UNITED NATIONS DEVELOPMENT
PROGRAMME IN UZBEKISTAN

AGENCY FOR COMMUNICATION AND
INFORMATION OF UZBEKISTAN

REVIEW
OF INFORMATION AND COMMUNICATION
TECHNOLOGIES DEVELOPMENT
IN UZBEKISTAN
2005

ICTP
ICT POLICY

ASSISTING THE GOVERNMENT OF THE REPUBLIC OF UZBEKISTAN
IN THE FORMULATION AND IMPLEMENTATION OF INFORMATION AND
COMMUNICATION TECHNOLOGIES FOR DEVELOPMENT POLICY

Tashkent, 2006

ABOUT "ICT POLICY" PROJECT

"Assisting the Government of Uzbekistan in the Formulation and Implementation of Information and Communication Technologies for Development Policy" is a joint project of United Nations Development Programme (UNDP) and Government of the Republic of Uzbekistan. The Project started its activities in May 2005, and it is the practical realization of UNDP's objective to assist the Government of the Republic of Uzbekistan in development of ICTs as well as implementation of tasks envisioned in the government decisions pertaining to ICT sector.
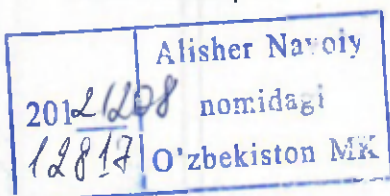
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Online version of the Review is available on the website of the "ICT Policy" project at: **www.ictp.uz,** as well as on the website of United Nations Development Programme in Uzbekistan at: **www.undp.uz**

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LIST OF ABBREVIATIONS

ALDTS	Automatic Long Distance Telephone Station
ATM	Automatic Teller Machine
ATS	Automatic Telephone Station
CBU	Central Bank of Uzbekistan
CERT	Computer Emergency Response Team
DDI PROGRAMME	Digital Development Initiative Programme of United Nations Development Programme (Programme implementation period: 10.2002-04.2005)
EDS	Electronic Digital Signature
HEI	Higher Educational Institution
ICT	Information and communication technologies
ICT Policy Project	Assisting the Government of the Republic of Uzbekistan in Formulation and Implementation of ICT for Development Policy
LAN	Local Area Network
MFERIT	Ministry for Foreign Economic Relations, Investments and Trade of The Republic of Uzbekistan
MHSSE	Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan
MoPE	Ministry of Public Education of the Republic of Uzbekistan
PC	Personal Computer
SCC	State Customs Committee of the Republic of Uzbekistan
SEMRC	Scientific-Engineering and Marketing Research Center
SSC	State Statistics Committee of the Republic of Uzbekistan
TUIT	Tashkent University of Information Technologies
UNDP	United Nations Development Programme
USD	United States Dollar
UzACI	Agency for Communication and Information of Uzbekistan
UzAPI	Agency for Press and Information of Uzbekistan
UzEX	Uzbek Commodity Exchange
UzInfoCom	Computerization and Information Technologies Developing Center
UZS	Uzbek Soums
VAT	Value Added Tax

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INTRODUCTION

Global informatization process underway worldwide leads to rapid advancement of scientific and technological revolution. Degree and rates of information penetration and technological development in many respects determine the state of economy, living standards, national security, and country's role in the international community. Rapid development of economy and education based on utilization of information and communication technologies (ICT) becomes the ultimate national priority. Furthermore, in ensuring accessibility ICT is a strategic instrument in achievement of the Millennium Development Goals identified in the Millennium Declaration[1]. Wide scale programmes for introduction of information technologies into the governance, education, healthcare, commerce, and other sectors are undertaken in all developed and most of developing countries. Yet realizing the importance of nurturing information society, every country is developing its own "Concept" for implementation of this focal area These processes are underway in the Republic of Uzbekistan as well.

Coordination Council for Development of Computerization and ICT, which is the highest interagency body for coordination of development of computerization and ICT, approved the amended "Concept for Development of Information Technologies in Uzbekistan" in its decision on May 12, 2005 (Minutes of the Meeting #11). According to the Concept, the following focal areas have been identified as key directions for country's development goals in information technologies:
- Development of national ICT infrastructure;
- Electronic education;
- Establishment and development of information and knowledge market;
- Electronic government;
- Electronic commerce;
- Electronic healthcare;
- Improvement of legal framework.

Effectiveness of measures to be taken in implementation of the approved Concept is assessed by the set of specific quantitative indicators, and for that reason it is envisioned to conduct a study on "Review of ICT Development in Uzbekistan for 2005".

Objective of the Review

This review's objective is to identify the trends in development of informatization in the priority areas.

Based on the level of electronic readiness of the country and to ensure comparability with similar studies conducted by the UNDP in the framework of Digital Development Initiative Programme[2], this review tracks the indicators of ICT development in the following sections:
- Access to global information resources;
- ICT in education;
- Public use of ICT;
- Electronic government;
- Electronic commerce;
- Government's ICT Policy.

Methodology of the Review

Research for preparation of the review includes collection, processing, and analysis of input data on ICT development indicators. "Indicators System for ICT Development in Uzbekistan" developed by DDI Programme in early 2005 was used as the basic set for collection of input data (Annex #1).

Data was collected from the most recent publicly available government and agency statistical materials. Data was collected from public sources pending their availability including websites of State Statistics Committee (www.stat.uz), Agency for Communication and Information of Uzbekistan (www.aci.uz), Ministry of Higher and Secondary Special Education (www.edu.uz), Ministry of Public Education (edu.fan.uz), Central Bank of the Republic of Uzbekistan (www.cbu.uz), and other international and local organizations.

In the meantime, there is no statistical data in some areas of informatization (hardware and software availability, public use of ICT) and use of online applications by government institutions (electronic government) and commercial institutions (electronic commerce). Therefore, polls were conducted to collect input data for these indicators. Representativeness of the survey was achieved by coverage of the residents of the city of Tashkent and all regions of the country, with the number of respondents (in excess of 13,000), and maintaining the parity of male and female population, and urban residents representing only 30% of population sampled .

Input data of the survey was processed by special software application.

Analysis of the indicators of ICT development is done by comparison of the findings with the indicators of previous years.

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[1] More detailed information about Millennium Development Goals in Russian is available at: http://www.un.org/russian/goals/ and in English at: http://www.un.org/millenniumgoals/
(Website on MDGs in Uzbekistan - http://www.un.uz)
[2] Digital Development Initiative Programme was implemented in 2002-2005.

Identified changes and trends in ICT development are illustrated by sections in the respective diagrams and tables. The review is of interest not only for ICT specialists but also for broad range of readers - scholars and researchers, teachers, students, journalists, managers, etc. everyone who wants to be aware of the current state of ICT development in Uzbekistan.

SECTION I. ACCESS TO INFORMATION RESOURCES

Today benefits and advantages of utilization of ICT are becoming ever more evident, and ICT is regarded as a powerful instrument creating new opportunities for social and economic development. Moreover, facilitating and improving access to information resources may be helpful in achievement of objectives identified in the Millennium Declaration:

1. Eradicate extreme poverty and hunger;
2. Achieve universal primary education;
3. Promote gender equality and empower women;
4. Reduce child mortality;
5. Improve maternal health;
6. Combat HIV/AIDS, malaria and other diseases;
7. Ensure environmental sustainability
8. Develop a global partnership for development.

It is obvious that creation and realization of advantages of ICT are not feasible if required information resources are not available and access to these technologies is not provided.

Being a broad definition, access to information resources is assessed by tracking the changes in the number of components such as information infrastructure, communication quality, access to information networks, hardware and software development.

1.1. Information Infrastructure

Emergence of new technologies enables to introduce more accessible means to create communication networks such as wireless networks, and improvement of information infrastructure. However, development of information infrastructure in nationwide scale requires major capital investments and systematic approach to ensure compatibility of new networks with existing ones. To this end, the Government of Uzbekistan has a number of resolutions geared to accelerate the development and modernization of information infrastructure.

In accordance with the Resolution #331 of the Cabinet of Ministers of the Republic of Uzbekistan dated July 6, 1999, "Measures for servicing preferential loan of the Overseas Economic Cooperation Fund (OECF) of Japan for the development of telecommunication network of Uzbekistan (2nd stage)" Japanese Bank for International Cooperation (OECF is now within JBIC) issued preferential loans in the amount of 12,692 mln. yens (USD 104 mln[3].). In the framework of the project, approximately 2,000 km of trunk lines, 700 km of intraareal fiber-optic communication lines, 300 km of radio relay communication lines have been built, automatic long distance telephone stations (ALDTS) in the regional centers in Ferghana and Karshi were digitized, digital automatic telephone stations (ATS) were installed in the Republic of Karakalpakstan, Khorezm, Bukhara, Navoi regions with total capacity of 37,000 numbers[4]. After implementation of this project and other similar activities funded from government budget, direct foreign investments and loans, coverage of administrative district centers by digital telecommunications network as of January 1, 2006 equaled 76.2%, while the rates of transfer of telephone stations to digital technologies 66.2%. In order to continue activities in the framework of this loan, Resolution #PP-127 of the President of the Republic of Uzbekistan was adopted on July 21, 2005, which envisions modernization of telecommunication networks in four regions of the country and replacement of television transmitters in nine regions.

Assessment of the development of information infrastructure and access, conducted based on a number of main (number of landlines, cellular communication subscribers, computers, regular Internet users) and extended (number of television sets) indicators displays improvement in general state, while identifying different degrees of growth within various areas (see Table 1.1.).

High rates of growth are evident in the indicators such as the number of cellular communication subscribers and regular Internet users. Rate of growth in the number of cellular communication subscribers has remained robust at 30-60% annually since 2000, and amounted to 1,149,900 as of January 1, 2006[5]. Despite rapid growth of subscribers in absolute terms, indicator per 100 residents merely accounts for 4.42 subscribers (see Diagram 1.1). The growth in the number of cellular communication subscribers continued despite the decreased number of cellular communication operators in 2005. One of the operators, UZMACOM ceased its cellular communication services starting August 2005 as its license of cellular communication operator had expired. The process of establishing

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the structure of cellular communication market has continued, and three leading companies by the number of subscribers have been identified: Uzdunrobita (MTS), Unitel, and Coscom, which together account for 95% of the market. (see Diagram 1.2.)

Better access to this type of services and expansion of the range of services and coverage areas by cellular communication operators were the driving force in rising number of cellular communication subscribers. Competitive pressures led to further reduction of fees for communications services. If in 2001 the average cost of calling time was USD 0.11 per minute, then at the end of 2005 average estimated cost of outgoing call within operator's network was USD 0.025 per minute, while outgoing call within Uzbekistan was USD 0.0592 per minute.

Fixed line telephone services, however, still remain for the majority of families (according to the survey data 62%) more affordable than cellular communication services.

Minor improvements in telephone line penetration are observed. In excess of 2,000 automatic telephone stations (ATS) with total installed capacity of approximately 1,980,300 numbers are operating nationwide. This capacity is used at the rate of 87.1% - number of landlines amounted to 1,725,600. Total telephone penetration for 100 residents is only 6.56.

According to the survey data total number of computers has increased by 50,000 and amounted to 640,000. Hence, the number of computers per 100 residents increased to 2.4. Also the number of regular Internet users measured by polls grew by more than 50% and as of January 1, 2006 reached 855,000.

Table 1.1. Indicators of information infrastructure development

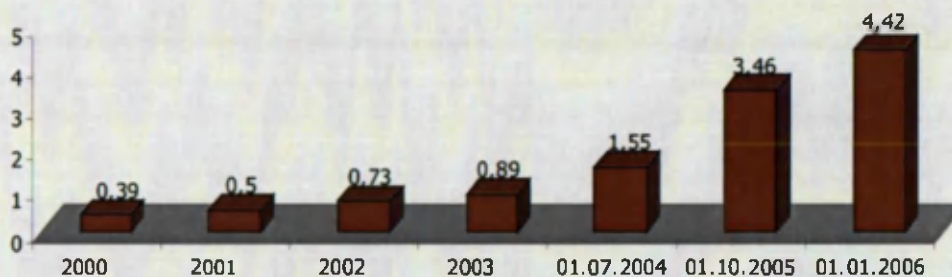| Indicators	Number (thous.)			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Number of main telephone lines	1647,1	1674,1	1714,9	1725,6
Number of cellular communication subscribers	211,8	394,5	900	1149,9
Number of computers	400	590	640	640*
Number of regular Internet users	235	526	806	855
Number of television sets	5800	5924	6004,2	6004,2*

* as of October 1, 2005

Diagram 1.1. Number of cellular communication subscribers per 100 residents
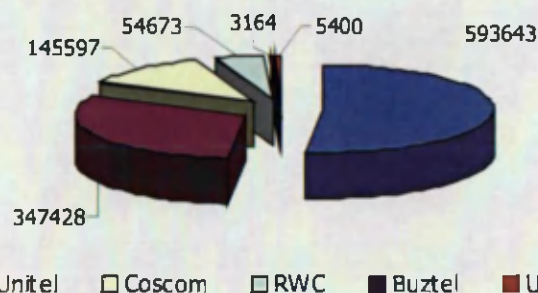
Diagram 1.2. Number of cellular communication subscribers by breakdown of operators as of 01.01.2006.

Number of television sets viewed as broader indicator of infrastructure development and access totaled 6,004,000 against 5,924,000 in 2004, according to estimated data. The number of television sets per family stands at 1.22. Meanwhile, the number of families possessing 2 or more television sets amounted to more than 20%.

