



WHITE PAPER 2011

MONGOLIA

This Paper is a special edition dedicated to the 90th anniversary of the Development of ICT in Mongolia.

Reviewed by

A. Munkhbat, Vice Chairman, ICTPA

Edited by:

Dr. U. Odgerel, Director General, PAC Dept, ICTPA

Developed by:

L. Ariunaa, CEO, Intec Co., Ltd

B. Tsetseg, Deputy Director, SIM Dept, ICTPA

L. Sayanaa, Deputy Director, Intec Co., Ltd

Ch. Nurgul, Director, ICIDP project

Designed by:

P. Munkh-Erdene, Officer, SIM Dept, ICTPA

A. Khaliunaa, Researcher, Intec Co., Ltd

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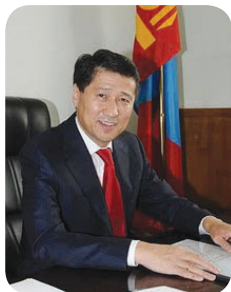
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FOREWORD BY PRIME MINISTER OF MONGOLIA



This year, we are celebrating 90th anniversary of ICT sector of Mongolia. In this regard, from the bottom of my heart I would like to thank all people involved in the development of White paper on ICT of Mongolia – 2011 and congratulate all ICT beneficiaries on this special anniversary.

ICT sector's specialists and workers are enriching the history of 90th anniversary with the successes and achievements. For the past year, the large-scale initiatives such as "The launching of National satellite of Mongolia" project, "Postal services to every household" and "Broadband" national programs were submitted to and approved by the Government of Mongolia.

Furthermore, to ensure development and implementation of the sectoral policy and development of ICT and e-government, National committee on ICT has been re-established and Council of Chief Information Officers of government organizations, comprised from senior decision makers has been setup.

In near future, there are a number of large scale programs and projects need to be developed and implemented such as "State policy on development of ICT sector of Mongolia by year 2021", "launch of National Communications Satellite", establishment of "Mongolian Silicon Valley", switchover of radio and television broadcasting into digital technology, establishment of broadband network and development of electronic government. These issues will be discussed at the National ICT Forum and will come to unified understanding and I'm quite positive that they will be successfully implemented.

I hope that you can read about the achievements of ICT sector development and its contribution towards the overall development Mongolia from publication.

May the knowledge prosper.



*Batbold Sukhbaatar
Prime Minister of Mongolia*

MESSAGE BY CHAIRMAN OF ICTPA

First of all, I would like to congratulate all readers of current publication with the 90th anniversary of establishment and development of ICT sector of Mongolia. When we are looking back, it is clearly seen that it was joint efforts of skilled leaders, engineers, technicians, academicians and teachers combined with government support and sectoral international and national cooperation, which have created history of development of ICT sector of Mongolia. Following sectoral specifics, constant growth and development, we are required to work fast and together in different directions.



The National Development Policy and Action plan of Government of Mongolia specified implementation of different large scale projects, such as high-tech innovation cluster (Silicon valley), launching of national communications satellite, improving capacities of human resources, which can be implemented together and in cooperation with different organizations.

I'm pleased to mention that the current edition of "White paper of ICT development of Mongolia – 2011" has been published in the time, when the discussion on "draft law on Digital signature" has been conducted at the Parliament and national programs information security, switchover of radio and television into digital technology, postal services to every household and high-speed broadband network has been approved by Government and started implementation. In addition, the "State policy on development of ICT sector of Mongolia by year 2021" will be discussed widely during the "National ICT Forum" to be held on May 25-26, 2011 in Ulaanbaatar.

We believe that the current White paper will serve as good source of information of development of ICT sector of Mongolia to national and international specialists as well as a mean of increasing public advocacy and awareness about our sector development to general public.

May the good seeds prosper.

A handwritten signature in black ink, consisting of a stylized 'B' and 'J' followed by a long horizontal line that tapers to the right.

*Bat-Erdene Jalavsuren
Chairman, ICTPA of Mongolia*

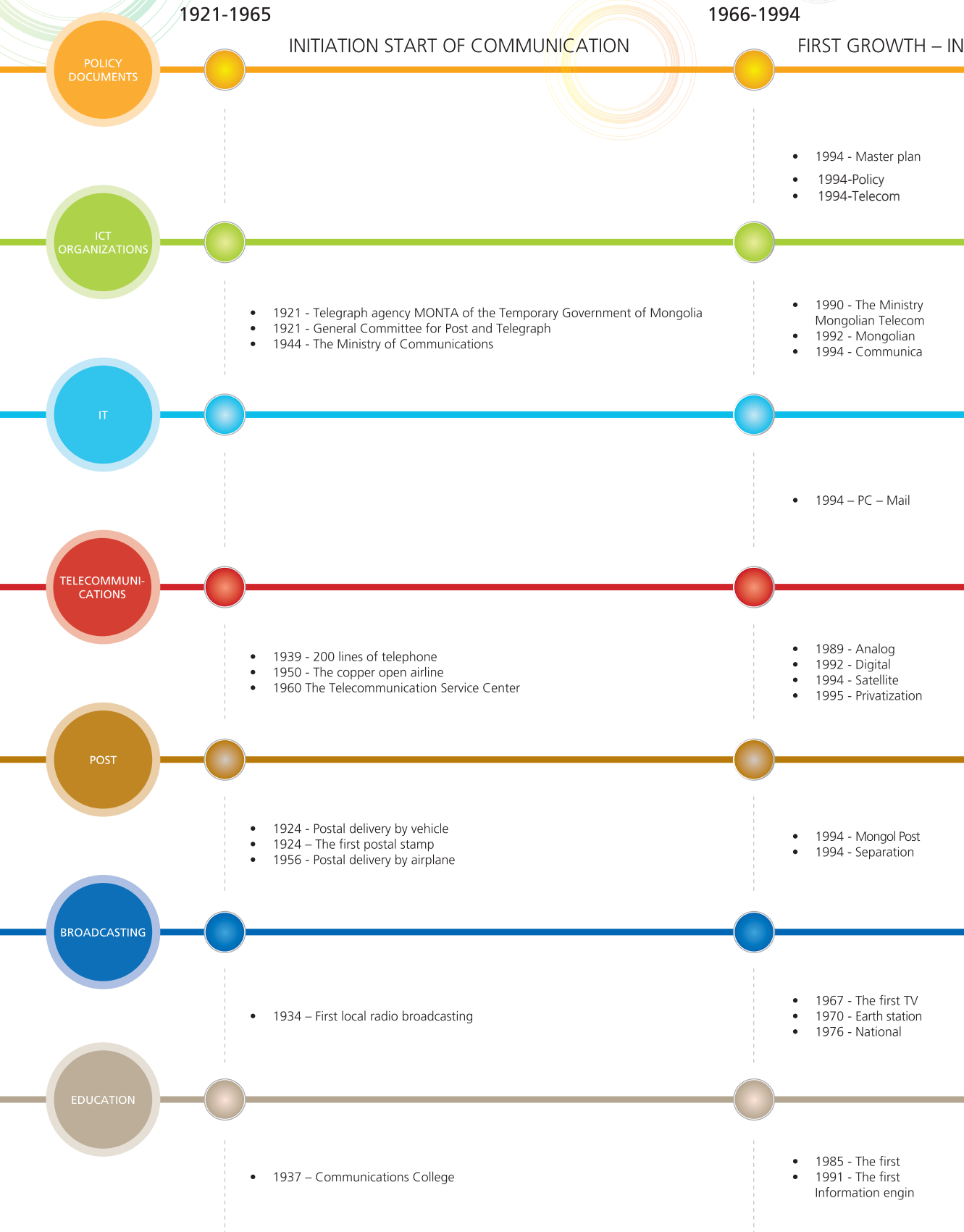
ACRONYMS

ADSL	Asymmetric Digital Subscriber Line
APIN	Asia Pacific Information Network
CATV	Cable Television
CDMA	Code Division Multiple Access
CRC	Communications Regulatory Commission of Mongolia
EDGE	Enhanced Data Rates for GSM Evolution
ERP	Enterprise Resource Planning
EVDO	Evolution-Data Optimized
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HDSL	High bit rate Digital Subscriber Line
ICNC	Information Communications Network Company
ICT	Information and Communications Technology
ICTPA	Information, Communications, Technology and Post Authority of Mongolia
IDI	ICT Development Index
IP	Internet Protocol
IPTV	Internet Protocol based Television
ITU	International Telecommunications Union
LAN	Local Area Networks
MDG	Millennium Development Goals
MECS	Ministry of Education, Culture and Science of Mongolia
MIDAS	Mongolian Information Development Association


ACRONYMS

MISPA	Mongolian Internet Services Providers Association
MITSA	Mongolian Information Technology Students Association
MNT	Mongolian Currency Tugrug
MOSA	Mongolian Software Industry Association
MT	Mongolia Telecom
MTWA	Mongolian Telecommunications Workers Association
MUST	Mongolian University of Science and Technology
NBIA	National Business Incubation Association
NDC	National Data Center
NGN	Next Generation Network
NGOs	Non-governmental organizations
NITP	National Information Technology Park
NSO	National Statistical Office
RTND	Radio and Television Network Department
SOHO	Small Office and Small Home
TLD	Top-Level Domain
UN	United Nations
USOF	Universal Service Obligation Fund
VDSL	Very-high-bit Rate Digital Subscriber Line
VoIP	Voice over Internet Protocol
VSAT	Very Small Aperture Terminal
WLL	Wireless Local Loop

2. Milestones of ICT De



Development of Mongolia

1995-2011 

STAGNATING TELECOMMUNICATION

SECOND GROWTH – DIGITALIZED TELECOMMUNICATION

to development Telecom sector by year 2010
Statement
Master Plan by year 2010

- 1995 - Law on Communications
- 1999 - Law on Radio Wave
- 2000 - Concept to develop ICT in Mongolia by year 2010
- 2001 - Revised law on Communications
- 2002 - Mid - term strategy to development ICT, Master plan of Postal services
- 2003 - Law on Post
- 2005 - E - Mongolia National Program, E - Government master plan
- 2008 - National Program to Establish Registration and Information Unified System
- 2008 - Master plan to develop outsourcing
- 2010 - Programs on Information Security & digital radio and TV broadcasting
- 2011 - Programs on Postal services to every household and Broadband

of Communications was reorganized into
munication Ministry
Telecommunication Company
tions Department of Ministry of Infrastructure
Development

- 1995 - Communications Regulatory Council
- 2001 - MIDAS
- 2002 - The Communications Regulatory Commission of Mongolia
- 2002 - National committee on ICT chaired by Prime Minister of Mongolia
- 2003 - National Information Technology Park
- 2004 - Information Communications Technology Authority (Now ICTPA)
- 2007 - MOSA
- 2006 - MISPA
- 2009 - National Data Center
- 2011 - National ICT Committee, CIO Council

network

- 1996 - The first ISP (Datacom)
- 1998 - "Human sustainable development for ICT" project
- 2001 - "Mongolian Development Gateway" project
- 2002 - Open Government portal

microwave network
telephone switching
Earth Naran Station
of MTC

- 1995 - The first GSM mobile communications operator (Mobicom)
- 1998 - VSAT system
- 1999 - The first CDMA mobile communications operator (Skytel)
- 2002 - The first fiber optic network
- 2008 - Mobile communications services accessible in all soums
- 2009 - 3G mobile communications services

Company
of portal services from telecommunications

- 1995 - Private postal operators (DHL Mongolia)
- 1996 - Integrated the Mongolian Post Company and Department of Mongolian Marks
- 2007 - Introduction of Zip codes

broadcasting center in Ulaanbaatar city
for receiving TV signals
Broadcasting TV and Radio

- 1996 - The first cable TV (Sansar Cable)
- 2010 - Nationwide TV Broadcasting by Ku Band

computer curriculum for universities
public ICT specialist educational institutions (School of
Engineering, School of Computer Science and Management)

- 1996 - The first local private IT university (Tsahim)
- 1999 - Erdemnet for scientific and educational institution
- 2001 - IT training center at The Mongolian University of Science and Technology
- 2002 - The first foreign invested IT institution (Khuree)
- 2007 - The first international franchise institution (Aptech)

EXECUTIVE SUMMARY

The current paper is a special edition dedicated to the 90th anniversary of the development of ICT in Mongolia.

