



STRENGTHENING COOPERATION ON ICT RESEARCH BETWEEN EUROPE AND SOUTHEAST ASIA



ICT policies, programmes and research priorities in the 10 ASEAN countries

June 2010



Supported by the European Commission and the ASEAN Secretariat

Foreword	3
Introduction	4
Brunei Darussalam	5
ICT POLICIES	5
ICT PROGRAMMES	5
ICT RESEARCH PRIORITIES	5
Cambodia	6
ICT POLICIES	6
ICT PROGRAMMES	7
ICT RESEARCH PRIORITIES	8
Indonesia	9
ICT POLICIES	9
ICT PROGRAMMES	10
ICT RESEARCH PRIORITIES	10
Lao PDR	12
ICT POLICIES	12
ICT PROGRAMMES	13
ICT RESEARCH PRIORITIES	13
Malaysia	14
ICT POLICIES	14
ICT PROGRAMMES	14
ICT RESEARCH PRIORITIES	15
Myanmar	17
ICT POLICIES	17
ICT PROGRAMMES	18
ICT RESEARCH PRIORITIES	18
The Philippines	20
ICT POLICIES	20
ICT PROGRAMMES	21
ICT RESEARCH PRIORITIES	21
Singapore	23
ICT POLICIES	23
ICT PROGRAMMES	24
ICT RESEARCH PRIORITIES	25
Thailand	26
ICT POLICIES	26
ICT PROGRAMMES	27
ICT RESEARCH PRIORITIES	27
Vietnam	29
ICT POLICIES	29
ICT PROGRAMMES	29
ICT RESEARCH PRIORITIES	31

FOREWORD

For the past three years, ASEAN Member States have actively engaged the European Commission in strengthening cooperation in ICT research in both regions through the SEACOOP project among other projects. The SEACOOP project is supported by the European Commission through the Seventh Framework Programme for Research and Technological Development (FP7).

Activities implemented under the SEACOOP project include the identification and analysis of ICT policies and research priorities in ASEAN Member States. Such information would be useful in determining potential areas of cooperation within ASEAN and with the European Commission. Thus, we are pleased to present a compendium of the current ICT Policies, Programmes and Research Priorities in the 10 ASEAN Member States.

Consistent with many Declarations and Statements of ASEAN Leaders, Member States have intensified efforts towards enhancing their capacities to deliver various ICT programmes. Noting the varied levels of development in ASEAN, the compendium provides a glimpse at the e-readiness of the individual Member States. Certainly, much work remains to be done and it is expected that the compendium will be updated regularly.

We would like to express our sincere appreciation to all those who have been involved in the preparation of this document. We would like to particularly thank the European Commission for the support in the implementation of the SEACOOP project including the publication of this compendium.

Thank you.

Alexander A. Lim
Head S&T
ASEAN Secretariat

INTRODUCTION



SEACOOP is an initiative supported by the European Commission and the ASEAN Secretariat and aiming at strengthening S&T cooperation in ICT between Europe and the 10 ASEAN countries: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

One of the main expected outputs of this initiative is the identification of cooperation priorities, which would support a quicker development of joint ICT research projects (involving organisations from both regions).

In order to identify such priorities, it is of course important that the characteristics of each region are well known by the other region, particularly as far as ICT policies, programmes and research priorities are concerned.

A lot of information is available today on national and regional statistics in both regions (particularly for the ICT sector) and we would recommend, among other sources, the Eurostat web site for Europe (<http://ec.europa.eu>) and the ASEAN Secretariat web site for Southeast Asia (www.aseansec.org), both providing a large set of up to date statistics. Another important source, that may usefully complement the statistics provided by Eurostat and the ASEAN Secretariat on ICT issues, is of course the ITU web site (www.itu.int).

Concerning ICT policies, programmes and research priorities, the situation today is the following:

In Europe, detailed information is available on ICT policies and programmes at national and regional levels, namely through the web portal of the i2010 strategy for “A European Information Society for growth and employment” (see http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm), while ICT research priorities at the regional level are translated into the periodically revised Work Programme of FP7 (main Europe’s research funding programme) for the ICT theme (see <http://cordis.europa.eu/fp7/ict>).

