

ICT Development in Myanmar (1988-2010)

Thinn Thinn Aye

Abstract

Today, the world we live is greatly influenced by scientific and advancement and changes that is growing day by day. Thus, it is important that every country in the world should try to catch up these advances. In doing so, ICT is a basic requirement for the development of the country. In order to create regional and global competency, ICT efficiency might be improved in every institutions. Government adopted Information Technologies policies and implemented ICT development. Moreover, Government initiated e.government project to achieve e-Myanmar society. The government promotes ICT by increasing training and education all level of organization ICT efficiency. Moreover, Myanmar signed MOU with neighbouring countries such as China, India and Japan for ICT development. Myanmar founded ASEAN University Network for exchange of knowledge and technology among the ASEAN countries. Learning Centre for computer Network, language lab, multi-media classrooms are being set up for e-education facilities. The state peace and development council has placed great emphasis on the development of ICT. As a result, remarkable progress of ICT Sector can be seen in the Union today.

Key Words : Government, ICT Infrastructure, International Cooperation, ICT Education, e.government.

Introduction

The world today becomes global village due to improving information and communication technology. The world people are applying inexhaustible modern resources of information and communication technology. The communication sector of Myanmar is being upgraded to be able to keep abreast of information and communication technology of the world. As a result, remarkable progress of communication network can be seen in the Union today.

In the past, Myanmar lagged behind in development of communication sector. The people had relied on facilities of post offices and telegraph offices. Therefore, they encountered poor communication. Sending a letter took many weeks from one place to another. Villages from far-flung areas

and border found it difficult to enjoy services of communication sector. Up to 1988 even Yangon and Mandalay had to be content with tens of thousands of telephones. Other major towns relied on magneto telephone system.

Change of system and technology is noteworthy for improving efficiency of the communication sector. Information communication technology advanced in leaps and bounds in late 20th Century and early 21st Century. In creating new lifestyle of the Myanmar human society that occurred after 1988, progress of information and communication technology helps shape the new nation.

The ICT infrastructure is the means of basic telecommunications services as well as the essential prerequisite for e-Commerce, e-Government and e-Learning. In other words, without an adequate ICT infrastructure, the whole ICT sector will not be able to achieve their goals. As the ICT infrastructure requires high-tech equipments and personnel, its impact on economic development is also very critical.

There are institutions in Myanmar ICT development. Myanmar Computer Science Development Council is established in 1996. Myanmar Computer Federation (MCF) is established in 1998. MCPA, MCIA and MCEA are subordinated by MCF.

Development of ICT Infrastructure

Remarkable development of post office and telegraph communication can be seen in comparison between 1988 and today. Number of post offices across the nation stood 1114 in 1988, and now the nation has 1379 post offices, extending 265 more offices. Likewise, the number of telegraph offices increased from 310 to 513 extension 205 more offices. Despite applying 10 facsimiles in past, the country has 5446 facsimiles today. Although there was no computerized telegraphic facility in 1989, the people are now applying 140 computerized telegraphic facilities. (The New Light of Myanmar, 31 Oct 2010, P.6-7)

In making strenuous efforts for development of communication sector, significant progress can be witnessed in telephone of Myanmar Posts and Telecommunication. Due to installation of auto-telephones and mobile telephones, 1.92 telephones ratio to 1000 people in 1988 increased to 39.95 for 1000 people in the year of 2010. (The New Light of Myanmar, 31 Oct 2010, P.6-7)

Although there were 74,855 ordinary telephone lines in 1988, number of telephone lines reached 229,741 in September 2010. Indeed, the telephone communication contributes much to economic and social development of the region, natural disaster preparedness measures and prevalence of law and order of the respective areas. Moreover, it earns money through charges of telephone installation and telephone calls for the state.