It was over 90 years ago, when the first PABX for 25 users was installed in Urge (at that time name for “Ulaanbaatar”), followed by installation of first telegraphic equipment connecting Mongolia with outer world. The establishment of the Mongolian Telegraphic Agency (MONTA) and General Committee of Postal and Telegraphic Information in 1921 has initiated the start of telecommunications in Mongolia. The following decade has seen the printing of first postal stamp of Mongolia, establishment of open copper telecommunications network connecting over 100 soums and the first telecommunications service center.

During telecommunications installation phase – first growth, which continued till early 1990’s, the very first radio television center, earth station, FM stations, mainframe computers and analog microwave networks were installed and Ministry of Telecommunications was established. In the transition to market economy, the mid-term strategy to develop ICT sector of Mongolia, law on Communications and other policy documents were developed and approved by Parliament of Mongolia in the beginning of digitized telecommunications phase – second growth.

The installation of first digital telephone switches, radio relay networks, international direct dialing services and all others were followed by establishment of first Internet Service Provider (ISP) and the first mobile telecommunications company in mid-1990s. The telecommunications network has been expanded not only internationally, but also within Mongolia, establishing fiber optic networks connecting government organizations in Ulaanbaatar as well as connecting all aimag¹ centers. This has given a boost to another era. The World Wide Web, Internet, electronic mailing, short messages, sms cards were new words introduced to the vocabulary of Mongolians.

Nowadays, Mongolia has over 2.5 million of mobile subscribers, who are benefiting from services offered in 2G and 3G environments and in Ulaanbaatar, 4G services started to offer, enabling communications through not only by voice, but also through video and other services such as listening to FM radio stations, TV programs and mobile contents, including entertainment, news and information and payments for services from mobile phones. The fiber optic cable network has been extended to over 13,000 km connecting over 50% of all

¹ Aimag – administrative unit of Mongolia, equivalent to provinces. There are 21 aimags in Mongolia

² Soum is a sub-administrative unit of Mongolia

soums of Mongolia. There are over 70 ISPs, which share 11.2Gbps bandwidth and provide services to about 200,000 Internet subscribers, who are using more xDSL, fiber optic, 3G, and GPRS connections.

According to the United Nations "E-Government Survey 2010", "...Mongolia (0.5243) gained 29 positions to be ranked 53rd globally, a dramatic rise due primarily by efforts to enhance its national portal and ministry websites to offer more e-services and more online content..." (UN, 2010).

In addition to that, Mongolia was ranked 9th in the top 15 countries online service index.

	Country	Online Service Index	Global Ranking
1.	Republic of Korea	1.0000	1
2.	Australia	0.7651	5
3.	Bahrain	0.7302	8
4.	Singapore	0.6857	10
5.	Japan	0.6730	13
6.	New Zealand	0.6381	15
7.	Malaysia	0.6317	16
8.	Israel	0.5811	19
9.	Mongolia	0.5556	20
10.	Jordan	0.5333	22
11.	Egypt	0.5302	23
12.	Kazakhstan	0.5270	24
13.	Kuwait	0.4603	36
14.	Philippines	0.3937	49
15.	Uzbekstan	0.3778	53

Table 1. Top 15 Countries Online Service Index (Source: UN, 2010)

Mongolia is in the top 20 countries in regards to online service development, in front of developed countries such as Germany and Sweden. (ibid)

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

3.1. POLICY DOCUMENTS OF ICT SECTOR

There are a number of sector specific key legal and policy documents, which govern ICT sector of Mongolia ratified by the Parliament of Mongolia as follows:

1. Law on Communications (approved by 1995 and revised in 2001 and amended in 2003, 2005 and 2008)
2. Law on Radio Wave (approved in 1999 and amended in 2001)
3. Law on Post (approved in 2003 and amended in 2005, 2007)
4. Law on Licensing Business Activities (approved in 2001)
5. Law on Government's Special Fund (approved in 2006)

The draft law on e-signature has been developed in 2010 and currently under the discussion at the Parliament of Mongolia. The draft law on e-signature specified the usage, conditions of validation and legal environment for certification authority to issue e-signatures. With the approval of draft law on e-signature, the favourable legal environment will be established to consider files and emails as official documents and Internet based works as legal.

In the past year, based on the time frame, the policy documents "Mid-term strategy to develop ICT by year 2010", "Concept to develop ICT in Mongolia by year 2010" and "E-Mongolia National Program" were reviewed comparing objectives and achievements of these documents. The result of this thorough process has specified that "Concept to develop ICT in Mongolia by year 2010" had 92.7% of achievement, the "Mid-term strategy to develop ICT by year 2010" has been achieved by 88% and "E-Mongolia National program" had 85.7% of success. Based on the results of this review process, the recommendations were made to develop policy documents such as ICT Vision – 2021, e-government national program, etc.

Following these reviews and considering the advancement of introducing ICT in public service, the "ICT working group" has been established comprised from representatives of ministries and agencies. The ICT working group has been mandated to develop a vision of ICT by year 2021. At the same time, another working group has been established, which has been mandated to develop National program of e-government of Mongolia in 2010.

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

In the past year, extensive works have been carried out on developing frameworks for “Mongolian Silicon Valley”, National Programs on Broadband policy, introduction of digital TV and radio broadcasting system and enhancement of information security. In addition, the projects documents were developed and funding secured for launching Mongolian satellite communications and establishment of outsourcing center.

NATIONAL PROGRAM ON POSTAL SERVICES TO EVERY HOUSEHOLD

The National Program on postal services to every household is a policy documents outlining long-term strategy of development of postal services of Mongolia (2010-2020), objectives and steps of implementations. The National Program has been approved by Government of Mongolia on April 20, 2011 by decree 126.

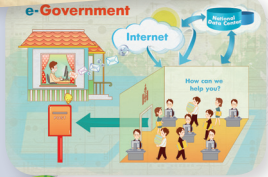
The main objective of the National program is establish national postal network of Mongolia, improve transportation capacities, increase a number and types of traditional services and introduce new kinds of services based on ICT, introduce usage and accessibility of postal services making it more efficient and reliable. The national program has major 6 objective and specific 33 activities, the implementation of which will improve the level of technology of national postal network, increase coverage of postal services, increase volume of postal deliveries, reduce time of delivery, deliver postal services to household effectively and timely, introduce ICT-based e-services and establish regional Mail centers.

“NATIONAL PROGRAM TO SWITCHOVER RADIO AND TELEVISION BROADCASTING TO DIGITAL TECHNOLOGY”

The National program to switchover radio and TV broadcasting to digital technology has been approved by Government of Mongolia on October 27, 2010 by decree No. 275. The same decree has approved the plan of activities to implement National Program. The National program has specified 4 major objectives: 1) development of favorable legal environment for switchover radio and TV broadcasting to digital technology; 2) development of technical and technology solutions for this process; 3) organize switchover process in phases in geographical areas and 4) organize public awareness activities among citizens and organize trainings.



Figure 1. E-Mongolia National Program



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onal
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Hentii

Dornogobi

Omnogobi

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

The policy documents and programs approved in previous years are still effective and being followed, such as:

- E-Mongolia National Program approved by the Government of Mongolia in 2005;
- National program to establish unified information and registration system, approved by the Government of Mongolia in 2008;
- National program to ensure information security, approved by the Government of Mongolia in June, 2010;

3.2. ICT POLICY AND REGULATORY ORGANIZATIONS

There are two key ICT government organizations for policymaking and regulation in Mongolia:

- Information Communications Technology and Post Authority of Mongolia, and
- Communications Regulatory Commission.

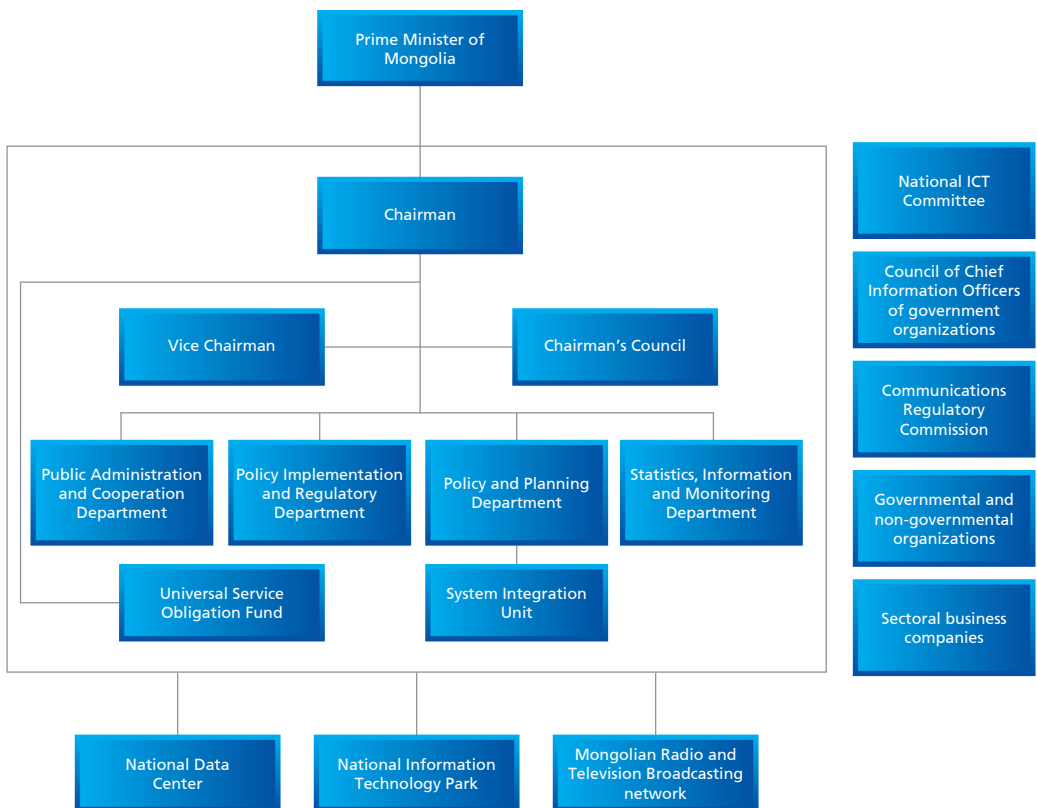


Figure 1. ICT Structure

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

INFORMATION COMMUNICATIONS TECHNOLOGY AND POST AUTHORITY OF MONGOLIA

(Website: <http://www.ictpa.gov.mn>)

Following implementation of the decree No. 64 of 2008 of the Government of Mongolia and decree No. 05 of January 19, 2009, issued by Prime Minister of Mongolia, the Information Communications Technology Authority of Mongolia has been transformed into Information Communications Technology and Post Authority. ICTPA is mandated to provide primary areas of work related to the development of laws, regulations and development policies related to information technology, post, broadcasting, telecommunications and technology development matters within the framework of works of the Prime Minister, development of unified registration system, organization of activities to implement policies, programs and plans, coordination, monitoring and evaluation.

