

CONNECT CIS

26-27 November 2009
Minsk, Belarus



THE Connect CIS Summit took place in Minsk, the Republic of Belarus, 26-27 November 2009, and gathered some 353 participants from 18 Member States, including five Heads of State and Government and one First Deputy Prime Minister. The administrations of 10 countries from the region were represented, including 7 at the Ministerial level. Some 40 leading ICT companies, development banks, international organizations and other stakeholders participated in the Summit.

THE Summit was held under the patronage of the President of the Republic of Belarus, Mr Alexander Lukashenko and was organized by the International Telecommunication Union in partnership with the Regional Commonwealth in the Field of Communications, the Commonwealth of Independent States Executive Committee, the World Bank, the European Bank for Reconstruction and Development, the European Investment Bank, the Islamic Development Bank, the United Nations Economic Commission for Europe, and the United Nations Global Alliance for ICT and Development.

THE aim of the Summit was to mobilize the human, financial and technical resources required as well as to identify priority areas and build political support for a rapid, region-wide transition to digital infrastructure and services, widely recognized as the engine of future employment, growth and social and economic development. In doing so, the Summit will help accelerate the implementation of the connectivity goals of the World Summit on the Information Society (WSIS) and in turn, support the achievement of the United Nations Millennium Development Goals (MDGs) for 2015 in the CIS region, building on and reinforcing existing activities, such as the ITU Telecommunication Development Bureau's (BDT) flagship initiatives: Connect a School, Connect a Community, Connecting Villages, ITU Academy Partnership, ITU-IMPACT Collaboration on Cybersecurity, ITU Mobile Health Initiative and ITU Wireless Broadband Partnership.

TO reinforce the need to accelerate the implementation of the WSIS targets in the CIS region, the Heads of State participating in the Summit issued the Connect CIS Declaration.

Connect CIS Declaration

The Minsk Connect CIS Summit, which was the second of Connect Series, has not passed any certain action plans. At the same time, the Summit specially emphasizing ICT as a priority line for the CIS region development and expressing political will of the leaders of the CIS countries to render every possible support to ICT development, accepted the Declaration below.

Towards a Digital Future

1. **We, the leaders of the peoples of the Commonwealth of Independent States (CIS)**, assembled in Belarus from 26-27 November 2009 for the Connect CIS Summit, have come together to forge a common future of prosperity for our region by leveraging the potential of information and communication technologies (ICTs).
2. **We reiterate our common desire** to build an inclusive and development-oriented Information Society, where people can achieve their full potential and improve their quality of life.
3. **We recognize** the important contribution of ICTs in stimulating economic growth, employment and broader sustainable development in the region, and in turn, their potential to help achieve the United Nations Millennium Development Goals.
4. **We further recognize** the essential role of governments in devising national e-strategies and establishing an enabling policy and regulatory framework to foster ICT investment.
5. **We reaffirm our commitment** to achieving the internationally agreed vision and goals of the World Summit on the Information Society (Geneva 2003; Tunis 2005).
6. **We note** the key proposals and initiatives brought to the attention of the Connect CIS Summit by the International Telecommunication Union and various partners.
7. **We reach out** to partners including those from the telecommunication/ICT sector, development banks and financial institutions, international and regional organizations and civil society to mobilize human, financial and technical resources for these and other initiatives, which help achieve the vision and goals of the World Summit on the Information Society in the CIS region.





Activities of ITU Area Office for CIS, 2010-2013

The Minsk Connect CIS Summit discussions were held within the framework of 6 Panels, dedicated to the priority areas of the development:

- Panel 1 – Building a Broadband-Enabled Future
 - Panel 2 – Fostering an Enabling Environment
 - Panel 3 – Strengthening Public Services through ICTs
 - Panel 4 – Strengthening a Knowledge-based Society
 - Panel 5 – Building Trust and Confidence in the Use of ICTs
 - Panel 6 – Moving from Analogue to Digital Broadcasting
- Closing Plenary: Towards a Digital Future.

Activities of the ITU Area Office for CIS in the period of 2010-2013, following the Summit, which included organization of seminars, workshops, trainings, and provision of expert assistance, were in line with the priority areas indicated with the topics of the Connect CIS Summit Panels. Below are some examples of key activities of the ITU Area Office, relating to the 6 priority areas.

Building a Broadband-Enabled Future

Distance Learning Course and CD Rom on Introduction of New Generation Internet Protocol - IPv6, Minsk, Belarus, 18 April – 27 May 2011

Regional Workshop “Migration from IPv4 на IPv6: Regulatory and Technical Aspects” Chisinau, Republic of Moldova, 24-25 May 2012;

Regional Seminar on Costs and Tariffs in Telecommunication/ICT, Odessa, Ukraine, 24-26 October 2012;

Creation of Internet access points in Moldova, Kyrgyzstan, Tajikistan, Georgia. In Moldova: 43 access points with 134 seats: 150,000 inhabitants can benefit from the access.

Upgrade qualification trainings for village informatics teachers, within the Connect a School in Kyrgyz Republic, March-May 2013;

Provision of expert assistance to Azerbaijan and Armenia aimed at further creation of satellite networks. Result: satellite communications network was created in Azerbaijan (satellite launched in early 2013);

Starting implementation of Regional Initiative on Provision of a stable electric power supply for telecommunication/ICT facilities in rural and remote areas of Uzbekistan;

Start in 2013, at the Regional Initiative, of establishment of the ITU virtual laboratory for the remote testing of equipment and of new technologies and services in cooperation with ZNIIS, Russian Federation

Fostering an Enabling Environment

Workshop on Economic Methods of Spectrum Management, Almaty, Kazakhstan, 3-4 March 2011;

Seminar on Number Portability: Regulatory Issues and Implementation Impacts, Chisinau, Republic of Moldova, 19-20 May 2011

Expert assistance to Kyrgyz Republic and Tajikistan aimed at the revision of the Law on Telecommunications.

Expert assistance provided to Ukraine, in creation of national body of object identifier registration, May 2011;

Regional Forum on Topical matters of Telecom regulation and Frequency spectrum use for CIS and Europe, Kiev, Ukraine, 11-13 September 2012;

Workshop on Trends in Development of Radiocommunication as a result of WRC-12. Technical and Regulatory aspects, St. Petersburg, 6-8 June 2012;

Annual ITU Regional Forum on Development for CIS Countries “The Policy and Strategy for ICT Development in the CIS Region and Regulatory Aspects”, Chisinau, Republic of Moldova, 22-23 May 2012;

Expert assistance to Kyrgyz Republic in the revision of the Law on Telecommunications, May 2013;

Regional Seminar on Radio Frequency Spectrum Management. Radiomonitoring as an effective tool of the RFS Management, Kiev, Ukraine;

Strengthening Public Services through ICTs

Workshop "Experience in implementation of network performance parameter control systems for ensuring QoS on the operator networks. Sensor networks as a tool for optimization of automobile traffic flows", Moscow, Russia, 27-29 April 2011

Training seminar «Approaches to network performance parameters testing to ensure services quality, Moscow, Russia, 17 -18 March 2011

Regional Workshop «Harmonization of Telecommunication/ICT Indicators with International Standards», Nakhichevan, Republic of Azerbaijan from 24 to 26 April 2013.

Workshop on Cloud Technologies as a New Business Development Strategy, Moscow, 28-30 October 2013;

Workshop on Development of e-Government as one of the Conditions of Integration into the Global Information Society, Moscow, 25-27 November 2013 (50 participants from 7 countries)

Strengthening a Knowledge-based Society

Regional Workshop on Enhancing Public-Private Partnerships, Issyk Kul, 22-24 August 2012;

Seminar "Capacity building on Strategic Management for Telecommunication/ICT", Moscow, Russia, 28 February – 1 March 2012;

Workshop on Procompetitive Public Regulation of the Mobile Communication Market. Experience, Practice and Technologies of Mobile Communication Development, Astana, Republic of Kazakhstan, 28-29 March 2012;

Regional seminar on Costs and Tariffs in Telecommunication/ICT, Odessa, 24-26 October 2012;

Regional Seminar on Strategic Aspects of ICT Use in Education, Odessa, Ukraine, 17-19 April 2013;

Distance Learning Course on Provision of the Quality of Services in Local and Global IP Networks, Minsk CoE Node, November 2013;

Seminars dedicated to International Girls in ICT Day in 2012, 2013, and 2014, Moscow, Russia

Building Trust and Confidence in the Use of ICTs

Regional workshop "Integrated aspects of child protection on the Internet" for CIS and Europe countries, Odessa, Ukraine, 6-8 April

Expert assistance was provided to Armenia and Kyrgyz Republic in elaboration of recommendations for national cyber security strategy.

EUR-ASP-CIS Cross-Regional Seminar on Current Methods for Combating Cybercrime Odessa, Ukraine , 28-30 March 2012

Regional Workshop on the Role of ICT in Saving Lives. Climate Change and Emergency Telecommunications, Issyk Kul, Kyrgyz Republic, 19-21 August 2013

Moving from Analogue to Digital Broadcasting

Training seminar «Capacity Building and Digital Inclusion», Chisinau, Republic of Moldova, 19-20 May 2011

Training seminar «Capacity Building and Digital Inclusion» Saint-Petersburg, Russia, 14-16 June 2011

Workshop on New Technologies for Creation and Distribution of Digital Broadcasting Programmes, Odessa, Ukraine, 22-25 June 2011

Videoconference Training for CIS "Complex Issues of Implementation and Development of Digital Broadcasting", ITU Area Office for the CIS Moscow, Russia, 16-17 May 2013

Creation at the Regional Initiative of Advisory and Methodological Centre to Assist the CIS Countries in Transition to Digital Broadcasting created in Minsk, Republic of Belarus. On the basis of the Centre:

Provision of expert assistance to Kyrgyzstan, Tajikistan and Uzbekistan on migration from analogue to digital broadcasting in their border areas (Fergana valley), 2011;

Workshop on economic methods of spectrum management; **Workshop** on new technologies for the creation and distribution of digital broadcasting programmes;

Regional Workshop on Implementation and Monitoring of DVB-T/DVB-T2 System, Minsk, 25-27 September 2013;

Created at the Regional Initiative in 2012 the video conference system network connected ITU AO and CIS Communication Administrations and enabled remote participation of the countries in the ITU regional events, such as: Girls in ICT Day videoconference seminar, press launches of the Measuring Information Society reports, videoconference trainings etc.



Regional Commonwealth in the field of Communications (RCC)

Cooperation with the RCC for promotion of ICT development in the CIS region and organization and conducting of regional events aimed at capacity building (in particular the CIS Centre of Excellence workshops) is very significant for development of the priority areas highlighted by the 2009 Connect CIS Summit. Among other key activities aimed at ICT development, the RCC publishes Statistical Yearbook on the Activities of the Communications Administrations in the field of Communications and Information. Below is some information from the 2013 Yearbook.

Mobile communication

| Communications Administrations – RCC parties | Number of subscribers, ths | | | | | |
|--|----------------------------|-----------------|----------------------------------|-----------------|--|-----------------|
| | mobile cellular networks | | digital mobile cellular networks | | data transmission via cellular mobile networks | |
| | 2011 | 2012 | 2011 | 2012 | 2011 | 2012 |
| Azerbaijan | 10120,0 | 10125,2 | 10120,0 | 10125,2 | 2001 | 3136,5 |
| Armenia | 3210,8 | 3322,8 | 3210,8 | 3322,8 | 1500,2 | 1471,7 |
| Belarus | 10694,9 | 10676,5 | 10694,9 | 10676,5 | 4537,8 | 5723 |
| Georgia | ... | ... | ... | ... | ... | ... |
| Kazakhstan | 25240,8 | 30235,4 | 25240,8 | 30235,4 | 10246,4 | 11143,2 |
| Kyrgyzstan | 6277,1 | 6797,9 | ... | ... | 2280,7 | 2577,9 |
| Moldova | 3715,0 | 4080,1 | 3715,0 | 4080,1 | 124,8 | 178,5 |
| Russia | 256116,6 | 261887,7 | 256116,6 | 261887,7 | 84522,7 | 91217,2 |
| Tajikistan | 6572,6 | 9840,6 | 6572,6 | 9840,6 | 1686,2 | 1721,1 |
| Turkmenistan | 2116,1 | 3178,6 | 2116,1 | 3178,6 | 403,8 | 778,6 |
| Uzbekistan | 25441,8 | 20274,1 | 25441,8 | 20274,1 | 7664,3 | 6162,5 |
| Ukraine | 55576,5 | 59343,7 | 55576,5 | 59343,7 | ... | ... |
| Total | 405082,2 | 419762,6 | 398805,1 | 412964,7 | 114967,9 | 124110,2 |

Data for Russia is given for subscribers' terminals

Satellite broadcasting

| Communications Administrations – RCC parties | Number of transmitting satellite stations, units | | | | Number of satellite receivers, units | | | |
|---|--|-------------|---------------------------|-----------|--------------------------------------|------------|---------------------------|------------|
| | Total | | including TV broadcasting | | Total | | including TV broadcasting | |
| | 2011 | 2012 | 2011 | 2012 | 2011 | 2012 | 2011 | 2012 |
| Azerbaijan | 7 | 8 | 3 | 4 | 235 | 248 | 233 | 233 |
| Armenia | 2 | 3 | 2 | 3 | 275 | ... | 210 | ... |
| Belarus | 2 | 2 | 1 | 1 | 133 | 136 | 133 | 136 |
| Georgia | ... | ... | ... | ... | ... | ... | ... | ... |
| Kazakhstan | 4596 | 5576 | 5 | 53 | ... | ... | ... | ... |
| Kyrgyzstan | ... | ... | ... | ... | 6 | 8 | 2 | 2 |
| Moldova | 11 | ... | 3 | ... | 5 | ... | 5 | ... |
| Russia | ... | ... | ... | ... | ... | ... | ... | ... |
| Tajikistan | 1 | ... | ... | ... | ... | ... | ... | ... |
| Turkmenistan | 2 | ... | 2 | ... | ... | ... | ... | ... |
| Uzbekistan | 1 | 1 | 1 | 1 | 314 | 314 | 314 | 314 |
| Ukraine | 4 | 4 | 3 | 3 | ... | ... | ... | ... |
| Total | 4626 | 5594 | 20 | 65 | 968 | 706 | 897 | 685 |

Below you can find information on ICT development after the Connect CIS Summit provided by the CIS countries, as well as information on ITU Area Office activities effected in cooperation with other international organizations (UNESCO IITE) and with private sector participation (contribution of Intellect Telecom, Russia to development of mobile communication, mobile broadband access, emergency communication).