1.2. Communication Quality

Widescale use and popularization of ICT depend on the speed and communication quality as frequent disconnections and low speed of data transfer reduce their appeal and hinder capital expenditures as well as consumer demand for ICT.

Changes in the quality of Internet access and communication services provided were tracked by the major indicators such as bandwidth capacity of external channels of access and total capacity of modem pools (see Table 1.2).

According to UzACI data, as of October 2005, total capacity of modem pools of Internet service providers amounted to 14,900, which is nearly twice as much as the analogous indicator of 2004.

Sustainable growth of bandwidth capacity of the external channels of Internet access has been observed every year. As of January 1, 2006, it totaled 143.1 Mbit/sec against 44 Mbit/sec in July 2004 (see Diagram 1.3).

1.3. Availability of Access to Information and Data Networks

Review of availability of access to information and data networks was conducted based on the analysis of indicators displayed in Table 1.3. Given insignificant increase in the total number of operators and providers in comparison with the period of "Review of ICT Development for 2004" only by 9 companies, study of the detailed data for 2004-2005 illustrates significant fluctuations (see Diagram 1.4.) For instance, at the end of 2004 and early 2005 the number of companies providing Internet access services was on increase, while their number went down closer to the end of 2005. In comparison with the data for October 1, 2005 the number of companies providing Internet access services decreased by 114 or 21% as of January 1, 2006. If favorable environment and popularity of the sector were factors of increase, the changes in regulatory framework were the main factors in the reduction of the number of companies.

While in early 2005 both legal entities and individuals without legal entity status could provide Internet access services, according to the changes introduced by the Resolution #155 of the Cabinet of Ministers issued on July 5, 2005, only legal entities are entitled to provide licensed telecommunication services. Individuals providing Internet access services must re-register as legal

Table 1.2. - Indicators of Communication Quality				
Indicators	Quantity			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Total capacity of modem pools of Internet service providers (thous.)	3,1	8,15	14,9	15
Total Bandwidth of external Internet access channels (Mbit/sec)	24	44	104	143,1
Percentage of successful connections on local telecommunication lines (%)	--	80	85	85*
Average time to fix a malfunctioning subscriber line (days)	--	1	1	1*

* as of 01.10.2005
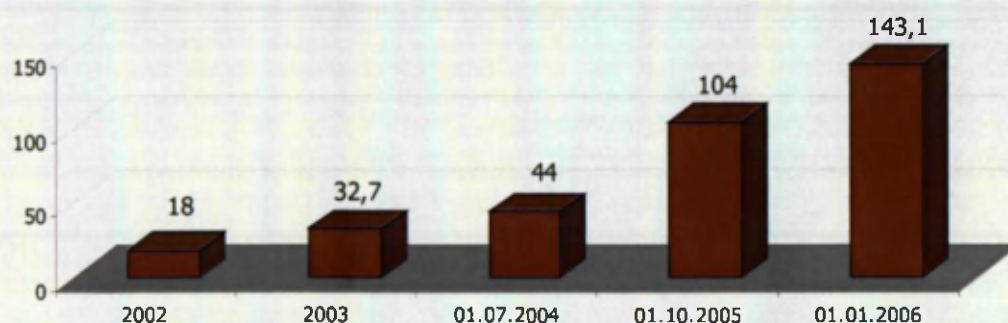
Diagram 1.3. Trends in total bandwidth of external Internet access channels

entities and receive new licenses, as it is currently occurring. 344 public Internet access points (Internet cafe, Internet clubs, Internet centers, etc.) account roughly for 81% of total number of Internet service providers and operators.

Meanwhile, the analysis of the number of legal entities providing Internet access services by regional breakdown indicates that significant gap between the number of Internet service providers in the city of Tashkent and elsewhere still exists. There is an insignificant increase in the share of regional companies in total number of operators and providers from 20.4% to 22.6%. The largest number of new providers and operators was established in Bukhara (12) and Samarkand (30) regions (see Diagram 1.5.).

Table 1.3. Indicators of access to data networks				
Indicators	**Number**			
	01.05.2003	**01.07.2004**	**01.10.2005**	**01.01.2006**
Number of public Internet access points	125	348	463	344
Number of Internet service providers	135	416	539	425
Number of second level domains in .UZ zone (thous.)	2,5	2,8	2,7	2,8
Regular Internet audience (thousand persons)	235	526	806,6	855
Average cost of Internet access per hour (thous. UZS per hour)	1	0,57	0,44	0,44*
Average rental cost of leased line Internet connection at the speed of 64 Kb/sec (thous. UZS per month)	250	200	277**	277**
Cost of local telephone call (UZS) (city network with unlimited calling time)	700	910	1000	1000

* calculated data, ** estimated data,
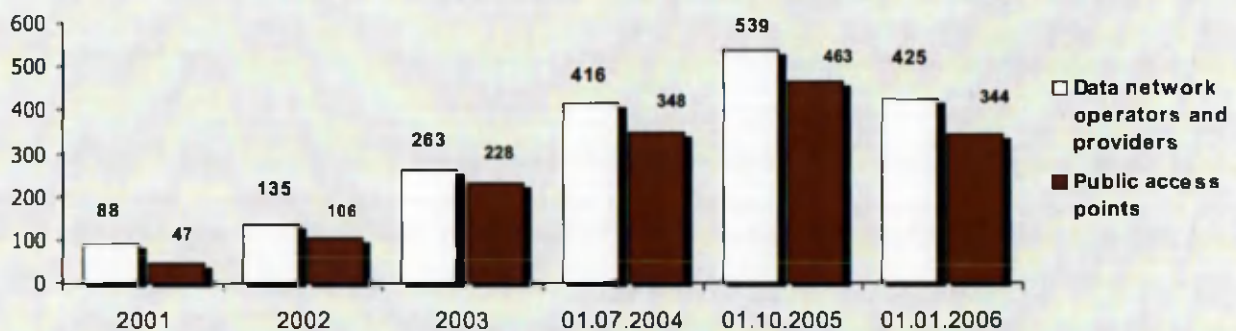
Diagram 1.4. Data Network Operators and Providers
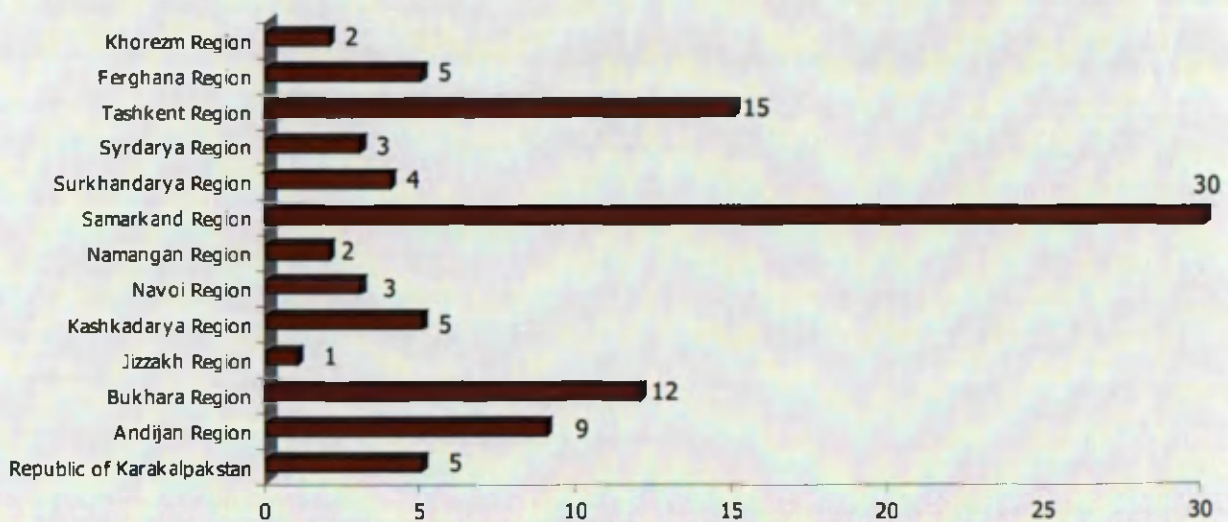
Diagram 1.5. Internet Service Operators and Providers by Regions

The second level domain development in the .UZ domain by the end of 2005 remained at the same level as in the previous year (July 2004), although it fell in the third quarter of 2005. According to the data of UzInfoCom Center, as of October 1, 2005 the number of domains equaled 2,704, while there were 2,800 domains in 2004 (see Diagram 1.6.). This fact is explained by the inclusion of those nearly 500 domains which were not paid for registration in the domain list in the time of monitoring. The situation improved by the end of 2005 and according to UzACI figures the number of second level domains reached the level of July 2004, i.e. 2,800 domains.

In the meantime, work was in progress to streamline the use of domain names of the national Internet segment and decentralize domain registration and support services. In December 2005 five operators were granted the status of registrars in addition to the previous only registrar after the bidding for the status of official registrar of national domain. Increase in the number of domain registrars in the .UZ domain positively affected the domain registration fees. If in 2001 only one company was involved in domain registration in .UZ zone and registration fee was USD 89, after emergence of new registrars the fees were reduced to USD 24 (see Annex 2).

Positive trends are observed in the number of Internet users. Assessed number of Internet users amounted to 855,000 persons. Hence, share of regular Internet users has increased up to 3.3% of total population of the country (see Diagram 1.7.).

Fees for Internet access started going down, which is primarily due to emergence of competitive environment in the market of Internet services (see Diagram 1.8.). In these circumstances Internet service providers started the policy of attracting the clients by providing flexible packages of services and introducing discounts and benefits for users. For instance, Internet service providers are increasingly often offering free nighttime Internet access as well as call back services. Internet cards are becoming popular for home users (registration and payment for Internet services using pre-paid card).

In average Internet access costs were reduced down to 0.37 USD per hour (see Annex 3). Lower costs of Internet access and growing popularity of Internet pre-paid cards led to significant increase in the number of Internet users working from home and workplaces.

In spring 2005 high speed home Internet access service ADSL service has emerged for the first time in Uzbekistan[6]. Now several companies are offering ADSL technology based Internet access services for individuals in the Uzbekistan market and most well-known products are SharqSTREAM, "eXtreme", and "TPS Jet"[7].

ADSL (Asymmetrical Digital Subscriber Line) technology is the technology enabling to use telephone line for high-speed Internet access concurrently using classical telephone communications on the same line. This technology is based on frequency division of the channel into two bands low frequency band for transfer of voice (0.3-0.4 kHz) and high frequency band for data transfer (above 4 kHz)

Wi-Fi is a type of local area network that uses high frequency radio waves instead of cable connections for data transfer between hubs. This is a flexible system of data transfer, which is used as an expansion or alternative to cable local network within one building or within certain area.
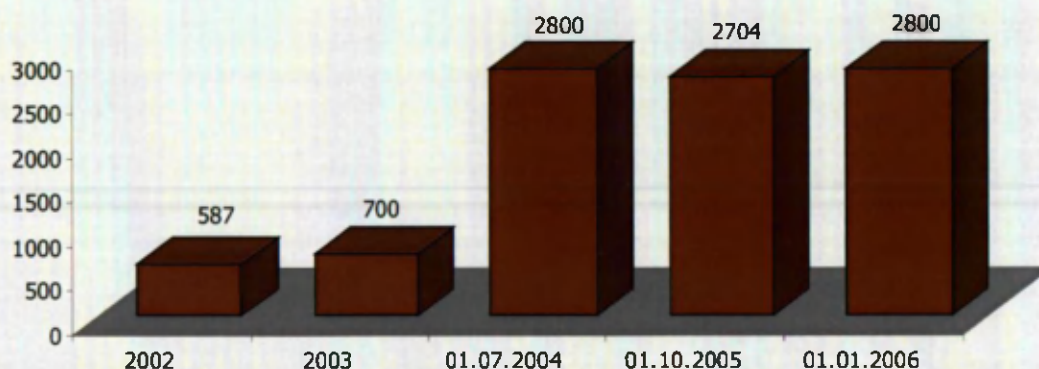
Diagram 1.6. Trends in number of second level domains in .UZ zone

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[6] Note: ADSL based Internet services started being offered to legal entities from 2003.
[7] www.stream.uz, www.extreme.uz , www.jet.uz

Currently providers are offering data transfer speeds up to 1 Mbit/s (incoming channel) and up to 256 Kbit/s (outgoing channel). Potentially ADSL can offer data transfer speeds to the subscriber up to 8 Mbit/s on incoming channel and up to 768 Kbit/s on outgoing channels.

Another novelty in Internet access services was introduced by two providers in Uzbekistan. So, in August 2005 Buzton JV and Sharq Telecom JSC announced about offering Wi-Fi networking services to their subscribers. A new specialized website of Sharq Telekom company became operational at www.wi-fi.uz, informing of introduction of Wi-Fi technologies and providing the scheme of Wi-Fi public access points - first Hot-spot in Tashkent.

Despite the fact that real per capita income and average wages grew by 22% and 40%[a] respectively, still Internet access remains limited for majority of the population. It is primarily due to limited development of public Internet access points and high cost of hardware and Internet access services.

1.4. Hardware and Software

Review of access in terms of hardware and software availability was conducted based on analysis of four indicators mentioned in Table 1.4.

Findings of the survey conducted by "ICT Policy" Project indicated significant growth in the number of personal computers, which equaled approximately 300,000 computers.

According to expert estimates, annual imports of computers into the country remained at the same figure as the last year and was approximately 35,000-40,000 computers.

According to the data of the State Patent Office of the Republic of Uzbekistan, 169 applications to register software products were received in 2005, including 155 as computer software applications and 14 applications for databases.

