

UDC 330.341

Yashyna K. V., PhD,  
Karpenko O. O., PhD

## DEVELOPMENT OF DNIPRODZERZHYN'SK STATE TECHNICAL UNIVERSITY AND KYIV STATE MARITIME ACADEMY KNOWLEDGE TRANSFER UNITS BUSINESS AND ACTIVITY PLANS

**Abstract.** Knowledge transfer is the basis of successful work of the modern higher education institution (HEI). Of critical importance for the effectiveness of knowledge transfer processes is the presence of developed knowledge transfer infrastructure inside the university. The approach to developing Business and Activity Plans for Knowledge Transfer Units of the modern HEI. The implementation of the proposed approach is presented by the example of Dniprodzerzhyn'sk State Technical University and Kyiv State Maritime Academy.

**Key words:** Knowledge economy, modern higher education institution, Knowledge Transfer Unit, business and activity plan, mission, vision, values, activity and operations plan, business canvas

## РАЗРАБОТКА БИЗНЕС ПЛАНОВ ЦЕНТРОВ ТРАНСФЕРА ЗНАНИЙ ДНЕПРОДЗЕРЖИНСКОГО ГОСУДАРСТВЕННОГО ТЕХНИЧЕСКОГО УНИВЕРСИТЕТА И КИЕВСКОЙ ГОСУДАРСТВЕННОЙ АКАДЕМИИ ВОДНОГО ТРАНСПОРТА

**Аннотация.** Трансфер знаний – один из основных видов деятельности современного высшего учебного заведения (ВНЗ). При этом осуществление трансфера знаний невозможно без наличия в университете соответствующей инфраструктуры. В статье предложен подход к разработке бизнес планов Центров трансфера знаний современных ВНЗ. Представлена имплементация описанного подхода на примере Днепродзержинского государственного технического университета и Киевской государственной академии водного транспорта.

**Ключевые слова:** экономика знаний, современное высшее учебное заведение, центр трансфера знаний, бизнес-план, миссия, видение, ценности, план действий, бизнес модель

## РОЗРОБКА БІЗНЕС ПЛАНІВ ЦЕНТРІВ ТРАНСФЕРУ ЗНАНЬ ДНІПРОДЗЕРЖИНСЬКОГО ДЕРЖАВНОГО ТЕХНІЧНОГО УНІВЕРСИТЕТУ ТА КИЇВСЬКОЇ ДЕРЖАВНОЇ АКАДЕМІЇ ВОДНОГО ТРАНСПОРТУ

**Анотація.** Трансфер знань - один з основних видів діяльності сучасного вищого навчального закладу (ВНЗ). При цьому здійснення трансферу знань неможливо без наявності в університеті відповідної інфраструктури. У статті запропоновано підхід до розробки бізнес планів Центрів трансферу знань сучасних ВНЗ. Представлена імплементація описаного підходу на прикладі Дніпродзержинського державного технічного університету та Київської державної академії водного транспорту.

**Ключевые слова:** економіка знань, сучасний вищий навчальний заклад, центр трансферу знань, бізнес-план, місія, бачення, цінності, план дій, бізнес модель

### 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 [1]. 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 [2]. Thus, in the developed countries universities play a key role of economic engines in the processes of new knowledge creation and its transfer to the

non-academic sector. At the same time universities have a direct impact on the development of an entrepreneurial society, enriching the students with the corresponding abilities and skills. Currently, the Bologna process clearly identifies the necessity to adjust the relations approach of the universities and enterprises, and ranking the knowledge transfer activities to be the key components of the university life. The Lisbon Agreement presents the universities as a key factor in the movement to improve the competitiveness and innovativeness of the European economy [3 - 5].

Knowledge transfer is the basis of successful work of the modern university. Knowledge transfer involves two main processes: the commercialization of research results and the implementation of market-

oriented educational programs. Thus, the knowledge transfer processes are associated with:

the commercialization of scientific activities results, the organization of scientific researches;

the usage of intellectual property rights for the scientific researches results of university;

the participation in national and regional development programs;

the work of technological incubators and scientific parks;

the development and implementation of innovative educational programs, demanded by the market [6 - 8].

Of critical importance for the effectiveness of knowledge transfer processes is the presence of developed knowledge transfer infrastructure inside the university, the basis of which is a knowledge transfer unit (KTU), and its purpose is to disclose the commercialization potential of the university for external customers [9, 10].

### 1. General structure of Knowledge Transfer Unit Business and Activity Plan

Knowledge transfer units were established in the Dniprodzerzhynsk State Technical University (DSTU) and Kyiv State Maritime Academy (KSMA) within the framework of the international project TEMPUS KTU (№ 544031-TEMPUS-1-2013-1-AT-TEMPUS-JPHES) [11].