The Government of Mongolia is committed to introduce Universal Service Obligation Fund (USOF) and amended the Law on State funds in 2006 for implementing USOF in Mongolia under authority of ICTPA. Following this, the obligations of contributing 2 per cent levy from revenues before taxes of all providers of ICT sector have been imposed and collected funds were used for providing ICT services to remote and rural areas of Mongolia. For the last 4 years, a total of 10,6 billion MNT were collected and used to finance rural ICT development and rural internet access to mobile telephone services and building optic fiber network in rural areas.

The following projects were implemented by ICTPA in 2010:

- Mongolian Internet Exchange (MIX) – upgrading equipment at MIX to increase overall capacity of local Internet bandwidth by 1100 times, connecting ISPs with National data center by 10G connections, which allowed to have effective, reliable and secure network within Mongolia, independent from international gateway.
- Delivering radio and television programs to rural areas – increasing capacities of transmission stations to enable viewing more channels by rural population;
- Connecting gerh district households to high-speed Internet connections through wireless technology – 30 households were provided with 1 year Internet access free of charge;
- Delivering Internet services to soums – 38 soums had access to Internet.
- Projects to improve mobile service coverage – towers were built in 17 soums, mobile telecenters were piloted, mobile services were delivered to 6 border areas and settlements, etc.

² MNT – Mongolian tugrug (National currency, 1USD = 1220 MNT as of May, 2011)

³ Ger – traditional housing of nomads, easy to assemble and disassemble

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

COMMUNICATIONS REGULATORY COMMISSION

(Website: <http://www.crc.gov.mn>)

The Communications Regulatory Commission of Mongolia (CRC) was established by the Communications Act of 2001, and is charged with regulating and supervising a wide range of subjects including competition issues, the provision of networks and services for fixed line and wireless telecommunications, television and radio broadcasting, and satellite transmission, spectrum management, postal services and the internet to ensure that the public interest is well served. The CRC's jurisdiction covers each region of Mongolia

The main objectives of CRC are the following:

- To facilitate access to safe, reliable and affordable ICT and Telecommunications networks and services by pursuing, where appropriate, a commercially viable and competitive environment;
- To support innovation and expansion in ICT and Telecommunication, postal markets, by the efficient and impartial oversight of network and service providers and the enforcement of their obligations;
- To protect the interests of users of networks and services in the sector in which we regulate;
- To increase tele-density and access to ICT and Telecommunications in the country at affordable prices;
- To establish an interconnection regime that allows fair, transparent, prompt and equitable interconnection;
- To re-balance tariffs so that the objectives of affordability and operator viability are met in a consistent manner;
- To protect the interest of consumers and to address general consumer concerns relating to availability, pricing and quality of service and other matters;
- To monitor the quality of service provided by the various operators, including numbering and radio frequency resources;
- to work on development of sector standards (ibid);

NATIONAL ICT COMMITTEE

The Prime Minister of Mongolia acknowledged the importance and need of developing ICT sector and approved a number of decrees in the past year. The decree No. 14 of February

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

2011 approved re-establishment of supernumerary National ICT Committee chaired by Prime Minister of Mongolia and included representatives of government, non-government organizations and private sector. The National ICT committee has been mandated to “develop ICT sector by providing guidance on policy implementation, coordination and support”.

CIO COUNCIL

The decree No. 25 of April 2011 approved appointments of state secretaries of ministries and general directors of some agencies as Chief Information Officers (CIO) of government organizations, which were in turn formed so called “CIO Council”. The main purpose of CIOs council to “provide necessary support on development of policies related to ICT, ensure common approach, management and monitoring of implementation and by improving cooperation and coordination among government organizations, ensure openness, transparency, efficiency and effectiveness of online services offered to citizens and businesses, thus supporting social and economic development of the country.”

NATIONAL INFORMATION TECHNOLOGY PARK

(Website: <http://www.itpark.mn>)

The National Information Technology Park (NITP) was established by the Resolution No. 107 of the Government of Mongolia in 2002. The Park officially commenced to operate its activities on August 6, 2002. The NITP is a government institution under the direct auspices of the Information, Communication, Technology and Post Authority of the Government of Mongolia.

It's grounded on creation of a favorable business environment based on knowledge by means of intensively developing the information technology productions and services that rely on the private sector. It aims to create a favorable environment for business enterprises and collaborations for the information technology entrepreneurial and offshore outsourcing companies and henceforth provide a complete management support and assistance for them to grow and develop on their own.

The NITP has four major areas of operation: 1) Incubation service; 2) outsourcing; 3) research and development and 4) mobile content development. In 2010, a package standard for software is being developed. We have established a laboratory to prepare Apple iPhone, Google Android developers and organize the training in the field. Conference, meetings

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

and seminars in the area of outsourcing are regularly organized in cooperation with local and international organizations.

NITP is a member organization of the Asia Pacific Information Network (APIN) and the USA-based National Business Incubation Association (NBIA), USA.

NATIONAL DATA CENTER

(Website: <http://www.ndc.gov.mn>)

The National Data Center is established by decree No. 183 on June 24, 2009. Established as a result of joint project, implemented by ICTPA and KOICA, the National Data center has perspective to be recognized as a professional organization in international level by becoming basic center for collocation of national information database and information security and quality of service in information technology sector. The main mission is to provide operative, secure and accessible services for data and information of government organizations of Mongolia.

In the past year, the National Data Center implemented several projects related to establishment of infrastructure for special ICT , development of document registration and online e-archiving system, supply of online of Mongolian language translator, online commerce system , applying for license and monitoring over approval process, Upgrade of Mongolian Internet Exchange point (MIX), establishment of infrastructure for interconnecting of government organizations and supply and installation of digital information security warning information system.

Currently, there are a number of projects planned to be implemented at the National Data center such as "Expansion of National Data center"; The Backup Datacenter establishment of the National Data Center"; and "Building high speed network between government offices" project.

MONGOLIAN RADIO AND TELEVISION BROADCASTING NETWORK

(Website: <http://www.rtbm.gov.mn>)

The Mongolian Radio and Television Broadcasting Network (MRTBN) is a state funded enterprise with the mission to re-transmit radio and television programs throughout the territory of Mongolia at high quality supplying nation with reliable and continual network

OVERVIEW LEGAL AND POLICY FRAMEWORK OF ICT SECTOR

including new technologies. MRTBN has been established in 1960 with its vision recently being redefined as to become a cross point of national re-broadcasting network. The main objectives of MRTBN is to switch from analogue radio and television re-broadcasting network to digital.

Currently, the MRTBN is implementing Mongolian radio broadcasting infrastructure renewing project with funding from government budget, which aims to switchover to digital radio and television broadcasting by July 2014.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

The ICT sector of Mongolia is comprised of telecommunications, information technology, radio and television broadcasting, and postal services.

The national fiber optic network of Mongolia is now extended to reach all 21 aimag centers and over 160 soums. ICTPA is planning to implement a project to extend fiber optic network in the next 2 years, which will connect over 140 soums more.

Four mobile operators currently provide mobile services to over 2.5 million subscribers throughout the territory of Mongolia (92% of penetration) and are currently expanding their services to provide Internet connections to schools at aimag and soum centers as well as extending further mobile content.

The USOF has enabled extension of backbone fiber optic network to rural and remote areas of Mongolia, thus allowing access to information and communications technologies and its services by rural population.

The number of software and development companies has reached over 100, which currently develop software and applications for government organizations and private sector.

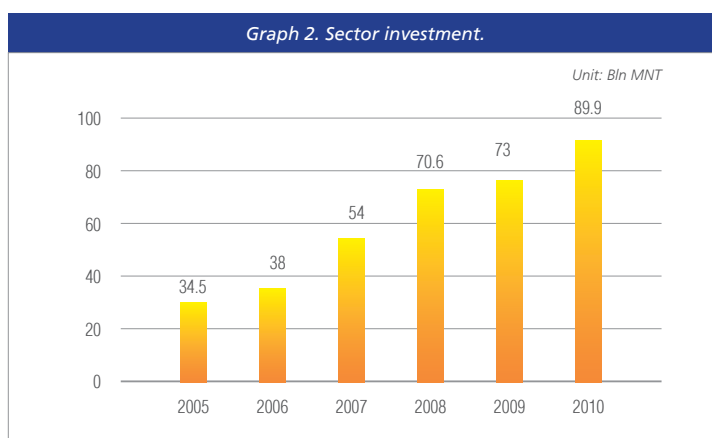
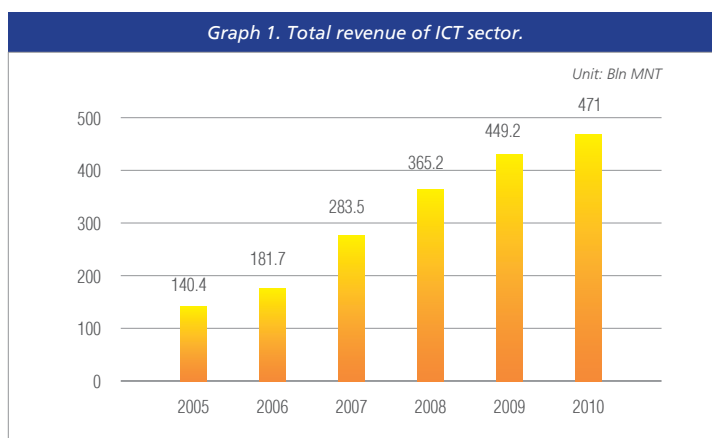
The number of websites has been increasing steadily for the last few years, with each organization getting domain names at .mn top-level domain (TLD) and outsourcing development of websites to local software development companies.

The number of students to apply and register at universities specializing in training on ICT areas has been steadily growing in the last few years, becoming a preferred choice of major for students to study.