In December 2005 the State Patent Office registered 1,000th software application. Currently the applicants for legal protection of software and
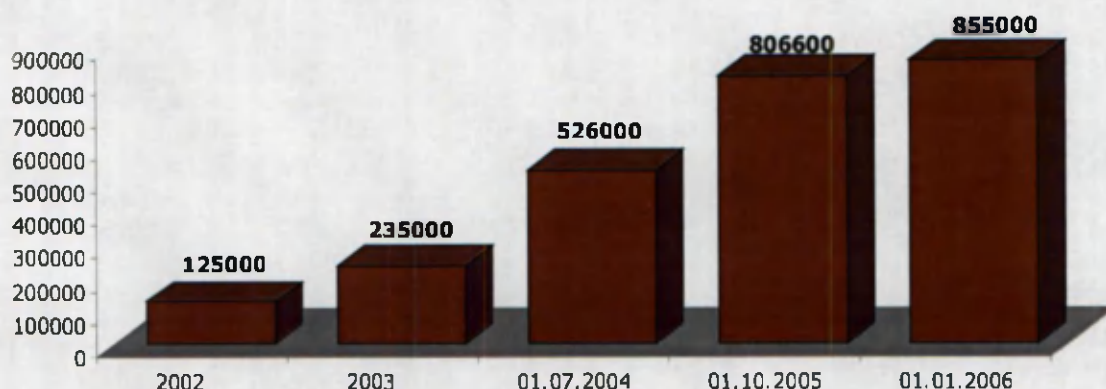
Diagram 1.7. Trends in number of regular Internet users

Average cost of dial-up Internet access (per 1 hour in UZS)

Average rental cost of leased line Internet connection (per month in USD)
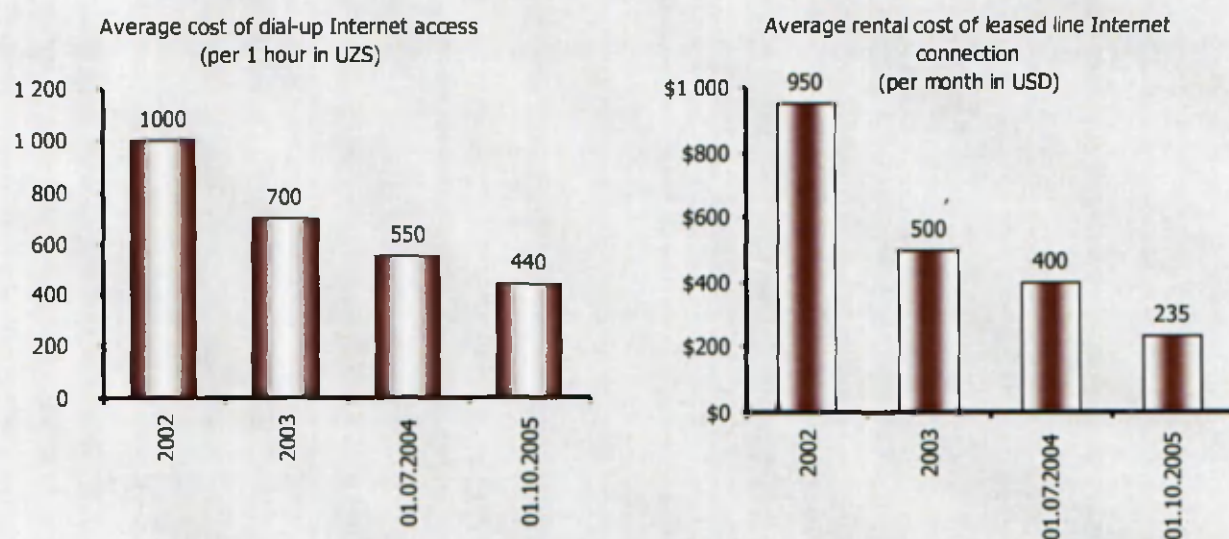
Diagram 1.8. Average cost of Internet access

Databases are national developers only. Applicants from city of Tashkent and Samarkand region have demonstrated most active involvement (see Diagram 1.9.)

Distribution of applications submitted for registration of software products by intended purpose has indicated that in comparison with the analogous period of 2004, the number of applications for educational (from 13 to 39), automation of technological processes (from 8 to 36), information technologies and telecommunication (from 3 to 17) purposes have grown, while the number of applications in medical sector has fallen from 45 to 41 (see Diagram 1.10.).

Yet it is noteworthy that registration of software products is not required for protection of copyright for newly created software, as copyright emerges from the moment software package is designed. Hence, this enables to believe that the number of software products developed is much greater than the number registered by the State Patent Office.

In July, 2005, a roundtable titled "Copyright protection for software producers" was held in Tashkent. At this event leading ICT companies of Uzbekistan signed the Declaration "On compliance with copyright of software producers". Signing of the Declaration binds the companies to a number of liabilities, for instance, conform with all terms of software license agreements; observe the rules regulating the sale and distribution of software products; issue required licenses for all software products, refrain from producing or distributing illegal copies of software or facilitation these action under any circumstances; take effective measures for compliance of all company staff with these responsibilities.

Table 1.4. Indicators of hardware and software development				
Indicators	Quantity			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Number of personal computers (thous.)	135	250,2	296	296*
Number of computers imported annually (thous.)	30	35	35	35*
Ratio of equipment suppliers to the total number of companies involved in ICT sector (%)	10	10	10	10
Number of software packages developed in the country	110	91	116	169

* as of October 1, 2005
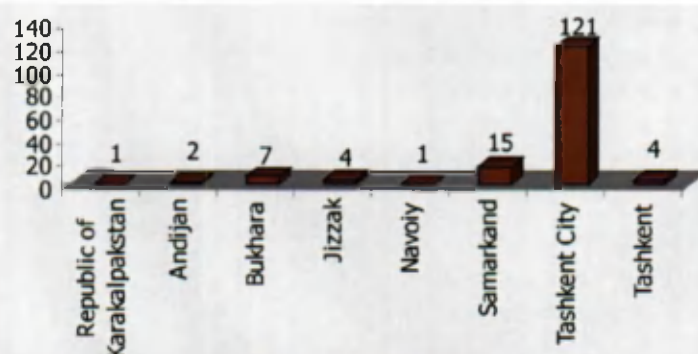
Diagram 1.9. Distribution of applications for registration of computer software packages by Uzbekistan's regions
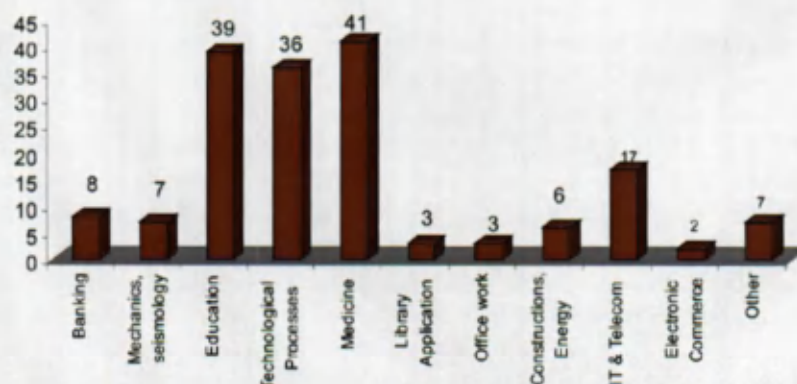
Diagram 1.10. Distribution of applications for registration of computer software packages by spheres

As it was aforementioned, ICT industry is one of the fastest growing economic sectors. Copyright protection of its participants promotes their success and prosperity, consequently positively affecting the overall economic situation in the country.

Broad awareness of negative implications of piracy and more reliable copyright protection will facilitate development of the market of information technologies in Uzbekistan, and particularly the development of software market.

1.5. Section Summary

Analysis of the indicators in this section demonstrates sustainable development of information infrastructure in the country. Internet access is being improved, the number of Internet users and cellular communication subscribers is growing. Cellular operators are implementing quality management systems in their operations[9]. First steps are being made to expand Internet access technologies by introduction of Wi-Fi and ADSL. The overall number of computers is also on the increase.

Yet benefits of improved information infrastructure is mostly in the cities, particularly in the city of Tashkent. Despite lower costs of Internet access, it still remains high for the majority of country's population.

In addition to the status of natural monopoly, Uzbektelecom JSC retains the status of legitimate or legally permitted monopoly on services of access to international telecommunication networks including the use of IP telephony technologies[10]. According to the government resolution, monopoly status will be retained after privatization of Uzbektelecom JSC. Considering that operators and providers are entitled to access international telecommunication networks exclusively through the infrastructure of Uzbektelecom JSC, it can lead to commercial conflict of interests and limitation of competition.

In order to facilitate broad access to global information resources, further liberalization of telecommunication market and development of competition and private entrepreneurship in ICT sector are recommended, which will lead to broad range of high-quality and affordable information and communication services.

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[9] For implementation of the Resolution #349 of the Cabinet of Ministers of the Republic of Uzbekistan dated 22.07.2004 "On Measures to Implement Quality Management Systems in Compliance with International Standards at Companies"

[10] Resolution #453 of the Cabinet of Ministers dated 29.09.2004 «On Additional Measures for Privatization of "Uzbektelecom" JSC».

SECTION II. PUBLIC USE OF ICT

Delivering the prerequisites for transition from ICT use for professional purposes only to ICT use in day-to-day life for information, communication and other needs is an essential element in building information society. In this regard, it is important to assess not only development of information infrastructure and access to it, but also the composition of users and purposes of its use.

2.1. Use of ICT in Workplace

Effective use of ICT requires, among other things, access of government organizations to the Internet. The number of government institutions in Uzbekistan with Internet access stands at 735 out of 6,713, while among companies it is 16,425 out of 305,526 (number of active companies, including small and private entrepreneurs as of January 1, 2006) or their share amounts to 5.3% (see Table 2.1.).

Analysis of the data provided in the table confirms the generally increasing trend of web access both by government institutions and companies.

Due to the lack of statistical data, assessment of the number of organizations with their own websites is approximated and based on the assumption that their number is not greater than the number of organizations connected to the Internet, i.e. 5.3%. Although there is no precise data available on total Internet resources, results of Internet festivals conducted domestically display the increasing trend in the number of websites. For instance, 700 websites were submitted for nomination to ".UZbekistan 2005" National Internet Festival contest, held from April to September 2005, while 300 websites participated in the first "Internet.uz" National Internet Festival held in March 2001.

Review of national and local government websites has indicated that 59 of 61 bodies already have their websites (more detailed information is contained in the Section IV: «Electronic government»).

2.2. Use of ICT in Day-to-Day Life

Indicator of "general Internet audience" is not sufficiently informative as irregular users are not active participants of "online" life. In this regard, indicators displayed in Table 2.2. were in the focus for assessment of ICT use in day-to-day life.

As it can be seen in the table, total Internet audience as of October 1, 2005 equals to 1,644,900 users, which exceeds the indicator as of July 1, 2004 by 31%. Along with this, number of regular Internet users made up 806,000. 13% of the surveyed answered that they use Internet every day (see Diagram 2.1.), which constitutes roughly 105,000 users.

Changes in development of public access points are also notable. According to UzACI data as of January 1, 2005, there were 463 Internet access centers nationwide, while their number (Internet cafй, public Internet access points) fell to 344 by January 1, 2006. Survey data indicated that the number of users of public access points has not in fact changed in comparison with analogous indicator of last year and amounted to 214,000 users (see Diagram 2.2.)

2.3. Home Internet Access

The number of persons utilizing information technologies, primarily Internet, is an essential indicator to identify the rate of informatization. In the society. Yet share of population regularly using the Internet is more important for development of information society.

Table 2.1. Indicators of ICT use in workplace				
Indicators	**Share (%)**			
	01.05.2003	**01.07.2004**	**01.10.2005**	**01.01.2006**
Number of organizations with installed local area networks (LAN)	3,9	5,2	5,2*	5,2*
Share of organizations with Internet access	1,1	2,74	5,3	5,3
Share of organizations with websites	1	2,1	< 5,3	< 5,3

projected data, as statistical data will be available in mid- 2006

In this regard, presence of individuals and organizations in the global network was assessed for the purposes of this review based on the indicators listed in Table 2.3. (see Table 2.3).

The survey data has shown that the share of public awareness of the Internet equals 59%. There is an increase in the number of Internet users, as according to the survey findings, 3 of 100 persons regularly use Internet as of October 1, 2005.

Meanwhile, no significant inequality by gender has been identified. For instance, share of women using Internet as a source of information equals 11%, which is only by 3% lower than the indicator for men.

Indicator of plastic bank cards use is also growing. According to the data of the Central Bank of Uzbekistan, domestic banks have issued more than a million cards, which makes up 5.76 cards per 100 residents of the country.

In order to provide information about the share of population in possession of hardware and software to access Internet, indicator of home personal computer (PC) possession was used. According to the findings of the survey, assessed number of PC owners has reached 300,000 persons.

2.4. Section Summary

Public interest in ICT is growing, more websites are appearing, and website content development is underway. The survey findings have illustrated that the number of regular Internet users and general Internet audience increases every year. Women are actively involved in ICT processes.

Growth rates in the number of home Internet access exceed the rates of growth in access from public access points and workplace.

