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**PROSPECTS OF INFORMATION SOCIETY  
DEVELOPMENT IN THE UKRAINE IN THE  
EUROPEAN INTEGRATION CONTEXT**

**INTRODUCTION**

One of the main aims of the Ukraine on the way to Euro integration is the building of the information society oriented on the people's interests, open for everybody and directed to self-development, where every person can create and accumulate information and knowledge, have free access to them giving possibility for everyone to realize the full degree of their potential, assisting social and personal development and increasing the quality of life. According to the Ukraine law "On the Basic Principles for the Development of an Information-Oriented Society in Ukraine for 2007–2015"<sup>1</sup> the information society development in the Ukraine and providing the latest ICT to all spheres of public life and to the activities of the government and local authorities is determined as one of the priority directions of the state policy of the Ukraine.

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<sup>1</sup>. About Basic principles of information society development in Ukraine on 2007-2015. Law of Ukraine N 537-v, 9.01.2007. [www.rada.gov.ua](http://www.rada.gov.ua)

The creation of information society is based on the fact that the processes of knowledge creation and distribution are in direct relation with the information resources which are available for the society and with the degree of their support.

The fact that the necessity of the information and communication technologies (ICT) and e-services given by their mediated participation was determined as the main priority of the national economies, arises from their ability to generate growth in all sectors of the economy, to increase the productivity in the value chain and as a result to accelerate economic development in the whole.

In the EU countries, especially in Central and Eastern Europe (CEE), numerous normatively legal acts operate which regulate the development of this sphere. Such as: "Electronic Europe – 2005", Lisbon strategy, program "Electronic TEN" etc. The implementation of their conditions is obligatory for countries which intend to join the EU<sup>1</sup>. Therefore studying the successful experience of the CEE countries that managed to make all the necessary tasks in the building of the information society is very important for the Ukraine to overcome the problems on this way.

So, the purpose of this article is to research the present situation and the prospects of the ICT sector development and the information society that is under formation in the CEE countries, and also forming the suggestion as for the ways of introducing their experience in the Ukraine.

## **MODERN DEVELOPMENT OF THE ICT SECTOR IN THE EUROPEAN COUNTRIES**

With the emergence of new centres of development, world spending on ICT grew annually by 5.6%. In the period from 2000 to 2005 the spending of OECD area grew by 4.2%, and the share of OECD in the world market decreased from 89% in 2000 to 83% in 2006. In 2006 the growth rates of the ICT sector were 6% in the world.

China is a world leader of development in this sphere. Its spending on ICT in 2005 are estimated to be 118 billion USD in the current prices (22% annual growth from 2000). Russia (25% annually) and India (23%) also had maximal rates of expenditure growth in this period. Indonesia, the South African Republic and the CEE countries of the OECD make the next group of countries with the highest growth rates<sup>2</sup>.

The share of ICT sector in the economy value added in the developed countries exceeds 8-9% and increases by very insignificant rates. Thus, from 1995 to 2003 in the most developed countries of the world (OECD countries) the growth increased by 1.04% in average (Table 1). Significant is the example of Hungary which increased this index for the same period by 3.2%, passing by even a world leader in this sector – South Korea.

According to OECD data, the rate of employees in the economic spheres linked with ICT in 2004 varied in the CEE countries from 17.9% in Poland, 18.7% in Slova-

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<sup>1</sup> Georgieva T.: E-services in the context of knowledge economy forming - the problem areas in candidate countries in the EU members (on the example of Bulgaria), Herald of Ternopol academy of national economy, 2005. 5-2. pp. 126-133.

<sup>2</sup> OECD Information Technology Outlook: 2006 Edition.