Table 1. Rural PCO Communication Stations

Ongoing tasks	unit	number	lines
Digital microwave installation - the stations under way	station	81	-
Auto-telephone installation - installing exchanges	exchange	80	35966
Mobile telephone installation - building GSM radiostation	station	30	61400
CDMA-450 mobile phone (IPstar) - building station	station	151	281000
CDMA-800 WLL mobile phone - building station	station	42	100000

Source: (The New Light of Myanmar, 31 Oct 2010, P.7)

Furthermore, relentless efforts are being made for development of the communication sector. Present situation of the communication sector can be studied as follows: -

Table 2. The Development of Communication Sector

Subject	unit	1988	2010	Progress
Post office	office	1114	1379	265
Telegraph office	office	310	515	205
Facsimile	number	10	5446	5446
Computerized telegraphic office	number	-	140	140
Telephone office				
- Digital auto-telephone	exchange	12	392	380
- Magneto exchange	exchange	211	296	85
- Rural telephone exchange	exchange	-	234	234
Telephone service	line	74855	2297419	2222564
- Digital auto-telephone	line	12000	794279	782279
- ARTS radio telephone	number	-	3856	3856
- DECT radio telephone	number	-	1949	1949
- CDMA (Fixed) telephone	number	-	20038	20038
Mobile telephone service	number	-	1435250	1435250
- CDMA (Mobile) telephone	number	-	583750	583750
- CDMA 800	number	-	250000	250000
- D-AMPS telephone	number	-	38400	38400
- GSM telephone	number	-	485100	485100
- WCDMA telephone	number	-	28000	28000
- Mc WLL telephone	number	-	50000	50000
Telephone density	(in 1000 person)	1.92	39.95	39.95
e-mail/Internet	station	-	7885	7885
Local satellite communication ground station	number	-	1825	1825
Local satellite communication channel	number	-	7300	7300
International telephone channel	number	26	4025	399
Trunk call communication links				
- Overseas satellite communication ground station	number	1	2	1
- Overseas satellite communication channel	station	26	804	778
- Overseas under water cable communication channel	number	-	1815	1815
- Fibre Optics links	mile	-	1348	1348
- Inland cross border fibre cable links	number	-	1406	1406
- Digital microwave links	station	-	316	316
- Analog microwave links	station	71	-	to digital
- carrier	station	124	-	to digital

Source: (The New Light of Myanmar, 31 Oct 2010, P.7)

On 16 July, 2004, GSM mobile system was implemented for creation of better communication system among Yangon, Mandalay and other major towns. Therefore, the residents of these areas can use new mobile phone system to make calls to any part of the nation and can apply advanced communication technology in connection with other countries through internet. During about two decades, new facilities of communication sector have uplifted the living standard of the people. Significant progress can be seen in social, education, economic and health sectors.

National backbone has fiber link between major Cities. Cross border fiber links are connecting India and Myanmar, China and Myanmar and

Thailand and Myanmar. International links are Sea-Me-We (3) Cable and Satellite. Last Mile Links are Dedicated Link, Wireless Broad Bank Access, ADSL and MPT Satellite Terminal.

With regard to the overseas communication links, satellite communication system, fibre communication system, under water cable communication system and border crossing communication system have been established in the nation. So far, the country has 4025 international communication channels and 316 microwave links. (The New Light of Myanmar, 31 Oct 2010, P.6)

Table 3. Progress of Communication Sector across the nation after 1988

Rural PCO communication stations

No.	States/Regions	States/Regions	States/Regions	States/Regions
1.	Nay Pyi Thaw	-	603	-
2.	Kachin State	-	1942	-
3.	Kayah State	-	105	-
4.	Kayin State	-	105	-
5.	Chin State	-	108	-
6.	Sagaing Region	-	2511	-
7.	Taninthayi Region	-	1412	-
8.	Bago Region (East)	565	150	-
9.	Bago Region (West)	-	208	-
10.	Magway Region	2	3019	-
11.	Mandalay Region	638	620	-
12.	Mon State	-	2744	-
13.	Rakhine State	-	192	-
14.	Yangon Region	-	242	-
15.	Shan State (South)	431	52	-
16.	Shan State (North)	-	427	-
17.	Shan State (East)	-	192	-
18.	Ayeyawady Region	851	3400	-
	Total	2487	17892	20379

Source: (The New Light of Myanmar, 31 Oct 2010, P.6)

Moreover, concerted efforts are being made in substitution of cable lines across the boarder areas with fibre optics lines for creation of rapid Internal communication the countryside.

To be able to manage office works applying electronic communication system on a wider scale, e-Government system is being realized. It is a system

to make effective connection among the ministries based on ICT technology without losing its original working styles. In addition, e-Government system can store personal data files of service personnel.