Table 2.2. Indicators of ICT in Day-to-Day Life

Indicators	Number (thous. persons)			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Total number of Internet audience	--	1252,4	1644,9	--
Number of regular Internet users	235	526	806,6	855
Number of users at public access points	--	213,4	214	--
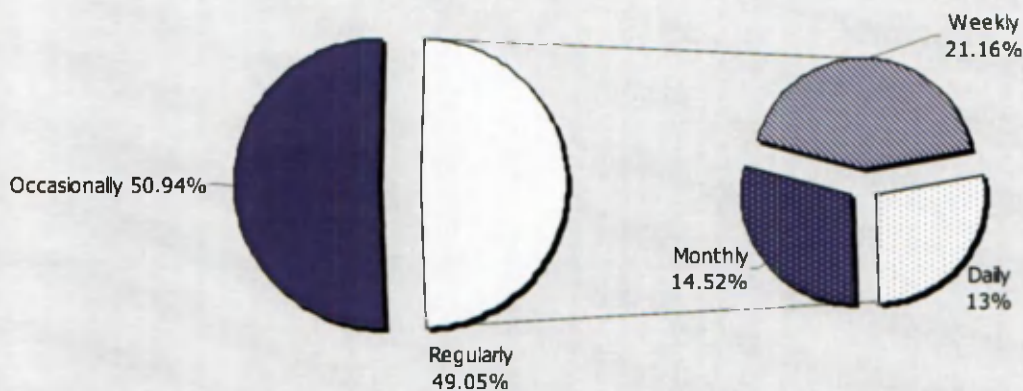
Diagram 2.1. Breakdown of Internet users by activity
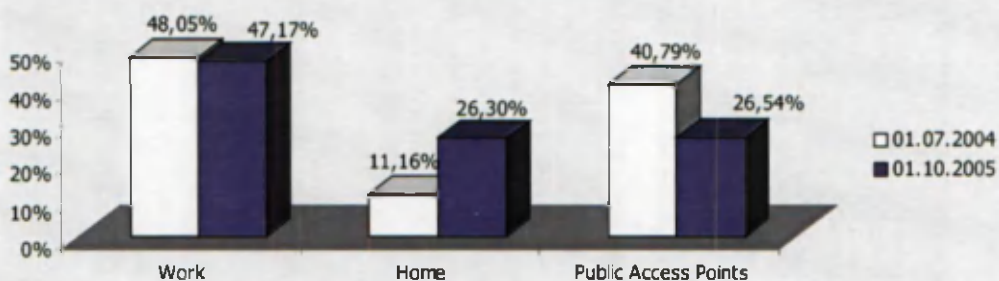
Diagram 2.2. Composition of Internet access

However, despite the significant growth of number of Internet users, the digital divide between the regions against the regional centers, particularly against the capital is growing. The indicator such as the share of organizations with Internet connection remains low.

For these purposes, it is recommended to develop and implement national level programmes for further development of national network, to generate, support, and disseminate publicly available information resources with the focus on rural areas where 2/3 of population is concentrated.

Table 2.3. Indicators of home Internet access

Indicators	Share (%)			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Share of population regularly using Internet	1	2,06	3,1	3,3
Public awareness of Internet	43	55	59	59*
Share of population in possession of hardware and software to access Internet	0,53	1	1,15	1,15*

* as of October 1, 2005

SECTION III. ICT IN EDUCATION

Aim-oriented activities for ICT development in education are underway in Uzbekistan. Special government decisions were made in 2004 to improve technical infrastructure and financial state of educational institutions, and sources identified for funding of the activities listed in these decisions. UZACI is implementing the activities for creation of National information and search engine and generation of socially and culturally oriented information resources. Ministry of Higher and Secondary Special Education (MHSSE) is forming a corporate network that enables connecting all HEIs of the country into single information system. Ministry of Public Education (MPE) is implementing a sectoral Programme for creation of computer classes in secondary schools. Due to these measures as well as concentration of efforts of international organizations in ICT development for enhancement of country's human capacity, indications of ICT in education have been significantly improved.

3.1. Accessibility of ICT for Educational Institutions

3.1.1. Accessibility of ICT for Schools

A number of government resolutions were adopted in 2004 for development of school education, which includes equipping the secondary schools with adequate technical infrastructure. The Decree of the President of the Republic of Uzbekistan #UP-

3431 "On State Nationwide Programme for School Education Development in 2004-2009" was issued on May 21, 2004, where procurement of modern academic and laboratory equipment, computer equipment, textbooks, and academic materials for the schools was identified as one of the focal areas.

In the period of implementation of State Nationwide Programme for School Education Development in 2004-2009, all companies and organizations, including those with special status of taxation, are subject to mandatory contribution in the amount of 1% of their income for school education development starting January 1, 2005[12]. Introduced mandatory contributions for development are equated to state taxes and dues. Programme for procurement of computer equipment for secondary schools for 2005-2009 is envisioned to cover 8,633 schools[13].

Changes in ICT accessibility for schools in 2004-2005 were tracked by four major indicators displayed in the following table (see Table 3.1). As illustrated in the table, almost all indicators display the trend for improvement of corresponding indicators of availability of computer equipment for school pupils. For instance, in comparison with the previous year, indicator of the number of pupils per 1 computer was improved by 25% (see Diagram 3.1).

Another positive trend observed in 2000-2005: reduction in the number of students of secondary schools per 1 computer classroom (see Diagram 3.2). While the number of pupils per 1 computer classroom was 5,179

Table 3.1. Indicators of school access to ICT			
Indicators	**Number**		
	01.05.2003	**01.07.2004**	**01.01.2006**
Number of students at secondary schools per 1 computer*	477 (107.6)	434 (98,8)	324,4 (90,2)
Number of students at secondary schools per 1 computer classroom	4766	4344	3394,5
Number of secondary schools per 1 computer classroom	7,7	6,8	5,6
Number of computers in secondary schools connected by LAN	22191	23928	32744
Share of secondary schools with Internet access (%)	1,2	1,5	1,7

in estimating the number of basic educational school students per 1 computer only modern computer classrooms were taken into account (Pentium II and above). Indicators taking into account computer classes equipped with Pravets, Agat and other computers are given in brackets.

[12] Resolution #610 of the Cabinet of Ministers of the Republic of Uzbekistan dated 28.12.2004 "On Indicators of the State Budget of the Republic of Uzbekistan for 2005". The particular type of taxable item is defined by Annex #24 according to the Resolution #PP-244 of the President of the Republic of Uzbekistan dated 27.12.2005.

[13] Annex #3 according to the Resolution #493 of the Cabinet of Ministers of the Republic of Uzbekistan dated 21.10.2004.

in 2000, this indicator fell by 34.4%, reaching the figure of 3,395 in early 2006.

Meanwhile, it is notable that the number of computer classrooms equipped with modern computers (Pentium II and above) accounts for only 25.4% of total number of computer classrooms. In this regard, inventory taking and disposal of old computers are underway, along with the measures to raise preferential loans and grants of foreign banks.

In order to achieve more dynamic and qualitative changes to procure new computer equipment for secondary schools in the framework of State Nationwide Programme for School Education Development 988 schools were equipped with computers in 2005.

Furthermore, Ministry of Public Education of Uzbekistan has reached an agreement with CNTIC IBC, a Chinese company to procure 2,000 computer classroom sets for country's schools.

USD 20 mln. are being disbursed for implementation of this project, of which USD 1 mln. is being disbursed as a grant of the Chinese government, and USD 19 mln. is being provided as preferential loan.

In October 2005 Asian Development Bank approved the decision to provide USD 30 mln. in preferential loan in the framework of the "Introduction of Information and Communication Technologies in Secondary Schools" in 2006-2010.

In the framework of this project, school clusters encompassing all schools will be established and 860 schools will be chosen as the leading cluster schools, which will provide support to other schools in its cluster in the process of ICT integration into all aspects of teaching and learning. It is planned that every cluster will on average unite 15 adjacent schools. Leading cluster schools will be equipped with computer equipment with Intranet and Internet access.

As of 1 January, 2006, share of secondary schools with LAN accounted for 43.1% of total number of schools against the figure of 41.9% in 2004, while only 1.7% of schools have Internet access.

3.1.2. Accessibility of ICT for Higher Educational Institutions

Accessibility of ICT for higher educational institutions was assessed by the following indicators:
- Number of HEI students per 1 computer;
- Ratio of HEIs using LAN against total number of HEIs (%);
- Share of HEIs connected to the Internet (%);
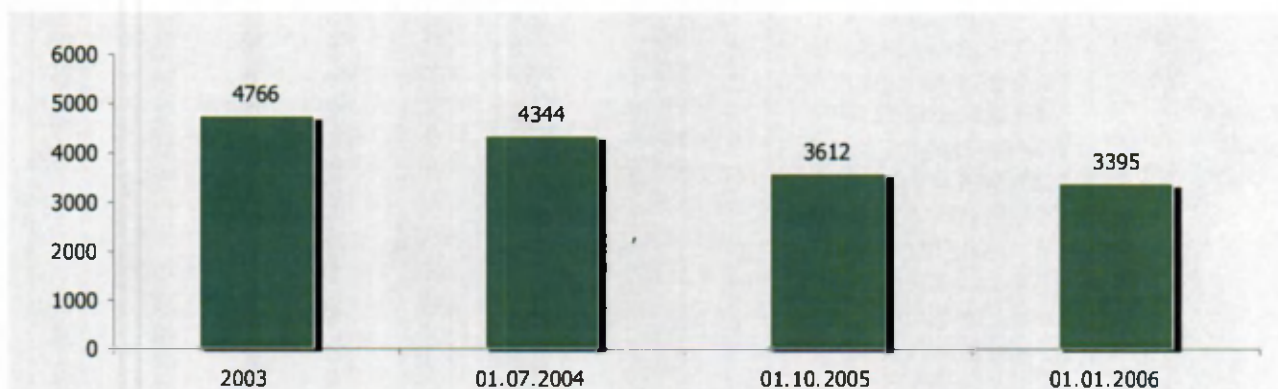
Diagram 3.1. Average number of students of secondary schools per computer
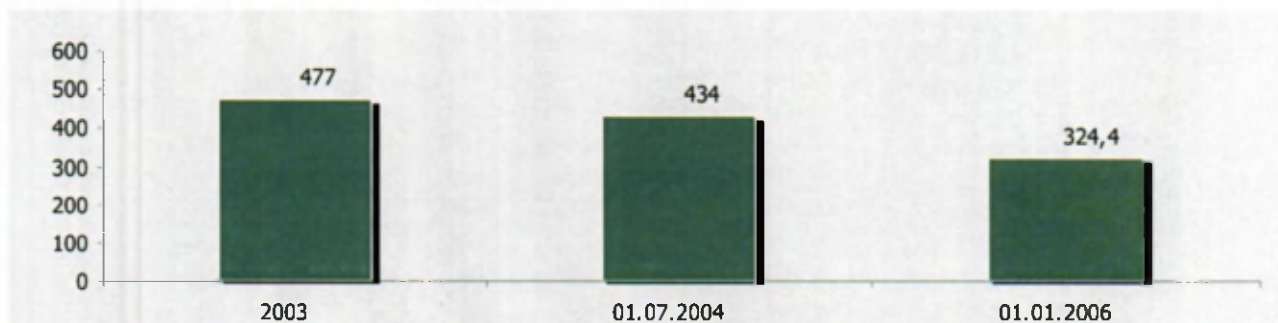
Diagram 3.2. Average number of students of secondary schools per computer classroom

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[14] http://www.adb.org

- Share of HEI students active users of Internet (%);
- Average office hours of computer classes in HEI;
- Share of financial costs of academic institutions for ICT in total budget (%).

Indicators of ICT accessibility for higher educational institutions, as illustrated in Table 3.2., got stabilized at relatively high level in comparison with secondary schools. Average working hours of computer classrooms have consistently equaled 8 hours in the last three years.

Number of computer classrooms at HEIs has increased up to 560. In each of them computers are connected to local area networks. General availability of computers at HEIs has improved, and as of January 1, 2006 HEIs of Uzbekistan had 18,300 computers, which is 16% more than in 2004. Respectively, the number of students per 1 computer decreased by 1.2 units (see Diagram 3.3.).

Yet this increase was not enough to improve the situation with the load of classrooms and indicator of students per 1 computer classroom worsened. If there were 481 students per 1 computer classroom in July 2004, as of January 1, 2006 this figure stood at 489. The reason for this was the increase in total number of students and insufficient increase in the number of computer classrooms.

Each of 61 HEIs of the country is connected to the Internet. 56 HEIs have leased line Internet connection including 2 HEIs using fiber-optic communications lines and 3 using wireless RadioEthernet access. Currently 17 HEIs have dial-up Internet connection, most of them use dial-up connection as back-up Internet channel concurrently with leased line connection. Frequently HEIs concurrently use 2 to 5 Internet service providers for communication. Total nationwide monthly traffic of domestic HEIs exceeds 418 GB.

Improvement in the indicator of the number of Internet users among students is observed. As shown in Diagram 3.4., share of students using Internet is annually increasing by 3-4% and it amounted to 6.9% in the beginning of 2006.

Share of financial costs for ICT in the total budget for all types of educational institutions also rose in 2005 and reached 23.27% against 17.26% in the previous period.

3.2. ICT in Educational Process

Table 3.3. summarizes the indicators in improvement of the quality of education based on ICT utilization studied in this report.