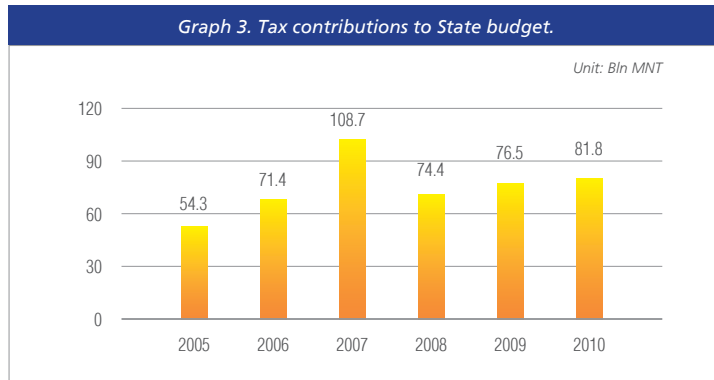
This includes not only system administration, hardware and software engineering courses, but also management of information systems, information systems engineering, and designing and multimedia applications development.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

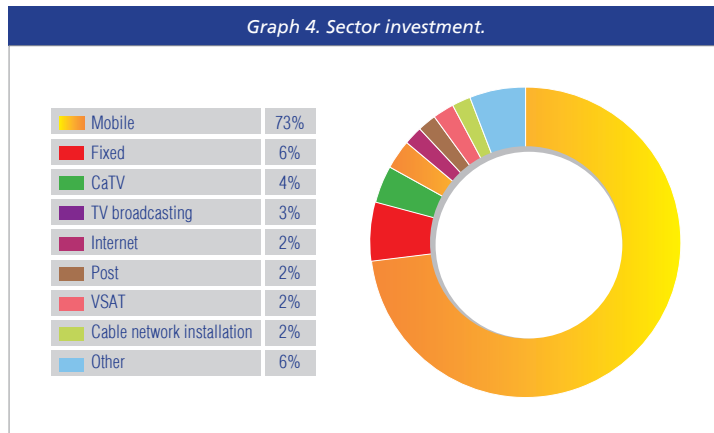
The following graphs show the total revenue of ICT sector for the period of 2005-2010, and tax contribution of ICT sector to the state budget and sector investments.



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA



The following graph represents composition of ICT sector revenues in 2010. It can be seen that about 73% of total revenues of the ICT sector are generated by mobile services and the remaining 27% are contributed by fixed telecommunications network, VoIP, Internet, Cable TV, broadcasting and other.

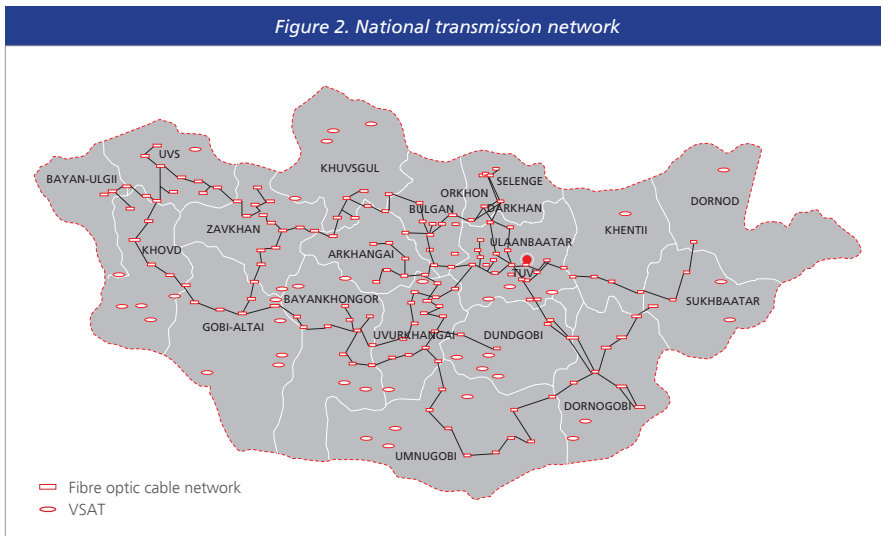


4.1. TELECOMMUNICATIONS INDUSTRY

Our country has become fully digitalized as far as switching and transmission equipment is concerned. The following graph represents the overall coverage of fiber optic and VSAT network of Mongolia. It can be seen that the backbone fiber optic network has reached all aimag centers and some soum centers.

The Information Communication Network Company (<http://www.icnc.mn>) is the owner of the national backbone and access network of Mongolia including international, long distance, rural and local transmission networks and local loops. In addition, private operators such as Mobicom (<http://www.mobicom.mn>), Gemnet (<http://www.gemnet.mn>), Skytel (<http://www.skytel.mn>) and Mongolian Railway (<http://www.railcom.mn>) have installed fiber optic networks in some locations.

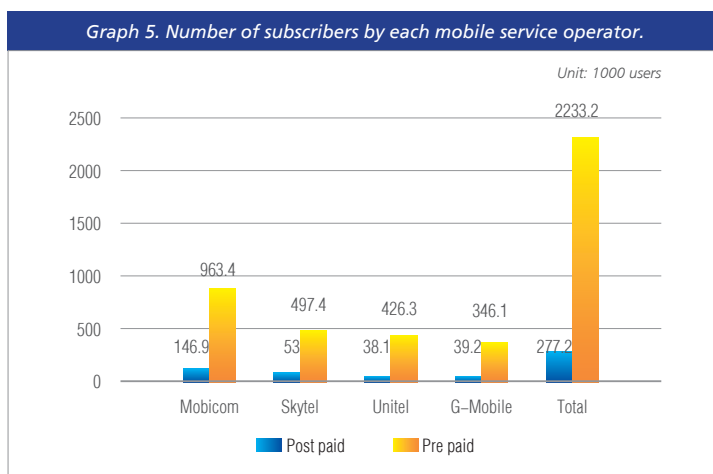
There are over 143,138 fixed telephone users in Mongolia constituting a ratio of 5.2 per 100 people. Since the introduction of mobile services, the number of users of fixed telephone has been decreased.



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

4.2. MOBILE COMMUNICATIONS SERVICES

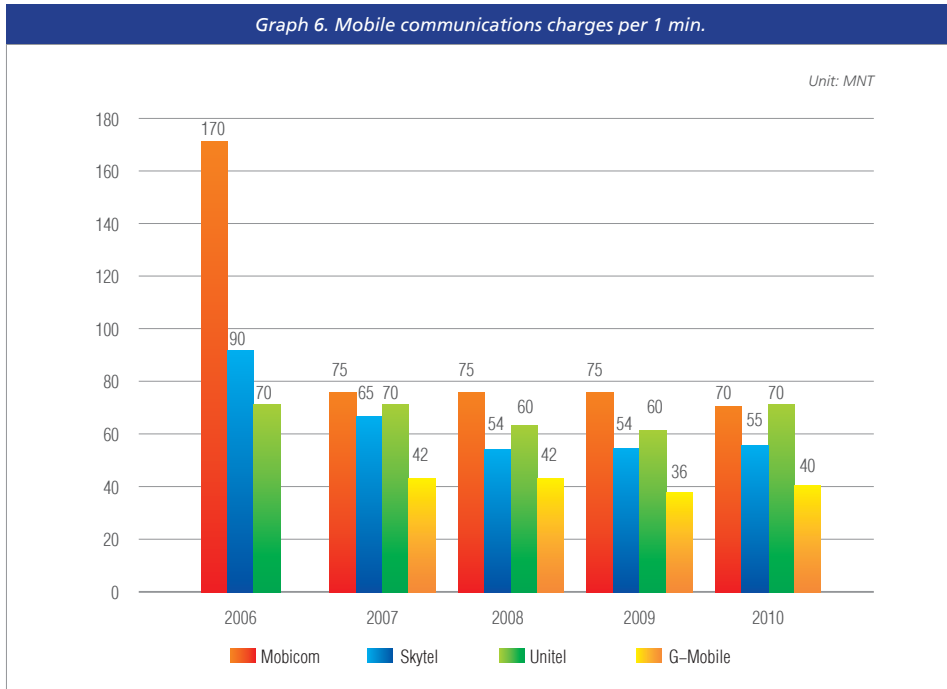
There are four mobile phone operators in Mongolia, which provide services to over 2.5 million subscribers of Mongolia. The penetration of more than 92% of the total population and 20% increase compare with 2009 are the main indicators of growth. Two mobile service providers use GSM system and the other two operators use CDMA system. The following graph represents the number of subscribers by each mobile service operator including pre-paid and post-paid services.



The "Card PLUS", "BE brand", "3.5G", "Doping", "ID", "My Phone", "G10", "Open" and other services were offered to subscribers, thus increasing their number and reducing costs of using mobile services.

As it can be seen from the following graph, the charges for mobile communications have been reduced more than twice since 2006. As of the end of 2010, 1 minute charge for a call with a mobile operator is average 58.75MNT. This shows that Mongolia is in the 91st place among 161 countries (ITU, 2010), having charges lower than the Asian average. (ITU, 2010)

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA



3G SERVICES

Since 2009, MobiCom, Skytel and Unitel (<http://www.unitel.mn>) have launched 3G - high-speed mobile broadband services in Mongolia, offering new services to their customers, such as Video call, Mobile broadband with high speed connection through mobile phones or special modems, and watching TV programs. All subscribers of these mobile service providers can have access to these services with the condition that their mobile phones supports these services. The 3G services are currently offered in 31 soums and settlements, reaching over 171,000 users.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

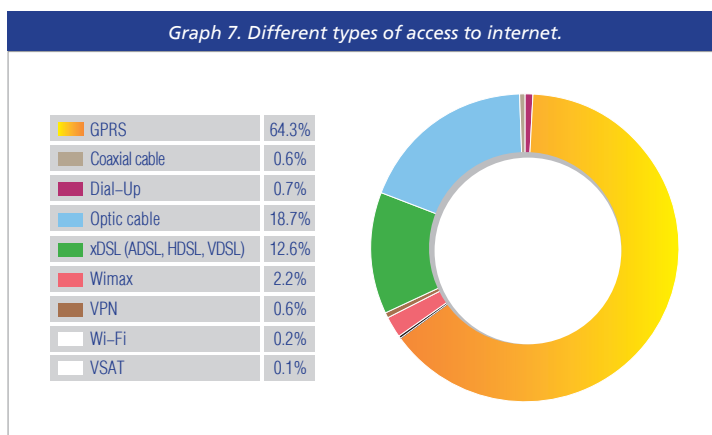
4.3. INTERNET SERVICES

The first Internet Service Provider (ISP) started providing Internet services in Mongolia in 1996 with 64kbps through VSAT technology.

Nowadays, there are over 70 companies, which were granted with for Internet access and service provision by CRC. (CRC, 2011)

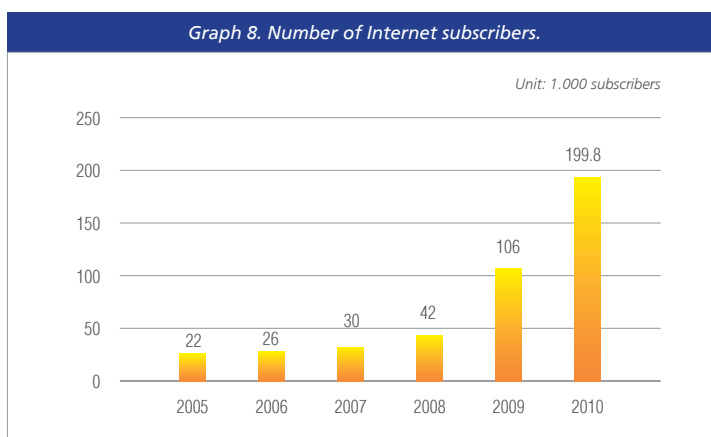
The overall bandwidth of Mongolia is downloading 11.2Gbps and uploading 11.2Gbps. The Internet connections are made through fiber optic cable network going along the railway lines to the north to the Russian Federation, and to the south to the People’s Republic of China.

At present, internet services in Mongolia are distributed via xDSL (ADSL, HDSL, VDSL), Fiber optic, GPRS (including 3G, EVDO and EDGE), WiMax, WiFi technologies, dial-up and VSAT. The following graph represents different types of technologies used for access to Internet, and as it can be seen the majority of users access Internet through GPRS, 3G, EVDO and EDGE technologies.