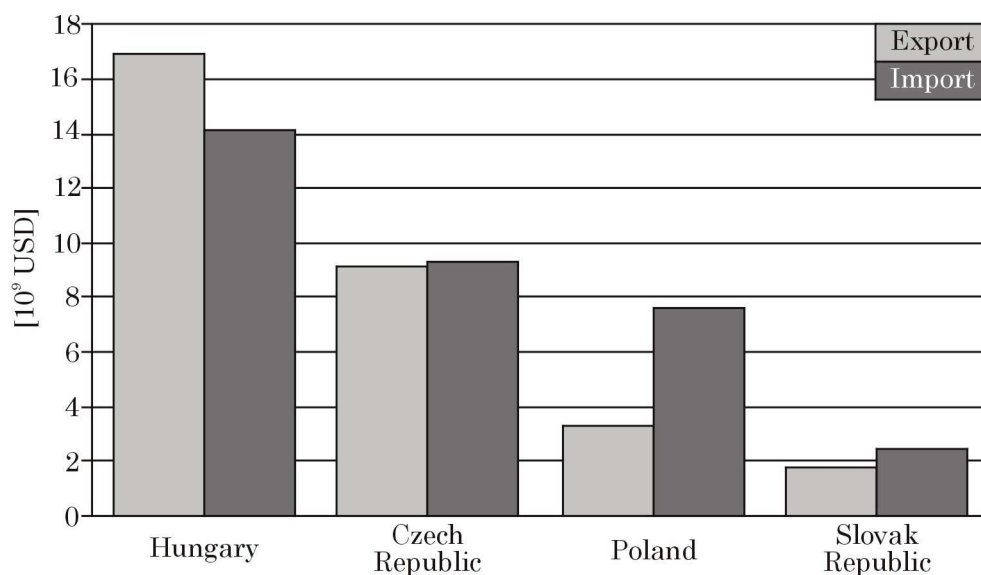
[http://www.oecd.org/document/10/0,3343,en\\_2649\\_37441\\_37486858\\_1\\_1\\_1\\_37441,00.html](http://www.oecd.org/document/10/0,3343,en_2649_37441_37486858_1_1_1_37441,00.html)

20.4% in the Czech Republic to 21.9% and 22.7% in Slovenia and Hungary respectively<sup>1</sup>.

*Table 1*  
*Share of ICT sector in the total value added of some national economies<sup>1</sup>*

	1995	2003	Growth, %
Finland	8.27	14.94	6.67
Hungary	6.65	9.87	3.22
Korean Republic	10.70	13.22	2.52
United Kingdom	9.65	10.76	1.11
OECD	8.00	9.04	1.04
USA	9.60	10.47	0.87
Czech Republic	5.17	5.73	0.55
Slovak Republic	4.63	5.12	0.49
Japan	7.20	7.58	0.39

In 2004 the export of ICT goods in the CEE countries attained a new peak due to electronic components, audio-, video- and other ICT equipment; the growth of import was predefined by the increasing volume of communication equipment, audio- and video equipment. Hungary is a leader in the region (Chart 1), the Czech Republic falls behind it by 1.5 times, Poland – 2.0, Slovakia – 7.0. It is evident that from the noted countries only Hungary has positive foreign trade balance of the ICT goods.



*Chart 1*  
*Trade in ICT goods in CEE, 2004, USD Millions*

<sup>1</sup> [http://www.oecd.org/document/23/0,3343,en\\_2649\\_34223\\_33987543\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/23/0,3343,en_2649_34223_33987543_1_1_1_1,00.html)

Nowadays the place occupied by the CEE countries in the EU development shows that the intensification of these countries' efforts in the last decade, particularly Hungary's, in relation to the ICT sphere development resulted in the rise of the national economy's competitiveness in the world market. The countries' efforts in this direction are crucial in the increase of the dynamics in establishing and realizing the international business contacts, exchanging information, expanding foreign economic activity. The information society development allows also to improve the population's living standard due to the economic growth, providing human rights and freedom, granting equal high-quality access to education, health care services and administrative services of public government and local authorities, creating new workplaces and expanding the possibilities of population employment, providing social protection to the needy.