Activities of the CIS Countries

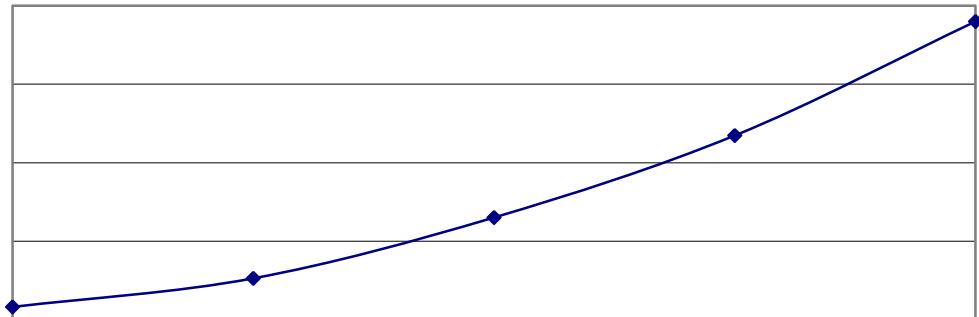
Priority topics that emerged from the Connect CIS Summit included expanding broadband networks needed to support advanced applications and services, transitioning from analogue to digital broadcasting, capacity-building, cyber-security and policy and regulatory reform to stimulate ICT investment.

Republic of Armenia

Core Indicators

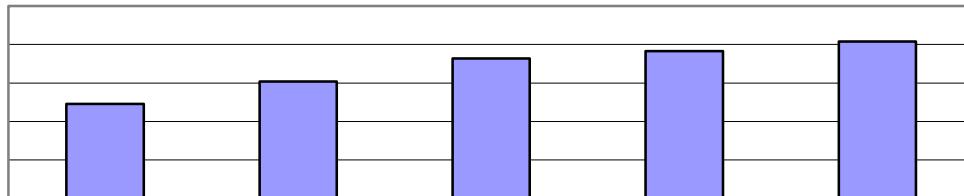
Core indicators of telecommunication infrastructure development in Armenia are stable rates of growth in incomes of telecommunication services. Increase of international IP transit to the Republic of Armenia caused lowering of the Internet access service price.

Dynamics of international Internet Traffic Capacity Growth



The diagram below presents growth of International IP transit in the Republic of Armenia in 2009-2013 and dynamics of growth in the number of the Internet broadband access subscribers, using both wired and wireless access technologies. The Internet access penetration in the Republic of Armenia is 60 % of the population.

Growth in the Number of Internet Subscribers (including GPRS)



Fixed-line telephony services are provided by traditional provider ArmenTel and 17 alternate providers, to which the Committee on Public Services Regulation of the Republic of Armenia allocated number resource with both

geographic and non-geographic code. As of end of 2013, mobile communication penetration made 109 %, while fixed-line telephony 18 %.

ICT Regulation

The ICT in the Republic of Armenia is administered by the Ministry of Transport and Communications and the Committee on Public Services Regulation. The Ministry elaborates and implements policy and strategy of the electronic communication industry. The Committee regulates public electronic communication networks and ensures competition in the field of electronic communication services and networks.

The Republic of Armenia make obstinate efforts aimed at creation of modern ICT infrastructure and consider development of information and communication technologies to be the key factor of fostering the economy and growth of business and intellectual activity of the society. In particular, building of intra area trunk fiber optic communication links are being built, transition from analogue to digital broadcasting at all levels of telecommunications are in progress. The market of mobile communication, data communication, and Internet access beasts off.

After the market liberalization, the traditional provider ArmTel was recognized as a dominating fixed-line telephony and international IP transit provider, for which the Committee on Public Services Regulation imposed maximal tariffs.

Development of Telecommunications

The key factors of the ICT development in Armenia are: network infrastructure development; mobile communication growth; development of the Internet; price reduction; improvement of competition in these market segments, causing more accessibility of communication service for the population.

In order to invite investments in the Republic, the National Assembly approved a law, according to which voice service and Internet access licensing was replaced by the procedure of the provider notification (registration).

Telephone penetration in the Republic made 100% by end of 2013. As a result of digitization of telephone networks, the proportion of main stations connected to digital ATS made 87.2% in the Republic and in the Armenian capital – 100%. The digitalization will be continued to reach 100-percent level in the entire Republic. For installation of telephone services in hard-to-reach areas, CDMA-450 wireless local loop networks were built.

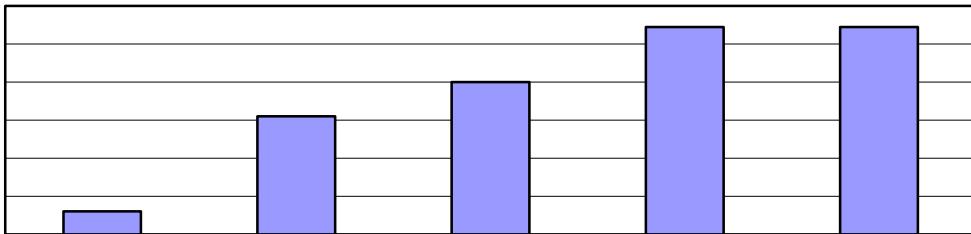
Some changes were made in CJSC Armentel license. In particular, the company has to modernize CDMA wireless local loop networks in 2013-2015 to provide broadband Internet access in rural areas of the Republic. The most efficient technology is currently negotiated between the the Committee on Public Services Regulation and the Armentel.

A huge fiber optic new generation networks using FTTH was created in the Republic of Armenia. By the end of 2013, access to broadband fiber optic networks was available in big cities of Armenia. The networks are being extended, which use Triple Play.

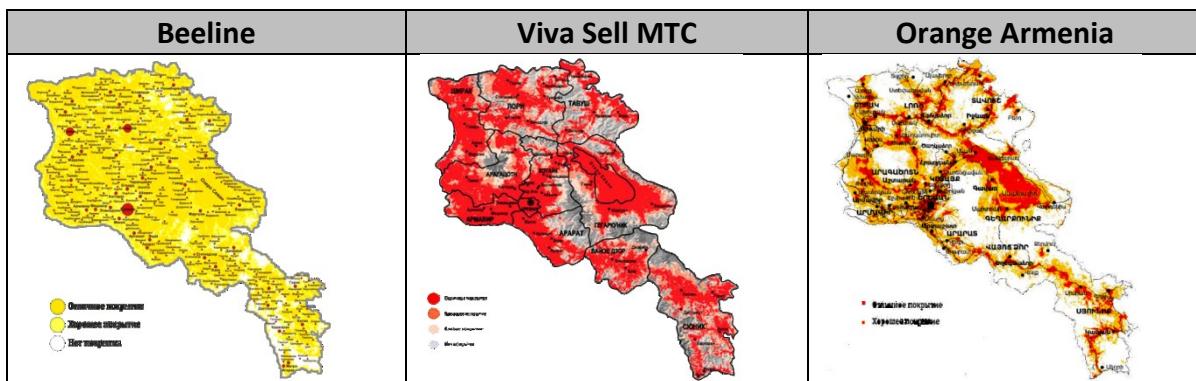
Mobile Communication Market

Interpenetrating mobile communication networks of the three licensed providers act at the territory of the Republic of Armenia: CJSC Armentel (tradename Beeline), K-Telecom (tradename Vivacell - MTS) и France Telecom of Armenia (tradename Orange).

Mobile Communication Subscribers



Mobile Internet access service on the basis of GPRS, EDGE, 3G, HSPA+, LTE technologies is wide spread. ViVaCell-MTC implemented LTE network commercial exploitation since March 2011. Currently, 4G coverage is being extended, and by end of 2014 all cities of the Republic will be provided with broadband communication based on LTE.



Coverage of Armenia's Territory by Mobile Communication

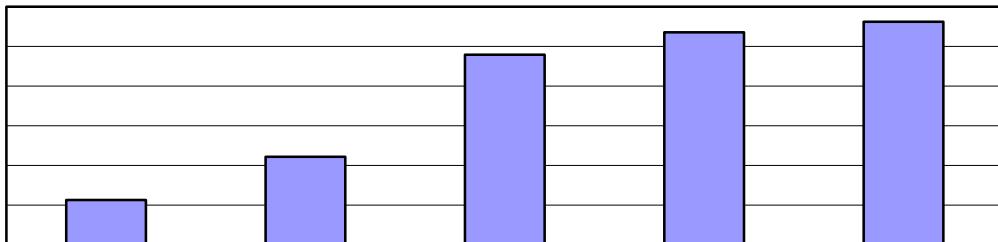
The Committee on Public Services Regulation identified 18 settlements which are not covered by GSM access. The three service providers are required to modernize their networks to proportionally cover the settlements with voice and broadband access service. 100 % of Armenian settlement will be covered by mobile communication service by the middle of 2014.

3G Internet penetration makes 100% in Yerevan and 99% in the entire Armenia, 4G Internet penetration makes 30% in the Republic of Armenia. The number of 4G Internet subscribers increased 5 times over last 5 years. Works on mobile number portability are in progress.

Broadband Access

Internet subscriber penetration in Armenia made 45.3% of the population as of the end of 2013. The data communication segment is one of the most dynamic communication market segments. The Internet access services are provided by about 90 large and middle communication service providers. Internet access service is provided on the basis of wired and wireless technologies: GPRS, EDGE, 3G, HSPA+, LTE xDSL, WiMAX, Wi-Fi, Ethernet, FTTx, BPL, as well as FTTH standard GPON. Hi-Line service on the basis of ADSL technologies is accessible in Yerevan and other big cities of Armenia.

Growth in the Number of Broadband Access Subscribers 2009-2013



International Interconnect and Optical Cable Network at the Territory of the Republic of Armenia

| CJSC Armentel | |
|------------------------------|---|
| | <ul style="list-style-type: none"> - IP/MPLS capacity 10 GB/s - 4 ground rings - North and South Segments - Cisco System router |
| CJSC GNC-Alfa | |
| | <ul style="list-style-type: none"> - IP/MPLS capacity 10 GB/s - 2 North Segments - 1 South Segment - 3 ground rings - 2 independent rings - Cisco System router |
| CJSC Fibernet Communications | |
| | <ul style="list-style-type: none"> - IP/MPLS capacity 10 GB/s - 1 North Segment - Cisco System router |

At the initiative of the Ministry of Transport and Communications of the Republic of Armenia and the ITU Area Office for CIS and with participation of the UNESCO Institute of Information Technologies and Education (IITE), as well as with support of CJSC IPost, Internet Access Centre for Blind and Visually Impaired Persons was opened in Yerevan in 2011.

Informatization Development and building of Information Society

The Government of the Republic of Armenia passed the Concept on Information Security aimed at functioning and development of information society and ICT for the period of 2010-2012. The Concept was to realize following tasks:

- Implementation of information society and electronic services;
- Implementation of beta-testing of digital TV networks in Armenia;
- Implementation of identification cards, electronic passports.

By nowadays, the PC for All programme has been completed (initiated in 2009), aimed at provision of Internet accessibility for the population. The desks providing access to electronic governance have been established in post offices, schools, and libraries. Also, a programme on PC and information programs for educational institutions is in progress. The PC Literacy in School project is under development.

The Republic of Armenia in collaboration with the Russian Federation work at creation of telemedicine consultancy and diagnostic systems for further integration the national systems in a united CIS telemedicine system.

The system of electronic passports containing biometric parameters was implemented in Armenia since 1 June 2012.

In accordance with requirements of the agreement Of the Work of Personnel of Transport Means Executing Road Haulages, a control system using digital tachograph was implemented in Armenia since July 2011.

For the purposes of monitoring and efficient exchange of information on national labour market and vacancies available, the banner of Labour Market in CIS of the CIS Executive Committee was placed on website of the State Employment Service of the Ministry of Labour and Social Issues of the Republic of Armenia (www.employment.am).

The information on vacancies is also available in Russian: <http://employment.am/ru/index.html>.

The Committee of Public Revenue under the Government of the Republic of Armenia is negotiating with CJSC IPost a possibility of implementation of electronic customs declaration system. A draft agreement between Armenia and Ukraine on preliminary exchange of information on goods and transport means which are brought through customs is under approval.

A resolution Of the Programme of the Development of Electronic Commerce, Net-Ready, and Technical Support; and of Approval of the Appointment Calendar for the Implementation of the Programme was adopted by the Government of the Republic of Armenia on 19 September 2013.

The concept on Internet Governance Principles elaborated by the Ministry of Transport and Communication of the Republic of Armenia was submitted to the Government consideration by the end of 2013. The concept is aimed at:

- Elaboration key principles of Internet governance;
- Formation of Internet governance policy;
- State support of the development of the networks reliability and safety;
- Support of cooperation in the sphere of Internet governance between international, regional and other organizations.

Transition to digital TV and radio broadcasting is realized in Armenia within the framework of a government programme approved on 30 June 2011, which is aimed at gradual transition from analogue to digital broadcasting by 17 June 2015.

Within the framework of the Regional Initiative approved by WTDC-10, ITU purchased videoconference equipment for the Ministry of Transport and Communications of the Republic of Armenia, which enabled connection of the Ministry to the videoconference system between the ITU Area Office and the Communication Administrations of the CIS in 2013.

Within the framework of the OP-13 implementation, ITU provided expert assistance to the Communication Administration of Armenia in identification of the necessity for coordination of satellite network based on C/I criterion and possible conditions for the work of ARMSAT-30B-71.4E, ARMSAT1 networks.

In accordance with Armenian legislation, all local government bodies should have websites. A draft resolution has been submitted for the Government consideration of approval of standard requirements for official webpages of the state administration bodies.

Development of e-Documentation

Development of e-Documentation and the system of electronic acknowledgement in the Republic of Armenia started in 2005 and is aimed at transition to digitalization of the entire document flow processing in the state

institutions. The state institutions use Mulberry system. E-gov.am Internet portal, which is in operation since 2010, provides services such as: receiving e-applications for licenses, e-registration of institutions, e-submission of tax statements, provision of e-visa, receiving of e-applications from the Agency of Intellectual Property, e-signature, interactive budget, law information system, system of legal information of the Republic of Armenia. The portal reduces to minimum direct contacts between citizens and the office holders and, therefore, minimizes corruption risks.

In parallel, the system of e-cadaster, pension system and medicine automation is being elaborated, which will include hospitals and insurance companies of Armenia.

Creation of Technology Parks

Technopark Gyumri

The Government of the Republic of Armenia initiated creation of the Ghumri Technopark aimed at development of the city and transformation it into a technological zone of current knowledge and innovation infrastructures. Currently, the building of the technopark is being constructed within the framework of the World Bank credit programme. The construction works are planned to be completed in early 2014. The technopark complex will be focused on information, telecommunication and high technologies. In the technopark complex there will be office premises and common areas with high-quality infrastructure. The building will be also used as incubation centre for both already existing laboratories, and for laboratories and companies which are to be created.