To get ICT awareness, MCF also performs seminars and workshops professional and ICT industry. MCF also performs ICT Caravan to rural areas for the basic ICT awareness and knowledge creation for the local people and students.

Myanmar Natural language Processing Project (NLP) was started on 27 October 2003 at the incubation center, MCF, Yangon, Myanmar.

Three major pillars of Myanmar ICT laws are (1) the Computer Science Development Law, 1996, (2) the Electronic Transactions Law, 2004, and (3) the Wide Area Network Order. A harmonized model for ICT laws consists of 3 parts: (i) telecommunication law, (ii) information promotion law and (iii) ICT industry promotion law. There is absence of information promotion law as the 1st tier law. However, it focuses mainly on business license, inspection, prohibition, information and duties of computer science development council, computer associations, and computer federation. But, ICT industry promotion function is very weak. (<http://www.upan/un.org/intradoc/groups/public/document>)

International Corporation in ICT Development

Myanmar is the only country neighboring with two ICT Super Power countries, India and China. So we can enjoy the benefit of spillover effect of these two countries development because of the strategic location. Forward-looking preparations are underway and also exhibits relative readiness in skills and human resources. The private sector also has the technology, resource and creativity to turn Myanmar into a reality.

Myanmar ICT policy has been drawn as early as in 2000 while Korea initiated the first Master plan for Informalization promotion in June, 1996. Annual assistance awarded to Myanmar by Korean government through KOICA (Korea International Cooperation Agency and KADO (Korea Agency for Digital Opportunity and Promotion) started from 2003. Eventually, ICT experts from Korea, not only the government entities but private companies are helping to improve e-government projects and set-up the data centers in

Myanmar. The Sasakawa Peace foundation of Japan has also funded training programmes on ICT in education for Myanmar.

Meanwhile, the country has also signed a series of memorandums of understanding in 2003 with companies from Malaysia, Thailand and an ASEAN organization on ICT development. Myanmar has been awarded for ICT development in 2003 by the Asian Oceanian Computing Industry Organization. Myanmar has signed the e-ASEAN Framework Agreement together with all the other members of ASEAN in November 2000 in order to closely cooperate in the area of ICT within the region. Myanmar IT Park has been established in January 2002 and it is a historical milestone which has emerged as a result of the encouragement of the government and efforts of ICT technicians and entrepreneurs. (U Soung Tin, 2003, p.2)

Networking in education was perceived as a principle vehicle for the development of human resource and the build-up of regional solidarity and identity. For the purpose, the ASEAN University Network or AUN was created. Currently, the AUN comprises 20 leading universities from 10 ASEAN countries. An ultimate objective of the ASEAN University Network is the establishment of an ASEAN University. Number of Complementary activities, such as, the Aun Inter-Library Online, the AUN Collaborative Research, the AUN Quality Assurance and AUN Distinguished Scholars Programme are designed to support the development of the ASEAN University.

But, viewing at the rapid development of ICT will also directly support for the rapid development of the country in terms of economic, social and knowledge based society. We are fully confident that ICT indicators are also essential for the development of the country.

e-Government

Almost all of the government departments are using computers for their own specific purposes or stand-alone applications. But some efforts have been made to introduce a Trade Electronic Data Interchange (TEDI) and e-Procurement; they are on progress. But very recently, on-line applications such as smart-card, smart school, e-passport, e-visa applications have been introduced to the country. Therefore, the data collection for the application for e-government will be required in due course.

e-commerce has been introduced very recently to our country. The e-commerce is taking place in some private trading organizations but have the effort at government side to facilities trading through computerization. At the same time, e-National Task Force is developing the cyber law together with the office of the Attorney-General and it is on progress.

The first phase of e-Government was implemented with US\$ 12 korcan loan. E-Government Network and Government Edu-center were already established. Myanmar-Info-Tech is the key organization for e-government project Development of e-Government projects is a national priority. To be able to manage office works applying electronic communication system on a wider scale. E-government system is being realized. It is a system to make effective connection among the ministries based on ICT technology without losing is original working styles. In addition, e-government system can store personal data file of service personnel. Applying e-Banking, e-passport, e-credit, e-library and e-learning centre better communication at home and abroad.