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

In the beginning of 2011, the number of Internet subscribers was 199,849 representing an increase of over 53% compared to 2009, which is shown in the following graph.



The cost of connection to Internet services has been kept stable from the cost of 2009. The Internet connection for corporate organizations is starting from 180 thousand MNT for 1Mbps for dedicated leased line for monthly basis.

The more and more users prefer connecting to Internet through fiber optic cables and ADSL, and the number of users connecting through wireless EVDO/3G modems increased substantially in the last year. The Internet connections for small office and small home (SOHO) solution nowadays is 27,900MNT for monthly fee of 1 Mbps.

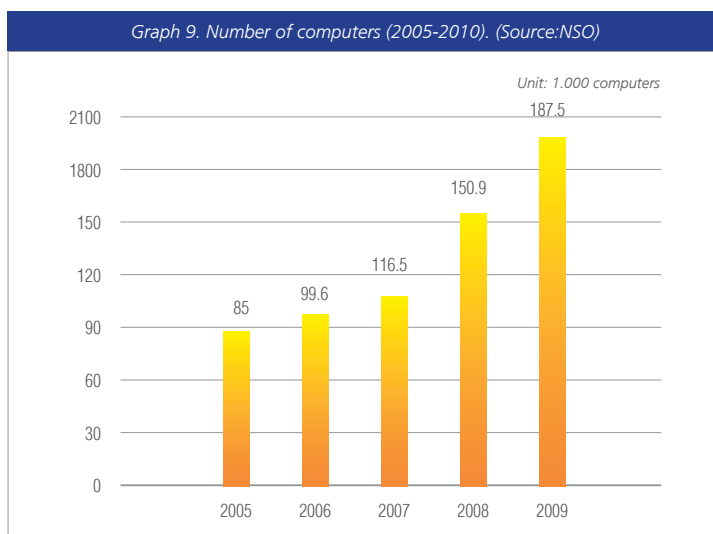
VOICE OVER INTERNET PROTOCOL (VOIP)

There are a number of companies, which offer pre-paid international direct calling cards services through Internet protocol. The cost of calling cards starts from 2,000MNT allowing over 1 hour of phone call. At the same time, the Mongolians use yahoo messenger, skype and other similar tools to have computer-to-computer calls free of charge.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

HARDWARE SUPPLY

There are over 30 companies in Mongolia, which supply computers and equipment to the market. There were a total of 187,500 computers in 2010, according to the 2010 Annual Statistical Yearbook of the National Statistical Office (NSO, 2010).



The population census has been conducted in Mongolia in December 2010, which included questions related to the use of mobile phones, access to Internet and availability of computers at households.

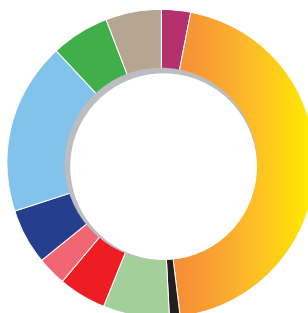
WEBSITES

There are over 3,400 websites with Mongolia-related contents, which are hosted at .mn, .com, .org, .net, .edu, .info, .biz and other top level domains. About 60% of those websites are hosted at .mn domain. About 52% of those websites are functional, and the rest of them are either under construction, or not working. (Intec, 2010). The following graph shows the distribution of websites by different types and it can be seen that 45% of websites are websites of non-IT organizations, which is an increase of 11% compare with 2009.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

Graph 10. Distribution of websites with Mongolia-related contents. (Source: Intec Co.,LTD)

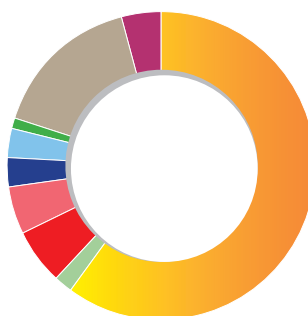
Government organization	6%
NGO	6%
Non IT company	18%
IT company	6%
Personal	3%
Education, culture & science	5%
Entertainment	7%
Sport, art & culture	1%
Not working	45%
Under construction	3%



The more and more websites are being developed and as it can be seen from the following graphs, there are more websites with .mn domain name.

Graph 11. Domain names of Mongolian websites. (Source: Intec Co.,LTD)

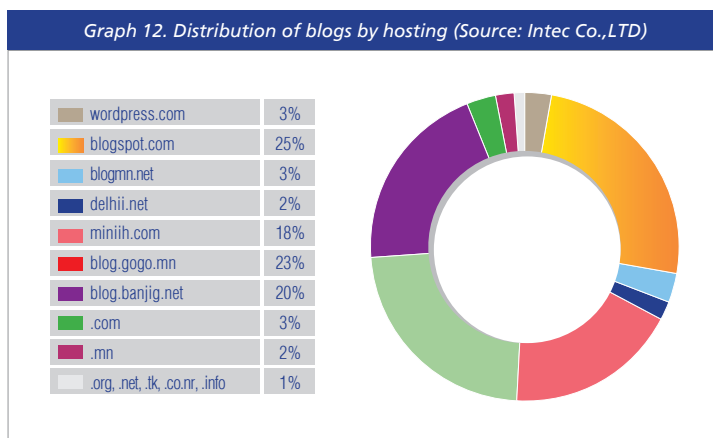
Domain names	
.mn	60%
org.mn	2%
edu.mn	6%
gov.mn	5%
.org	3%
.net	3%
.info	1%
.com	16%
Other	4%



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

The recent study has identified existence of 1,823 blogs being developed, maintained and updated by Mongolians and foreigners related to Mongolia. As it can be seen from the below graph, the majority of the blogs are hosted in Mongolian blog portals such as 23% at blog.gogo.mn, 20% at blog.banjig.net, 18% at miniih.com, etc. (Intec, 2011).

The blogs were created starting from 2005 and nowadays, 32% of all blogs were created in 2010, 22% in 2009, 16% in 2011, 12% in 2008, etc. The content varies depending on the blog writer and author, still the most popular blogs are those related to music and groups, world wide information and history, love, etc.

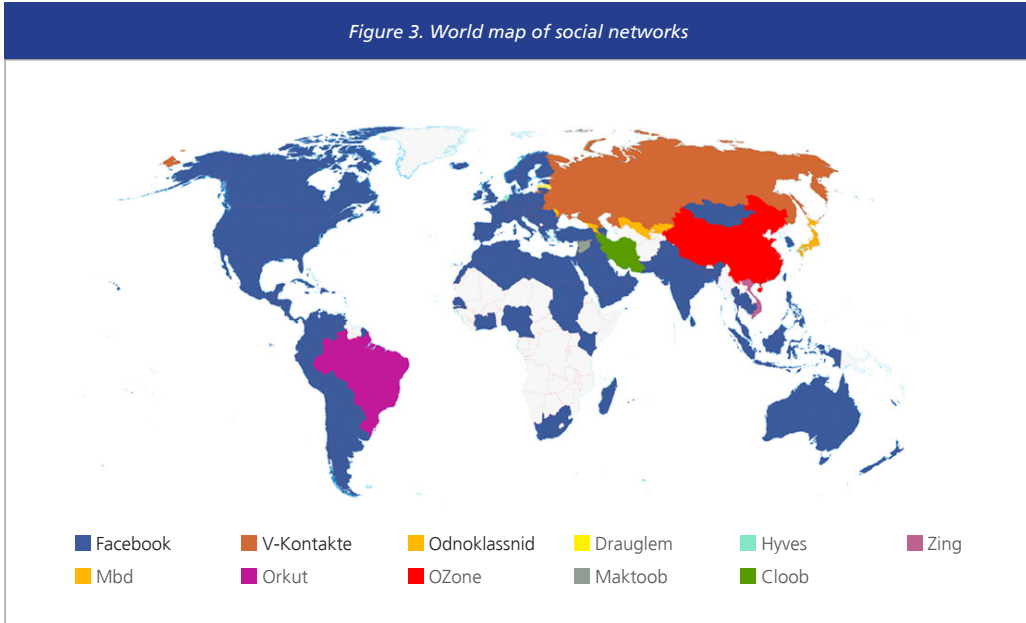


INTERNET BASED SOCIAL NETWORKING

With the development of social networking websites, more and more Mongolians have started using social networking portals. According to social networking portals, the most popular ones among Mongolians are Facebook, Hi5, Biznetwork, Twitter and Flickr. (Vincos, 2010)

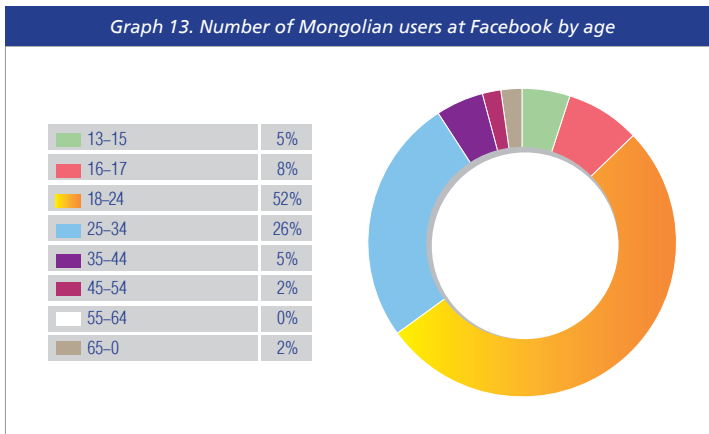
CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

Figure 3. World map of social networks



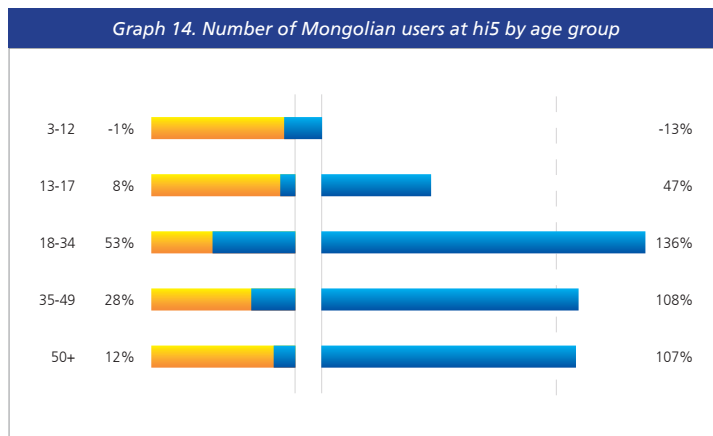
The number of Mongolian users at Facebook is more than 161,640 thousand users. The following graph represents age group distribution of Mongolian users of Facebook, and it can be seen that the majority of them (51%) are young people aged between 18-34 years old.

Graph 13. Number of Mongolian users at Facebook by age



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

As for Hi5, there are over 161,519 unique Mongolian users according to Quantcast (QuantCast, 2010), out of which 65% are males and 35% are females. As it can be seen from the following graph, the majority of Mongolian users at Hi5 are also young people aged between 18-34 years old. In addition, it should be noted that 28% of Mongolian users of Hi5 are people of 35-49 years old.