Technopark Vanadzor

Taking into account the successfulness of the Gyumri technopark model, creation of a similar technopark will be started in the city of Vanadzor, in Lori region, within the framework of the World Bank credit programme. This project will serve as a basis not only for economic development of the region, but will also allow to create a regional technological centre, which will be, along with Gyumri technopark, a more solid ground for technology development and increase of competitive ability and prestige of Armenia.

Technopark Viasfer

CJSC Viasfer technopark was founded in 2000 and created a business environment for both developed technology companies and for the beginners, through providing for the latter the services of business incubator. Companies specialized in laser technologies, EDA, CAD, and production of software extended their business at the territory of Viasfer technopark.

IT Park Business Centre

IT Park Business Centre is a modern and rapidly growing business centre, which hosts over 50 companies, mostly specialized in IT.

Free economic area

The first free economic area in Armenia was created at the territories of CJSC RAO MARS and CJSC Yerevan Scientific and Research Institute of Mathematic Machines in 2012. The creation of the area is aimed at manufacturing and export of high-quality and innovation technologies in the field of electronics, engineering, pharmaceuticals, biotechnology, information technologies, alternative energetic, industrial art, and communications (design and manufacturing of systems and materials for information communication). At the same time, an innovation and technology platform for attraction of companies specialized in high technologies was created in the vicinity of the Institute. The platform has office facilities and several conference halls and a unique exhibition complex, as well as cable networks of all the most advanced Internet connection providers.

Republic of Azerbaijan



Azerbaijan's ICT sector has changed noticeably over last three years. To be specific, Azerbaijan's revenues from the ICT sector in 2013 reached 2081.1 million US dollars, which was about 36.3% percent more compared to 2010. The total capacity of the fixed lines increased from 10 percent summing up 1 791 412 numbers in 2013 compared to 2010. In last three years, the average number of fixed line subscribers also slightly grew since the percentage of cellular subscribers has become 110. Compared to 2010, number of Internet subscribers per 100 inhabitants increased from 50 to 70 and number of fixed-broadband subscription raised from 15 to 50. The number of international channels reached the total of 10 844 and the general capacity of Internet channels grew from 40 Gbps to 210 Gbps.

Within recent three years, Ministry of Communication and Information Technologies (MCIT) initiated a number of projects that are currently being successfully implemented. The E-Government Portal comprises online services provided by public institutions was launched in 2012. About 250 services are currently available online. The first telecommunication satellite "Azerspace-1" of Azerbaijan was launched in 2013. At present, the satellite operates on a commercial basis and 58 channels are broadcasted via Azerspace-1. Digital broadcasting covers more than 97 percent of the country's territory and 11 channels are broadcasted free of charge. In 2013 Mobile Devices Registration System (MDRS) was put into the operation. The MDRS envisages that IMEI numbers of each mobile device imported into the country for personal purpose (with SIM cards of country's mobile operators), should be registered within 30 (thirty) days from the date of its connection to the network.



While benefitting from oil and gas generated revenues, Azerbaijan is investing efforts to diversify the economy and develop non-energy sectors, with particular emphasis on the role of ICTs. The country's ICT sector has changed noticeably over last years. To be specific, Azerbaijan's revenues from the ICT sector in 2013 reached \$2.1 billion, which was about 36.3% percent more compared to 2010. The ICT sector grew twice in size on average span of every 3 years covering the period of 2004-2013. The private sector has been the main driver of growth and its share has risen substantially - in the overall economy, from 61% in 2003 to 80% in 2011, and in the non-oil economy, from 2.9% in 2003 to 7.2% in 2011. Since 2009 Azerbaijan well improved its position in ITU's *ICT Development Index*.

Compared to 2010, number of Internet subscribers per 100 inhabitants increased from 50 to 70 and number of broadband subscription raised from 15 to 50. The number of international channels reached the total of 10 844 and the general capacity of imported Internet channels grew from 40 Gbps to 250 Gbps. Thus, today 70 out of every 100 citizens are the Internet users connected both by wire line and wireless. Number of cell phone subscribers reached 110. *Mobile Devices Registration* and *Mobile Number Portability* were put into operation.

The first stage in establishing a nation-wide broadband network- *AzDataCom* took place in 2005-2011 within the framework of the joint project with the UNDP. The network spans for several hundred kilometers and embraces Baku, and connects Baku to Ganja and all regional centers of the country with the speed of 10 Gbps. It will be further expanded from regional centers to remote areas including villages, providing broadband connection to 3 million people. Upon completion of the project, the entire territory of Azerbaijan will be covered by high-speed Internet connection.

Since cellular and wireless communications are dynamically enhanced by private sector the developing of fixed line infrastructure is dealt by the Government and \$0.5 billion is planned to be invested by the *State Oil Fund* the *Fiber*

to the Home or FTTH for ensuring high capacity connectivity to every city, every village and every house located even in remote areas. The total capacity of the fixed lines increased from 10 percent summing up 1 791 412 units in 2013 compared to 2010. In last three years, the average number of fixed line subscribers also slightly grew since the percentage of cellular subscribers has become 110.

The first telecommunication satellite *Azerspace-1* was launched in 2013 to cover Europe and the significant part of Asia and Africa to avail the transmission of TV/radio broadcasting and the internet connectivity for the emerging markets. The satellite has an anticipated service life of 15 years. It will provide TV broadcasting and telecom services, as well as high-quality and stable communication platforms for government and corporate clients. At present, the satellite operates on a commercial basis and broadcasts about 60 channels.



The *eGovernment* portal was launched in 2012 and today it holds 60 percent of services provided by public institutions annually managing to process 800.000 inquiries. Almost 40 percent of secondary schools in the country are connected and 70 percent of teachers are trained with basic IT skills. Digital television transition was completed prematurely meeting the 2015 ITU deadline. Ten channels are broadcasted in an open package by 48 DVB-T transmitters across the country.

Azerbaijan essentially helps the ITU General Secretariat with striving to drive the broadband deployment across the world and is vigorously involved in the activity of the *UN Broadband Commission for Digital Development*. The country hosted *7th Internet Governance Forum* in 2012 and declared 2013 the *Year of Information and Communications Technologies*. For last decade Azerbaijan increased its role as a hub for bringing together the regional ICT champions, business leaders and government officials and the role of the *Bakutel* annual exhibition and conference is indispensable. The event is the number one ICT platform for networking in the South Caucasus and the Caspian Basin.

Initiated by Azerbaijan the *Trans-Eurasian Information Super Highway (TASIM)* is a major regional project aimed at creation of transnational fiber-optic backbone targeting primarily the countries of Eurasia from Western Europe to Eastern Asia. It envisages building a major new transit route from Frankfurt to Hong Kong. Thus, this route will connect the biggest exchange point in Europe with the biggest exchange point in Asia. The transit route will pass China, Kazakhstan, Azerbaijan, Georgia, Turkey, the way to Germany. A redundancy northern route passing Russia, Ukraine and Poland is also considered.



Republic of Belarus

The Republic of Belarus has started implementation of the National Programme Accelerated Development of Services in Information and communication Technologies on the 2011 - 2015 years, which is aimed at creation of public system to provide e-services.

Advisory and Methodological Centre in Minsk

The Ministry of Communications and Informatization of the Republic of Belarus proposed a regional initiative to establish a regional Advisory and Methodological Centre in Minsk for the introduction of digital TV and sound broadcasting, which was discussed at the RCC level in 2009 and 2010 and subsequently submitted to WTDC-10. The initiative was adopted by WTDC-10 without amendment.

The goal of the Centre creation is to assist RCC member-states and their neighbouring countries in development and implementation of agreed decisions on the transition from analogue to digital broadcasting in accordance with national plans for the introduction of digital broadcasting, including border areas between the states of Regions 1 and 3 for completion by 2015.



The Communication Administration of the Republic of Belarus was appointed coordinator of the regional initiative, for which the following working title was approved: "Establishment of an Advisory and Methodological Centre in Minsk to help RCC Member States in transition from analogue to digital TV, development of interactive multimedia application for terrestrial digital TV and radio broadcasting, training of digital TV and radio broadcasting specialists". The start of work was set for the third quarter of 2011, and work should be completed in the third quarter of 2014.

Expected results:

- Advisory and Methodical Center created, to help RCC member-states during analog to digital TV transition, development of interactive multimedia applications for terrestrial digital radio broadcasting, training of specialists in digital TV and radio broadcasting
- Recommendations in the field of digital television and radio broadcasting developed;
- Educational consultative-methodological workshop on practice of forming main goals and tasks and developing technical requirements aimed to realize the usage of uplink channel for terrestrial systems of digital television;
- Development of technical requirements for implementation of uplink channel technology in DVB-T networks;
- Development (in full) design and construction documents to the infrastructure of digital terrestrial television broadcasting for RCC member-states.

Georgia¹

Mobile Service

First mobile service in Georgia was introduced in 1997 and until 2007 there were 2 GSM mobile operators on the market: "MagtiCom" and "Geocell". In 2007 "Mobitel", a mobile service company of "VimpelCom", a global provider of telecommunication services, joined the Georgian Telecom market. In 2011 incumbent operator "Silknet" (former "United Georgian Telecom) started CDMA mobile operations in Georgia.

Since the establishment of Georgian National Communications Commission in year 2000, Commission regulates technical, economical and legal issues on interconnection between electronic communications network operators, implements access regulation, pursues market analysis, defines SMPs (Significant Market Power) and imposes relevant obligations including price cap on MTRs (Mobile Termination Rates).

In the December 2013 commission developed a special glide path for the mobile operators' MTRs which is defined in the table below:

Table 1²

| Company | from 1 st March 2014 ; incl: VAT, excise tax | from 1 st September 2014 ; incl: VAT, excise tax | from 1 st March 2015 ; incl: VAT, excise tax | from 1 st September 2015 ; incl: VAT, excise tax |
|----------------|--|---|--|---|
| "MagtiCom" Ltd | 0.06 | 0.05 | 0.04 | 0.035 |
| "Geocell" Ltd | 0.06 | 0.05 | 0.04 | 0.035 |
| "Mobitel" Ltd | 0.07 | 0.05 | 0.04 | 0.035 |

Based on the measures taken by commission, prices have significantly reduced on mobile services throughout these years.

Fixed telephony service

Along with traditional telephony, since 2008 CDMA technology became available in Georgia for fixed wireless telephony. Major companies dominating the CDMA telephony market are: – "Magticom" and "Silknet". CDMA service was very popular from the very beginning of its introduction to the market. The product has high demand mostly in regions, where there is lack of fixed wired telephony service. As of 2013, number of subscribers using CDMA fixed telephony service was 595,140 and fixed telephony (PSTN) subscribers were – 564,794.

After developing Fiber-Optic networks, companies were able to offer VoIP service, which is fast growing service in Georgia. As of April 2014, 37,864 subscribers are using VOIP service.

Number portability

In 2011 GNCC introduced mobile and fixed number portability services in Georgia. Number portability service enhanced competition between operators which resulted in better and versatile service offerings to the end-users. From 2011 until April 2014, 307,439 mobile subscribers used number portability service, while in fixed network only 4,525 subscribers used the service.

Internet

As of end of 2013 there were 541,597 subscriptions to the fixed internet service (43,6% of households). There are two dominant companies (ISPs) offering internet services on the Georgian market: "Silknet" and "Caucasus Online".

¹ Georgia withdrew from the Commonwealth of Independent States (CIS) in 2009, though geographically belongs to the CIS region.

² All prices are given in Georgian Lari

The majority of consumers are subscribed to fixed broadband services using fiber-optic and DSL technologies. Since 2010 leading ISPs are actively developing and constructing fiber-optic networks. From the third quarter of 2013 the number of fiber-optic subscribers surpassed number of DSL internet subscribers. As of April 2014, 235,389 subscribers are using Fiber-Optic internet service, and 212,114 subscribers are using DSL internet service.

In the regions where there is no fiber-optic, neither DSL (fixed broadband) service available, subscribers use mostly Wi-Fi (37,054 subscribers), HSPA/EVDO (26,706 subscribers), EVDO (13,550 subscribers), CDMA (8,861 subscribers) and WiMAX (7,826 subscribers) services. Minor number of subscribers uses Canopy (930 subscribers), Ethernet (896 subscribers) and Satellite (60 subscribers) services.

Broadcast transit

Development of internet services in Georgia allowed telecom companies to offer innovative products like new generation interactive television. The first IPTV service was introduced by JSC "Silknet" in June, 2010. By 2014 four local (Georgian) companies: "Silknet", "Caucasus online" and two small size operators are offering IPTV service to the consumers. Currently IPTV technology holds 31,8% of total broadcasting transit market. Besides basic service, IPTV consumers are able to use Value added services like: Video On Demand (VOD), school lessons program, shopping, internet etc.

Satellite broadcasting holds significant part – 32,3% of broadcasting transit. The satellite service is mostly prevalent in regions. "Magticom" is the leading company offering satellite TV service. There are 71 authorized entities providing broadcasting transit service in total.

Digital Broadcasting

Georgia is in the process of digital switchover. Based on the decision of ITU (International Telecommunication Union), for Georgia, analogue switchoff date is defined as June 17, 2015.

Ministry of Economy and Sustainable Development of Georgia, with engagement of EBRD (**European Bank for Reconstruction and Development**) and Georgian National Communication Commission, has developed "action plan and relevant recommendations for transition from analogue terrestrial TV broadcasting to digital terrestrial TV broadcasting".

On 31th March 2014, GNCC announced a contest for obtaining five licenses for the use of radio frequency spectrum for the provision of digital terrestrial tv network.

Data Collection

In 2011 GNCC developed a special data base which houses, processes and delivers (in relevant cases) the information about the legal entities operating in the electronic communications industry in Georgia. The information input takes place on monthly basis and it is submitted by the companies themselves. GNCC processes the submitted information and publishes the data which is public, also provides the public information to the legal entities and physical persons upon request.

In 2014 GNCC developed and launched a new innovative service, analytical portal: www.analytics.gncc.ge. The portal process and organizes the public information which is accessible from any device connected to the internet after the registration. The portal displays reports about the : number of subscribers of companies and/or service; company incomes, MoUs, traffic volumes by service; number of broadcasters, growth dynamics, etc.

Republic of Kazakhstan

Information and Communication Technologies are the most significant factor of competitive ability of the economy and improvement of the quality of life. Kazakhstan appreciates and supports it. According to the evaluation of the experts of the World Economic Forum (WEF) Annual Meeting 2012, Kazakhstan was included in the list of the 50 most competitive countries of the world.

To create competitive environment furthering rapid saturation of the market with high-quality and accessible services, the Republic of Kazakhstan started liberalization of telecommunication market in 2004. As a result, alternative domestic long-distance and international communication providers entered the telecommunication market of the Republic of Kazakhstan. These conditions boosted to development of competition in the

communication market. Therefore, domestic long-distance and international communication services are currently provided by 11 providers, cell connection – by 4 providers, and local telephone communication and Internet access – by over 400 providers.