Table 3.2. Indicators of ICT accessibility for higher educational institutions				
Indicators	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Number of HEI students per 1 computer	16	16	14,9	14,9
Ratio of HEIs using LAN against total number of HEIs (%)	77	78,7	80,3	83,6
Share of HEIs connected to the Internet (%)	100	100	100	100
Share of HEI students active users of Internet (%)	--	3,5	6,9	6,9
Average working hours of computer classes in HEIs (hours)	8	8	8	8
Share of financial costs of academic institutions for ICT in total budget (average for all academic institutions - %)	10	17,26	23,27	23,27
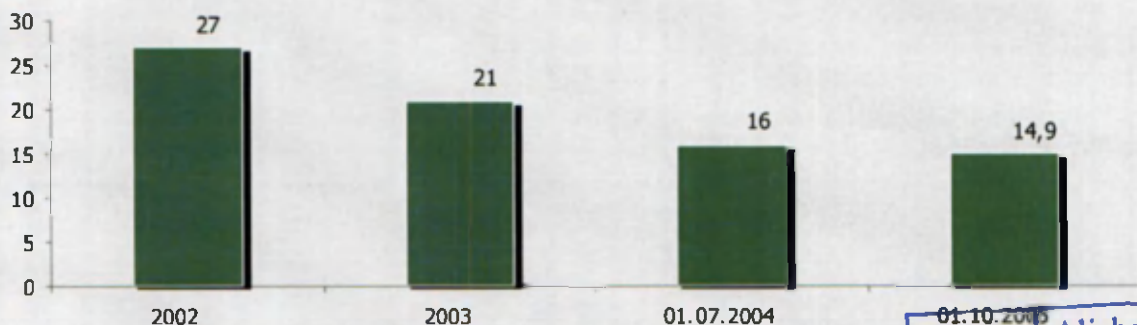
Diagram 3.3. Number of HEI students per computer

Total number of websites of academic institutions as of October 2005 stood at 152, which exceeded this indicator for 2004 by 37%. The following is the distribution of websites by the groups of academic institutions:

- Secondary schools 78 or 0.8% of total number of schools in Uzbekistan;
- Academic high schools 2 or 2.6%;
- Colleges 11 or 1.25%;
- HEIs 61 or 100%.

Currently efforts are being made to introduce information technologies into education in Uzbekistan. Following two websites were launched in 2005: www.ilm.uz and www.examen.uz, which provide opportunities for preparation of university applicants to admission exams at HEIs and other academic institutions, testing and enhancement of the knowledge, preparation for attestation of teachers, managers and other staff. Legislative and regulatory framework related to educational sphere is also provided on these websites.

According to Resolution #PP-91 of the President of the Republic of Uzbekistan issued on September 28, 2005 "On establishment of Public Educational Information Network of Uzbekistan", educational and youth information resources created in the data networks by various institutions of Uzbekistan will be united into single ZiyoNet information network. Need for establishment of ZiyoNet network emerged due to the lack of single information network, which would systematize educational and youth-oriented information.

It is expected that all schools, academic high schools, colleges, higher educational institutions, youth organizations, libraries, museums, and other educational and cultural institutions of the country will be connected to international data networks including Internet via ZiyoNet network, and indicators of ICT in educational process will be improved in the process.

3.3. Availability of Trained Staff

Development of human resources capacity of ICT sector for purposes of this review were tracked by the indicators such as share of students trained in the ICT profession in the total number of HEI students and ratio of the number of ICT teachers against total number of teachers at educational institutions (see Table 3.4).

Total number of students being trained in ICT professions stood at 17,921 at the time of review, which accounts for 6.85% of total number of country's students.

In accordance with Resolution #PP-91 of the President of Uzbekistan "On Improvement of the System for Training of Human Resources in Information Technologies", Tashkent University of Information Technologies (TUIT) was designated as the "leading higher educational institution for IT specialist training" in the higher educational system.

In accordance with this Resolution, TUIT's regional branches started operating in the cities of Nukus, Karshi, Samarkand, Ferghana, and Urgench starting from academic year 2005-2006.
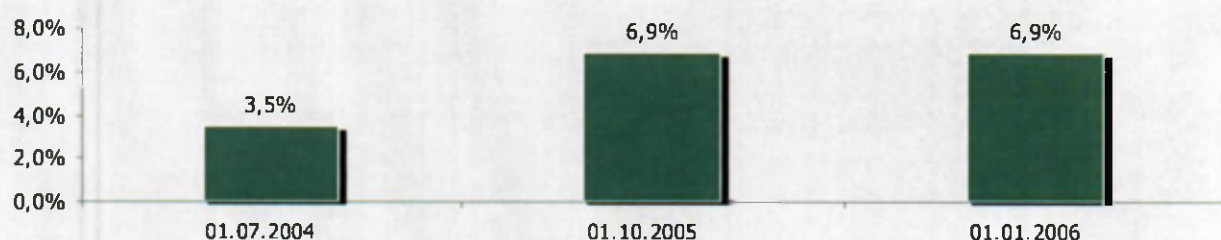
Diagram 3.4. Share of students active users of the Internet

Table 3.3. Indicators of ICT use in academic process				
Indicators	**01.05.2003**	**01.07.2004**	**01.10.2005**	**01.01.2006**
Share of academic institutions having websites (%)	0,75	1,03	1,41	1,41
Share of disciplines taught with use of ICT among total number of disciplines (%)	-	13	14,4	14,4
Share of teachers - users of distance education (%)	-	0,7	0,9	0,9
Share of academic institutions using computer testing (%)	-	25,2	28,5	28,5

According to this document, this measure is adopted to improve the system for training of IT specialists as well as further expansion and implementation of ICT and innovational technologies into the educational process.

It is notable that since 2005 there are no admissions of students into "Informatics and IT" specialty at all educational institutions of the country except National University of Uzbekistan, Tashkent State Economic University, and Tashkent Islamic University. 2nd and 4th year students enrolled in this area of study will be transferred to TUIT and its regional branches to continue their education. Special government commission was formed by government resolution to handle organizational issues related to opening of TUIT branches, their accommodation, financial, and technical support.

3.4. Section Summary

The results of the study have demonstrated improvements in ICT infrastructure of domestic educational institutions.

Improvements in availability of computer technologies for pupils and students are evident. The number of pupils and students - active users of the Internet within total number of students is growing every year. All HEIs have access to the Internet.

Yet taking aforementioned into account, disadvantages must also be taken into account. The Internet connection penetration in schools, colleges, and high schools nationwide is extremely low. There is a very limited number of websites of educational institutions. Level of Internet usage in educational process is low. In this regard, initiatives for adoption of programmes for procurement of computer technologies for secondary schools in 2005-2009, identification of the sources of funding in government budget, creation of single ZiyoNet information network, and attraction of preferential loans from international institutions provide a basis for real improvement of ICT utilization in educational institutions of the country.

Wide-scale use of modern innovative educational technologies (long distance, information and telecommunication technologies) enabling to train tens and hundreds of thousands persons is recommended to improve the educational process. This assumes adoption of government decisions for development of electronic education infrastructure and improvement of the system of Internet-based continuous education and training.

Table 3.4. Indicators of availability of trained staff		
Indicators	01.07.2004	01.10.2005
Share of ICT students among total number of HEI students (%)	6,4	6,85
Share of ICT teachers among total number of teachers (%)	1,98	2,33

SECTION IV. ELECTRONIC GOVERNMENT

ICT in governance provides good opportunities for improvement of interactions of the government with the public and commercial organizations, as well as enhancement of the efficiency of government institutions themselves. In this regard, the national government focuses particularly on development and wide scale utilization of ICT in governance. For instance, "Programme for ICT Implementation in Activities of Government and Local Authorities up to 2010" was approved by the Resolution #PP-117 of the President of Uzbekistan issued on July 8, 2005 "On Additional Measures for Further Development of Information and Communication Technologies". In conformity with this resolution, all ministries, agencies, and local authorities have started developing specific activities for application of information technologies and electronic document flow, generating and regularly updating web-based information resources.

For review in «Electronic government» section, the indicators listed in the table below were systematized and analyzed (See, Table 4.1).

As illustrated in the table, as of January 1, 2006, percentage ratio of government institutions with websites has improved in comparison with 2004. If only 53 of 63 government institutions had their own websites in 2004, then by October 1, 2005 the number of government websites amounted to 58 as the number of government institutions decreased to 61 (Annex #4).

In the meantime, a particular focus is placed on the indicator of electronic government, as the share of government institution websites meeting the criteria set. According to the analysis conducted (Annex #4), of total volume of web-resources of government institutions, 48% websites are not regularly updated, 79.3% have placed the information in the "About us" column, 70.7% have "Feedback" function, 58.6% have news sections, 32.7% enable search in site's content. Vast majority of government websites are limited to offering information only. Merely 15.5% of websites of government institutions have forums and provide electronic forms of documents.

One of the few information resources providing public information within generally adopted standards is the website of Press-service of the President of the Republic of Uzbekistan (www.press-service.uz). Virtually all documents adopted by the President of Uzbekistan are swiftly published on this website. The website of the Ministry of Finance (www.mf.uz) is close to this benchmark, which publishes information on government budget and expenditures.

Unfortunately, there is no free and easy web access of businesses to many regulatory acts (guidelines, statutes, explanatory notes, decisions of various ministries, etc.) and mandatory government reporting forms. Vast majority of these documents are kept in electronic form. But these resources (electronic reference systems such as "Pravo", "Norma", etc.) are available only commercially.

In order to improve the content of information resources of government institutions, the Cabinet of Ministers of Uzbekistan issued its Resolution #256 "On improvement of normative and legal base in the sphere of informatization" dated November 11, 2005, stipulating the list of information to be mandatory placed in the official website of a government institution, list of basic information services to be provided by the government institution through its official website. Also requirements for access to information, frequency

Table 4.1. Indicators of electronic government				
Indicators	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Percentage of government institutions with websites (% of total number of government institutions)	76,9	87,3	96,7	96,7
Number of websites of public services available online among total number of government institutions (%)	3	2	15,5	15,5
Number of civil servants per 1 computer	10	5	--	--
Number of civil servants per 1 computer, connected to the Internet	300	67	--	--
Share of computers at government institutions connected to the Internet (%)	3,0	7,0	12,0	12,0
Share of government budget appropriations allocated for ICT (% of total expenditures)	1	No data available	0,56	0,56

of updating, language of information to be provided and other aspects were set. In accordance with this resolution, government institutions must conduct inventory taking of information resources and bring their websites in compliance with the requirements of the resolution.

In the meantime, review of the share of computers connected to the Internet at government institutions, despite its systematic growth, still remains quite low - only 12% of the computers at government institutions are connected to the Internet.

It is notable that majority of government institutions and local authorities have their local computer networks. In fact every agency develops and maintains its information systems. However, only 11% of them have their corporate networks, while the information systems created function primarily for intra-agency needs, do not interact with other agencies and do not provide access to information for all stakeholders.

This situation has started to change gradually. For instance, on December 13, 2005, the official ceremony dedicated to the start of pilot project for introduction of electronic government at khokimiat (administration) of Syrdarya region was held. The primary objectives of the pilot project which is expected to go into operational stage in the second half of 2006 are to increase effectiveness of government and public, government and business interaction functioning mechanisms, to increase public access level to government information and documents, to provide openness and transparency of government activities for businesses and public.

In order to enhance the effectiveness of implementation of customs policies and introduction of single system for customs clearance records, single automated information system (SAIS) of State Customs Committee (SCC) and Ministry of Foreign Economic Relations, Trade, and

Investments of Uzbekistan is being introduced. All this indicates the beginning of practical implementation of ICT in some segments of governance.

Section Summary

Analysis and summary of section data illustrate that many government bodies and local authorities have Internet access and the number of government websites is on the rise. Special management information systems are used increasingly often.

In the meantime, many issues such as creation of horizontal interagency connections, human and technical resources of a number of government bodies remain unresolved. One of the significant reasons for inadequate rates of ICT penetration into the activities of government institutions is lack of targeted financing of respective projects from government budget.

Implementation of the following tasks is offered as recommendation for development of electronic government:

- Create government corporate network, provide Internet resources to support its external contacts, integrate agency and interagency network resources of all central government institutions and local authorities;
- Introduce electronic document flow systems;
- Identify sources of funding for public electronic services, create appropriate information resources, generate related information exchange vehicles by making separate budgetary provisions for ICT and introduce staff positions responsible for ICT development within the institutions;
- Arrange wide-scale training of population on accessing and using public e-services through ICTs.

SECTION V. ELECTRONIC COMMERCE

Usage of ICT in electronic commerce implies doing business with a wide range of business transactions in global scale. Electronic commerce enables companies to perform internal transaction in effective and flexible manner, interact with suppliers in a more comprehensive manner and swiftly react to the clients' requests and expectations. Companies get the opportunity to choose best suppliers regardless of geographic location as well as opportunities for accessing global market with their goods and services both in Business-to-Business (B2B) and Business-to-Consumer (B2C) segments.

Introduction of legal regulations of the affairs emerging in electronic payments along with the decision to create the missing elements of infrastructure of electronic commerce - a special body for usage of electronic digital signature (EDS) and centers for registration of EDS keys were the important developments in the electronic commerce sector in 2005. Lack of an authorized body in the matters of EDS and registration of EDS keys were noted in the Review of ICT Development in Uzbekistan in 2004 as factors hindering the development of electronic commerce in the country. It is expected that after establishment of the centers for EDS keys registration and start of their activities in 2006, a new impetus will be provided for development of electronic commerce. So far, in 2005, electronic commerce in the country was in its initial stage of development.

Potential for electronic commerce in the country is usually tracked through existing technical and economic conditions that enable to assess the capacity for ICT development in general as well as electronic commerce (see Table 5.1). Currently

Government of Uzbekistan is developing National Programme for Development of Electronic Commerce until 2010. Ultimate objectives of government efforts are to create modern information market infrastructure for goods and services; to deliver prerequisites and facilitate favorable environment for every possible development of electronic commerce based on enhancement of the effectiveness of government support; to focus and coordinate efforts of government, public, and private institutions.