One of the common and important implementation of e-government projects G-Government refers to the use by government agencies of information technologies that have the ability to transform relations with citizens, business, and other arms of government in the delivery of services. e-government creates the capacity to offer services to the public on an intergrated cross-agency basis (i.e) "networked government". In other words, e-government is the use of ICT to promote three objectives for the implementation of e-government projects. (Patricia, 2003,6,7)

(1) Delivery government program and services to citizen more efficiently

Most of the government services will be offered by on-line. Citizens do not need to go government offices instead they can access from their home or office anytime. This is Government to citizen model (G2C)

(2) Government comprehensive services for Business Development

One of the e-Government implementation is creating the environment for more cooperation and co-ordination between Government and Private Business for the new business potential, technological development. Human Resources development and news rules and regulations Development. This approach is Government to Business (G2B) model.

- (3) G2E services encompass G2C services as well as specialized services that cover only government employees, such as the provision of human resources training and development that improve the bureaucracy's day to day functions and dealing with citizens.
- (4) G2G services take place two levels: at the local or domestic level and at the international level. G2G services are transactions between the central/ national and local governments, and between department-level and attached agencies and bureaus. At the sometime, G2G services are transactions between government, and can be used as an instrument of international relations and diplomacy.

Another requirement for the implementation of e-government is telecommunication infrastructure readiness. MPT (Myanmar post and Telecommunication) is for the Development by establishing new micro waves rates, introducing of wireless mobile telephone system such as cellular, CDMA, GSM, and installation of domestic communication earth station as well as (A) satellite earth station for the international V-Sat network is also used for remote areas by using. This com satellite, At the same time, Myanmar has connected SEA-ME-WE 3 submarine cable and it is now in service. One of the achievement is connecting fibre line among all the big in Myanmar.

e-Education (ICT Education)

The government has opened 26 computer universities in states and divisions. It is encouraging in the use of ICT in the education sector. All Universities and Colleges in Myanmar have used computers for teaching and learning. Data collection of the graduates of higher education by field of specialization has been started long time ago.

In addition, Multimedia classrooms have been opened in virtually all the basic education high school and in some middle and primary schools. There are over 900 high schools with multimedia class rooms so that the young students are able to learn the ICT subject starting from the basic education level. Over 500 e-Learning Centres have also opened at universities, colleges and high schools. Other areas such as, Library, health, Sports should be considered to provide information assistances to the public users through the on-line services and internet. (U Soung Tin, 2003. p.7)

Nowadays, the Myanmar IT status is growing rapidly according to the encouragement of the government and implementation of the local IT organization. There is a consensus that Information Communication Technology (ICT) is recognized as a key element in implementing political, economic and social objectives in Myanmar. There is a very good chance that Myanmar can compete effectively in the international ICT industry especially in Software industry. There are many opportunities for application of ICT in socio-economic organizations to increase the productivity, market penetration, reduction cost and improving services so that they can compete in the global market. Systematic efforts on development of ICT will provide Myanmar opportunities to leapfrog and catch up with the development countries.

Examples of many countries prove that development of IT can be successful only if there is an environment for fair competition and private sector takes the leading role. In Myanmar, public sector should take the responsibility of doing the tasks, which cannot be done by private sector such as building IT infrastructure, amalgamation of law, rules and regulation, setting standards. And then create an environment for fair competition. State should provide a situation in which private sector can function effectively in developing IT applications and building as IT industry. Due to dedicated and concrete efforts both in the public and private sectors in Myanmar, development in ICT in the last couple of years have been result. But, the pace of development still needs to be improved so that Myanmar can narrow the digital divide.

One of the more significant information and communication technology (ICT) related developments in Myanmar is the completion of the first phase of the Yatanarpon cyber city. Officially opened on 14 December 2007, the city includes a telecommunications hub and seven incubation centres. The telecommunication hub is connected by fibre to the national backbone linking all of the big cities. International fibre links to China, India, and Thailand are also to be established.

Another significant development is the establishment of the government fibre network linking all ministries and head offices of government agencies, and a data centre housing serves for all ministries. The government broadband network provides a good opportunity for the development of e-government. There are already some e-Government efforts, such as the Government Personnel Management System (GPMS) and

Electronic Document Management System (EDMS). There are also efforts by various government agencies to computerize operations. (Thein Oo & Myint Myint Than, 2009)

The Ministry of Science and Technology (MOST) upgraded the 24 Government Computer Colleges (GCCs) to Universities of Computer Studies on 19 January 2007. There are now 26 computer universities dedicated to professional education in ICT fields.