The work aimed at telecommunication market liberalization is being continued through decrease of interconnect rates, implementation of mobile number portability service, provision of equal access of the communication providers to telecommunication infrastructure, rebalancing of tariffs for communication services.

At the same time, broadband access infrastructure is currently the fundament for the citizens' participation in the information society life. Considering the ICT leadership in global economy, the broadband access infrastructure is supposed to be public property, similar to auto roads and railways. Without this property digital divide between developed and developing countries will only extend.

Communication Administration of the Republic of Kazakhstan, in its turn, also set itself a task to develop broadband access services through modern technologies, such as CDMA/EVDO, FTTH/B, 3G, 4G.

So, people living in the settlements populated by more than 50 people receive telephony and broadband access services using CDMA/EVDO technology with the speed of up to 3.1 Mbit/sec.



Building of the universal Fiber to the Home (FTTH) access network was started in urban area in 2011.

Also, implementation of 3G mobile communication was implemented in Kazakhstan in 2011. Settlements populated by more than 50,000 people were covered by these networks in 2013, while people living in the settlements of over 10,000 people will be covered by this service in 2015. Realization of the project aimed at building of 4G networks was started in 2012. This is an advanced generation of mobile communication, which

is characterized by a higher speed of data transmission. 4G (LTE) network was started up in Astana and Almaty in 2012, with participation of the Head of the State.

4G (LTE) network was deployed in all regional centres in 2013. 4G (LTE) networks will be deployed in the settlements of over 50,000 people in 2014, while by 2018 4G networks will be deployed in all regional centres. Currently existing in Kazakhstan telecommunication infrastructure provides broadband access service to the population and business structures.

Also, rapid growth of the number of Internet users and mobile communication subscribers in the Republic of Kazakhstan should be noted. In the period of 2005-2013, number of Internet users grew from 4 to 71.1%; number of mobile communication subscribers grew from 35.6 to 177%.

As a result of the work aimed at more accessibility of communication services for the population and decrease of the tariffs, Kazakhstan increased its mobile communication rank in accordance with IT WEF indicator by 22 steps, from 64th place in 2012 to 42nd in 2013, being ahead of Russia, Canada, and the US. In accordance with the WEF report, Kazakhstan took 10th place among 148 countries based on the rank of number of mobile communication subscribers in 2012.

The Communication Administration of Kazakhstan continues its work aimed at implementation and development of satellite and off-the-air digital TV and radio broadcasting **within the framework of transition to digital broadcasting in the Republic of Kazakhstan**. OTAU TV satellite broadcasting network was put into operation on 18 January 2014 and covers the territory of the country by 100 %. Also, off-the-air digital television broadcasting was put into operation in 2012. The put into operation ceremony took place on 3 July 2012 with participation of the Head of the State, Mr. N.Nazarbayev, within the framework of the Industrialization Day.



As a result, half of the population of Kazakhstan, or about 8 Million families in more than 1,100 settlements, were provided with the off-the-air digital television, i.e. 51 % of population were covered. Further development of off-the-air digital broadcasting network will be developed in further steps:

2013-2014 - Organizational works and building of the network in the border districts (397 RCC), covering 72 % of population;

2014-2015 - Organizational works and building of the network in the border and internal districts (269 RCC), covering 81 % of the population;

2015-2016 - Organizational works and building of the network in the border and internal districts (222 RCC), covering 95 % of population.

At the same time, an active work is being conducted, aimed at development of **telecommunication transit potential** of the Republic of Kazakhstan.

Opening of butt joint of telecommunication networks between Kazakhstan and Turkmenistan in the lot Temirbaba – Bekdash took place on 11 May 2013, with participation of the Heads of Kazakhstan and Turkmenistan. Creation of



this butt joint of telecommunication networks gives the possibility of communication through JSC Kazakhtelecom networks on the networks of Turkmenistan, Afghanistan, Iran, as well as possibility of traffic transit for Turkmenistan using transit potential of the Republic of Kazakhstan towards Russia, Europe, and the countries of Southeast Asia. Therefore, JSC Kazakhtelecom has been evolved as Central Asian hub.

At present, a stream with the speed of about 50 Gbit/sec of the total volume of the world information streams from Europe to Asia goes through territory of Kazakhstan. This figure is planned to be increased up to 537 Gbit/sec by



2030, and up to 1750 Gbit/sec by 2050.

Development of transit potential causes the necessity to develop **datacentres**. By today, there are 24 datacentres in Kazakhstan, providing services to 14,500 clients. The datacenters are charged for 60% and the providers are ready to continue increasing of the existing capacities. The largest in Kazakhstan datacenter was opened in September of 2012 in the city of Pavlodar, within the framework of the forum on border cooperation between Russian Federation and Kazakhstan.

As concerns **e-government**, it should be noted that 5 to 10 years ago, public services were provided by each body separately and with direct contact with the servant, long queues and a lot of papers to be submitted... But in 21st century, that should be data and not people who run. Therefore, creation of e-government infrastructure was started in 2004-2009. This work was conducted by each body, creating necessary information systems and databases. And, key elements have been created: the national certifying centre, databases of private persons and legal bodies, realty register, a protected united transport environment. In parallel, a programme of negotiation of inequality was implemented, through which 10.7% of population (1.63 Million people) were taught computer literacy.



After creation of the infrastructure, a great work was done to align the work of the front office. Two entrance were chosen for the population to use state services: the portal egov.kz and centres of public service. Also, a huge work was done to analyze business processes of each state service to provide high-quality services. As a result, businessmen can register their business within several hours instead of 5 to 30 days as usually, receive any license or permit online and submit electronically any tax reporting.

Private persons, who possess no skills for online receipt of data, come to the Centre of public service and receive

free of charge digital e-signature and complete training and are consulted by connectionpoit-ax.

In general, 570 services have been converted to non-legible form. 38 Million services per year are provided electronically. This allowed to avoid submission of about 40 Million paper documents by population and business structures. Kazakhstan was ranked second place as of UN E-Government Readiness Index and 14th place as of online service index. While computer literacy of the population of Kazakhstan makes 60 % or over 10 Million people.

To develop IT business, provision of financial support of start-up projects and their acceleration, the Communication Administration of Kazakhstan in cooperation with communication service providers created ICT Development Foundation, which financed 4 start-up projects for the amount of USD 150,000 in 2013. A venture capital fund in the field of ICT will be created in 2014.



Kyrgyz Republic

ICT Infrastructure Development

The sphere of Information and Communication Technologies (ICT) is one of the central strategic priorities of the Kyrgyz Republic. It is in the focus of attention of the leadership of the country and other stakeholders, from major donors to universities and schools.



Recognition of advantages provided by development and extensive use of ICT is growing in the entire world. Informatization involves all spheres of life and activities of modern human society: science, education, culture, economic and social development, efficiency of public and civic institutions. ICT are one of the leaders in the sphere of service industry. The ICT sector ratio in gross domestic product of most of countries is growing from year to year.

Therefore, the level of the ICT development in Kyrgyzstan is of special interest, as well as analysis of main trends in this sphere. Lack of information of ICT development hampers taking adequate decisions by business circles, public and international organizations.

New wireless technologies of 3G, LTE, WiMax networks were implemented and started up step by step since 2011. Thanks to them, user can connect to the Internet using different devices, including cell phones, notebooks, netbooks, USB-modems.

Today, communication service providers of Kyrgyz Republic take complex measures aimed at enlargement of subscriber base, which form profitability of the companies through deployment of new high-quality services and advanced technologies (3G, 4G, LTE, WiMax), elaboration and implementation of new tariff plans, extension of communication coverage area.

Radio frequency spectrum allocation policy is open and transparent. The users are not restricted in use of standards (WiMax, LTE etc.) in the allocated frequency spectrum. Moreover, use of frequency spectrum use for WiFi standard is not licensed. Currently, the telecommunication services are provided by 7 providers. Due to development and extension of mobile communication service spectrum, as well as implementation of WiMax, 3G, LTE wireless technologies, the interest in the cellular communication services is growing up.

Cellular communication companies, through decreasing the tariffs and building the networks in the regions, attract more and more subscribers. The number of cellular communication subscribers reached **6,977,951**, i.e. 122.8% of the population of Kyrgyzstan are covered by cellular communication, which is by 2.6% more compared to

previous period (**6,797,852**). Today, Kyrgyz population can use services of 2 to 4 mobile communication providers at the same time.

Total number of mobile communication subscribers has exceeded the number of fixed-line telephony subscribers (**481,468**) by 14.5 times due to development and extension of range of mobile services and implementation of new wireless technologies, such as WiMax, 3G, LTE.

Number of Internet users is **3,491,500**.

Development of Telecommunication Services in Kyrgyz Republic

| | 2012 | 2013 | Growth rates | % of growth |
|--|-------------|-------------|---------------------|--------------------|
| Number of fixed-line telephony subscribers | 500,068 | 473,673 | 94.7 | -5.3 |
| Number of Internet subscribers | 2,652,404 | 3,491,500 | 131.6 | 31.6 |
| Number of cellular communication subscribers | 6,293,411 | 7,853,751 | 124.8 | 24.8 |
| Extension of fiber optic network lines (km) | 2,334.706 | 11,379.5 | 487 | 387 |
| Cable television users | 26,513 | 27,060 | 102 | 2 |
| Digital television users | 1,956 | 2,103 | 107.5 | 7.5 |

Investment volume grows due to modernization of communication networks and extension of the service coverage area, as well as due to penetration of new technologies in all spheres of Kyrgyz economy. As of 2013, investment volume made **98.4 Million USD**, that is by **11%** more compared to the same period of 2012 (**88.8 Million USD**).

Internet access services have been provided in Kyrgyz Republic within 15 years. This field is being developed very quickly, following the world trends. Market potential of these services is really huge, though it is limited by the capacities of the population.

By today, not all regions of the country are covered by the Internet access services. The majority of access points (about 72%) are concentrated in the city of Bishkek. The penetration of Internet in the population of the Republic makes **50.8%**.

The Internet access is being developed in the regions mostly through extension of the cellular communication coverage area, which makes **95.7%** of the populated territory of the country. The growth in the demand and in the mobile technology capacities can be observed everywhere, allowing to receive wireless Internet services practically in any spot of the country.

The tariffs of Internet services are getting lower. There are a lot of Internet providers in the Kyrgyzstan, who offer very attractive service plans.

Both quality and price of Internet services depend on the speed of data transmission. Each Internet provider has own service plans, taking into account technology of providing Internet services, regional clamping and other aspects. Though, today Kyrgyz providers go on to unlimited plans, that furthers decrease of tariffs. Users can choose a provider based on comparison of service plans, coverage area, additional services offered.

Analysis of the tariffs for wired Internet services in 2013 compared to 2012 shows decrease of prices by 25 % and increase of data transmission speed by 20 %. While according to analysis of the tariffs for wireless Internet services in 2013 compared to 2012 shows decrease of prices by 21 % and increase of data transmission speed by 15 %.

Development of broadband access in Kyrgyz Republic is one of key strategic areas, realized through use of radiofrequency spectrum. Main movers of broadband access market are following factors: the wish of local power bodies to deploy municipal broadband networks for improvement of efficiency of the work of different services and security of population. Providers consider WiFi to be a device for providing of broadband access services, which allows them to compete with mobile communication providers.

However in general Kyrgyz telecommunication market follows global trends, its development is behind other countries: wireless broadband access penetration is significantly lower, however it grows from year to year. The key factor here is underpopulation of many regions of the country. This factor along with low paying capacity of the population complicates implementation of any large-scale project on modern communication services. Main development of wireless broadband access networks is concentrated around big cities, such as Bishkek, Osh.

Peculiarities of Frequency Spectrum Management for Wireless Access Networks

By today, the **latitude of 2.4—2.483 GHz** is practically exhausted in the cities for building the networks outside, however it well suits for building of networks inside the buildings or outside huge settlements due to maximal transmission range (over 50 km).

The **latitude of 3.4—3.6 GHz** was recently opened for civil devices, and after acquisition of the latitude of 2.4 GHz became popular, in spite of expensiveness of the equipment and low speeds of data transmission. Though, later most part of this latitude was closed due to handing it over to the satellite group.

The **latitudes of 5.150—5.350 GHz and 5650—5920 MHz** are presently the most promising for building of distributed wireless networks. Among the advantages of this latitude there are high speeds of data transmission and huge operability of different equipment.

Today, Kyrgyz providers work with standards GSM 900/1800, CDMA, DAMPS.

Therefore, 2G networks developed in the line, which ensured providing of mass demand services, and became basis for 3G networks. Networks of the standards CDMA, D-AMPS и GSM (GPRS, EDGE), WCDMA, LTE have been already deployed and provide services of communication and data transmission. The networks are used in all regional centres and big cities of Kyrgyz Republic.

Liberalization of most of national communication markets, which enabled competition and explosive character of the development of Internet access services, caused increase of data amount circulating in global networks and made the provider revise fundamental of their development strategies as of data transmission. After put into operation of 3G and 4G networks, equipment manufacturers extended to the market personal multimedia communicators (tablet PC), which allow to use information and communication Internet resources on a full scale and, therefore, make the process of convergence of the networks and services real for the final user.

The convergence process in Kyrgyz Republic should touch first of all the companies, which will be able to introduce MIDI transmission mode with packet switching on their networks. This ensures providing of many additional services and different applications, which are not accessible for providers with traditional infrastructure, based on channel commutation. Introduction of packet switching on mobile communication networks will further development of so-called vertical markets, where following services could be demanded:

- Operation of cash machines;
- Operation of good and service sales offices;
- Operation of utility system needs;
- Remote monitoring of different actuating devices;
- Freight control;

- Operation of security functions;
- Operation of police needs, emergency aid, alerting services.

Trunking systems are currently widely used in Kyrgyz Republic by force and law enforcement structures, public security services, transport and energy companies for provision of communication between mobile communication subscribers between each other. Most of Kyrgyz providers use analogue and digital trunking systems with tracking band width of 25 kHz, 12.5 kHz; 6.25 kHz on bands of 146-174 MHz and 400-450 MHz.



Within the framework of Programme on Transition to Digital Television Broadcasting in Kyrgyz Republic, the Communication Agency allocated to OJSC Kyrgyztelecom 4 multiplexes (frequency allocation) in each zone of Kyrgyz Republic for implementation of digital terrestrial on-air broadcasting. Currently, OJSC Kyrgyztelecom is designing digital television broadcasting networks of the standard DVB-T2. Two multiplexes were allocated to private communication providers over the entire territory of Kyrgyz Republic. Also, OJSC Kyrgyztelecom elaborates a project aimed at provision of 95-percent coverage of the population by digital TV broadcasting.

Laboratory-educational complex at the Institute of Electronics and Telecommunications

The project is realized in cooperation with ITU-D in 2012.