### **PRE-CONDITIONS OF INFORMATION SOCIETY FORMATION IN THE UKRAINE**

The priority directions of the information society formation are: providing general access to the telecommunication services and information resources; development of the electronic education; introduction of the electronic health care; speed-up creation of the electronic government; growth rates acceleration of electronic commerce volumes; solving the problems of information security.

The main index of access to the information resources is a present audience of Internet-users (Table 2).

*Table 2*  
*Internet users in CEE countries<sup>1</sup>*

Country	Population (2007 Est.)	Internet users latest data	% Population (penetration)	% Users Europe	Usage Growth rate (2000- 2007)
Bulgaria	7,673,215	2,200,000	28.7%	0.7%	411.6%
Czech Rep.	10,209,643	5,100,000	50.0%	1.6%	410.0%
Hungary	10,037,768	3,050,000	30.4%	1.0%	326.6%
Poland	38,109,499	11,400,000	29.9%	3.6%	307.1%
Romania	21,154,226	4,940,000	23.4%	1.6%	517.5%
Slovak Rep.	5,379,455	2,500,000	46.5%	0.8%	284.6%
Slovenia	1,962,856	1,090,000	55.5%	0.3%	263.3%
Ukraine	45,833,977	5,278,100	11.5%	1.7%	2539.1%
Europe	809,624,686	314,792,225	38.9%	100.0%	199.5%

<sup>1</sup> <http://www.internetworldstats.com/stats4.htm>

As it can be seen at the average European level the Internet coverage of the population is 39%. A lot of the Eastern European countries have not attained this level yet, particularly Hungary and the Ukraine<sup>1</sup>. However, we must emphasise the extraordinary success of the Ukraine on this way as the amount of the users has become 25,4 times bigger in the last 6 years, which on the average is 4-6 times quicker than in other CEE countries. The tendency of the Ukrainian Internet users' quantity growth is kept in the current year, according to some data it is equal to a quarter million users quarterly<sup>2</sup>.

So it is necessary to emphasize that according to the data of the State communication and information department (Transport and communication Ministry of the Ukraine) the number of the internet - users in the Ukraine attained 9 million people in 2006<sup>3</sup>. Neither the Ukrainian companies nor UNCTAD agree to this fact. Such disagreements are predefined by the statistic methodology disparity of the international and Ukrainian organizations.

There is unevenness in bringing in to usage the world network in the different Ukrainian regions. The Kiev region (60.8%) is the leader. Odessa, Dnepropetrovsk, Donetsk, Kharkov, Lvov, Crimea, Zaporozhye are also acknowledged to be the most active regions of the Ukraine. Their total share is 27.7%. There are only 11% users in all other regions.

The important index of communication technologies development is the adequate provision of the population with stationary home telephone lines (Chart 2).

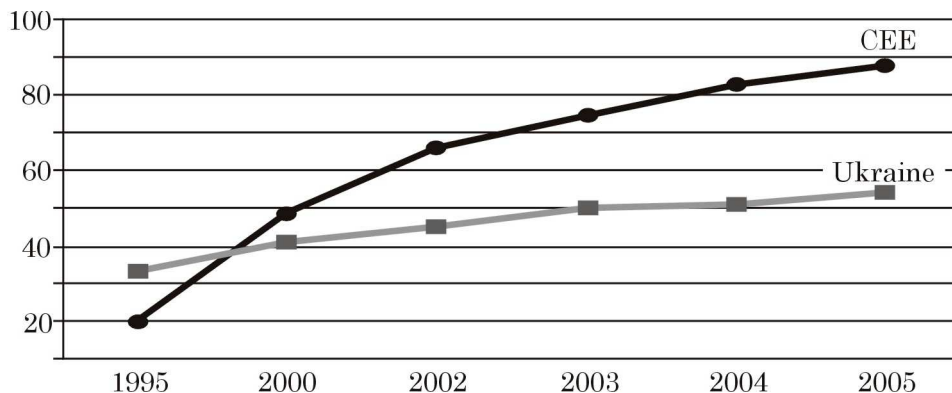


Chart 2

*Provision of population with stationary home telephone lines in CEE and Ukraine in 1995-2005 (per 100 inhabitants)*

Unfortunately the level of provision with stationary home telephone lines in the Ukraine is far below that of the CEE countries one. In 2005 it was 54 items per 100 families<sup>4</sup>, that is 34 items less than the CEE middle indexes<sup>1</sup>.