An ICT Master Plan for Myanmar covering the period 2006-2010 has been drafted with funding support from the Republic of Korea under the Initiative for ASEAN Integration. But their Master Plan has not been officially adopted or approved. The lack of an ICT Master Plan or a coherent set of ICT policies is the biggest weakness in Myanmar's ICT development efforts. Adopting a Master Plan will provide direction not only to government agencies, but also to ICT business enterprises and investors.

The e-education and awareness building component of the Master Plan consists of : (i) benchmarking against success factors in other nations; (ii) making full use of existing resources (including traditional media); (iii) encouraging the participation of opinion leaders; (iv) setting priorities and targeting the young talents first; and (v) cooperating with private, civil and international entities.

The strategic directions for an ICT legal framework may be summarized as follows : (i) overhaul the ICT legal framework; (ii) reduce uncertainties in implementing telecommunications policy; and (iii) modernize the ICT legal framework.

The Wide Area Network Order focuses mainly on prohibiting illegal acts relating to networks, and not a facilitating the building and upgrading of telecommunications networks. In addition, it deals with licence regulations that should be covered by a Telecommunications Law.

Developing skilled human resources particularly for the software and ICT services sectors is considered a key to Myanmar's economic growth. Twenty-six universities of computer studies are helping to substantially increase the country's supply of ICT professionals. The Ministry of Education and New Century Human Resources Development NHRD Department also have their own programs for developing ICT graduates. The Ministry has a Bachelor of Computer Science program at Dagon University and Yadanabon University, and a Postgraduate Diploma and a Master of Computer Science

program at Yangon University. The New Century Human Resource Development (NHRD) Department has various graduate, diploma and certificate programs related to ICT and its graduates has been increasing steadily.

The ultimate goal of e-education and awareness is to achieve and inclusive e-Myanmar society in which everyone those living in urban and rural areas, the young and the old, rich, and poor- has access to information services. This is the key to a full-fledged information society where e-government and e-commerce are part of everyday life for all citizens. The three main pillars for achieving an inclusive e-Myanmar society are promoting awareness of ICT, improving digital literacy and ensuring universal access. While the vision of an e-Myanmar society is not one that can be realized quickly, two targets that may be achieved in the short term (i.e. by 2010) are : an internet usage rate of 20 percent and a telephone penetration rate of 40 percent. By achieving these two targets by 2010, Myanmar will develop confidence in implementing the ICT Master Plan and be in a good position to initiate the next stage of development.

Myanmar's commitment to ICT development is apparent in the establishment of the Yataharpon cyber city, improvements to the national backbone and international connectivity, the government fibre network and e-government projects, computer universities in regional areas, public access centres in the rural areas, and efforts at localization.

Give its strategic location between two of the world's biggest, countries, China and India, its abundant natural resources, and its cheap labour force, Myanmar has the potential to become a high growth country. But it is still at an early state of ICT development. The supply side of ICT development, such as the telecommunication infrastructure, computer penetration and access points, will be improved if the present level of effort is maintained. Improving the legal framework and developing relevant applications will require more time and effort from both the public and private sectors. Devising a mechanism for effective collaboration and cooperation will be a key success factor.

The focus of information and communication technologies (ICT) education in Myanmar's colleges is classroom learning rather than practical training, so students rarely graduate with knowledge than translates into workplace skills. The project is therefore focused on enhancing the practical capabilities of college graduates in the ICT field by establishing the

Information and Communication Technology Training Institute (ICTTI) to provide exercise-based training. (http://www.jica.go.jp/myanmar_english/activities/activity_09.html)

At present, there are as many as around 70 private computer schools in Myanmar. Some of them provide diploma and degree courses. Ministry of Education and Ministry of Science and Technology are installing V-SAT and IP Star satellite systems among universities. These facilities are going to be used for video conferencing and e-learning systems at the universities. Under these programme, the number of professional are about 1500 per year. Myanmar Computer Federation (MCF) is offering professional IT courses for IT engineers in order for them to be able to cope with the dynamic changing nature of technology advancement. MCF has also introduced Japan-Myanmar cross-certification examination system which would be recognized among the Asian region. Unless the private sector there are 850 number. It's vision is to become one of the ICT automating service centres in the world on the basic of proper ICT HRD.