The goal of the project is the development of human capacity building in communications and information technologies field in Kyrgyz Republic, significant improvement of the training and retaining of qualified ICT specialists. The project was launched in the Institute of Electronics and Telecommunications because the Institute is a major supplier of specialists for the ICT field.

The project includes:

- Two multimedia classrooms including 30 computers, smart board, projector and LCD display;
- SOTSBI-U hardware\software systems which makes it possible to model network, study protocols and signaling in modern communication networks. The complex consists of powerful hardware, software including e-learning resources and class with 10 computers.
- powerful hardware, software including e-learning resources and class with 10 computers.

Implementation of multimedia classes allows using modern information technologies in the educational process and active participating of students and teachers in various on-line conferences and seminars. In particular, our undergraduates have participated in on-line seminar "The Future of Radio according to results of WTDC-12. Regulatory and technical aspects" which was held by ITU in St. Petersburg (Russian Federation) on 5 to 8 of June 2012.

The hardware\software complex SOTSBI-U makes it possible to conduct visual and high-level trainings on such difficult for teaching subjects as signaling systems and protocols of telecommunication networks. Educational electronic resource of the complex which includes an electronic library, allows studying a theory, conducting laboratory works and workshops, carrying out tests of student's knowledge level etc.

Created complex actively used not only to train students but also to train specialists already working in ICT field. The hardware\software complex SOTSBI-U makes it possible to conduct visual and high-level trainings on such difficult for teaching subjects as signaling systems and protocols of telecommunication networks. Educational electronic resource of the complex which includes an electronic library, allows studying a theory, conducting laboratory works and workshops, carrying out tests of student's knowledge level etc.

Created complex actively used not only to train students but also to train specialists already working in ICT field.



In addition to training and retraining of specialists these classes have been used in a joint with the ITU «Training for trainers» project to train the teachers from rural schools and remote areas to empower them with ICT skills.

As a result of the project in 2012-2013 there were conducted lectures and workshops for students on such subjects as "Communication Networks and Switching Systems", "Info-communication technologies and communication systems", as well as advanced training courses for specialists of ICT field on "Modern signaling systems in telecommunication networks" topic block.

For the given period courses on switching systems, signaling systems and modern telecommunications systems has been conducted in multimedia classrooms and SOTSBI-U complex. 156 students attended more than 200 academic hours on the basis of the above mentioned classes.

Advanced training courses were attended by the leading specialists of communication operators of Kyrgyz Republic, in particular, specialists of Kyrgyztelekom OJSC, Alfa Telecom CJSC, as well as representatives of the State Communications Agency of Kyrgyz Republic, Ministry of Interior of Kyrgyz Republic. More than 20 leading experts improved their skills using the software package of theoretical and practical learning forms based on a client-server platform which makes it possible to create and model different technical solutions and significantly increases the level of information perceive. According to the feedback of students and participants training courses have been conducted at a very high level.

Result of this project is the possibility to conduct training courses and empowering of skills using the mechanism of informative and communicative competence development of all participants in the educational process, the introduction of interactive learning in education process and the gradual transition to a new education level based on information technologies, as well as, the possibility of distance learning for students and specialists of ICT field. Complex geographical features (mountain landlocked country, lot of remote and inaccessible areas) and the poverty of the population do not allow training in the capital sufficient amount of IT-specialists for remote regions. In order to solve this problem, Institute considers the development of distance learning as one of the main directions of its activity.

Created complex is ideal for this purpose and it would be appropriate to further expansion, addition of server hardware and development of platform for distance learning which will include the formation of e-learning resource, distance learning system, testing system.

All this would allow to introduce modern information technologies in education system and significantly develop the human capacity building in our country.

Annex 1: Letter of thanks from Mr. K.Sultanov, Minister of Transport and Communications of the Kyrgyz Republic.

Annex 2: Letter of thanks from Association of Communication Operators of the Kyrgyz Republic

Connect a School, Connect a Community in Kyrgyzstan. Training for trainers project

Within the framework of "Connect a School, Connect a Community" initiative the ITU Area Office for CIS countries in cooperation with the Institute of Electronics and Telecommunications (IET) under the Kyrgyz State Technical

University named after I.Razzakov, has launched the «Training for trainers» project in Kyrgyzstan to train the teachers from rural and remote areas to empower them with ICT skills.

Nowadays information technologies became an integral part of our life. A rapid growth and development of new technologies creates the problem of qualified specialists' shortage, training of which should begin with the schools.

The aim of this project is to increase the accessibility to information and communication technologies, modern information technologies training and improve the practical skills of rural school teachers.

The main objectives of the project are training the rural school teachers the basic skills of working with Microsoft Office applications, software for e-book and educational/methodological materials development and information resources of Internet. The content of the program is oriented to improve the teachers' skills on using the Internet and other office technologies in their professional activities and transfer their knowledge and skills to the students. In 2012, five ICT advanced training courses were organized to 60 rural school teachers (14 men and 46 women) at the educational laboratory complex of the IET which was created in collaboration with ITU. The program included studying the Ubuntu and Windows OS, and MS Office software package as well as electronic textbooks developing software including Internet technologies

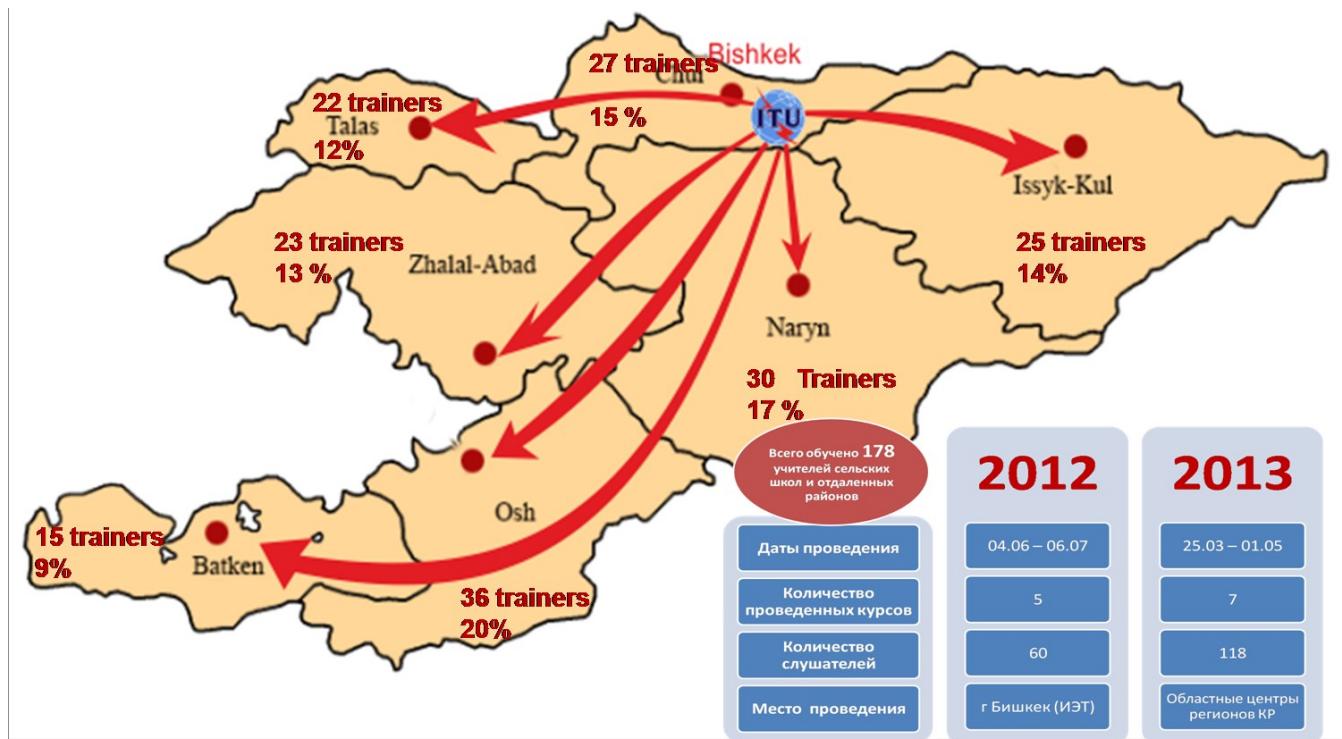
The classes used handouts, presentations, audio and video tutorials. Courses conducted by highly qualified teachers in information and communication technologies. Two times a day a coffee-breaks were arranged, when participants informally discussed the course of studies, sharing their ideas and experience followed with questions and suggestions.



Considering the importance and necessity for such training courses, ITU in cooperation with IET, and with the support of the Ministry of Education and Science and the Ministry of Transport and Communications of the Kyrgyz Republic continue in 2013 the «Training for trainers» project. Due to the fact that not everyone willing to participate can come to Bishkek, seven on-site training courses were organized for 118 rural school teachers (46 men and 72 women) in remote areas at each of the regional centers (cities). The format of the courses and the content of the program have been modified in accordance with the proposals and requests of the participants. Syllabus for 2013 includes the study of the advanced features of Windows OS, network technologies, MS Office software packages and software for e-books & electronic textbook development, as well as modern information and communication technologies and the Internet.

Totally, 12 training courses were organized in last two years for 178 rural school teachers from different regions and rural schools in remote areas of the Kyrgyz Republic, including 60 men and 118 women. Participants had an opportunity to expand their knowledge in the field of information and communication technologies.

Fig.1. Geography of the training courses



On Fig. 1 a geography of organized training courses and the number of teachers trained in each region of Kyrgyzstan is shown.



Based on the course participants' survey results, official references, informal discussions during the coffee breaks, the following conclusions were drawn:

1. A shortage and necessity to conduct training courses on information and communication technologies, to use in the educational process of the school were identified;
2. The training courses helped to improve the skills of the teachers;
3. Mastery of modern information and communication technologies and techniques helped participants in solving everyday professional issues;
4. The training courses helped to exchange experiences between schools;
5. The courses hosted at the IET, helped to restore the relations between schools and the university, showing the potential of the university and its requirements for schools;
6. On-site courses in regional sites helped to cover a wider range of teachers from the villages, as well as, made it possible to save the cost for travelling and accommodation of participants.

At the end of the courses the following suggestions were made by the participants:

1. It is advisable to continue conducting such courses for the same participants, but with more advanced program at the IET premises;
2. It is necessary to create a «Training for trainers» web-portal to strengthen the contacts between the participants and the organizers of the courses with the view of transition in future to e-learning;
3. Organize the courses for teaching centers in charge of rural schools;

4. Think about organizing competitions among participants of the advanced-courses as the best design developer with incentive prizes and announcement on the web portal;
5. Organize the Forum of the best participants in the Issyk-Kul lake.

Videoconferencing system in Kyrgyz Republic

In the framework of the Regional Initiatives for CIS countries approved during the World Telecommunications Development Conference (Hyderabad, 2010), a project of videoconferencing system for RCC countries was developed with the center in ITU Area office for CIS in Moscow.

Information and communication technologies have significantly affected our lifestyle, a new communication facilities appear making it possible to transmit not only voice and different types of messages, but also to see the interlocutor in a real time such as videoconferencing system. Not all countries able to participate in every ITU event due to the limited possibilities and using the new technologies enable them to participate remotely and save time and money.

The goal of the videoconferencing project is to provide a good alternative to the physical meetings that enables to hold a meeting or a workshop to online problem solving on different issues.

The videoconferencing system in Kyrgyz Republic is a part of a videoconferencing system for RCC countries. With the view of efficient implementation of the project, by the Ministry of Transport and Communications of the Kyrgyz Republic it was decided to install the videoconferencing hardware at the Institute of Electronics and Telecommunications under the KSTU named after I.Razzakov.

A videoconferencing system was launched in Kyrgyzstan on February 2013. On 13th of February a first session in test mode was held and 4 countries connected to the videoconference. During this session all possible problems were worked out that may appear during the videoconferencing.

Since this short period of time, a videoconferencing system showed a high efficiency and ability to cope with the immediate tasks. The events conducted since launching the project are the evidence of that.

Thus, last February with this system a videoconference session was organized for some RCC countries to discuss the issues on preparations to the Regional Preparatory Meeting in CIS for World Telecommunications Development Conference (WTDC-14) which was held in Chisinau, Republic of Moldova.

On 6th of March 2013 a digital broadcasting online lecture was held through the videoconference when four countries participated (Armenia, Kyrgyzstan, Moldova, Russia). From the Kyrgyz side 23 specialists participated including the deputy minister of transport and communications of Kyrgyz Republic, representatives of the State Communications Agency under the Government of Kyrgyz Republic, Kyrgyztelecom OJSC, Institute of Electronics and Telecommunications.

During the online lecture, participants expressed the view of necessity of such trainings. In particular, due to the ongoing transition process to the digital broadcasting, this issue was the most topical and it was proposed to organize an online workshop to discuss the problems of the transition to digital broadcasting with wider range of participants.

Also on 18th April 2013 a conference bridge between Bishkek and Chisinau was organized when a Ministry of Information Technology and Communications of the Republic of Moldova introduced its "Digital Moldova 2020" Strategy and a project of electronic transformation of the state administration.

From the Kyrgyz side in the conference bridge a vice-prime minister Mr. T.Sarpashev, deputy chair of the economic trade development committee of the Parliament Mr. A.Dosaliev, director of the State Communications Agency under the Government of Kyrgyz Republic Mr. A.Kadyrkulov, representatives of the Government machinery, Ministry of transport and communications, UNDP. The Secretary-General of ITU Dr. H.Toure participated in this conference bridge session as well.

Within the framework of the ITU Center of Excellence for CIS, on 16 to 17 of May 2013 in the ITU Area office for the CIS a regional training "Complex issues of implementation and development of digital TV broadcasting" was held by means of videoconferencing. The issues of terrestrial digital broadcasting services planning, organizational aspects, experience in digital broadcasting implementation and many other were discussed and attended by the leading specialists in digital broadcasting field.

11 CIS countries and Georgia participated in this workshop and 30 participants were from Kyrgyz side. The participants representing Ministry of transport and communications, State communications agency under the Government of Kyrgyz Republic, Kyrgyztelecom OJSC, mobile operators, media groups and Institute of Electronics and communication had an opportunity to share the experience between the countries and discuss the main problems and issues that countries face during the transition to the digital broadcasting.



Since this short period of time, a videoconferencing system showed a high efficiency and ability to provide high quality of voice and video transmission that enables to organize distant meetings in a real time basis. Therefore, taking into account the proposals of the participants, a number of workshops and advanced training courses are planned by means of videoconferencing on different topics such as NGN, Information Security, Digital TV.

Thus, the videoconferencing system installed with the support of ITU, allows Kyrgyzstan not only participate remotely in ITU events, but also significantly contribute to increase the human capacity in our country in the field of telecommunications.

Republic of Moldova

Ever since the membership of the Republic of Moldova in the ITU, our country benefited from a sustainable support through various programs, projects, expertise in the field of information technology and communications that contributed significantly to the development of the country's ICT sector and promoted the image of the ICT sector of the Republic of Moldova at the international level.