In Southeast Asia, if a more and more substantial amount of information is available concerning the regional level (particularly through the web site of the ASEAN Secretariat), limited information is available to date on ICT policies, programmes, and research priorities in each ASEAN country.

This is why the Southeast Asian members of the SEACOOP partnership have prepared the present document and are happy to make it publicly available.

It will be updated whenever necessary in the months and years to come, each released version being posted on the SEACOOP web site (www.eurosoutheastasia-ict.org).

BRUNEI DARUSSALAM



ICT POLICIES

The Brunei Information Technology (BIT) Council, formed in 2000, is central to ICT development in Brunei. BIT council is chaired by the Minister of Communication and the council member consists of prominent figures from both the public and private sectors. There are no known national ICT policy in the public domain, however, the various Ministries have their respective ICT policies. Through Ministerial speeches the Brunei ICT policies are said to be supportive of economic growths at all fronts.

Brunei is developing a technological competent society. This is reflected by the the achievement of a 100% internet ready community. Cellphones penetration is just over 1 per population. The two major cellphones service providers are DST and b-Mobile. DST and TelBru are the two internet service providers. The private sector has lead the way in the implementation of ICT. Internet banking and various e-services are provided by the businesses. The government is responding through the e-government initiative.

The Brunei Government has allocated B\$1,146 million or 12.1% of the overall National Development Plan (NDP) 2007-2012 budget for ICT development. In a nutshell, e-government initiative is develop a so called e-smart government system where ICT is to be used to transform the business processes of the government. The e-government initiative will integrate the numerous government ICT systems to provide a transparent, secure, caring, accessible, relevant and practical services to the people. More information on Brunei e-government initiative can be obtained from:
http://www.egnc.gov.bn/download/Documents/e_government_strategic_plan_2009_2014.pdf

ICT PROGRAMMES

The main ICT programme in Brunei is the e-government initiative. The main implementation stakeholder is the e-government technical authority body (EGTAB). www.egtab.gov.bn EGTAB is under the purview of the Authority for Info-Communications Technology Industry (AITI) for Brunei. The day to day management of the e-government initiative is conducted by e-government national centre (EGNC) <http://www.egnc.gov.bn/Pages/default.aspx>

ICT RESEARCH PRIORITIES

The main centre for developmental ICT companies is the iCentre, [www.icentre.biz]. iCentre is an ICT incubation centre under the purview of Brunei Economic Development Board (BEDB) [www.bedb.com.bn]. For most ICT companies research and development are not given priorities. Most local ICT companies are only functioning as distributors or resellers of international ICT products. It is only a handful of companies who are engaged in product development.

The main reason for the lack of ICT research is the inability of local companies in attracting talents. The ICT business environment does not seems to provide long term continuity and hence the reluctance of companies engaging in long term R&D.

At the university level higher, Institute Teknologi Brunei (ITB) is engaged in ICT research [www.itb.edu.bn], and in Universiti Brunei Darussalam (UBD), ICT is incorporated into the research thrust areas of; energy, bio-diversity and food security. ICT is used as tools. For example, in bio-diversity research, ICT is used to model rain forest dynamics, or the swamp dynamics of animals are studied from which agents algorithm are developed.

CAMBODIA



ICT POLICIES

Overview

- | | |
|--|-------------------------------------|
| - Country Name: Kingdom of Cambodia | - Religion: Buddhism (95%) |
| - Capital City: Phnom Penh | - GDP: \$26.064 Billion |
| - Language: Khmer (Official), English and French | - GDP Per Capita: \$2,500 (as 2009) |
| - Land Area: 181,035 km ² | - Currency: Riel (1USD ≈ 4200Riels) |
| - Location: South East Asia (ASEAN Member) | - Country Code: +855 |
| - Population: 13.3 Millions (as 2008) | - Internet Code: .kh |

Since 2000, Royal Government of Cambodia (RGC) has been issuing policies to adopt and promote the ICT use in governmental organisations as well as in other sectors. Cambodia could gain the most benefits from those ICT policies to boost the economy and bridge the digital gap. The policies are aiming to build Cambodia to become information-base and knowledge base society.