<sup>1</sup> <http://www.internetworldstats.com/stats4.htm>.

<sup>2</sup> Shkurin M.: Virtual accessible // "the Ukrainian capital" – [www.stolytsya.kiev.ua](http://www.stolytsya.kiev.ua)

<sup>3</sup> <http://www.kmu.gov.ua/mtunit/control/inform/uk/index>

<sup>4</sup> Ukraine Statistical annual on 2005. Editor-in-chief of the issue R. G. Vilenchuk. K. Derzhkomstat of Ukraine, 2006. p. 638.

To increase the ICT availability in the Ukraine it is necessary to create in all settlements the possibilities for the Internet access, including the development of the public points network with the multiple access; the acceleration of conducting the radio frequency resource conversion to the civil users; definition of the strategy of the universal telecommunication services development, consideration of the creation of universal services fund expedience for providing the access of the defenceless sections of the population to these services, development of legal, financial and economic mechanism of the noted fund functioning.

The important social measures of the information society development are education providing, health protection and government work with ICT.

Because of the permanent growth of the Internet-users' amount, the public and local authorities also start using the on-line communication with the Ukrainians, namely the e-mail. Presently 58 central institutions of the executive power and 27 regional and city administrations have their own web-sites. Such level of government authorities' informatization is attained due to the edicts of the Ukrainian Cabinet of Ministries, which oblige the local administrations to support the contact with the people through the Internet. One of such legal acts is "The order of legal publicity in the Internet network of the information on executive authorities' activity" which determines the order and types of information that central and local executive authorities must publish on the official sites.

Unfortunately, it is early to talk about the creation of e-government in the Ukraine, because the sites of the state government establishments do not provide on-line services, namely the percentage of such services is the main index of this sphere of the information society development. Thus, in Hungary 50% state services for physical and legal persons are accessible in the real-time that is 10 and 21 place according to these indexes in EU<sup>2</sup>.

The creation of the system of electronic health care has two main goals which stipulate the necessity of its introduction:

- decreasing the spendings on health care by the improvement of planning, accounting and control during the payment of activity in this sector;
- improving the quality of the services by increasing the information volume which the employees of this sphere will have, and raising patients' awareness.

The application of ICT in the Ukraine health care requires:

- encouragement of the public government and the local authorities, the health care specialists, and the representatives of the private economy sector to take general actions with involving the international organizations in order to create the reliable, high-quality and accessible system of telemedicine creation, mass electronic medical and health facilities for the home use;
- increasing the organizational and technological level of the ICT development in health care, making medical employees' ready to work with them;

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<sup>1</sup> Telecommunication Development Bureau (BDT), International Telecommunication Union (ITU) <http://www.itu.int/ITU-D/ict/statistics/ict/index.html>

<sup>2</sup> [http://ec.europa.eu/information\\_society/eeurope/i2010/](http://ec.europa.eu/information_society/eeurope/i2010/)

- expansion of the possibilities that modern medical services can provide, which must take a place on condition of normatively legal and methodological determination of telemedicine services;
- providing the access to world medical knowledge and actual at the local level information resources with the purpose to increase the effective implementation of the government research and prophylactic programs concerning health care, in particular the protection of men and women reproductive health, infectious diseases (AIDS, malaria, tuberculosis etc.);
- development of exchange standards of medical data on condition of providing of private life inviolability.