The Mongolian social networking website Biznetwork continue to be most popular and used website in Mongolia. Biznetwork is developed in Mongolian language, thus making it more accessible and user-friendly for Mongolians. It has now over 70,000 users, some of which are individuals and some are corporate organizations. Individual users create their own profiles, inviting people in their own circle of friends, colleagues and interest groups. The corporate organizations use Biznetwork to promote their businesses, product and services as well as to share information on their works and announce employment opportunities.

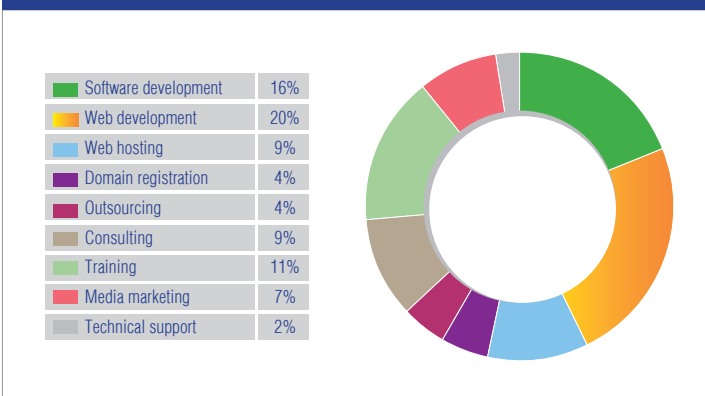
There are currently over 100 active members. Top 50 Mongolian companies advertise through Biznetwork on new jobs and vacancies. (Singleton, 2011). Moreover, the non-governmental organizations and individual members organize their own interest groups and through website organize activities for society or for its members, such as contests and sports activities as well as trainings to their friends, colleagues and friends.

The email marketing is becoming one of the popular means of providing information on products and services to citizens. The email marketing companies have databases of email addresses of Mongolian users, which are mostly subscribed at yahoo.com and use this network for marketing of products and services.

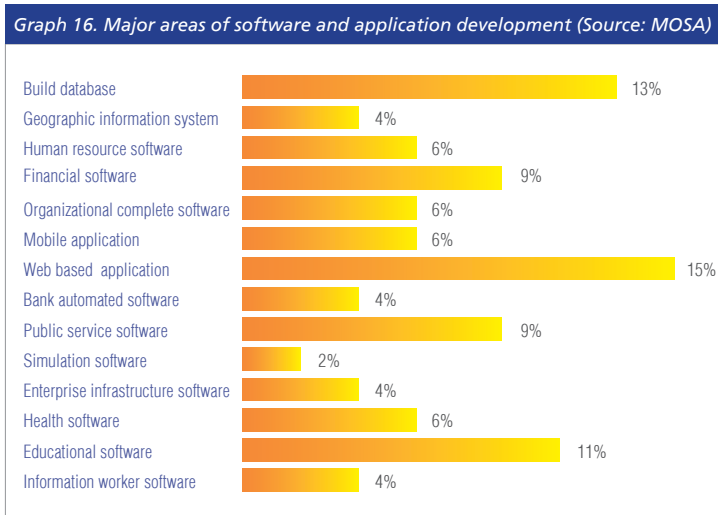
4.4. SOFTWARE INDUSTRY

The Mongolian software industry currently has over 100 software development companies, which specialize in the development of different software and applications, ranging from applications to be used at stand-alone computers to enterprise resource planning software to be used at network environments. There are a number of software companies, which specialize in the development of websites and portal sites, and more software companies have started to shift towards the development of web-based applications. According to recent study, the main areas of activities of software companies are on development of websites (20%) and software and application development (16%). In addition, the software development companies conduct training, offer web hosting services as well as consulting, media marketing and other services.

Graph 15. Major areas of operation of software development companies (Source: MOSA 2011)



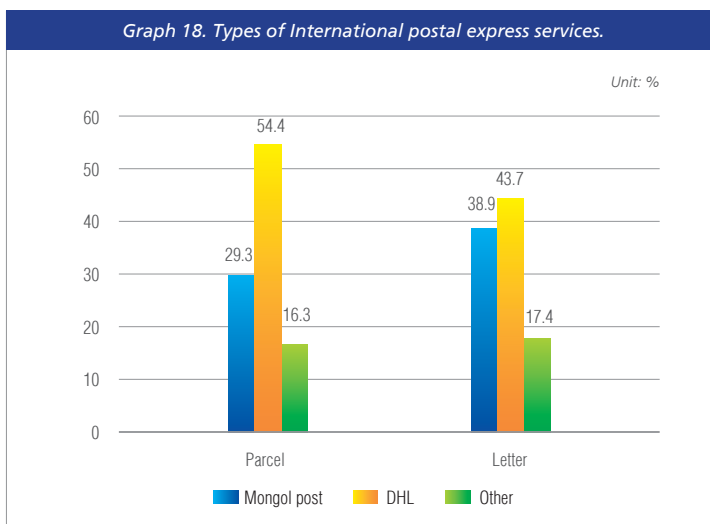
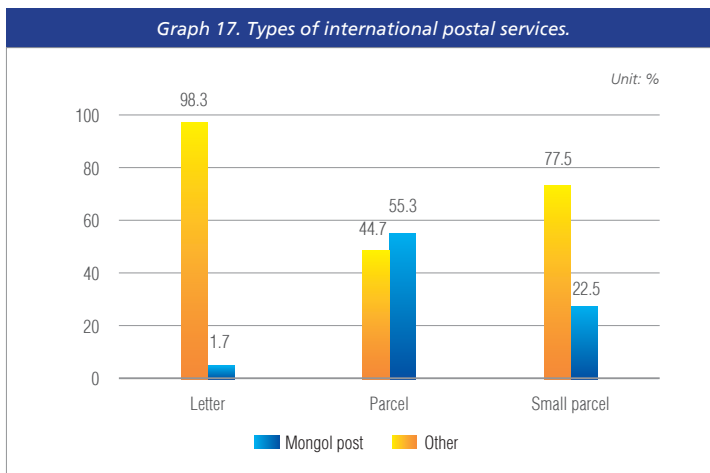
CURRENT SITUATION OF ICT SECTOR OF MONGOLIA



There are a number of software and applications used by organizations is increasing together with the complexity of those applications. The Enterprise Resource Planning (ERP) solutions are in greater demand by organizations.

4.5. POSTAL SERVICES

There are one state-owned (designated) operator- Mongol Post (www.mongolpost.mn) and 54 licensed postal operators are currently running postal service business. Some competitive services in the postal market such as outgoing international postal services (parcel, post letter, small parcel) and outgoing international express services are shown in the following graphs.



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

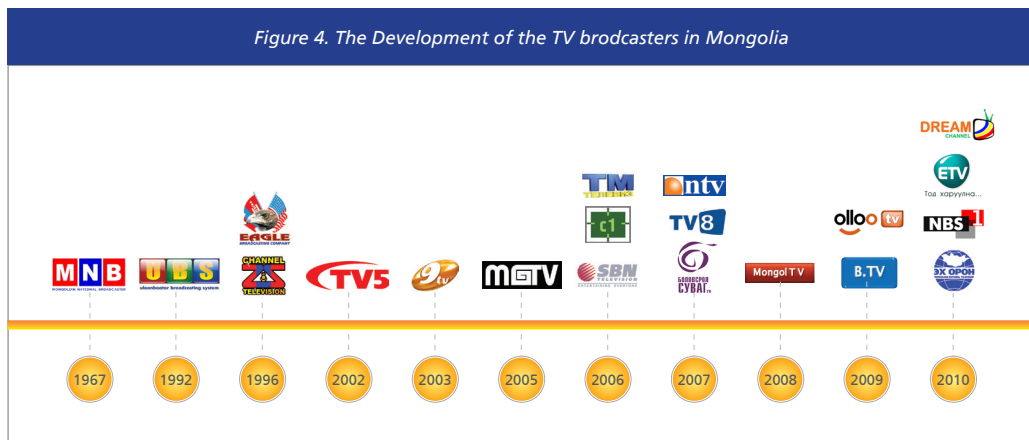
ICT-RELATED JOURNALS AND BOOKS

There are three major ICT-related journals published in Mongolia: “My computer/Digital World”, “Computer Times”, “Bileg” and “Kholboochin” (ICT workers).

The journals differ from each other on the content and target audience. “My Computer/Digital World” and “Computer Times” are targeted for broader public audience, whereas Computer Times is more of entertainment type. “Bileg” is targeted for ICT professionals and contains serious articles and publications related to ICT research and development. All of them are included in the list of journals for subscriptions. For more information on these journals, visit www.kt.mn and www.mycomputer.mn websites.

4.6. BROADCASTING SERVICE

TV broadcasting in Mongolia started in 1967, when the first national television program was aired in Mongolia. The following graph shows the evolvement of the television broadcasters in Mongolia.



Nationwide public TV broadcasting started transmission in 1992 by C-Band. Since May 2010, Mongolia has shifted to Ku-band, which allows broadcasting public and commercial TV channels nationwide.

There are 99 companies and organizations, which have television broadcasting licenses, including 70 companies to provide cable TV services.

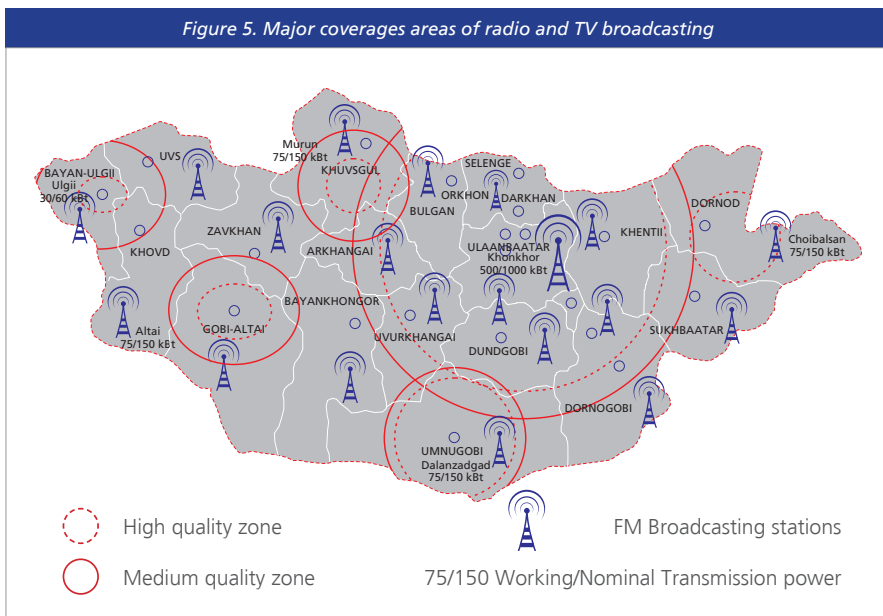
CABLE TELEVISION

There were 70 cable television (CATV) operators in Mongolia in the beginning of 2011. In recent years, as a result of the enabling rural citizens to watch National TV programmes and CATV, the total number of rural subscribers has increased rapidly, especially in 2009 and 2010. The following graph shows the number of CATV subscribers and market shares in CATV services in 2010, from which it can be seen that the number of the CATV subscribers have increased by 23% between 2009 and 2010.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

RADIO BROADCASTING

The two programs of the National Public Radio Broadcaster (NPRB) are transmitted throughout the territory of Mongolia, covering all aimags and soum centers. As it can be seen from the below figure, there are six major coverage areas: in the east in Choibalsan, in the south in Dalanzadgad, in the north in Honhor, in the mid-west in Murun and Altai and in the west in Ulgii.