Infrastructure of online shops in Uzbekistan is being developed in very slow rates. According to expert estimates, as of January 1, 2006, 30 online Internet shops were operating in UzNet segment in Business-to-Consumer (B2C) scheme. Majority of these shops utilize advance non-cash payments systems or cash payments on delivery of the goods. The fact that some Internet shops started accepting payments by plastic cards in Uzbek soums (payment is made on delivery of portable terminal) has become a positive trend.

It is notable that several systems for bank plastic cards have been established and are operating, having issued more than 1 mln. cards in total[15] (as of July 1, 2005) (see Diagram 5.1.).

DUET based card systems have single emission-processing center services by Single Nationwide Processing Center under Uzbekistan Banking Association.

Concurrently six banks service in total of 11,000 international magnetic cards by utilizing special software packages. Total number of points servicing plastic cards has reached 8,200.

Analysis of the trends in bank cards has shown that this type of banking services is steadily developing. Volume of transactions using

Indicators	Number			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Number of online shops	14	20	30*	30*
Number of plastic card payment terminals	902	1819	8200	--
Share of electronic payments in the total volume of payments (%)	1	1,0	1,8	1,8
Number of banks issuing the cards of international payment systems	--	4	6	6
Share of population using ATM cards (%)	--	1,56	4,42	5,76
Share of banks using "bank-client" electronic technologies (%)	--	100	100	100

Table 5.1. - Indicators of electronic commerce

* *estimated data*

[15] According to the data of Central Bank of the Republic of Uzbekistan, www.cbu.uz

plastic cards is on the rise. Taking advantage of privileges provided by government, banks are introducing new types of services to expand the network of plastic bank cards. It is notable that along with plastic cards emitted and terminals installed, volume of the turnover via electronic payment systems using plastic cards is on the rise. For instance, in six months of 2006, circulation in local currency nationwide amounted to UZS 56.7 billions. At the same time, the number of transactions, i.e. payments by plastic bank cards amounted to 3,230,984. Nevertheless, share of electronic trade in the total national trade still remains low within 1.8%[16].

All domestic banks are using "bank-client" electronic payment technology. However, no bank in Uzbekistan is using Internet banking payment systems yet.

Number of websites using non-bank WebMoney system, which enables to make online transactions is increasing but slowly 2 in 1 year. 3 websites are using WebMoney today: http://www.tillo.uz, http://www.emoney.uz, http://www.uzwebmoney.com So far payments for Internet cards as well as for express-payment cards of local cellular communication operators are being made via WebMoney system. This service has not yet become widely popular according to the number of registered users of WebMoney Transfer in Uzbekistan: roughly 90 users.

The circle of Uzbek companies successfully utilizing ICT in their Business-to-Business (B2B) segment is growing albeit slowly. Positive experience of introduction of electronic commerce in the country is emerging. For instance, introduction of single trading electronic systems at Uzbek Commodity Exchange (UzEX), initiated by the Government of Uzbekistan has led to significant increase in the overall domestic trading.

In addition to this system, UzEX has introduced another electronic trading platform[17] - electronic exhibition and exchange trading system. The new system is used for trade transactions of all goods with individual descriptions. In other words, this online market operating in conformity with the electronic trading principles enables sellers and buyers to conduct pricing dialogue, arrange deals and make real contracts without inefficient costs related to traveling and other expenses.

Section Summary

As it was noted in the previous reviews of domestic ICT development, Uzbekistan has the environment essential for development of electronic commerce. There is legislative framework in place to do business by using ICT. Given rapid growth in the number of plastic bank card users, capacity for development of Business-to-Consumer (B2C) is growing and Business-to-Business (B2B) segment has been boosted.

Although the available data indicates that electronic commerce is on the rise, it still constitutes very small share of overall business activities of companies. Domestic market of electronic commerce is yet limited due to the lack of trust to electronic commerce both among buyers and sellers. Issues of registering transactions and making payments remain the major obstacles, therefore companies are primarily using Internet presence to publish their price lists. There is also an issue related to availability of personnel with appropriate ICT skills. The existing very small number of operating online Internet shops and trading platforms are concentrated in Tashkent and other regional centers. Should the trend of ICT development around more affluent city centers persists, ICT will cause the effect quite the opposite of the major
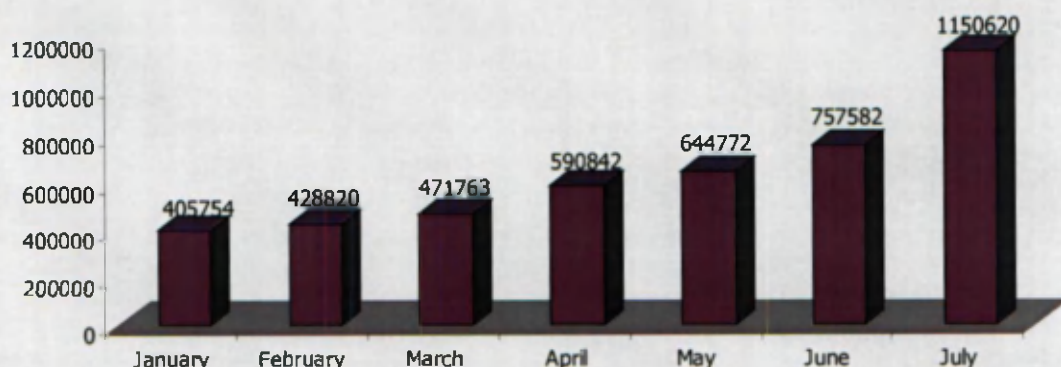
Diagram 5.1. Trends in number of ATM cards in 2005

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[16] Volume of electronic commerce in developed countries also remains low: Business-to-Consumer segment trade accounts for 1.2-1.4% of total trade in developed countries (OECD (2004), ICT, E-business and SMEs).
[17] www.uzex.com

objectives for its implementation reduction of the economic and social inequality among urban and rural population.

Application of modern Internet technologies in business is not just limited to creation of website or electronic catalogue enabling to place orders but it also means utilizing technologies and accumulated experience for profound transformation of the way business transactions are done with the help of Internet and relevant computer networking technologies. Therefore, for further development of electronic commerce domestically, development and implementation of the range of measures for development of infrastructure and providing adequate support for it, improvement of regulatory framework and government support for advancement of electronic commerce nationwide, and media promotion of the advantages of electronic commerce are proposed.

SECTION VI. ICT POLICY

Every country aware of the importance of accession to information society develops its own concept for implementation of this direction. Henceforth, **information legislation**, which reflects not only government policy but also stipulates the rules for conduct of legal entities and individuals in the country becomes the dominant component.

The next vital component of government's ICT policy is so called **prioritization of domestic ICT development**, reflecting the strategy or concept for ICT development and effectiveness of its implementation.

The third component of government policy is development and implementation of a system of **government programmes** aimed at mobilization of intellectual and financial resources to address ICT affairs.

6.1. Information Legislation

In the reviewed period actions were taken to improve legislative framework regulating issues of electronic payments, usage of EDS, ensuring computer security as well as decisions were made to improve ICT training of human resources, develop educational network and make preparation for privatization in the sphere of telecommunications.

For instance, in December 2005 the Law "On Electronic Payments" was adopted, which, along with previously adopted laws, provides the legal framework for further development of electronic trade.

Joining of Uzbekistan to the Berne Convention for the Protection of Literary and Artistic Works (Paris Act dated July 24, 1971, amended on September 28, 1979) on April 19, 2005, and World Copyright Convention (Geneva Convention) has become an important factor for development of information legislation. Considering that according to the Law "On Legal Protection of Computer Software and Databases", software is equalized to items of copyright, joining Berne Convention facilitates the use of instruments of copyright protection well-used in international practice to safeguard the copyright of local and foreign authors.

At the same time, it is notable that ensuring information security and combating computer crimes are included in the list of priorities to improve ICT legislation framework. To this end, in the first half of 2005, amendments to the Code of Administrative Liability as well as to the Criminal Code and Criminal Procedures Code of the Republic of Uzbekistan related to offences in the sphere of informatization and data transfer were prepared. Draft law on these amendments was approved by Coordination Council for Development of Computerization and ICT as the underpinning for further development and agreement with stakeholder government institutions in the established procedure.

In order to ensure the security of ICT and Internet use, timely identification, prevention, and neutralization of computer security threats, the computer incident response service - Computer Emergency Response Team (CERT), which is the first of its kind in Central Asia, was created. CERT was established under UzInfoCom Center according to the Resolution #PP-167 of the President of Uzbekistan dated September 5, 2005 "On Additional Measures to Ensure Computer Security of National Information and Communication Systems". It was identified as a single center for users of national information systems and Internet segment, enabling collection and analysis of information on computer incidents, providing consultancy services and technical support to the users in preventing computer security threats. Official website of CERT was launched on December 1, 2005 at: www.cert.uz.

Another major event in 2005 was the decision for development of the infrastructure of centers for registration of EDS keys. Legal framework for usage of EDS was put in place by the Law "On Electronic Digital Signature" back in 2003, while there was no real domestic infrastructure enabling full-fledged use of EDS. According to the Resolution #PP-117 of the President of the Republic of Uzbekistan dated July 8, 2005 "On Additional Measures for Further Development of Information and Communication Technologies», UzACI was designated as an authorized body in the sphere of EDS usage.

Electronic Digital Signature (EDS) - consecutiveness of symbols received by special transformation of information using digital signature key. It serves as metadata of electronic document designed to protect this electronic document from forgery and enabling to identify the owner of certificate of the signature's key and identify authenticity of information in the electronic document.

UzACI responsibilities related to EDS now include: development of legislative and regulatory acts, government standards, technical prerequisites and requirements for use of EDS.

According to the Resolution #215 of the Cabinet of Ministers of the Republic of Uzbekistan dated 26.09.2005 "On Improvement of Legal and Regulatory Framework for Usage of EDS", Regulations "On Procedures for Government Registration of EDS Keys Registration Centers" and "On Operating Procedures of EDS Keys Registration Centers" were approved.

UzACI is the body for registration of the EDS keys registration Centers, while the Scientific-Engineering and Marketing Research Center (SEMRC) is the executive body of UzACI in the sphere of EDS usage. These bodies will start their operations in early 2006[18].

Overall, in order to ensure implementation of the laws and further development of ICT sector, the following legal and regulatory acts were adopted:

Resolutions of the President of the Republic of Uzbekistan:
1. Dated 02.06.2005 #PP-91 "On Perfection of Human Resources Training System in the Sphere of Information Technologies";
2. Dated 08.07.2005 #PP-117 "On Additional Measures for Further Development of Information and Communication Technologies»;
3. Dated 08.08.2005 #PP-149 "On measures for Development of Data Transfer Services and Preparation for Privatization of Uzbektelecom JSC";
4. Dated 05.09.2005 #PP-167 «On Additional Measures to Ensure Computer Security of National Information and Communication Systems";
5. Dated 28.09.2005 #PP-191 "On Establishment of Public Educational Network of the Republic of Uzbekistan";

as well as **Resolutions of the Cabinet of Ministers of the Republic of Uzbekistan:**
1. Dated 26.09.2005 #215 «On Improvement of Legal and Regulatory Framework in Usage of Electronic Digital Signatures";

2. Dated 22.11.2005 #256 «On Improvement of Legal and Regulatory Framework of Informatization";
3. Dated 28.12.2005 #282 «On Further Development of ZiyoNET Information Network.

These government decisions were made in the background of broader government resolutions to improve general business environment in the country: reduce interference of enforcement bodies in the activities of business entities, liberalization of financial responsibilities of business entities for economic offences, reduction of reporting burden, introduction of single tax to facilitate development of microfirms and small businesses[19].

Establishment of the Association of IT Companies and Organizations of Uzbekistan in December 2005 was a major event in private ICT sector. The Mission of the Association which brought together more than 30 companies of Uzbekistan is to improve government and private sector partnership in ICT development. This step is a positive factor as the success of the implementation of government programmes in many respects depends on close collaboration with representatives of private sector. It is expected that after starting its activities, the Association will become a good catalyst for ICT development.

6.2. National Strategy

ICT development is becoming an important component of Uzbek economy. Major aspects of National ICT and Internet Strategy are reflected in the Decree of the President of the Republic of Uzbekistan dated May 31, 2002. "Concept for Development of Informatization in Uzbekistan" developed on its basis has been tested and approved by the Coordination Council for Development of Computerization and ICT on December 12, 2005.

This Concept has established the following priorities of ICT development:
• Improvement of government policy for development of informatization and identification of main areas for creation of information resources, and development of

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[18] http://www.ftmtm.uz

[19] Resolution #PP-100 of the President of the Republic of Uzbekistan dated 15.06.2005 "On Improvement of Reporting submitted by Business Entities and Enhancing Liability for Illicit Demands of Reporting"; Decree #UP-3618 of the President of the Republic of Uzbekistan dated 14.06.2005 "On Measures to Accelerate Implementation of Prioritized Areas of Enhancement of Market Reforms and Further Liberalization of the Economy"; Decree #UP-3619 of the President of the Republic of Uzbekistan dated 14.06.2005 "On Measures for Further Improvement of the System of Legal Safeguards Business Entities"; Decree #UP-3620 of the President of the Republic of Uzbekistan dated 20.06.2005 "On Additional Measures Providing Incentives for Development of Microfirms and Small Businesses"; Decree #UP-3622 of the President of the Republic of Uzbekistan dated 24.06.2005 "On liberalization of Financial Liability of Business Entities for Economic Offences", etc.

regulatory framework and market of ICT services;

- Accelerated development of technical infrastructure telecommunication networks and systems, ensuring access to international information networks;
- Broad introduction of ICT in the real sectors of the economy, into management, business, science, and facilitating broad access of various population groups to modern information systems and resources, consecutive transition to electronic document flow;
- Informatization of the entire educational system including incorporation of advanced educational systems, including distance learning based on active utilization of computer and information technologies into curricula of schools, vocational colleges, academic high schools, and higher education institutions;
- Arrangement of training of highly skilled human resource capacity for employment in ICT sector;
- Establishment of effective mechanism for encouraging development of domestic hardware and software industry and their exports.