Thus, one of the major project challenges was to the development of KTU Business and Activity Plan (BAP).

The BAP has collected relevant specific information useful to draw and construct each university's business and activity plan. This tool has included key actions and objectives of setting up and initiating a KTU. The final version of this document is a roadmap for KTUs from their initial phase (fig. 1).

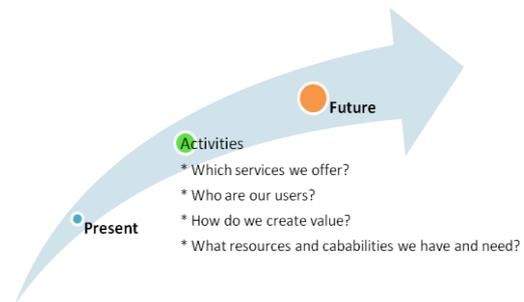


Fig.1. Vision of business and activity plan

The BPA isn't a traditional business plan and/or a classical strategic plan in strict sense. It has combined elements of each of them and provided useful guidance for the DSTU and KSMA KTUs.

BAP is short and simple, but it has collected the sufficient information basic definitions and recommendations.

BAP has included:

1. The information about university (number of students, teaching and research staff, administrative staff, budget, number of patents, spin-offs, licensed technologies, royalties).
2. The KTU Mission, Vision and Values.
3. The KTU Organization and Staffing.
4. The KTU Activity and Operations Plan.
5. The KTU Business Model Canvas.

### 2. The Mission, Vision and Values of Knowledge Transfer Unit

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.
2. Professionalism.
3. Diversity of competences and skills among the staff.
4. Personalized attention.
5. Focus on people.

6. Orientation towards client and user satisfaction.

### 3. Knowledge Transfer Unit organization staffing and services

In the DSTU KTU was created as a division of the R&D department.

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 center and the center of new information technologies (quality management laboratory of higher education).

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

In the DSTU eight positions have been assigned to cover the activities and operations of KTU: Director, Business Manager, Patent Manager, Marketing Manager, Project Manager, Software Engineer, and Administrator.

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.

The following units already exist at KSMA and will partially participate in knowledge transfer:

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.

You can find the full job descriptions for each position, responsible persons and their contacts on the DSTU and KSMA websites [12, 13] and in the DSTU and KSMA KTU strategies [14].

Thus, 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 [12, 13].

#### 4. Knowledge Transfer Unit Activity and Operations Plan

KTU Activity and Operations Plan includes four groups of tasks:

1. Preliminary tasks (Acquire knowledge).
2. Basics tasks (Create and initiate the KTU, Transfer technology, Patenting support, 3D printing technology, etc.).
3. Dissemination tasks (Gain and enhance visibility of the KTU).
4. Other (Support of grant proposal writing).

Every group of tasks has a Global objective. In addition, users can see Detailed objectives/Actions, Responsible, Others involved and Deadline in the Activity and Operations Plan.

The short part of the KSMA Activity and Operations Plan you can see in the table 1.

Table 1. Part of KSMA Activity and Operations Plan

	Global objective	Detailed objectives/Actions	Responsible	Others involved	Deadline	
<b>1. Basics</b>	1. 1. Create and initiate KTU	1.1.1. Formally create KTU 1.1.2. Define and delimit functions 1.1.3. Equip KTUs 1.1.4. Staff KTUs 1.1.5. Web site	Panin V. Panin V.  Panin V., Gorban A. Panin V. Panin V.	Karpenko O.  Karpenko O., Astafieva G. Karpenko O., Astafieva G. Karpenko O., Astafieva G. Karpenko O., Astafieva G.	Done Done T4 2015 Done T3 2015	
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" 2.1.2. Training about 3D p technology (Pilot Project) 2.1.3. Production and realization of 3D models (Pilot Project)	Karpenko O.  Karpenko O. Astafieva G. Gorban A. Blyndaruk A.	Blyndaruk A.  Blyndaruk A. Karpenko O.	T4 2015  T2 2016 T2 2016
		2.2. Transfer technology	2.2.1. Identify core specialties of research with commercial potential 2.2.2. Identify potential industrial partners	Brazhnikova O. Gorban A. Brazhnikova O. Gorban A.	Astafieva G. Karpenko O.	T2 2016 T2 2016
	3. Intellectual Property	3.1. Intellectual property support	3.1.1. Information about intellectual property on the KSMA website 3.1.2. Consulting inside KSMA about patenting applications 3.1.3. Seminars about intellectual property	Brazhnikova O.  Brazhnikova O. Brazhnikova O	Gorban A.  Gorban A. Gorban A.	T3 2015  T1 2016 T2 2016

#### Conclusion

#### 5. Knowledge Transfer Unit Business Model Canvas

The Business Model Canvas of KTU is based on the classical Business Model Canvas. The DSTU Canvas is given in the fig. 2

Knowledge transfer unit is a unique department, because KTU provides comprehensive knowledge transfer in the university and out.