In the course of the last five years, Chișinău hosted a number of ITU events of international significance, such as:

- ITU-D Regional Development Forum for Europe and CIS Regions "Next Generation Networks (NGN) and Broadband: opportunities and challenges", August 24-26, 2009;
- Regional Development Forum for Europe and CIS Regions "Next Generation Networks (NGN) and Broadband", May 5-7, 2010;
- ITU Cross Regional Forum for Europe, CIS and Asia-Pacific Regions on Broadband Access, October 4-6, 2011;
- ITU Forum on ICT Development Policy and Strategy in the CIS Region and Regulatory Issues, May 22-23, 2012);
- ITU Regional Seminar "Transition from IPv4 to IPv6: regulatory issues", May 24-25, 2012;
- ITU Regional Forum for Communications development in the CIS Region, February 18, 2013, as well as other numerous seminars and workshops, carried out in Chișinău with the purpose of the ICT community training in our country and promoting exchange of experience on technological trends and evolution of the legal framework of policies in this field.

At the same time, the International Telecommunication Union supported multiple participations at international events of the experts from the Republic of Moldova at the representation level and at continuous training events of ICT specialists from the Republic of Moldova.

In the period of February 19-21, 2013, the Regional Preparatory Meeting for the CIS Region for the World Telecommunication Development Conference 2014 took place for the first time in Chișinău. This was the first of those six international meetings held worldwide on this topic and was carried out, for the first time for our country, as well, in paperless regime.

The cooperation of the Republic of Moldova with ITU is intense and beneficial for the ICT sector of the country. The Ministry of Information Technology and Communications (MITC), with the ITU support, launched, on September 25, 2008, the "Pilot project of broadband access development by creating public access points to Internet in rural areas of the Republic of Moldova" (PAPI). This project offered the possibility to open 48 access points equipped with modern technology enabling Internet access in rural areas (the project value, including the contribution of the Republic of Moldova, amounted to USD 500 thousand). Through these access points, the population from the rural areas included in this pilot project has access to Internet, electronic mail, Skype, e-Services and e-Government, fax, printing, scanning, multiplication services, etc. The service of personalized postal stamps was also created and launched within the PAPI project. This service has an information system and a specialized printer. The citizens may benefit from this service within the PAPI points, by ordering personalized stamps via Internet. The project implementation period is of 2 years (2008-2010). The Republic of Moldova financial contribution to the project is of 105 000 USD, and the ITU's contribution amounts 114 143 CHF.



Based on technical assistance agreement between the Government and the United Nations Development Programme dated 2 October 1992, and by the Governmental Decision nr.1487 from 26 of December 2008, the PAPI project was included in the list of technical assistance projects in progress, which falls under international treaties terms, pursuant to income tax exemption, excise duty and VAT exemption at the imported equipment meant for the project needs.

Considering the fact, that about 61.5%³ of population of the Republic of Moldova is living in rural areas with limited access to the information

technologies and, first of all, to Internet resources, this project has as a main objective of enabling access to Internet in rural areas of the Republic of Moldova, by creating public access points (PAPI).

This pilot project will serve as a model for developing similar models all over the country. The consultancy services established in the public access points will increase the possibility for citizens to benefit from computer based public services, educational services, etc. Public access points were established depending on local conditions: within existing postal offices premises, or, as alternative, in libraries and/or schools. The set of provided services includes information services, Internet access, email, scanning and printing documents, working with electronic documents, IP phone/fax and other means of electronic communications and services. Also, on the base of these PAPIs, it was scheduled to organize the training of the population in using computers (face-to-face & online).



Services

The project provides the implementation of ICT infrastructure using broadband facilities in rural areas of the above mentioned regions, reparation of the placements, procurement and installation of required hardware & software, access to Internet for population, email, IP telephony, rendering public electronic services, and training of population in PC and ICT use (directly and online).

³ Source: National Bureau of Statistics, 2010 Census data

During the official visit of Dr. Hamadoun I. Touré, the ITU Secretary-General, to the Republic of Moldova on May 6, 2010, a modern PC laboratory was inaugurated as a donation from the ITU to the Technical University of Moldova located in Chișinău. The eminent guest was awarded the honorary title “Doctor Honoris Causa” within the ceremony hosted within the premises of the Technical University. In the course of the same visit, Dr. Touré also donated a number of PCs and supporting equipment for the opening of a modern PC Laboratory within the boarding school from Vâsoca village, district of Soroca.



Within the project has been designed and launched the Personalized postage stamps service. The service is equipped with an informational system and a specialized printer for this purpose. Customers can benefit from this service through the PAPI points, ordering customized stamps through the Internet. As an example, embedding an envelope with Personalized postal stamp (Mr. Hamadoun Toure, ITU Secretary general), launched on the occasion of the ITU Regional Development Forum for the Europe and CIS Region. Chisinau, Moldova, 24-26 August 2009.

Equipment

One PAPI is equipped with 2-4 computers, printer, scanner, webcams etc. The cost of the equipment for one PAPI is about USD 4400.

Connectivity

Broadband connection (MaxDSL) was made by the means of J.S.C. "Moldtelecom" (minimum Speed access down/up: 2 Mbps per one PAPI)⁴.

Prices for services (approximately):

Price for consumer for one hour work – USD 0,6.

Printing, scanning, photocopying – USD 0,17 per page.

Use of computer with webcam and/or use of IP telephony – USD 1 per hour.

Training Courses for population – free of charge. After preliminary analysis of the market potential it is expected to generate acquire about USD 1000-1200 per month per each PAPI. These financial funds will be enough to cover salaries for personnel and maintain the further activity of PAPIs.

Project objectives and main achievements

The objective of the project was to enable access to Internet in selected (pilot) rural areas of the Republic of Moldova by creating public access points with appropriate communications and broadband technology.

Main achievements

- Broadband network developed in identified areas;
- Enabling environment created to facilitate the use of e-governance, e-commerce, e-transaction and e-signature;
- Increase of citizens' and business communities' awareness on e-applications;
- Lessons learned for the dissemination of positive results all over the rural areas of the Republic of Moldova.

Project activities

At the start of the project implementation the priorities were outlined and an agreement regarding an implementation plan was achieved. The identification of focal points to follow-up the project implementation and the responsibilities of different stakeholders were also confirmed.

The following steps and activities have been realized:

⁴ “Moldtelecom” MaxDSL packages: <http://www.moldtelecom.md/services/internet/maxdsl/en.html#Sub2>

- The optimal components for equipping public access points to Internet with technical equipment and software were identified.
- The materials for the tender of project realization were prepared.
The requirements for tender materials were as follows:
 - *Provision of access to Internet for the population from rural areas;*
 - *Provision of the communication equipment and facilities, such as computers, printers, scanners, overhead projectors, fax machines, phones, and others;*
 - *Provision of rooms required for PAPI nodes implementation;*
- The incoming proposals were evaluated, and the State Enterprise “Posta Moldovei” was selected to execute the works for the realization of the project:
 - *the set of documents for the establishment and functioning of the PAPI was developed;*
 - *the set of instructions for the personnel was developed;*
 - *the set of instructions for rendering e-services within the public access points using broadband technologies was developed;*
 - *training of the personnel;*
 - *the works on creating public access points using broadband technologies were carried out (placement, preventive maintenance, specification, delivery, installation, putting into operations, maintenance);*
 - *the equipment for the public access points to Internet was certified;*
 - *the programs and the applications for the training of the population in rural areas in using PC and Internet at the user level were developed;*
 - *training of trainers was provided;*
 - *implementation of programs and applications for training the population from rural areas;*
 - *elaboration of the set of instructions for rendering public e-services;*
 - *implementation of the set of public e-services using broadband technologies;*
 - *the public access points were opened, services started being rendered:*
June 2009 – the first stage of implementation in 10 localities;
February 2010 – the second stage of implementation in 14 localities;
June 2011 – third stage of implementation in the 5 localities;
July 2012 – fourth stage of implementation in 14 localities.

Results and impact

Candidate regions were selected taking into account their geographical and administrative position, population structure and rural distribution, economic growth, dynamics, penetration of Internet and telecom services, other national and international projects priorities and aspects, and the possibility to dislocate the PAPI's in postal offices located in the concerned rural areas.

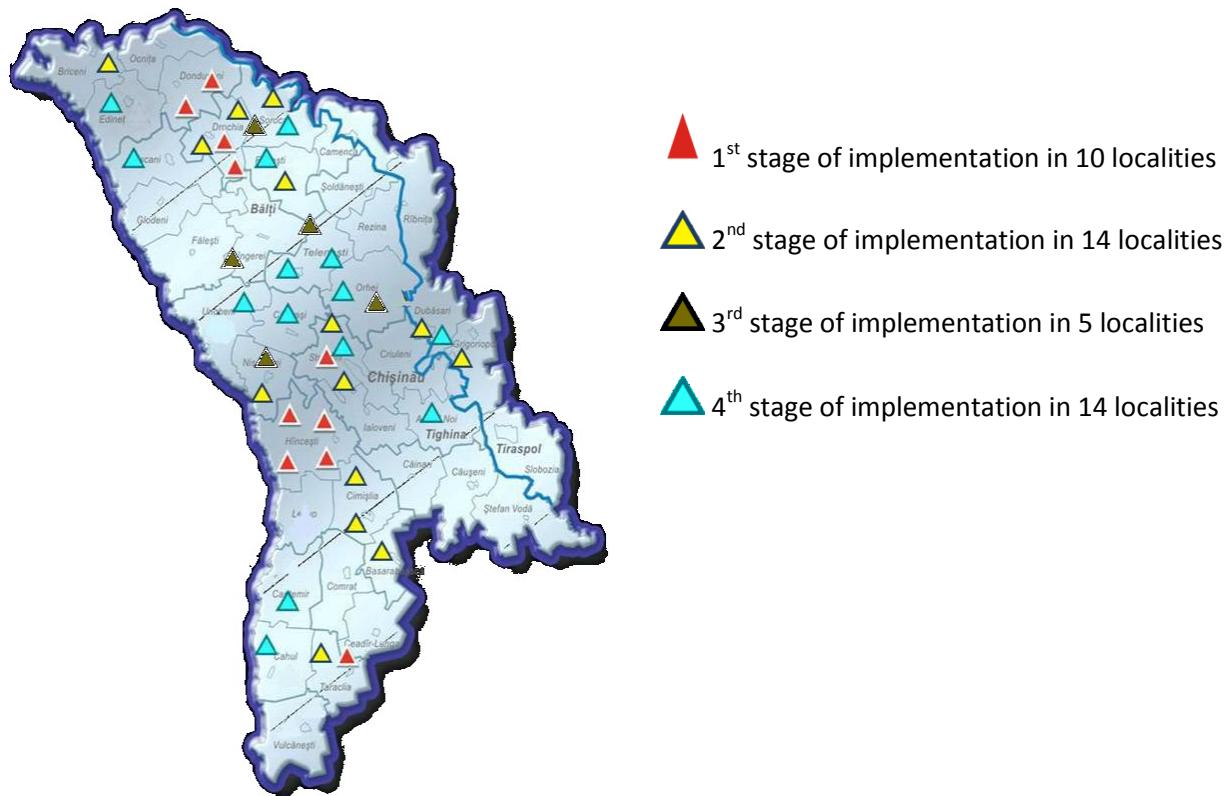
S.E. “Posta Moldovei” implemented the ITU Project creating 43 Internet access points with 134 seats within 43 post offices in rural areas of the Republic of Moldova in 2008-2012. Around 150 thousand of inhabitants leave in those 43 villages and can benefit from the access to the services provided by the internet access points.

Conclusions

1. The project was completed successfully and approximately 150 000 residents of rural areas of the Republic of Moldova in 43 rural settlements have access to the Internet at speeds up to 2 Mbps.
2. The cooperation of the Ministry of Information Technologies and Communications of the Republic of Moldova and the ITU with the additional collaboration with Moldtelecom (providing high-speed Internet), Moldova Post (providing facilities and staff in rural post offices) and local government (local authorities and people's interest) was successful.

3. At the opening of the PAPI to finalize the project, some villages were visited by General Secretary Dr. Hamadoun Touré (May 2010, *Lozova*), Director (2007-2010) BDT ITU Mr. Sami Al-Basheer Al-Morshid (August 2010, *Ciuciuleni*). They highly appreciated the project implementation process.
 4. Project success primarily depended on the interest of the Member of the Union and Communication Administration of the Republic of Moldova.

The map of the Republic of Moldova indicating the localities where the PAPI points have been created (PAPI 1-4):



We express gratitude to the Ministry of Information Technologies and Communications of the Republic of Moldova, personally to Minister Pavel Filip and to all our partners during the project.

Russian Federation

By the fall of year 2010, the government program of the Russian Federation "Information Society (2011 - 2020 years)" was launched. Total amount of financing from federal budget is more than 3,5 billion USD every year. This includes almost all expenditures made by Ministry of Telecom and Mass Communications of the Russian Federation.

Number of fixed (wired) broadband Internet subscribers reached 17.4 million in the Russian Federation in 2011, of which: 7.7 million are FTTH/FTTB subscriptions and 8 million are using xDSL connection. Much more than a half - 12.1 millions of subscribers are using Internet with speed more than 2 Mbit/s.

The increase in numbers of active mobile broadband subscriptions in 2011 is more significant - 20 million of subscribers (68 mil. in 2011, 49 mil. in 2010). The total penetration of wireless broadband in Russia is 48 subscriptions per 100 inhabitants. Number of mobile-cellular subscriptions for last three years increased by 57 million, and now there are 179.1 subscriptions per 100 inhabitants. It is expected that by the fall of this year the number of mobile-cellular subscriptions will increase to 262 million.

Number of mobile-cellular subscriptions increased in Russia from 199,522,000 in 2009 to 256,116,581 in 2011. While active mobile broadband subscriptions increased from 848,000 in 2009 to 68,394,682 in 2011. Number of subscribers per 100 persons increased from 141,1 in 2009 to 180 in 2011. Percentage of Internet users in population of Russia increased from 27 percent in 2009 to 49 percent in 2011. Number of fixed (wired)-broadband Internet subscriptions increased from 9,280,000 in 2009 to 17,423,113 in 2011. Number of International Internet bandwidth several times increased in 2011. Percentage of households with access to the Internet increased from 29% in 2009 to 48,4% in 2011. Proportion of organizations using a broadband Internet access, the total number of organizations, business sector, social services, public administration and local self-government, increased from 39,2% in 2009 to 47% in 2011.

ICT Development Index (ITU), rank 80 in 2009 and 77 in 2011. E-Government Development Index (UN Department of Economic and Social Affairs), rank 60 in 2009 and 27 in 2011.