1. In order to monitoring the massive of developments, RGC has been adopted ICT as a tool to provide, gain knowledge from all information and established e-Government services such as Residential Registration System, Vehicle Registration System, Real Estate Registration System, e-Health/Mobile Health Care services, and also providing e-Visa service (<http://www.mfaic.gov.kh/e-visa/vindex.aspx>) to ease international visitors/tourisms for applying visa to enter Cambodia. These are the basic data that government need which could lead to provide efficiency and enhance the quality of e-Services. Also we had developed automate-custom clearance system for sea port, which help the speed of shipping of products to international market and importing products faster and easier.
2. Increase competitiveness of national ICT industry, improving quality of life of people and boost opportunities for Cambodian people to get the better services.
3. Encourage development of national ICT industry by promoting widespread adoption of ICT applications, especially promoting the development of ICT applications in local language (Khmer Language).
4. Reduce the gap of living standard, improvement of information accessibility and constructing basic ICT infrastructure on nationwide level through National Information Infrastructure (NII), National Backbone, and the cooperation with telecommunication sector to run Optical Fiber cable and wireless/satellite technology over the country.
5. Reduce public administration time, costs and improve quality of public services through development of ICT.
6. Promoting e-banking/internet banking which is the basic for e-Commerce and e-Business transactions by starting from full function of ATM and internet banking services (<http://www.nbc.org.kh/index.asp>).
7. Citizen could gain more knowledge from data/information which provides by government as well as other sources, which could help them in the competitive of Free Market.
8. Tax could be increase since the availability data of transactions/incomes and other through e-banking system.
9. ICT training policies has been provided for Human Capacity Building for both government officials and society in general by established Training Centre as well as provided policy to enable private sector and development partners to build Community Information Centre (CIC) and Public Information Centre (PIC) where citizen could access free of charge. Also promoting private ICT training centres to train students and other to get deep in their skills.
10. WID (Women in Development) in ICT sector, promoting women to join the development of ICT by providing priority to women to get ICT related scholarship in universities as well as in other training centres.

There are two authorities who are responsible for developing ICT and Telecommunication policies:

11. In August 2000, NiDA has been established and responsible for researching, proposing, formulating, promoting, implementing, monitoring and evaluating all of National ICT policies, e-Government, and Information Security Initiative in Cambodia. (www.nida.gov.kh)
12. Ministry of Post and Telecommunication (MPTC) is responsible for researching, proposing, formulating, promoting, implementing, monitoring and evaluating of Telecommunication sector and Network Backbone in Cambodia. (www.mptc.gov.kh)

To achieve those missions, resources are planned and milestones to be reached:

13. for national ICT policies: <http://nida.gov.kh/index.php?language=en>
14. for telecommunication policies: <http://www.mptc.gov.kh/>
15. for ICT policy in education: <http://www.moeys.gov.kh/en/education/ict/index.htm>
16. for Banking: <http://www.nbc.org.kh/index.asp>

The international/ global dimensions of these policies are: the first goal is to connect to the world through high-speed network that would make this world becomes closer in term of communication and space. Second, with ICT applications and high-speed network, governments could share each other the most important data/information that could protect and fight against terrorisms to keep this world with peace. Since the connection of high-speed network between Europe and Asia has been connected (TEIN3), data/information has been sharing among academic research area that would boost the growth of ICT and find the new trend of ICT in the future.

ICT PROGRAMMES

ICT main programmes in Cambodia:

Services		S&T	e-ASEAN (ICT)	Economic Development
1. E-Banking		6. Unicode of Khmer Font	11. ICT in Education	16. Promote the use of ICT in SMEs
2. E-Government		7. Smart Card	12. ICT training	17. Promoting e-Commerce
3. Mobile-Health Care and E-Health		8. Information Security	13. E-Learning	18. Public Private Partnership programme on ICT development
4. E-Library		9. Open Source Development in Khmer Language	14. E-Learning Platform	19. Promote the using local language (Khmer) in ICT applications
5. Information Sharing		10. Green IT	15. Video Conference	

Objectives of these programmes are to reduce time, cost of transaction, space, to make user friendly, and increase/resize business market which will sustain the economic development and reduce the gap of living standard in the region as well as the world at large.

The main stakeholders setting and implementing: from government side NiDA, MPTC, MoEYS, NBC, ect., from private sector are Intel Cop, Telecom firms, Angkor net, Commercial banks, VietTel, etc., and from non-profit organisation are ADB, UNDP, World Bank, ect.