The mobile subscribers also have benefit of listening to radio stations on their phones, especially if their phone sets are enabled radio or Internet radio services.

COMMUNITY RADIO NETWORK

There are 94 companies, organizations and individuals, which have received licenses from CRC for operation and functioning of FM radio stations in Ulaanbaatar city, in aimag and some soum centers. This is 25% decrease compare to 2009.

IPTV AND MOBILE TV

By end of 2010, the CRC issued two licenses for Internet Protocol (IP) based television and two licenses for mobile television services in Ulaanbaatar city initially, and extended later to other cities. The companies have modernized networks to introduce IPTV and mobile TV services, and, as a result, mobile subscribers of these two companies can benefit from watching television on their phones, Internet, or other multimedia devices.

In 2010, Univision Company, an subsidiary of Unitel group, has broadened its scope of service to deliver latest technology that developing rapidly worldwide that becomes IPTV, in other words HD TV that is next generation of CATV through fiber optic for households and Corporate. The Univision is offering two services: IPTV and Internet. The IPTV is the technology which gives opportunities of being interactive with TV, choosing and watching any videos from VOD, making time shift, restart TV, catch up TV programs anytime and enables watching HD and SD local and international TV channels with high quality. The Internet service which is offering highest broadband, highest quality and Wi- Fi technology which is able to be connected anywhere with GPON technology.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

4.7. ICT HUMAN RESOURCES

POLICY

The revised laws on education, tertiary education, primary and secondary education were adopted in 2002. In 2006, the Ministry of Education, Culture and Science of Mongolia (MECS) developed “Master plan to develop Education in Mongolia for 2006-2015”, approved by the Parliament of Mongolia.

Since 2006 MECS has been implementing “General directions to introduce information technologies in the primary and secondary education sectors by year 2015”.

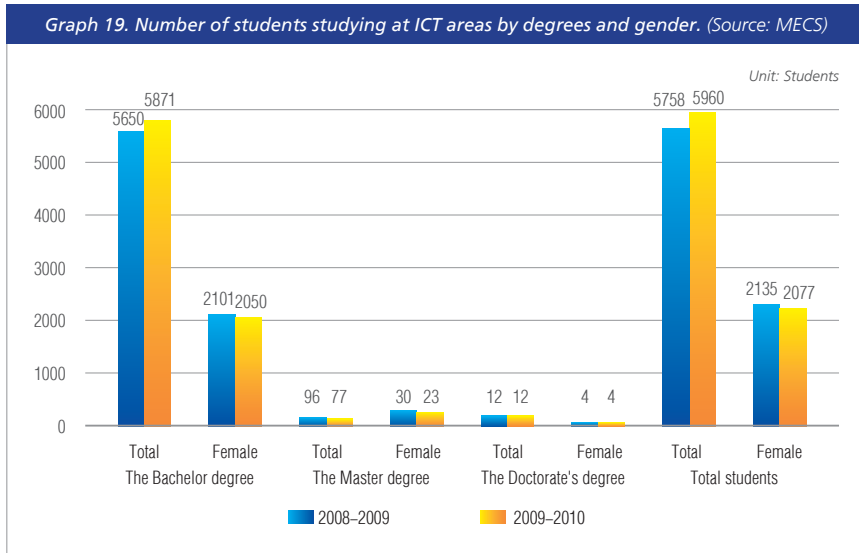
On June 5, 2007, the Minister for Education, Culture and Science issued the decree No.183 approving some measures to be implemented in the near future ICT, describing the measures such as using Erdemnet (Knowledge Network) for Internet connection for science, education and cultural institutions, connecting public tertiary institutions to Internet and recommending private educational institutions on increasing their Internet connection bandwidth, improving skills and knowledge of ICT of teachers and students studying in those institutions, improving use and application of ICT and Internet by teachers, and paying more attention to increasing number of computers and equipment, software and quality of utilization (MECS, 2006). For more information, visit <http://www.mecs.gov.mn> . (add information from ADB TEDP)

TERTIARY EDUCATIONAL INSTITUTIONS

There are 24 ICT educational institutions in Mongolia, which train ICT professionals, of which 7 are public institutions, and the remaining are private institutions. There are over 6,000 students studying in those institutions, specializing in software engineering, network administration, information systems and management, hardware engineering, telecommunications engineering, postal services, electronics engineering, optic communications, television and radio technology, satellite and wireless communications, information technology, etc.

The following graph represents the comparative table of students studying at Bachelor, Master’s and Doctorate levels at all higher educational institutions of Mongolia, separated by proportion of female and male students.

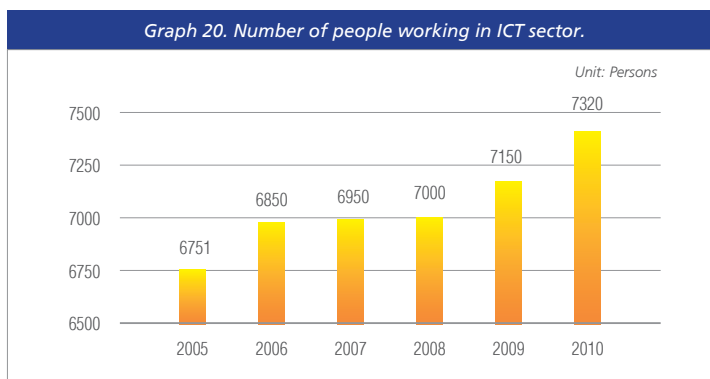
CURRENT SITUATION OF ICT SECTOR OF MONGOLIA



NUMBER OF ICT SPECIALISTS

There are 7,320 people working in telecommunications, mobile communications services, Internet services, software, hardware and consulting services companies of Mongolia.

Recently The ICTPA and CRC has established a joint working group to development "National program on ICT Human resource development".



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

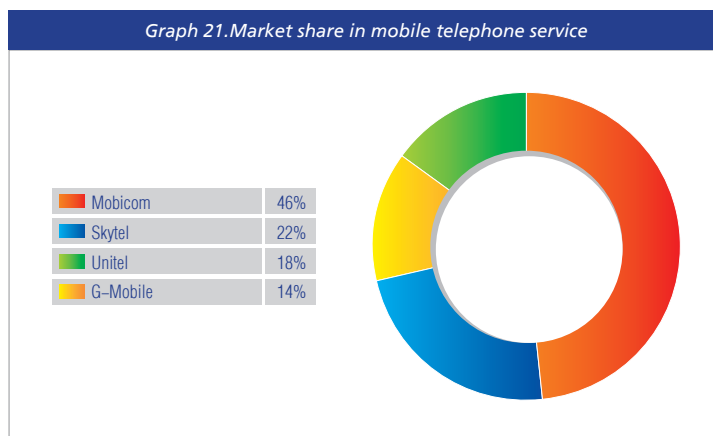
4.8. ICT RELATED ORGANIZATIONS

TELECOMMUNICATIONS OPERATORS

Mongolia Telecom (MT) is one of the leading telecommunications companies of Mongolia, which provides fixed telephone services to household and organizations. From 2006, the MT started offering Next Generation Network (NGN) CDMA 2001X and installed NGN stations at each district of Ulaanbaatar. In addition, MT is offering F-Zone wireless telecommunications services, which are used in 21 aimags centers and 34 soum centers. Among service providers, the Information Communications Network Company (ICNC) plays a leading role. ICNC is a state-owned company, which owns 100% backbone network of Mongolia, including national and international transmissions. The ICNC has its main office and branches in 3 cities, and 340 soums. The main services offered by ICNC are renting voice and data channels, cable and networks within Ulaanbaatar city, fiber optic network and other transmission equipment nationwide.

MOBILE PHONE OPERATORS

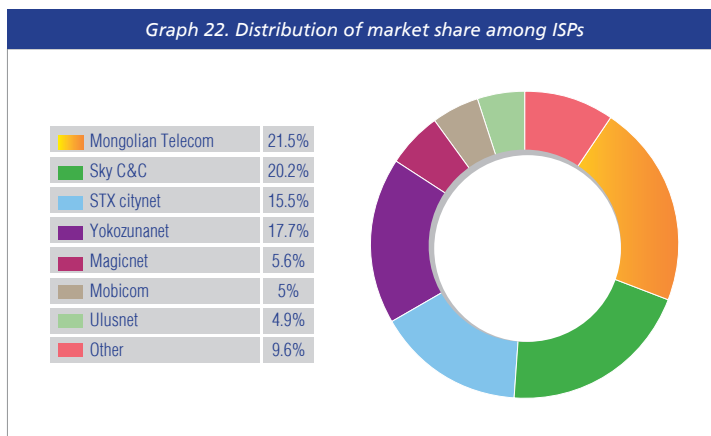
There are four mobile service providers in Mongolia: Mobicom and Unitel provide services of GSM system, and Skytel and G-Mobile (www.g-mobile.mn) provide CDMA system services. The Unitel and Skytel companies have become national mobile operators in 2010 and Unitel has announced setting up Unitel group.



CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

INTERNET SERVICE PROVIDERS

There are 77 Internet service providers, which received licenses from CRC by the end of 2010. The following table represents distribution of market share among ISPs.



VSAT

There are 8 operators and companies that provide VSAT services. Mongolian Telecom has 19 VSAT stations, Incomnet (<http://www.incomnet.mn>) has over 400, Orbitnet has over 29, Mobicom has 94, Skytel has 4, Unitel has 31 and G-mobile has 29 VSAT stations throughout Mongolia.

ICT CONSULTING COMPANIES

There are about 10 companies, which specialize on providing ICT consulting services. The concept of consulting services is considerably new in Mongolia, therefore, the majority of companies specializing on ICT consulting service provision tends to offer their services to international and donor organizations, rather than to companies and institutions in Mongolia.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

INTERNET CAFE

There are over 120 internet cafes and game houses in Ulaanbaatar city, which are connected to high speed Internet. The services offered at Internet cafes vary from access to Internet, use of computers and basic services, such as photocopying, scanning documents and taking photos.

According to the recent survey conducted by Intec (<http://www.itconsulting.mn>), IT consulting company of Mongolia, among the Internet cafes and game houses in the rural parts of Mongolia covering 16 aimags of Mongolia, the estimation is that there are about 3-5 Internet cafes or game houses in each aimag center, leading to conclusion that there are 80-100 Internet cafes outside of Ulaanbaatar city, and over 200 Internet cafes and game houses nationwide.

The majority of them are connected to Internet through ADSL of 512kbps and more high connection speed. They are equipped with computers of Pentium IV model and additional equipments such as video cameras, digital cameras, printers, photocopy machines, scanners, etc. (Intec, 2009).

DIRECTORY SERVICE PROVIDERS

There are 171 directory service providers, which have licenses for premium numbers, out of which 106 are in Ulaanbaatar city, and the remaining 38 - in aimags of Mongolia.

In addition to the premium numbers, there are 13 toll-free and local rate numbers to be used for emergency purposes such as ambulance calls, fire alerts, law enforcement agencies, and others.