In order to encourage and support domestic software industry, starting January 1, 2006, the single tax for microfirms and small businesses involved in development and implementation of software products has been reduced from previous 13% down to 5%[20]. Considering that 80% of approximately 100 businesses involved in developing software products and information systems are microfirms and small businesses, this lowering of single tax rate should provide incentives for development of software industry.

6.3. Government Programmes

Previous period was significant with regard to mobilization of intellectual and financial resources to address issues in ICT sector. A number of **programme documents** have been adopted for this purpose and their implementation has started. Hence, transition from development of ICT strategy and concepts to establishment of concrete mechanisms for its implementation has been performed.

As of October 1, 2005, National ICT Development Strategy is backed up by the following programme documents:

- *Programme for Development of ICT and Computerization in 2002-2010, approved according to the Resolution #200 of the Cabinet of Ministers dated June 6, 2002,* determines the major areas for development of ICTs and sets general framework for ICT development until 2010, particularly in development of telecommunication infrastructure, national Internet segment, procurement of computer hardware and development of computer networks, creation of software industry, generating and utilizing information resources, human resources training in the area of ICT, developing competitive environment in ICT sector and improvement of regulatory framework, standardization and certification.
- *Target indicators for development of telecommunication and data networks, and application of ICTs until 2010, approved according to the Resolution of the President #PP-117 dated July 8, 2005,* sets annual target indicators for development of telecommunication and data networks (capacity of ATS, rate of digitization, length of fiber-optic communication lines and digital radio relay communication lines, speed of access to international data networks, number of Internet users and points of public access to the Internet, number of cellular communication subscribers as well as targets for ICT introduction into activities of government institutions and local authorities (availability of computers, creation of LAN and corporate networks), share of computer literate staff and share of paperless document flow) in 2005 - 2010.
- *Programme for Modernization of Postal Services Network, Introduction and Development of New ICT based Services until 2010, approved according to the Resolution of the Cabinet of Ministers #128 dated May 19, 2005,* identifies focal areas and objectives of modernization of postal services network and development of new ICT based services as well as envisions two-stage schedule and plan of activities for realization of the programme.
- *Programme for Introduction of ICT into activities of government institutions and local authorities until 2010, approved according to the Resolution of the President #PP-117 dated July 8, 2005,* lists

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[20] Annex 8 to the Resolution #PP-244 of the President of the Republic of Uzbekistan dated 27.12.2005 «On prognosis of major macroeconomic indicators and estimates of state budget of the Republic of Uzbekistan for 2006»

activities for improvement of legislative and regulatory framework of ICT sector and activities of local authorities based on implementation of ICTs.

- *Programme for Establishment and Development of National Information Search Engine, approved according to the Resolution of the President #PP-117 dated July 8, 2005*, identifies the activities for creation, forming, expansion, and integration of national information search engine in the Internet.

6.4. Institutional Framework

Implementation of National Strategy and programme documents is facilitated by the following institutions:

Coordination Council for Development of Computerization and Information and Communication Technologies *(www.ictcouncil.gov.uz)*, headed by Deputy Prime Minister of the Republic of Uzbekistan, is the highest interagency body for coordination of computerization and development of ICTs.

Agency for Communication and Information of Uzbekistan (UzACI) *(www.aci.uz)* is:

Special authorized body for government ICT regulation;

Working body of Coordination Council for Development of Computerization and Information and Communication Technologies;

According to the Resolution #PP-117 of the President of Uzbekistan dated 08.07.2005, UzACI has also been designated as an authorized body for usage of EDS in Uzbekistan.

Uzbek Agency for Press and Information (UzAPI) *(www.uzapi.gov.uz)* is a special body authorized for government regulation of media, press, and publishing development.

Computerization and Information Technologies Developing Center "UzInfoCom" (www.uzinfocom.uz) institution for offering wide range of information and consulting services to government bodies and private businesses on the issues of computerization and introduction of information and communication technologies. According to the Resolution #PP-167 of the President of Uzbekistan dated 5 September, 2005, separate service was established under the Center to respond to computer incidents.

Scientific-Engineering and Marketing Research Center (SEMRC) *(www.ftmtm.uz)* institution for coordination of the work of standardization services of the businesses in the industry as well as performing organizational and technical oversight of ICT standardization and certification.

ICT Policy Project *(www.ictp.uz)* - "Assisting the Government of Uzbekistan in the Formulation and Implementation of Information and Communication Technologies for Development Policy" is a joint project of UNDP and the Government of the Republic of Uzbekistan. Two major interlinked objectives of the Project are: 1) to support the development of ICT in Uzbekistan and 2) to facilitate use of ICT by Government for achieving specific development goals in a) poverty reduction, b) public governance, c) health care, d) education, e) environment and f) gender areas.

6.5. Section Summary

ICT legal framework created so far has been generally regulating legal aspects of creation, functioning, and development of ICT. Current information legislation is designed to facilitate functioning of ICT sector, regulate the relations between owners and users of information. Systematic approach from drafting ICT development strategies and concepts to institute mechanisms of their realization has been identified. The process of improvement of organizational institutions geared to facilitate ICT development in the country is underway.

Nevertheless, utilization of ICT and the Internet to provide services to the population and businesses leads to accumulation of information about citizens. Unauthorized access to this information may often cause damage. Therefore, adequate legal safeguards are essential to protect personal data. This is also relevant to information security, copyright and exclusive rights for protection of intellectual property accessible via the Internet.

There is a need for appropriate adaptation of regulatory framework, regulating workflow in government institutions, features determined by use of computer technologies.

Determination of legal status of information resources to be placed in computer networks of government institutions both for interagency and general public access is still an outstanding issue.

It is expedient to identify legal status of public access points to the Internet (Internet-cafe, Internet - clubs and etc.).

CONCLUSION

Application of ICT creates vital opportunities and may facilitate economic development, enhancement of productivity, improve and change the nature of relations. ICT may be a powerful instrument to overcome various development issues and improve livelihoods of the population in general.

This review of ICT development in the country is an assessment of various factors impacting ICT development and identifies general trends of its changes. Given rapid development and changes in the ICT sector, this review is a snapshot assessment of the situation.

The Review of ICT development conducted in six prioritized areas such as development of infrastructure, electronic education, information and knowledge markets, electronic government, electronic commerce, and government's ICT policy have demonstrated overall positive trend in ICT development in the country. At the same time the Review still underlined the existence of problems mentioned in the previous reviews particularly in the segments of electronic government and electronic commerce.

It is expected that these problems will be resolved in the course of implementation of the Resolution #PP-117 of the President of the Republic of Uzbekistan dated 08.07.2005 "On Additional Measures for Further Development of Information and Communication Technologies", which identifies clear targets for development of telecommunication networks, data transfer and application of ICT in governance both centrally and locally and development of National information search engine.

Yet financing remains an important prerequisite of further development of ICT and meeting the objectives set by the government. Favorable tax and customs benefits introduced in 2002 facilitated accessibility of computer hardware, emergence of new ICT companies, fostering competition and ICT promotion among the public, private institutions and the Government. Nevertheless, as the review has indicated, in order to accelerate the pace of development, it is essential to enhance the instruments of government support to ICT development, extend the terms of customs exemption of computer hardware and network equipment imported into the country, and grant VAT benefits. If there are no government support measures, issues of ICT implementation in private sector and society may move to the background of other social and economic issues.

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[21] According to the Decree #UP-3080 of the President of the Republic of Uzbekistan dated 30.05.2002 "On Further development of computerization and introduction of information and communication technologies", the following was exempt until January 1, 2006:
- from customs duties (except for fees for customs clearance) - equipment for creation of computer data networks, computer hardware, accessories, and software;
- from VAT - services for computer and IT training, sale of software packages and servicing.

Annex 1. INDICATORS OF ICT DEVELOPMENT IN UZBEKISTAN

Component	Indicators	Source of Information
I. ACCESS TO INFORMATION RESOURCES		
1.1 Information infrastructure	Number (penetration rate) of main telephone lines	data according to Form #40 - state statistical reporting for communications, compiled by UzACI
	Number (penetration rate) of cellular communication subscribers	data according to Form #1 - state statistical reporting for communications, compiled by UzACI
	Number (penetration rate) of computers	data according to Form #1HT - IT state statistical reporting, summarized by State Statistics Committee
	Number (penetration rate) of regular Internet users	data identified by assessment analysis
	Number (penetration rate) of television sets	data identified by assessment analysis
1.2 Communication quality	Total capacity of modem pools of Internet service providers per 100,000 residents	data identified by survey of Internet service providers
	Total bandwidth of external channels of the Internet access per 1 regular user	data provided by UzACI
	Percentage of successful connections on local telecommunications lines	data according to Form #13 -state statistical reporting for communications, summarized by UzACI
	Average time to fix malfunctioning subscriber line	data according to Form #13-state statistical reporting for communications, summarized by UzACI
	Share of digital communication lines	data according to Form #40-state statistical reporting for communications, summarized by UzACI
1.3 Availability of access to information and data networks	Number of Internet service providers	data provided by UzACI (Number of licensees)
	Number of websites in .UZ zone	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	Number of second level domains in .UZ zone	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	Number of public Internet access points	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	Number of Internet-cafes	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	Number of regular Internet users (subscribers)	data identified by assessment analysis
	Average cost of Internet access per hour	data identified by survey of Internet service providers
	Average rental cost of leased line Internet connection	data identified by survey of Internet service providers
	Cost of local telephone call	data provided by UzACI (price list of Uzbektelecom JSC rates)

Component	Indicators	Source of Information
1.4 Hardware and software	Number of personal computers	data identified by assessment analysis
	Number of computers imported into the country	essential to be included in statistical reporting
	Number of computers domestically manufactured	essential to be included in statistical reporting
	Ratio of suppliers of equipment to the overall list of companies involved in ICT	data identified by market analysis
	Number of ICT software applications developed domestically	data provided by SPA
II. PUBLIC USE OF ICT		
2.1 Use of ICT in workplace	share of organizations with installed local area networks (LAN)	data according to Form #1HT - IT state statistical reporting, compiled by State Statistics Committee
	share of organizations connected to the Internet	data according to Form #1HT - IT state statistical reporting, compiled by State Statistics Committee
	share of organizations with their websites	data according to Form #1HT - IT state statistical reporting, compiled by State Statistics Committee
2.2 Use of ICT in day-to-day life	Total number of Internet audience	data identified by public survey
	Number of regular Internet users	data identified by public survey
	Number of users at public access points	data identified by survey of public access points
2.3 Home Internet access	share of population regularly using the Internet	data identified by public survey
	share of population using e-mail	data identified by public survey
	share of population using the Internet to purchase goods and services;	data identified by public survey
	share of population in possession of hardware and software for Internet access	data identified by public survey
III. ICT IN EDUCATION		
3.1 Accessibility of ICT for educational institutions: Related to schools	Number of pupils per 1 computer	data provided by MoPE
	Number of pupils per 1 computer class	data provided by MoPE
	Number of schools per 1 computer class	data provided by MoPE
	share of school computers enabling use of modern IT technologies in learning	data provided by MoPE
	share of schools connected to the Internet	data provided by MoPE
Related to HEIs	share of higher academic institutions connected to the Internet	data provided by MHSSE
	share of students active users of the Internet	data identified by survey of HEIs and their students
	Average working hours of university computer classrooms	data identified by survey of HEIs and their students
	share of financial expenditures of academic institutions for ICT within overall budget	data provided by MHSSE
3.2 Use of ICT in educational process	share of academic institutions with websites	data identified by survey of academic institutions (MoPE and MHSSE)
	share of disciplines using ICT in learning within total number of disciplines	data provided by MHSSE and MoPE
	share of students users of distance learning at academic institutions	data identified by survey of HEIs and their students

Component	Indicators	Source of Information
	share of educational institutions, using computer testing	data provided by MHSSE and MoPE
	share of teachers, using information technologies (Internet) for teaching disciplines unrelated to Informatics	data identified by survey of academic institutions (MoPE and MHSSE)
3.3 Availability of trained staff	share of ICT students in total number of students	data provided by MHSSE
	share of ICT teachers in total number of teachers	data provided by MHSSE
	share of teachers trained in ICT	data provided by MHSSE
	share of government institutions staff trained in computer literacy	data identified by survey of
	share of adult population trained in ICT	government bodies (UzACI) data identified by survey of institutions offering training or survey of adult population

	IV. ELECTRONIC GOVERNMENT	
Electronic government	Percentage of government institutions with websites;	data identified by survey of government bodies (UzACI)
	share of websites of government institutions, in conformity with relevant criteria	data identified by survey of government bodies (UzACI)
	share of government services available online	data identified by survey of government bodies (UzACI)
	Indicator of basic package of services offered	data identified by survey of government bodies (UzACI)
	Amount of government procurement that can be done online	data identified by survey of government bodies (UzACI)
	Number of civil servants per 1 computer	data identified by survey of government bodies (UzACI)
	Number of civil servants per 1 computer, connected to the Internet at government institutions	data identified by survey of government bodies (UzACI)
	share of computers connected to the Internet at government institutions	data identified by survey of government bodies (UzACI)
	share of government funds allocated for ICT as percentage of total government expenditures,	Data provided by the Ministry of Finance