KTU is an important part for the innovative university based on the concept of

knowledge triangle: education, research and innovation.

Development of a clear BAP is necessary for KTU organization, as it can:

1. Provide detailed analysis of the current situation, define prospective directions of the university collaboration with business and industry. Find out the existing problems and the ways to solve them.
2. Formulate Mission, Vision and Values of Knowledge Transfer Unit.
3. Define the KTU within the university structure.

4. Justify the personnel structure of the KTU, formulate corresponding position requirements and instructions.

5. Define services that must be provided by the KTU to successfully implement the “third mission” of the university.

6. Justify the clear plan of actions that can provide efficient work of the KTU.

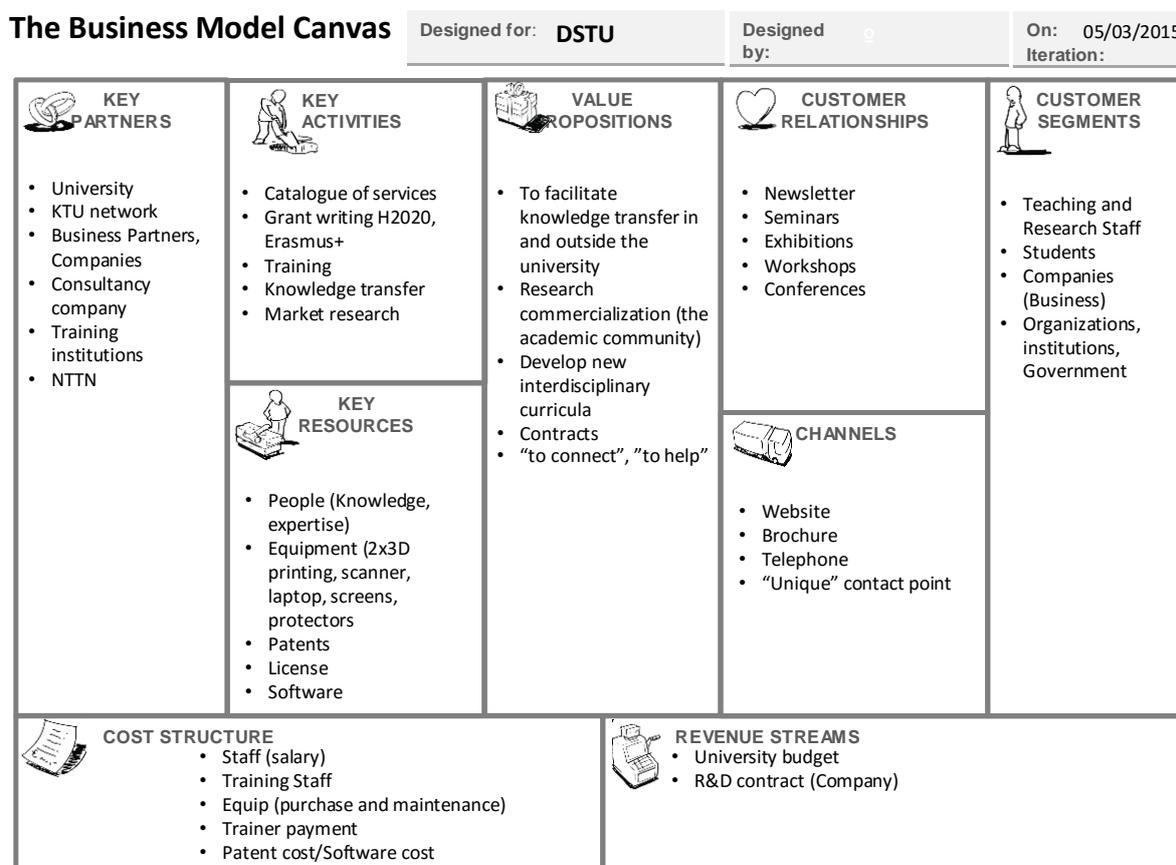


Fig. 2. DSTU Knowledge Transfer Unit Business Model Canvas

7. Develop business model of the KTU that will conveniently and clearly describe peculiarities of the unit’s work.

Received 05/05/2016

References

1. Medvedkin T.S. Imperativi mizhnarodnogo transferu znan' v sistemi

global'nih naukovo-tehnologichnih transformacij [The imperative of international knowledge transfer in the system of global scientific and technological transformations]: avtoref. dis.... dokt. ekon. nauk: 08.00.02 / Taras Sergijovich Medvedkin; Institut ekonomiki promislivosti NAN Ukraïni. – Donec'k, 2013. – 40 p. (in Ukrainian)