CONTENT DEVELOPMENT

Extensive efforts are being made to improve content development both for Internet and for mobile phones. Initiatives such as "Mongolian Content Forum", contests among students and developers on development of software and applications for mobile services, and further enhancement to develop content for mobile phones, including but not limited to digital content for mobile phones, digital content for television programs, content for IPTV and mobile TV, etc. are being organized to support and encourage development of

MONGOLIAN CONTENT

The special focus is made on the development of mobile content and the National Information Technology Park (NITP) has been working on promoting of Apple Apps and Android system developers, organizing trainings and workshops as well as providing with opportunities to demonstrate products to mobile operators.

NON-GOVERNMENTAL ORGANIZATIONS

There are over a dozen of non-governmental organizations (NGO's), which are active in ICT sector in Mongolia including National ICT Association (NICTA), Mongolian Information Development Association (MIDAS), Mongolian Software Industry Association (MOSA), Mongolian Internet Service Providers Association (MISPA), MITSA, Mongolian Development Gateway (MDG), Communications Manufacturing and Research Institute, Mongolian Young Software Developers Association, Open Source Society, Mongolian Robotics Association, Japanese Mongolian Information Technology Association (JMITA), Mongolian information technology Consortium, Association of ICT infrastructure builders, Mongolian center to fight Cyber crime , "Leading Researchers" and others.

NGO's are mainly established with the focus on either addressing sector specific matter (internet service provision, software industry – such as MISPA or MOSA) or on generic areas to promote the development of ICT in Mongolia, such as MIDAS.

NICTA (<http://www.com-assn.mn>) former National Association of Mongolian Telecommunications Workers was established in 1991 with the purpose of establishing an independent organization with members working in all types of private, government and semi-governmental postal and telecommunications organizations of Mongolia to protect and represent the rights of its members. In 2010, it has been renamed to National ICT Association reflecting converging trends in ICT sector.

MIDAS (<http://www.ict.mn/midas>) was established in 2001 with the mission to promote development of the ICT sector in Mongolia.

MOSA (<http://www.mosa.mn>) was established in 2007 and aims at promoting the software development industry to match world standards and requirements and protecting rights of members. It has about 30 corporate members and over 40 individual members.

CURRENT SITUATION OF ICT SECTOR OF MONGOLIA

MISPA (<http://www.mispa.mn>) was established in 2005 as an association to represent and protect the rights of ISPs, coordinate and cooperate with national and international organizations on pricing and conditions for bandwidth for Mongolia. Since its establishment, MISPA has worked successfully to reduce costs of Internet connections for Mongolia and within Mongolia. MISPA operates Mongolian Internet Exchange (MIX) to transfer Internet data that originates and terminates within Mongolia locally.

MITSA (<http://www.mitsa.mn>) was established in March 2010 with the purpose of improving professional skills of students studying in ICT specialties.

RESEARCH AND DEVELOPMENT INSTITUTIONS

Communications Manufacturing and Research Institute has been established in 1969 under the former Ministry of Communications. It has been mandated to promote innovations and new ideas, pilot test those ideas and implement them in production. It was operational until 1995, conducting different researches and development works.

The Informatics Institute of Mongolian Academy of Sciences of Mongolia has been established in 1987. The primary objective of Informatics Institute is to conduct research and development in the areas, which will facilitate development of policy to improve government policies. The researches related to Information technology and applications, establishment of geo-information systems and development of knowledge base related to land and geography were carried out.

The tertiary education institutions, such as Mongolian University of Science and Technology (MUST) and National University of Mongolia (NUM) have been conducting a number of research and development works on ICT. The School of Information Technology (SIT) and School of Mathematics and Computer Science (SMCS) of NUM and Computer Science and Management School (CSMS) and Communications and Information Technology school (CITS) of MUST are the primary institutions, which carry out different researches and development.

Currently, there are discussion on establishing ICT research and development institution in Mongolia.

INTERNATIONAL COOPERATION IN ICT SECTOR

The Information, Communications Technology and Post Authority (ICTPA) of the Government of Mongolia is actively engaged in numerous international activities for strengthening bilateral and multilateral cooperation with its foreign counterparts, ICT and Post specialized international and regional organizations and multinational corporations in order to promote and facilitate the ICT and Post sector development in Mongolia.

Since its inception, ICTPA is extensively involved in the international multilateral cooperation in the sectors. ICTPA represents the Government of Mongolia as a state member in the numerous international and regional organizations such as the International Telecommunication Union, Universal Postal Union, Asia Pacific Telecommunity, Asia Pacific Postal Union, Asia Pacific Space Cooperation Organization, Intersputnik, and World Technopolis Association.

As the member of the afore-mentioned organizations, ICTPA honors and carries out its membership duties by regularly participating their events and initiatives such the plenipotentiary conferences and international and regional forums on pressing issues. The Government of Mongolia will organize Asia-Pacific Regional Forum on Cooperation Mechanism for Disaster Communications Management 07-11 July and Asian-Pacific Postal Union Executive Council Meeting, 25-29 July, 2011 in Ulaanbaatar, Mongolia.

Bilateral international relations and cooperation are also extensively encouraged and conducted with numerous foreign government agencies and ministries, international and regional non-governmental organizations and multinational business entities and around 40 agreements and memorandums of understanding were concluded in order to strengthen the friendly and beneficial relations with them.



ICTPA participated ITU Plenipotentiary Conference 2010 (PP-10) in Guadalajara, Mexico in October, 2010. The Plenipotentiary Conference is the key event at which ITU Member States decide on the future role of the organization, thereby determining the organization's ability to influence and affect the development of Information and Communication Technologies (ICTs) worldwide. During this Conference, Mr.A.Munkhbat, Vice Chairman of ICTPA met with Dr Hamadoun I. Touré Secretary-General of ITU. (Figure-7)



To name such recent initiative, the Memorandum of Understanding was signed by Mr.J.Bat-Erdene, Chairman of ICTPA and Prof.Dr.Oh, Deog-Seong Secretary General of World Technopolis Association to cooperate on the establishment of ICT cluster during the official visit paid by the Prime Minister of Mongolia to the Republic of Korea in March 2011. (Figure-8)

To promote and extend its cooperation with the foreign countries where ICTPA is involved in various collaborative and joint activities, the ICT ambassadors were designated to the developed countries such as Japan, the Republic of Korea and Sweden. There are a number of projects and initiatives implemented by ICTPA. The Information and Communications Infrastructure Development Project (ICIDP) of World Bank, implemented for a period 2006-2012 has reported on the achievements of its major components – infrastructure development, universal access program, straightening policy and regulatory capacity and enabling environment for e-government.

Since 2008, the ICTPA has been cooperating with United Nations Asia Pacific Center on ICT (UN APCIC) based in Incheon, Korea. ICTPA has been cooperating with Academy of Management, Intec Company and National Information Technology Park to introduce content of “Academy of ICT essentials for government leaders” program to government officials of Mongolia and to translate modules of “Academy” into Mongolian language. In 2010, Mongolia has been recognized and awarded with the certificate of appreciation among 3 countries out of 17 countries for extensive efforts made to introducing content of Academy to over 100 civil servants of Mongolia and organizing over 7 national workshops.

There is an ADB/ITU regional project on Rural ICTs with the objective to improve rural ICT policy and regulatory/legal environment in the Asia region. The project scope includes the study of rural ICT development policies, practices, experiences in selected Asian countries to develop collective body of knowledge to share across the region. The eight study countries include Korea, Malaysia, Philippines, China, Indonesia, India, Mongolia, Cambodia.

Mongolia was one of the three countries to implement “Improving public service through ICT” pilot project of ADB. The Capability Maturity Model (CMM), ICT project guidebook and on-line platforms were developed and pilot tested in Mongolia at education, health and public transportation sectors. A number of capacity building workshops were organized both in Mongolia and overseas, enabling decision makers to share their experience of using CMM for assessing e-government projects implemented in their sectors and comparing sector progress with other countries.

ICT FOR DEVELOPMENT

A number of ICT for development initiatives were implemented in Mongolia for last year, including infrastructure development and substantial content development initiatives. The establishment of free WiFi zone at Sukhbaatar square, an initiative of Ulaanbaatar mayor's office has allowed ordinary citizens to have access to Internet through hotspots at Sukhbaatar square.

The National Information Technology park has a WiFi zone for students and researchers, enabling them to have access through WiFi hotspot at the 1st floor of NITP and at the "Innovation center" at 2nd floor.

The free Wi-Fi zones are currently operational at the big hotels, restaurants, railway stations and airport. The Wi-Fi zones were established in 10 soums in 2010. There are intentions to setup Wi-Fi zones in public locations, such as libraries, hospitals, etc.

Nowadays ICT have penetrated into almost all sectors of the economy and society of Mongolia. The penetration is expressed widely in the use of computers for processing data, development of reports, materials and other documents, providing online information services to citizens, communicating through websites, emails and others, introduction of 3G in mobile services, content development, etc.

More and more works and attention are paid for integrating ICT other sectors of Mongolia, such as education, health, transportation, agriculture, environment, etc. The issues such as climate change and disaster management are looking into possibilities of integrating ICT in early warning of citizens in disaster situations.

The Education reform project currently implemented at Ministry of Education, Culture and Science of Mongolia has big component related to ICT, which includes development of Master plan of ICT in Education sector, addressing issues of ICT policy, infrastructure, hardware, software, human resource development and capacity building and content development etc. There is an Open Education Management Information System (EMIS) being currently pilot tested in Mongolia. The Open EMIS has been developed by UNESCO Paris office to address the need of members-countries to have unified management information system. It's an open source code based software and piloted only in Mongolia. If the piloting is successful, there will be nation-wide implementation and UNESCO will implement it in other countries.

ICT FOR DEVELOPMENT

There are a number of initiatives in health sector. The hospitals are starting to offer doctor appointment system, thus allows patients to visit doctor on specified time and date. The Third health sector project is being implemented at the Ministry of Health, which has some components related to ICT. The national system of early warning of infectious diseases is planned to be implemented at the National center of infectious diseases, which will allow health practitioners to be warned about the infectious diseases outbreak, resulting in better health services to citizens.

Intelligent transport system and emergency management information system have been implemented by Ulaanbaatar and the integrated circuit card is planning to be implemented in the public transportation sector. The elderly people, students and pupils and marginalized groups of population would benefit of this system, which will allow them to use public transport system in Ulaanbaatar with ease.

The land and property registration system is being implemented with the funds from the Millennium Challenge Account, which allows placement and marking of properties and land in to the geographical information system (GIS). This will ease the process for citizens to get certificate and verification of information related to immovable property and land.

The decree No. 67 of March 2011 of Government of Mongolia has outlined measures to take related to citizens registration, which specified that the design of digital citizens ID card, specifications and budget has to be developed and by second quarter of 2011 and preparation works will be carried out under the supervision of the Chief of Government Authority of State registration.

ICTPA is fully committed to continue comprehensive efforts of the Government of Mongolia to build a knowledge-based society, and welcomes all partners to unite to promote development of ICT sector in our country as one of the essential requisites to foster the implementation of the MDG based Comprehensive National Development Strategy of Mongolia.

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Information, Communications Technology and Post Authority of Mongolia

Sukhbaatar square, Ulaanbaatar-15160

P.O.Box-785, Mongolia

Phone: +976-11-330785, +976-11-330781

Fax: +976-11-330780

E-mail: info@ictpa.gov.mn

foreignrelation@ictpa.gov.mn

Web: <http://www.ictpa.gov.mn>