A new technological university of the Yatanarpon cyber city, aimed at producing human resources capable or producing new products with innovation based on ICT, was also inaugurated. The Yatanarpon technological university is designed to cooperate with international universities so as to produce experts in the field of IT and research. The technological university under the Ministry of Science and Technology has admitted 7,475 students for the current 2010-11 academic year.

Conclusion

Improvement of communication sector is one of the development sectors being realized by the State. By overcoming many obstacles, the government is steadfastly building a modern and developed nation to be able to serve the long-term interest of the State and the people.

Nowadays, the national citizens are enjoying development results of new communication networks linking across the nation. The government are created the communication networks for the public interest by applying modern communication technology in two decades. Thanks to rapid and easy communication networks, significant progress can be witnessed in administration management, economic, education, health and social sectors of the nation.

The creation of Digital Opportunities within all sectors is a long approach. International cooperation is very important. Myanmar still has a great opportunity. Myanmar is the only country neighbouring with two ICT super power countries India & China. So we can enjoy the benefit of spillover effect of these two countries development because of the strategic location. Forward-looking preparation are underway and also exhibit relative readiness in skills and human resources. In future, Myanmar Implemented ICT Master Plan and Action plan projects to develop ICT infrastructure and efficient e-government. In doing so, digital divide will be narrower.

References

Asocio ICT Best practices award Taipei, China, 2010

Aung Kyaw Oo, Comparative study on ICT policy Management Korea (Myanmar), akoo@temep.snu.kr.

Country Report Myanmar, www.itu.int/ITU-D/usp/cms/Even/sio-3-Salai-Samuel-Wintin-pdf.

Hnin Wut Yee, e-learning statues in Myanmar, Asia Pacific Networking Group.

<http://en.kuming.cn/index/content/2011-01/119/content2404592.htm>

ICT in Education in the Asia Pacific Region, Progress and Plans, UNESCO 2007.

India-Myanmar Cooperation Embassy of India, Yangon 2004.

MICT Park, A year in Review [http://www.me.washington.com/Issue/20 No.27.20 JANUARY.doc](http://www.me.washington.com/Issue/20%20No.27.20%20JANUARY.doc).

Myanmar ICT Industry, [http://www.elcot.com/mail-report/ Myanmar/ 20 Jet .pdf](http://www.elcot.com/mail-report/Myanmar/20%20Jet.pdf)

Myanmar-Korea ICT Forum, MICT Park, Yangon, Myanmar, 2002.

Patricia J.Pascal, e-Government, may 2003 E-ASEAN Task force UNDP

Project on ICT Human Development of ICT Training Institute, [http:// www.jica, go-ja/ Myanmar/ English activities/ activity 09-html](http://www.jica.go.jp/Myanmar/English%20activities/activity09.html).

Soung Tin, ICT statistics collection and analysis in Myanmar, central statistical organization, 2003.

Swe Thu Han, ICT Development in Myanmar, Department of Communication and Integrated system, Tokyo Institute of Technology.

Thaung Su Nyein, ICT for SMES in Myanmar, MCPA

Thaung Tin, e.ASEAN : How will it benefit Myanmar, Myanmar Computer Scientists Association, ASEAN, 2003.

The New Life of Myanmar, 31 October 2010, vol.XVIII, No-193.

Thein Oo & Myint Myint Than, .mm Myanmar , [http // www.crdi.org// lacro/ev.140980-201-1-Do-Topic – htm](http://www.crdi.org/lacro/ev.140980-201-1-Do-Topic-hm).

Thein Oo, Resident MCF, Cooperation Opportunities in ICT Between Myanmar and Japan, Myanmar Computer Federation, Myanmar Info-Tech

Thein, Dr. Kyaw, IT Policy-Human Resources Development: Country Report, [mcf@mpt mail net. Com](mailto:mcf@mpt.net.com)

Tin Aye Kywe, Current IT status and utilization of information technology in Myanmar, ACE data system Co., Ltd.