2. Limar V.V. Derzhavne reguljuvannja mizhnarodnogo transferu znan' v ekonomici Ukraini [State regulation of the international

transfer of knowledge in the economy of Ukraine]: avtoref. dis.... kand. ekon. nauk: 08.00.03 / Valeriya Valeriyivna Limar; Institut ekonomiki promislovosti NAN Ukrayini. – Donetsk, 2013. – 24 p. (in Ukrainian)

3. «Gruppa vos'mi» ob obrazovanii ["Group of Eight" about education] // Vyssee obrazovanie segodnja . 2006. No 1. P . 30-35. (in Russian)

4. Hagen, Stephen. From Tech Transfer to knowledge exchange: European Universities in the Marketplace // Wenner-Gren International Series, Vol. 84. The University in the Market. Portland Press Ltd. 2008. (In English)

5. Bednyj A.B. Transfer znanij v innovacionnom universitete [Transfer of knowledge in the innovation university] – N. Novgorod: Izd-vo NNGU, 2010. — 40 p.

6. Strategija transfera znanij Nizhegorodskogo gosudarstvennogo universiteta im. N.I. Lobachevskogo [The strategy of knowledge transfer of the Nizhny Novgorod State University. N.I. Lobachevsky] [Electronic resource] – Access mode: [//www.unn.ru/general/transfer.html](http://www.unn.ru/general/transfer.html) (in Russian)

7. Sovershenna I.O. Universitets'ki centri transferu tehnologij – vazhliva lanka innovacijnoi infrastrukturi [University technology transfer centers - an important link in the innovation infrastructure] [Electronic resource] – Access mode: [//ena.lp.edu.ua:8080/bitstream/ntb/18760/1/16-71-75.pdf](http://ena.lp.edu.ua:8080/bitstream/ntb/18760/1/16-71-75.pdf) (in Ukrainian)

8. Fedorov M.P. Rol' universitetov v innovacionnoj jekonomike [The role of universities in the innovation economy] // Innovatsii. -2007.-№02(100). – P. 71-75. (in Russian)

9. Etzkowitz, Henry. 1983. Entrepreneurial Scientists and entrepreneurial universities in American academic science. *Minerva* 21: 198–233. (In English)

10. D'Este P. and P.Patel (2007), University-industry linkages in the UK: What are the factors underlying the variety of interactions with industry?, *Rresearch Policy* 36, 1295-1313. (In English)

11. *Tempus project*: knowledge transfer unit - from applied research and technology-

entrepreneurial know-how exchange to development of interdisciplinary curricula modules [Electronic resource] – Access mode: [//my-ktu.eu/](http://my-ktu.eu/).

12. Centr transferu znan' Dniprodzerzhins'kogo derzhavnogo tehnicnogo universitetu [Knowledge Transfer Unit of Dniprodzerzhynsk State Technical university] [Electronic resource] – Access mode: [dktu.org.ua](http://dktu.org.ua). (in Ukrainian)

13. Centr transferu znan' Kiivs'koï derzhavnoi akademii vodnogo transportu [Knowledge Transfer Unit of Kyiv State Maritime academy] [Electronic resource] – Access mode: <http://ktu-ksma.com/> (in Ukrainian)

14. *Tempus* KTU Strategy: Strategy document for Knowledge Transfer Units – 544031-TEMPUS-1-2013-1-AT-TEMPUS-JPHES Grant, 2013. – 57 p. (In English)



Kseniia Yashyna,  
PhD, associate professor,  
head of Scientific Research  
Department,  
Dniprodzerzhynsk State  
Technical University,  
Dniprodzerzhynsk,  
Dniprobudivska, 2 , 51939,  
+380974301394,  
[YashinaKsenia85@gmail.com](mailto:YashinaKsenia85@gmail.com)



Oksana Karpenko,  
PhD, associate professor,  
professor of Economic and  
Management Department,  
Kyiv State Maritime  
Academy  
Kyiv, Kyrulivska, 9, 04071,  
+380683530580,  
[karp2004@ukr.net](mailto:karp2004@ukr.net)