Republic of Tajikistan

Telecommunications are developing rapidly in the Republic of Tajikistan, being one of the most significant industry sectors, which make direct effect on economy growth in the Republic. Communication networks significantly extended through implementation of new technologies. This caused increase by more than twice of the number of communication providers and a broader use of ICT in all spheres of the country life-sustaining activities. At the same time, implementation of new technologies caused necessity to search for new forms of the ICT sector regulation.

Currently, redistribution of the service offers could be observed: the share of traditional sector, in particular of fixed-line telephony , is getting lower, while the share of high-technology and high-margin services is growing. By present moment, modernization of the most of telephone networks has been completed.

The situation in the ICT sector is characterized with the process of the telecommunication market liberalization and uprise of alternative providers of domestic long-distance and international communication. Electrical communication and telematic communication services are provided by more the 750 licence holders. 117 licences were granted for provision of cellular communication of different standards (GSM, CDMA 20001X, CDMA 450, 3G-UMTS).

By present time, almost all communication enterprises have been handed over to private ownership. Also, the number of private persons who wish to occupy with this kind of business is growing from year to year. 1312 business units in the field of communications are acting in the Republic of Tajikistan, but OJSC Tachiktelecom is universally recognized service provider, which possesses modern technologies in the telecommunication infrastructure. The newly created transport network of the Republic of Tajikistan allowed the country to connect with the "near abroad" countries, and this certainly enhances statute of the country at the international level.

The ICT activities are licensed in accordance with the Provision on Peculiarities of Licence Granting of Certain Kinds of Activities based on individual and standard licenses and are divided in 17 categories, including the following main categories:

- Cellular communication;
- Telematic services (including IP telephony) ;
- Telematic services provided through the channels of the providers (including IP) ;
- Telematic services (excluding IP) provided through the channels of the communication providers;
- International communication;
- Domestic long distance communication;
- Local (fixed-line) telephony;
- Designing and building of communication facilities.

It should be noted that wireless WiMax Internet is functioning in Tajikistan, NGN networks are also being implemented, and quickly repaid wireless systems are being actively developed. Public Internet access centres are being created in Tajikistan, which are accelerators of the country internetization.

Total number of PC is now over 100,000, i.e. 3.4 PC per 100 persons.

Development of information resources is very dynamic. A lot of new websites emerge, however most of them contain social and political and mass information. Over 7,000 websites have been opened under domain .tj. The density of websites in the Internet makes 2.04 per 100 people.

The Government of the Republic takes measures aimed at development of ICT. In particular, a number of legal documents were passed aimed at implementation of ICT: Programme for Information Security of the Republic of Tajikistan; strategy on Information and Communication Technologies for Development of the Republic of Tajikistan, Programme on Development and Implementation of Information and Communication Technologies in the Republic of Tajikistan, Programme on Use and Development of Information Technologies in Tajik Language. Also, Council for Information and Communication Technologies is acting in the Republic of Tajikistan.

Use of ICT is a necessary condition for development of the country today. Some state administration bodies use the simplest and cheapest way of telecommunication interaction with computers – through modems and commutated telephone channels. Though, these technologies do not allow to satisfactorily solve topical problems of information interaction of the bodies of different level, which need a higher level of telecommunication services . In all ministries of the Republic e-resources are being created (or are already in force). Unfortunately, these resources function in the interest of certain structures and solve only the structure-related problems.

The number of cellular communication subscribers made about 8,300,000 as of 1 January 2014, while the number of fixed-line telephony – about 450,000. The latter service, which is cheaper and more accessible, is still much-in-demand in the conditions of the Tajikistan's terrain.

The existing competition makes communication providers enlarge communication service coverage, so the number of base stations grows up, as well as radio relay links, and cellular communication penetrates in the most remote areas of the Republic.

The level of Internet penetration is getting a key factor of economic and social development of the county. Internet connection and email services are provided by 150 Internet providers. The number of active Internet users has exceeded 2,000,000 people, including mobile Internet subscribers. The number of potential Internet users, who enter the Internet from time to time, including students, university professors, as well as taking into account the number of Internet cards sold by providers, as well as taking into account the number of Internet cards sold by providers and visits of the public Internet access centres, exceeded 1,800,000.

Ukraine

ICT services make 20 percent of the total amount of services in **Ukraine** and rank number 3 as for income level compared to other economies. The volume of ICT services increased from 6.6 billion USD in 2009 to almost 7.9 billion USD in 2012, or by 19.2% within the period of 2009-2012. Communication services, which make lion's share of all ICT services provided in Ukraine, brought, according to preliminary data, incomes of more than 5.9 billion USD in 2012. This is by 3.8 % more than in 2011, by 9.6 % and 10.1% more than in 2010 and 2009 respectively.

The structure of communication market incomes has not been changed within the 4 years. Incomes from mobile communication services have still the biggest ratio among all communication services and made 60.6% of total incomes from the ICT services in 2012. The ratio of the second biggest segment of the communication market - the fixed-line telephony – decreased from 19% in 2009 to 16.2% in 2012 due to the Internet market growth, which is a worldwide trend.

The Internet connection ratio in the total volume of communication services increased from 7.3% in 2009 to 10.1% in 2012.

The total amount of investments in mobile communication made over 3.8 billion USD in 2009-2012. Most of the funds were invested in the broadband Internet development, including the wireless Internet; increasing network capacity, first of all in the regions with an active growth of subscriber base; implementation of IT-systems for development of new services and technologies; network digitization and digital TV implementation.

According to preliminary data, Ukraine spent over 917.4 million USD for ICT development in 2012, of which 851.1 million USD – for development of communication industry. Main ICT indicators are expected to be in Ukraine in 2012 as following:

- Mobile communication penetration – 130% (compared to 119.9% in 2009);
- Fixed-line communication penetration – 27.3% (compared to 28.2% in 2009);
- Broadband access to the Internet – 7.9% (compared to – 4.9% in 2009);
- Coverage of Ukrainian population with analogue television - 95%, coverage with radiobroadcasting - 87%;
- Cable television penetration – 8.1% (compared to 7.6% in 2009).

Digital broadcasting is being effected through 673 transmission units and 4 digital broadcasting multiplexes (MX 1, MX 2, MX 3 и MX 5), which, along with acting analogue television transmission units, enable over 90-percent covering of Ukrainian territory. Some more multiplexes are planned to be implemented by 1 January 2016, after deactivating analogue television transmission units. The state budget foresaw about 350 million UAH (approximately 43,050,000 USD) funding to provide socially unprotected groups of population with terminal stations to receive digital broadcasting signals (set top boxes). The social package determined by the state contains 32 channels. By today, 270,000 TV tuners have been purchased for households by the state.

In Ukraine, national Cyrillic top-level domain ".УКР" has started functioning in 2013. Also, technical specifications have been set for creation/modernization of official websites relating to access for disabled users.

Republic of Uzbekistan

The long-term strategy of social and economic development of the Republic of Uzbekistan is aimed at creation of the conditions for forming of information society. It should be noted, that Uzbekistan has gone a long way to creation of the national information and telecommunication infrastructure.

Initially, the task was set in the Concept of Informatization of the Republic of Uzbekistan, approved by the Cabinet of Ministers on 2 December 1994. Main trends of the ICT development were identified by the Decree of the President of the Republic dated 30 May 2002, also the Coordination Council was created on development of computerization and information and communication technologies, and customs and tax exemptions were set, and measures to promote business activity were planned.

By present moment, following programmes have been implemented in the Republic of Uzbekistan:

National Programme of Reconstruction and Development of Telecommunication Network of the Republic of Uzbekistan for the period to 2010, aimed at creation, on the basis of digital transmission systems and digital commutation equipment, of a national telecommunication network for a deep integration in the world telecommunication system and meeting the demands in the services of the economy and the population;

Programme of Modernization and Development of National Data Transmission Network of the Republic of Uzbekistan for the period of 1999-2003, which determined main organizational and technical measures of modernization and development of the national data transmission network and its extension in the cities of Tashkent and Nukus;

Programme of Development of Computerization and Information and Communication Technologies for 2002-2010, aimed at meeting information demands of the society and increase of competitive ability of the national economy, which foresaw:

- Acceleration of the development of existing telecommunication infrastructure and digitalization of the networks, as well as development of mobile communication networks;
- Development of the national segment of the Internet;
- Creation of the conditions to promote the development of computerization, national industry and export of software products;
- Human capacity building in ICT;
- Development of competitive environment in the field of ICT;
- Adoption of legal regulations on standardization and certification of information resources.

A regulatory system has been created in Uzbekistan. Some works are being done aimed at implementation of inter-institutional e-document management, e-signature, e-trade.

The State Committee of Communication, Informatization and Telecommunication Technologies is appointed as a plenipotentiary body in the field of use of electronic digital signature. The Committee structure includes Centre of Development and Implementation of Computer and Information Technologies (UZINFOCOM) and Centre of Scientific and Technical and Market Research (UNICON.UZ), which are responsible for elaboration of draft programmes and legislative acts in the field of ICT development, provision of information and consultancy services.

Aimed at further development of ICT, by the decree of the President of the Republic of Uzbekistan dated 8 July 2005 On Additional Measures for Further Development of Information and Communication Technologies, following documents were approved:

- Benchmarks of the development of telecommunication networks, data transmission, and use of information and communication technologies to 2010;
- Programme of ICT use in the activities of state administration bodies and governmental authorities at the local level to 2010;
- Programme of formation and development of the National Information and Search System.

By the Decision of the President of the Republic of Uzbekistan Of the Measures for Further Implementation and Development of the Modern Information and Communication Technologies dated 21 March 2012, the Programme of Further Implementation and Development of Information and Communication Technologies was approved for 2012-2014.

One of the key measures foreseen by the Programme is improvement of regulatory and legal framework, which regulates use of special software programmes in state bodies, development of coordinated yearly institutional plans of ICT implementation and development, further development of telecommunication infrastructure of broadband access for the population, upgrade qualification and certification of specialists in the field of ICT through special trainings, including those for information security and foreign languages, protection of state information resources and systems, considering the security requirements.

According to the President of the Republic and the Cabinet, one of the most advantageous tasks in the field of ICT development is accelerated elaboration of the concept of the programme on e-government, including management processes and providing of services to business and the citizens, creation of the national system, integrating inter-institutional information systems.

Currently, over 600 interactive and information public services are provided to business and citizens through the websites of public authorities and the governmental portal. A united portal of interactive public services aimed at provision of services on the principle one stop shop was launched in 2013. Over 30 projects were implemented as efficient elements of e-government in different spheres.

Implementation of e-government system will exclude the necessity of direct contact between the citizens and public officer. The elements of e-government programme are being implemented at a fast pace. The criteria of evaluation of the development of e-government are based on international experience and, in particular, on the UN e-Government Readiness Index.

The e-government system in Uzbekistan should provide a united technology approach to forming of the e-government, in particular a united mechanism of designing, elaboration and integration of information systems,

information resources and databases used in the state bodies, re-organization of functional and operational processes of the activities of the government institutions.

The Agency of Communication and Informatization of the Republic of Uzbekistan was reorganized into State Committee of Communication, Informatization and Telecommunication Technologies of the Republic of Uzbekistan in 2012.

By the Decision of the Cabinet of Ministers, Provisions of the Fund of ICT Development was approved in 2012, authorizing the Fund to finance the priority and socially important projects in the field of ICT. In particular, the Fund is aimed at financing elaboration and support of the projects for implementation of new services in the field of ICT, data transmission, broadband access to national and international information networks over the entire territory of the Republic.

Complex Programme of the Development of the National Information and Communication System for 2013-2020 was adopted by the Decision of the Government in June 2013, which is aimed at further development and implementation of ICT and accelerated development of information resources, systems and networks, as well as encouragement of widening the range of services provided to business and citizens of Uzbekistan. The Programme should ensure efficiency of state management system, accessibility of innovation and information and communication infrastructure, creation of information environment for social and economic and cultural development of the country, as well as development of information space.

By the Decision of the President, creation of the Centre of E-Government System Development and Cyber Security Centre on the basis of Computer Incident Response Service of the Centre of Computer and Information Technologies Center Uzinfocom in the structure of the State Committee of Communication, Informatization and Telecommunication Technologies.

By the Decision of the President, Republican Commission for Coordination of the Implementation of the Complex Programme was created under the chairmanship f the Prime Minister of Uzbekistan and administration order of the Commission was approved.

The Government of the Republic of Uzbekistan adopted the resolution Of the Measures on Organization of the Activities of the Centre of E-Government Development System and the Centre of Cyber Security under the State Committee of Communication, Informatization and Telecommunication Technologies of the Republic of Uzbekistan on 16 September 2013.

Development of Digital TV Broadcasting

In accordance with the State Programme on Technical and Technological Transition to Digital TV Broadcasting in the Republic of Uzbekistan adopted by the Resolution of the President dated 17 April 2012, development and extension of the digital television broadcasting network will be realized in two stages.

First stage: Development of terrestrial network of digital broadcasting of the Republic of Uzbekistan. Extension of digital TV broadcasting network in huge and under-populated settlements with installation of 66 new digital transmission units of different capacity. The 1st stage implementation period is 2013-2015. As a result, 98% of the population will be covered by digital TV broadcasting.

Second stage: Development of Digital TV broadcasting in remote and difficult of reach settlements of the Republic of Uzbekistan. It is planned to extend digital TV broadcasting to remote and difficult of reach settlements (over 300 low powered radiotelevision stations). The 2nd stage implementation period is 2016-2017. As a result, 100% of the population will be covered by digital TV broadcasting.

20 digital transmission units in DVB-T format with MPEG-4 wavelet manufactured by NEC and Rodhe&Schwarz were brought into action in Uzbekistan in 2008. In accordance with the Programme, 45 % of the population of Uzbekistan are covered by digital TV broadcasting by this time.

Regulatory Environment:

Following laws were elaborated in Uzbekistan relating to information and communication technologies and cyber security:

Of Protection of State Secrets, dated 7 May 1993 № 848-XII;

Of Communication, dated 13 January 1992 № 512-XII;

Of Telecommunications, dated 20 August 1999 № 822- I;
Of Principles and Guarantees of Freedom of Information, dated 12 December 2002 N 439-II;
Of Informatization, dated 11 December 2003 № 560-II;
Of Electronic Digital Signature, dated 11 December 2003 № 562-II;
Of Electronic Document Management, dated 29 Aril 2004 № 611-II;
Of Electronic Commerce, dated 29 Aril 2004 № 613-II;
Of Electronic Payments, dated 16 December 2005 № 3PY-13;
Of Protection of Information in Automated Bank System, dated 4 Aril 2006 N 3PY-30;
Of Postal Communication, dated 22 April 2009 № 3PY-211
Of Copyright and Associated Rights dated 15 December 2000 № 175-II;
Of Legal Protection of ECM Programmes and Databases, dated 6 May 1994 № 1060-XII;
Of Legal Protection of IC Chip Topologies, dated 12 May 2001 г. №218-II;
Of licensing of Certain Types of Activities, dated 25 May 2000 №71-II;
Of Standardization, dated 28 December N 1002-XII.