The first steps in this direction have already been carried out in the Ukraine. For example, at the end of 2004 specialists of the medical informatics department at the National medical academy of the post-graduate education named after P. L. SHUPIK (in essence, first in Europe) in accompany with the American scientists organised an international seminar on the problems of tuberculosis in the on-line way. The participants of the seminar were highly qualified specialists in physiology and pulmonology from four countries of the world – the Ukraine, the USA, Poland and Slovakia (the Ukraine was presented also by the scientists of the Physiology and Pulmonology Institute named after F.G. YANOVSKIY – one of the structural units of the Ukraine Medical Sciences Academy, and Zaporozhye State Medical University)<sup>1</sup>.

One of the main conditions of creating a successful information society in any country is providing education, and professional preparation for the people to work under the new conditions. For this purpose it is necessary to develop the national scientific educational sector, to work out the methodological provision of the computer multimedia technologies use at school objects and disciplines teaching, to take into account the peculiarities of work with the ICT in the system of training students in the higher educational establishments and teachers' retraining; to provide priority of ICT specialists preparation; to improve the curricula, to open new specialities concerning the latest ICT, to incarnate the principle „life-long learning”; to create the systems of the remote (distance) education and provide on their basis the effective ICT development and the use on all educational levels of all forms of studies; to provide at the proper level educational and scientific establishments by modern ICT economic facilities and necessary information resources.

For example, in Hungary at schools on average 100 students use 8.6 computers. The average-European index is 9.9 computers per 100 students. In Ukraine this index was 1.3 items in 2005. To complete to 2010 computerization and informatization of the secondary education, to provide schools with modern computers to reach the level of 6.7 computers per 100 students<sup>2</sup>, which is also far below the level of the CEE countries, is foreseen by the government program conception

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<sup>1</sup> Voronenko Y. V., Mincer O. P.: Reformation of the medical education system in the light of “society of knowledge” conception. The Ukrainian medical magazine, 2006. 1 (51). pp. 6-13.

<sup>2</sup> Podolyan L. Nikolaenko S.: Ministry of science and education can be named the ministry of the future in Ukraine. Mirror of week, 2005. 38 (566). pp. 12-13.

“Information and communication technologies in education and science on 2006 – 2010”. The government plans to finance the program with 3.7 billion UAH<sup>1</sup>.

The last, but not less important step on the way to information society development in the Ukraine is the growth rate increase of e-commerce. Only in Eastern Europe the volume of trade operations between enterprises in the category “business-business” (B2B) increased from 7 billion USD in 2000 to 128 Mrd USD in 2005. The share of on-line transactions grew from 13% in 2001 to 30% in 2006<sup>2</sup>. Both general economic activity liberalization in the world and Internet multifunctionality are crucial in it.

Electronic trade gives the following advantages for business legal persons and their clients:

- promotes the expansion of the sale markets for sellers and opens new possibilities of choice for buyers;
- creates equal conditions of access to the goods and services for the users of different administrative and geographical areas;
- increases the volumes of retail and wholesale trade and reduces the amount of the intermediary branches;
- improves markets transparency in price ranges, products quality, supply terms;
- reduce trade turnover costs.

Obviously, the possibility of the creation and supply of goods and services in an immaterial form without the physical meeting of the buyer with a seller, transferring certain data via the communication channels and fulfilling the calculations in an electronic form results in the loss of clearness between the definitions of domestic and international trade, which complicates the exposure of export and import facts.

In the industries of the CEE countries, which carry out the operations through the Internet, concentrate mainly in transport and communication, trade and operation with the real estate and renting (*Chart 3*). This index is the greatest in Czech Republic – 13% enterprises all of industries carry out a sale in average and 21% – purchase of commodities by the Internet.

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<sup>1</sup> About ratification of the Government program “Information and communication technologies in education and science” on 2006-2010. Decision of Ukraine Cabinet of Ministries N 1153 from December, 7 in 2005. [www.rada.gov.ua](http://www.rada.gov.ua).

<sup>2</sup> Krivous V.: Services in the Internet network as innovative constituent of EU economy: lessons for Ukraine. Herald of Ternopol academy of national economy, 2005. 5. pp. 154-158.