	V. ELECTRONIC COMMERCE	
Electronic commerce	Number of online shops and their total sales	data identified by survey
	share of organizations providing online commercial services	data identified by survey of institutions
	share of electronic trade in gross domestic trade	data identified by survey of institutions (MFERIT)
	Number of terminals for ATM card transactions	data identified by survey of institutions or terminal distributors
	share of electronic payments in total amount of payments	data identified by survey of institutions (MFERIT)
	share of banks issuing cards of international payment systems	data identified by bank survey (CBU)
	share of banks using "bank-client" electronic technology	data identified by bank survey (CBU)
	Share of population using ATM cards	data identified by bank survey (CBU)

ANNEX 2. REVIEW OF DOMAIN NAME REGISTRATION COSTS IN .UZ ZONE (AS OF 01.01.2006)

Registrar	Domain registration in .UZ zone and 1 year maintenance (USD)	Extension (maintenance) of 1 year registration in .UZ zone (USD)	Domain registration in .com .net .org zones (USD)
1 "Amaliy Aloqa Biznesi" (BCC) www.bcc.uz	25	20	40
2 "ColorIT Design" LLC www.colorit.uz	24	19	40
3 "Global Study" LLC www.billur.net	25	20	28
4 "Sarkor Telecom" LLC www.sarkor.uz	25	20	No
5 "TV-Inform" LLC www.eanetways.com	25	20	no
6 "Tomas" LLC www.tomas.uz	40 30 (expected price)	36 27 (expected price)	no no

Payments in UZS at the rate of Central Bank of Uzbekistan on transaction date
Source: registrar websites

ANNEX 3. REVIEW OF INTERNET ACCESS COSTS BY PROVIDERS (AS OF 01.01.2006)

№	Internet service providers	Dial-up access to the Internet for individuals[1]		
		1 hour access (USD)	Access time	Unlimited access (USD)
1	Albatros *	0.47	09:00-20:00	64
2	ARS Inform *	0.34	not defined	59.3
3	BCC *	0.34	08:00-18:00	76.3
4	Sarkor Telecom	0.48	08:00-18:00	80
5	SharqTelecom	0.35	09:00-20:00	50
6	TPS	0.30	09:00 - 18:00	90
7	UzNET *	0.34	08:00-22:00	50.8
	Average by providers	0.37		67.14

[1] "standard" (i.e. without special discounts) rates for daytime access (08:00 - 18:00 or 09:00- 20:00) are taken as indicators
* estimated data at the exchange rate USD 1 = 1180 UZS; company publishes its tariffs in UZS

№	Internet service providers	Corporate Internet access					
		Rates for limited traffic plans (USD)			Rates for unlimited traffic plans (USD)		
		64/64 KBit/sec (500 mB)	128/128 KBit/sec (1000 mB)	256/128 KBit/sec (2000 mB)	64/64 KBit/sec	128/128 KBit/sec	256/128 KBit/sec
1	Albatros[1]				211.9	381.4	762.7
2	ARS Inform[1]	42.4	84.7	169.5	148.3	296.6	593.2
3	BCC[1]	84.7	144.1	254.2	254	423.7	593.2
4	East Telecom[2]	60	137	260.4			
5	Sarkor Telecom	70	130	220	200	380	730
6	SharqTelecom[3]	90	161.1	279.9	200	350	1,310
7	TPS[4]	58.6	88	164.1	395	745	1,445
8	UzNET[5]	65	95.2	169.7	varies	varies	varies
	Average for providers	67	120	217	235	429	906

[1] estimated data at exchange rate of USD 1== UZS 1180; company publishes its tariffs in UZS
[2] estimated data; rates for limited access at the speed of 128/128 KBit/sec published by the company amounts to 140 USD for 1 GB, at the speed of 256/128 KBit/sec - 200 USD for 1.5 GB
[3] estimated data; rates for limited access at the speed of 128/128 KBit/sec published by the company amounts to 165 USD for 1 GB, at the speed of 256/128 KBit/sec - 430 USD for 3 GB
[4] estimated data; rates for limited access at the speed of 64/64 KBit/sec published by the company amounts to 120 USD for 1 GB, at the speed of 128/128 KBit/sec - 180 USD for 2 GB, at the speed of 256/128 KBit/sec - 420 USD for 5 GB
[5] estimated data at exchange rate of USD 1= 1180 UZS; rates for limited access at the speed of 64/64 KBit/sec published by the company amounts to 78,000 UZS for 512 Mb, at the speed of 128/128 KBit/sec - 115000 UZS for 1024 Mb, at the speed of 256/128 KBit/sec - 205000 UZS for 2048 Mb

ANNEX 4. CURRENT STATE OF GOVERNMENT WEB-RESOURCES (AS OF 01.12.2005)

№	Government body	URL	Readiness	Forum	Comments	Language
1.	Ministry of Economy of the Republic of Uzbekistan	www.mineconomy.uz	Interface language intact, operates in testing mode	Yes but dysfunctional	Dynamic website	Uzb Rus Eng
2.	Ministry of Finance of the Republic of Uzbekistan	www.mf.uz	functional website	Yes	Dynamic website	Uzb Rus Eng
3.	Ministry of Agriculture and Water Management of the Republic of Uzbekistan	www.msvx.uz	functional website	Yes Guestbook	Dynamic website	Rus
4.	Ministry of Labor and Public Welfare of the Republic of Uzbekistan	mintrud.uzpak.uz	website under construction	---	---	---
5.	Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan	www.edu.uz	functional website	Yes	Dynamic website	Uzb Rus Eng
6.	Ministry of Public Education of the Republic of Uzbekistan	edu.fan.uz	functional website	Yes	Dynamic website	Rus
7.	Ministry of Health of the Republic of Uzbekistan	www.mrz.uz	functional website	Yes	Dynamic website	Rus
8.	Ministry of Culture and Sports of the Republic of Uzbekistan	madaniyat.sport.uz	Functional website	No	static website	Uzb Rus Eng
9.	Ministry of Defense of the Republic of Uzbekistan	www.mod.uz	No website	---	---	---
10.	Ministry of Internal Affairs of the Republic of Uzbekistan	www.mvd.uz	No website	---	---	---
11.	Ministry of Emergencies of the Republic of Uzbekistan	mes.st.uz	functional website	Yes	static website	Rus
12.	Ministry of Foreign Affairs of the Republic of Uzbekistan	www.mfa.uz	functional website	No	static website	Uzb Rus Eng
13.	Ministry of Justice of the Republic of Uzbekistan	minjust.gov.uz	No website	---	---	---
14.	State Committee of the Republic of Uzbekistan for Government Assets Management	spc.gov.uz	functional website	No	Dynamic website	Rus Eng
15.	State Committee for Statistics of the Republic of Uzbekistan	www.stat.uz	functional website some pages are under construction	No	static website	Rus Eng
16.	State Committee for Demonopolization, Support for Competition and Entrepreneurship of the Republic of Uzbekistan	www.antimon.uz	functional website	No	static website	Uzb Rus Eng
17.	State Tax Committee of the Republic of Uzbekistan	www.soliq.uz	hosting company website loads	No	---	---

№	Government body	URL	Readiness	Forum	Comments	Language
18.	State Customs Committee of the Republic of Uzbekistan	www.customs.uz	functional website	No	Dynamic website	Uzb
19.	State Committee for Nature Protection of the Republic of Uzbekistan	www.uznature.uz	functional website	No	Dynamic website	Uzb Rus Eng
20.	State Committee for Geology and Natural Resources of the Republic of Uzbekistan	www.uzgeolcom.uz	functional website	Yes Guestbook	Dynamic website	Uzb Rus Eng
21.	State Committee of Architecture and Construction of the Republic of Uzbekistan	www.gkas.uz	website does not load	No	Dynamic website	Rus
22.	State Committee of the Republic of Uzbekistan for Land Resources, Geodesy, Cartography, and State Cadastre	www.gkz.uz	functional website some pages are under construction	No	static website	Rus
23.	Ministry of External Economic Relations, Investments, and Trade of the Republic of Uzbekistan	www.mfer.uz	functional website	No	Dynamic website	Rus Eng
24.	Agency for Press and Information	www.uzapi.gov.uz	functional website updates 20.09.2005	Yes	Dynamic website	Rus
25.	Uzbek Agency for Communication and Information	www.aci.uz	functional website	Yes	Dynamic website	Rus
26.	Uzbek Agency for Standardization, Metrology, and Certification	www.standart.uz	functional website	No	Dynamic website	Uzb Rus Eng
27.	UzKommunXizmat Agency	www.uzkommunhizmat.uz	website does not load	---	---	---
28.	Uzbek Agency for Automobile and River Transport	www.uzaart.uz	functional website	No	static website	Uzb Rus Eng
29.	Uzbek Republican Copyright Agency	www.uzraap.uz	functional website	Yes	Dynamic website	Uzb Rus Eng
30.	Agency for Precious Metals under the Central Bank of the Republic of Uzbekistan	No website	---	---	---	---
31.	UzArchive Agency	www.archiv.uz	functional website	under construction	Dynamic website	Uzb Rus Eng
32.	Committee for Management of Government Reserves under the Cabinet of Ministers of the Republic of Uzbekistan	No website	---	---	---	---
33.	Committee for Religious Affairs under the Cabinet of Ministers of the Republic of Uzbekistan	www.religions.uz	functional website	No	Dynamic website	Rus Eng

№	Government body	URL	Readiness	Forum	Comments	Language
34.	Center for Coordination and Oversight of Securities Market under State Property Committee of the Republic of Uzbekistan	www.uzsecurities.com	functional website updates 20.04.2005	No	Dynamic website	Rus
35.	Center for Science and Technologies under the Cabinet of Ministers of the Republic of Uzbekistan	www.ftm.uz	functional website	Yes	Dynamic website	Uzb Rus
36.	Center for Secondary Special and Vocational Education of the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan	markaz.uzsci.net	website under construction 03.11.05	---	---	---
37.	State Testing Center under the Cabinet of Ministers of the Republic of Uzbekistan	www.test.uz	functional website	Yes	Dynamic website	Uzb Rus
38.	National Information and Analytical Center for Narcotics Control under the Cabinet of Ministers of the Republic of Uzbekistan	www.ncdc.uz	functional website under construction 2005	No	static website	Rus
39.	Sifat Uzbek Center for Certification of Cotton Fiber under the Cabinet of Ministers of the Republic of Uzbekistan	www.webcenter.ru/-sifat	does not load	---	---	---
40.	Center for Hydrometeorological Service under the Cabinet of Ministers of the Republic of Uzbekistan	meteo.nature.uz	functional website under construction March 2004	No	Dynamic website	Rus
41.	State Flight Safety Inspection of the Republic of Uzbekistan	www.uzcaa.uz	User-Gate loads	---	---	---
42.	State Railway Safety Inspection of the Republic of Uzbekistan	www.rwnadzor.uz	functional website under construction 27/04/2005	Yes	Static website	Rus
43.	State Inspection for Oversight of Technical Conidtion and Operational Safety of Major and Vital Water Management Facilities under the Cabinet of Ministers of the Republic of Uzbekistan	www.v-nadzor.re.uz	website does not load	---	---	---
44.	Uzbek State Agency for Oversight of Utilization of Petroleum Products and Gas under the Cabinet of Ministers of the Republic of Uzbekistan	ngi.uzpak.uz	under construction	---	---	---

№	Government body	URL	Readiness	Forum	Comments	Language
45.	State Bread Inspection of the Cabinet of Ministers of the Republic of Uzbekistan	sgiuz.re.uz	website does not load	---	---	---
46.	State Electricity Inspection of the Republic of Uzbekistan	www.uzenergy.uz	website does not load	---	---	---
47.	State Industrial and Mining Safety Inspection of the Republic of Uzbekistan	www.sanoat.cc.uz	website does not load	---	---	---
48.	Council of Ministers of the Republic of Karakalpakstan	www.sovminkarakalpak.uz	website does not load	---	---	---
49.	Khokimiat (administration) of Andijan region	andijan.gov.uz	functional website	No	static website	Uzb Rus Eng
50.	Khokimiat (administration) of Bukhara region	bukhara.gov.uz	website under construction			Uzb Rus Eng
51.	Khokimiat (administration) of Jizzakh region	www.jizzax.uz	functional website under construction (Nov 2004)	No	Dynamic website	Uzb Rus Eng
52.	Khokimiat (administration) of Kashkadarya region	kash.uzpak.uz	functional website not updated	No	static website	Rus Eng
53.	Khokimiat (administration) of Navoi region	navoi.gov.uz	functional website not updated	No	static website	Rus
54.	Khokimiat (administration) of Namangan region	naman.uzpak.uz	functional website not updated	No	static website	Rus
55.	Khokimiat (administration) of Samarkand region	samarkand.gov.uz	No website (website under construction)	---	---	---
56.	Khokimiat (administration) of Syrdarya region	www.sirdaryo.uz	website does not load	---	---	---
57.	Khokimiat (administration) of Surkhandarya region	termez.uzpak.uz	functional website	No	static website	Uzb Rus Eng
58.	Khokimiat (administration) of Tashkent region	tashvil.gov.uz	website does not load	---	---	---
59.	Khokimiat(administration) of Ferghana region	www.ferghana.uz	functional website not updated	No	static website	Rus
60.	Khokimiat (administration) of Khorezm region	khorezm.gov.uz	website does not load	---	---	---
61.	Khokimiat(administration) of the city of Tashkent	www.tashkent.uz	website does not load	---	---	---