Currently, considering the experience of advanced countries, the State Committee of Communication, Informatization and Telecommunication Technologies in cooperation with other stakeholders a draft law of e-government is being elaborated, while the Central Bank is elaborating a new edition of the law of e-commerce.

Cooperation with Private Sector

Russian Federation

OJSC INTELLECT TELECOM



OJSC Intellect Telecom activities are aimed at solving the problem of creation of low-cost energy saving technology of wireless mobile communication for rural, remote and underpopulated areas of the world.

OJSC Intellect Telecom is a scientific and research and innovation centre specialized in wireless broadband access, fixed-line communication, satellite navigation and telematics. The staff of OJSC Intellect Telecom, which was created in 2007, includes over 150 specialists, 5 professors, 6 doctors of science, 21 candidates of science. OJSC Intellect Telecom has realized over 300 complex telecommunication projects for Russian and foreign clients.

Chief Designer/Director of Science of OJSC Intellect Telecom is Mr. Yury Gromakov.

Sphere of competence:

- Research in the field of creation of new integrated systems, networks and devices of mobile communication, wireless broadband access and fixed-line telephony;
- Development of concepts and technical strategies for communications companies;
- Development of radiofrequency spectrum use strategies;
- Designing, planning and optimisation of communications networks and systems;
- Research in the field of creation of advanced devices and systems of wireless broadband access and fixed communication, new generation mobile communication, radio and television, broadband systems etc.

OJSC «Intellect Telecom» is a member of the International Telecommunication Union and participates in the ITU-R and ITU-D sectors.

OJSC “Intellect Telecom” elaborated a new technological solution of the problem set by ITU on creation of cost-effective mobile communication network for rural, remote, and underpopulated areas of the world - *Cellular System with Capacity Transfer* - which was presented on behalf of OJSC “Intellect Telecom” at the meeting of the Study Group 2 in 2010.

Technological structure of the system is based on combination of the usual base stations and the capacity transfer repeaters (CTR). The CTR is a key element in this technological solution. The small size and weight of CTRs allow to set them on the top of an easier mast, and not in the containers, therefore there is no need in expensive towers and air-conditioned containers, also the area where the CTRs are placed are many times smaller.

CTR do not “deduct” capacity from donor base stations. CTRs replace cellular communication base stations with the same coverage area and network capacity.

Use the CTRs does not need high-cost radio relay sets or laying optic fiber to the site. Power consumption of the site decreases by several times, this allows using alternate power supply sources (solar batteries, wind-power generators etc.).

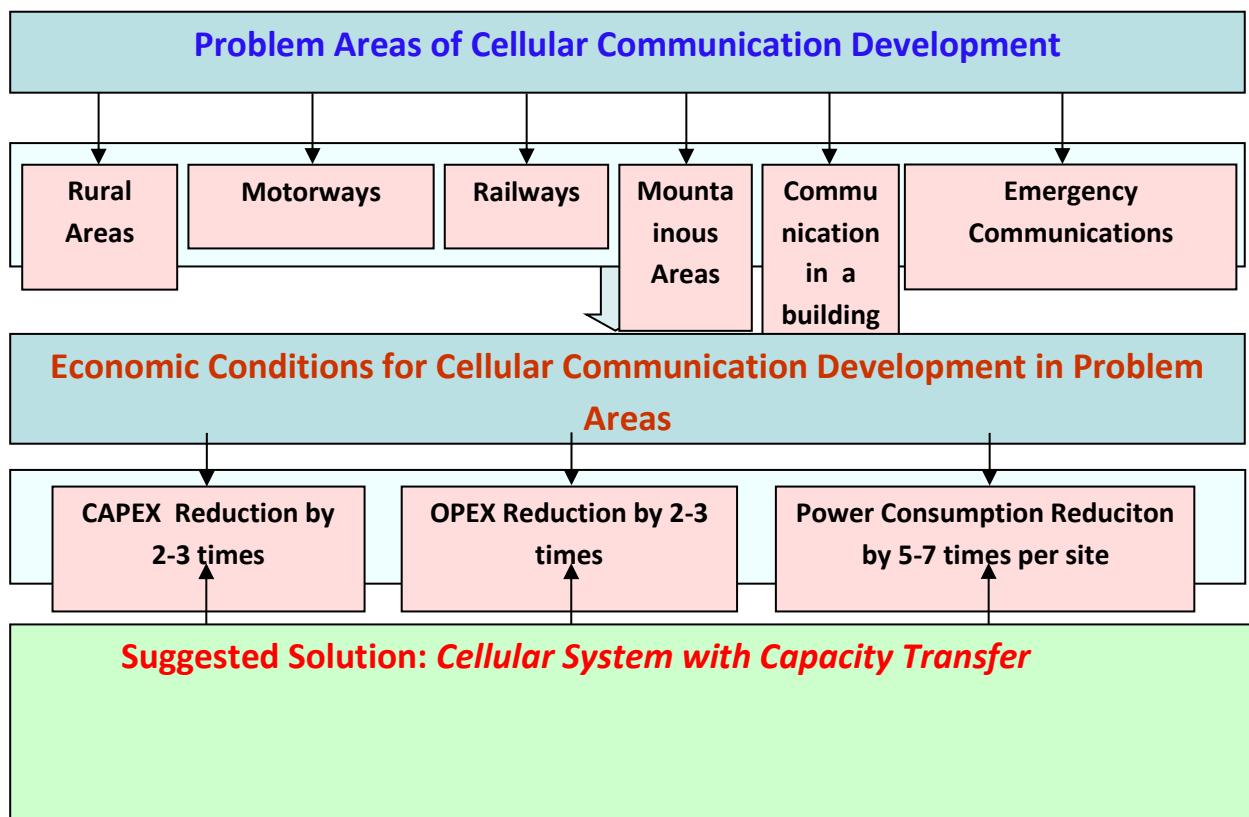
One of the main advances of the *Cellular System with Capacity Transfer* is its standard invariance (communication providers can use GSM, GSM-R, UMTS, CDMA, LTE and others). Also, CTR software version is not to be changed in

case of change of software versions on base stations, and compatibility of CTRs with base stations of any manufacturer is ensured.

Cellular System with Capacity Transfer on the basis of CTR practically solves the problem of ICT development in rural and remote areas, providing broadband access to the Internet, using low-cost and sustainable communication infrastructure.

The above solution uses innovation technologies elaborated for real reduction of capital and running costs and significant energy usage.

Some results of additional surveys allow to positively speak of significant reduction of capital commitments and operating costs when building of wireless networks on the basis of *Cellular System with Capacity Transfer*, as well as of several-fold reduction of power consumption. Moreover, further works in that process will allow to form a technological platform for practical solution of the problems of economic and social development of some areas and countries.



Mobile Communication Coverage of Autoroads

Reduction of costs for building and operation by 2 to 3 times and reduction of energy usage by up to 5 times for long-distance network with low traffic. The interval between GSM-R base stations is to be 50–60 km



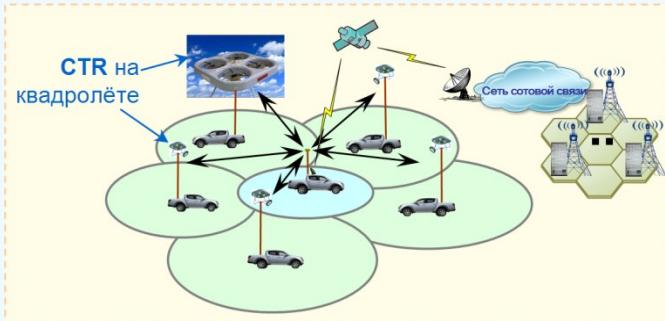
Operational Communication System on Railways

Up to 2-time cost reduction when deploying operational communication system network for improving safety and efficiency of transportation by railroad. The interval between GSM-R base stations is to be 50–60 km



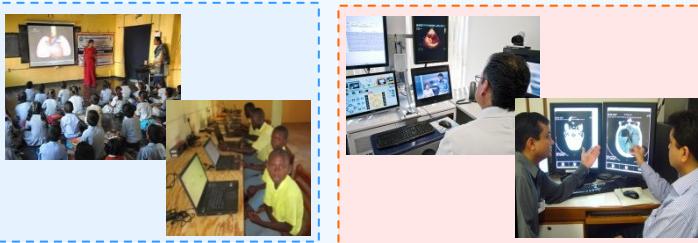
Emergency Communications

Use of repeaters installed on quadro-copters for quick mobile communication in an emergency area. With CTR take-off height of 100 m, the system coverage range is about 20 km



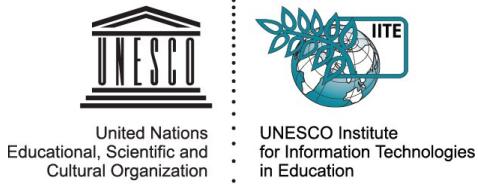
Broadband Wireless Access for Remote Areas of the standards UMTS, LTE, WiMAX

For improvement of the quality of life, education, medical service for the population of the remote areas through provision of access to the Internet and organization of telebridges



Cooperation with International Organizations

UNESCO IITE



During 2010-2014 a close cooperation was established between ITU and UNESCO Institute for Information Technologies in Education (IITE). IITE is a unique institution whose expertise on ICT in education is offered to all UNESCO Member States. As UNESCO's specialized resource centre and provider of technical support and expertise in the use of ICT in education, IITE supports bridging the digital divide in education and building inclusive knowledge societies by reinforcing national capacities in promoting e-

environments for increasing access to education and lifelong learning, facilitating policy dialogue, and initiating the development of national strategies on the application of ICTs in education.

Through its activities, IITE contributes to the achievement of internationally agreed Education for All goals (Dakar 2000) and United Nations Millennium Development Goals (MDGs), implementation of the Plan of Action for the United Nations Literacy Decade (2003-2012), International Implementation Scheme for the United Nations Decade of Education for Sustainable Development (2005-2014), the UN Global Education First Initiative (2012), as well as other international commitments such as Bonn Declaration - World Conference on Education for Sustainable Development (2009), the Communiqué of the 2009 World Conference on Higher Education, Moscow Framework for Action and Cooperation – the World Conference on Early Childhood Care and Education (2010), UNESCO Paris Declaration on Open Educational Resources (2012) and the Moscow Declaration on Media and Information Literacy (2012).

The priority areas of IITE work include:

- strengthening the knowledge and skills of policy-makers and educational professionals on ICTs in education through policy dialogue, high-level policy advice, improving access and exchange of information on ICTs in education;
- developing and implementing advanced online/offline training courses and programmes for educators on ICT in Education, including an International Advanced Training Programme (at master level) on ICT use in teachers' professional development;
- fostering ICT-enhanced learning through knowledge sharing and Open Educational Resources; and
- reinforcing and updating UNESCO Chairs' network operating in the field of ICTs in education and innovation pedagogy, as well as the network of UNESCO Associated Schools working in this field.



The IITE's programmes and activities covered relevant issues of ICT application at all stages and in all forms of education – from early childhood to higher education. The Institute developed policy briefs, analytical surveys and training materials for educators and top educational managers. It supported Member States in using ICTs for inclusive education, with the aim of expanding the learning opportunities to excluded groups of children. Acting as a clearinghouse, the IITE continued publication activities and prepared and disseminated educational materials, handbooks and toolkits in the field of open educational resources, teacher training, and research in the field of new ICT-enhanced learning methodologies.

In light of the UN Convention on the Rights of Persons with Disabilities, that was signed by 158 states and ratified by 143 (as of March 2014) and with the aim to support CIS countries in the field of ICT accessibility and social integration ITU and the UNESCO IITE joint its efforts in partnership project. In 2010-2012 ITU and

UNESCO IITE worked closely on the establishment of the IT center for persons with visual impairments in Yerevan, the Republic of Armenia.



The main purpose of this project was promoting inclusive policies and creation of accessible information and education environment by means of ICTs for visually impaired persons. The center was equipped with standard and specialized soft- and hardware for people with visual disabilities.

The technological infrastructure of the center includes typical work places equipped with standard and specialized soft- and hardware for 2 groups of users: (1) blind persons; and (2) partially sighted persons. The center does not only serve as a platform for providing access to knowledge and information for persons with visual impairments, but also became a point of networking and experience sharing among the specialists.

The project envisages the development of instruction and support materials on ICTs and accessibility for policy- and decision-makers, as well as for IT and educational specialists, involved in teaching and social rehabilitation of persons with disabilities.

The opening ceremony of IT center for persons with visual impairments was carried out on November 21, 2011 with participation of high-level representatives of international and national organizations, including Mr Houlin Zhao, ITU deputy General Secretary; Mr Orozobek Kaiykov, Head of ITU Area Office for CIS; Mr Dendev Badarch, Director of the UNESCO Moscow office and IITE Director, a.i.; Mr Vahram Kazhoyan, General Secretary of the Armenian National Commission for UNESCO; Mr Manuk Vardanyan, the Minister of transport and communications; Ms Dzhemma Bagdasaryan, the vice minister of social affairs. Representatives of press and non-governmental organization also took part in this event.



During 2011-2012 UNESCO IITE in close cooperation with ITU, UNECEFArmenia and other partners implemented a set of trainings on the basis of the established IT-center for local specialists. The main goal of the trainings was to raise awareness of the participants and develop their professional skills and competencies in the area of practical application of modern technologies to meet educational needs of visually impaired students. The training seminars and the workshops brought together more than 60 educational decision-makers, representatives from teacher training and inclusive education institutions, as well as specialists from medical and pedagogical centers.

Another field of cooperation between ITU and UNESCO IITE covers the issue of gender equity and ICTs. During 2012-2013 by invitation of ITU IITE participated in the seminars devoted to the International Girls in ICT Day held by the ITU Area Office for the CIS in Moscow, Russian Federation. IITE presented its position and experience on ICT potential for promoting of gender equity in education and appealed for deeper involvement of its potential, including its facilities to cooperate within such networks as IITE ASPnet Pilot Project "Learning for the Future".





Conclusion

The information presented by this publication does not fully cover the activities of the CIS countries aimed at ICT development, they are much more wide-scale. The ITU Area Office will update the brochure as soon as some additional information is received from the countries.

On behalf of the ITU Area Office for CIS, I would like to express gratitude to the Communication Administrations of the Member States from the CIS and Georgia, as well as the ITU-D Member, OJSC Intellect Telecom for cooperation and support of the ITU activities and for the materials provided.

Also, I would like to express gratitude to UNESCO Office in Moscow and UNESCO IITE and personally Mr. Dendev Badarch, Director for the fruitful cooperation.

Orozobek Kaiykov
Head, ITU Area Office for CIS