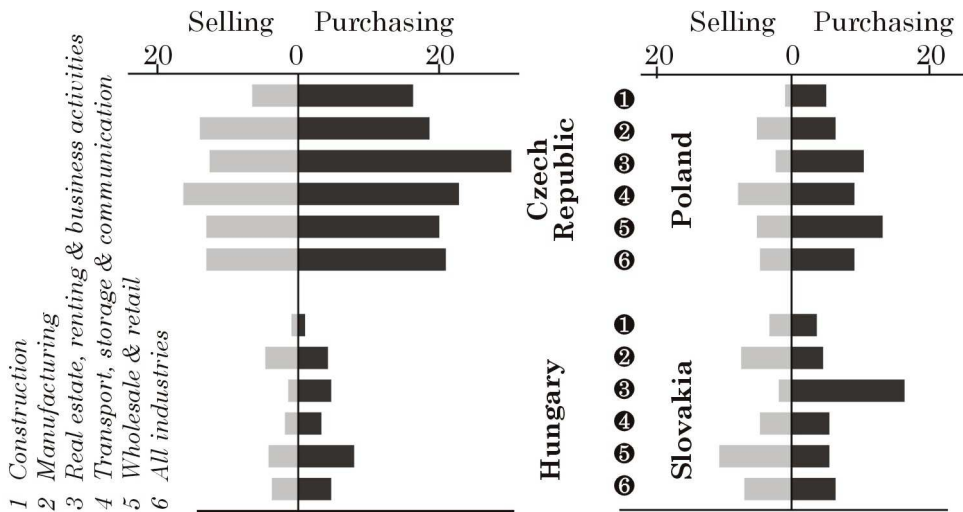


Chart 3

*Share of different industries enterprises in CEE countries economy which was engaged in e-commerce in 2005, %.*

Unfortunately, such information is not available in the Ukraine. It is possible only to mention that nowadays the amount of ua domains is 241.7 thousands, web sites - over 36.0 thousands. The first place among the Ukrainian users is occupied by such search engines as: google.com (64.8%), yandex.ru (17.7%), rambler.ru (5.4%), meta.ua (5.3%), bigmir.net (5%) and others like that. Most users look for scientific abstracts, weather and work.

Information society development in any state needs the weighed strategy and proper financing. So in Hungary the National Development Program GV-OP was carried out on 2004 – 2006, foresaw financing at 215.8 millions EUR, from which EU funds 94.1 millions. The e-commerce development (100 millions), digital content (39.3 millions), e-government (42.5 millions) and broadband telecommunication networks (36 millions) projects were financed in its scopes. Unfortunately there is no developed plan of action concerning the national strategy of the Ukraine.

Experience of e-services development in the CEE countries demonstrates also the necessity of working out the compatible rules of business processes participating at the state level. Such rules are necessary for the functioning of the trade systems (making an agreement on the Internet, conduct of the electronic documents circulation), payment systems, goods supply systems (guarantees and mechanism of supply), solving the controversial points. Working out the proper regulatory documents will allow to provide and essentially extend the e-commerce limits. Both Internet buyers and sellers need the defence of their interests and the provision of guarantees which will limit the risks in trade relations.

## CONCLUSIONS

Analysing the experience of the ICT and Internet development in the CEE countries, it is possible to select the following tasks towards information society development in the Ukraine:

- expansion of the collaboration with the leading international organizations concerning the information society development within the framework of the Ukrainian international agreements on scientific and technical collaboration and international technical help;
- Ukraine's educational, scientific and cultural integration into the global cultural, educational, scientific and technical information space;
- realization of joint projects within the framework of the Ukrainian international agreements which will provide Ukraine integration in the global information space;
- assistance to develop partnership between the state and the private sectors of the economy in the context of the information society development.

Also the questions of computer literacy popularization and ICT implementation in all sectors of the society , creation and development of e-commerce in a format "business-consumer" (B2C), "business – business - consumer" (B2B2C), stimulation of investments in ICT and Internet services, especially from small and middle enterprises need attention.