With PPP (public private partnership) policy, they have been working closely to contribute most of their efforts to those programmes to make sure that they would be smoothly implemented and successful.

Resources are planned for these programmes are NiDA, MPTC, NBC, MEF, MoEYS, and other. The Success Criteria are to sustain the economic development, socio-cultural development, share experiences and gain knowledge amongst ASEAN countries and partners, especially on R&D of S&T and supporting policies.

International dimensions of these programmes are to expand market from local to International by starting e-Commerce and e-Business as well as to reach the international ICT level and the world of closer. With these programmes, the level of economic and S&T in Cambodia could be sooner caught up with other.

Beside those programmes, Cyber, e-Signature and e-Commerce law are under processing of research and draft. At the same time, telecommunication law is on the process of final drafting and will pass to National Assembly soon.

ICT research priorities in Cambodia
ICT Policy <ul style="list-style-type: none">- ICT promoting Policy- ICT training Policy- Promoting ICT in Education Policy- E-Government Policy- E-Learning Platform- Trend of future ICT- Cyber Policy and Regulation- Telecommunication Policy and Regulation- E-Signature and E-Commerce Policy and Regulation
Infrastructure <ul style="list-style-type: none">- Network Infrastructure Development (Optical Fiber) and Monitoring- ICT Management and Network Monitoring- Wireless/Satellite Infrastructure Development
Information Technology and Services <ul style="list-style-type: none">- E-Learning- ICT Applications and Open Source Development- Information Security System and- E-Services (e-Government) and E-Library- E-Banking / Internet Banking- Wireless Technology and Satellite Technology- 3G Technology

INDONESIA



ICT POLICIES

INSTITUTIONS AND ORGANIZATIONS DEALING WITH ICT POLICIES

The National ICT Council (Dewan TIK Nasional — DETIKNAS) was established in 2006 to accelerate Information and Communication Technology (ICT) growth through policies that would synchronize the ICT programs of all government departments, ministries, and units. DETIKNAS has seven flagship programs:

e-Pendidikan (e-Education) — intended to establish an education network (see 'ICT-related Education and Capacity-Building Programs').

e-Pengadaan (e-Procurement) — now on a trial run at the National Development Planning Agency (Badan Perencanaan Pembangunan Nasional — Bappenas) and the National Education Department.

e-Anggaran (e-Budget) — to merge the routine budget and the development budget into one budgeting format to reduce the intersect allocation.

National Single Window (NSW) — an integrated system to accelerate customs clearance, cargo clearance, and the custom facilitation process, thereby cutting the high costs associated with customs services.

Single Identity Number (SIN) or National Identity Number (NIN)

Palapa Ring — the national telecommunication backbone organized as a fibre optic ring surrounding the entire Indonesian archipelago to accelerate access, increase telecommunication quality, and ensure universal availability of the telecommunications infrastructure.

Software legalization program — to promote use of licensed software in government and non-government institutions, with open source software as the main choice.

The implementation of telecommunications standards, rules, and policies is the joint responsibility of **Directorate General Post & Telecommunication** called Dirjen Postel, which is under the **Ministry for Communication and Information** (called Depkominfo), the **Indonesia Telecommunication Regulatory Body** (Badan Regulasi Telekomunikasi Indonesia — BRTI), the Directorate of Telecommunication, the Directorate of Radio Frequency Spectrum Satellite Orbit, the Directorate of Post and Telecommunication Standardize, and the Directorate of International Post and Telecommunication Institutional. BRTI is an independent regulatory body charged with protecting the public interest and fostering healthy competition in the telecommunications sector. It coordinates with Dirjen Postel and gives periodic reports to the Depkominfo.

The State Ministry of Research and Technology (Kementerian Negara Riset dan Teknologi - called **Ristek**) is working for research coordination on expanding the ICT infrastructure through telecommunications and internet application development, digital broadcasting, development of energy-saving and low-cost computers, and open source applications.

Private sector participation in ICT development in Indonesia is led by the non-profit **Indonesia Infocomm Society (Masyarakat Telematika - MASTEL)**, which serves as a bridge between government and ICT industry groups. MASTEL has seven working groups: telecommunication blueprint, policy development, broadcasting, ICT roadmap, taxation, ICT for the rural areas, and dispute resolution.

The Indonesia Information Technology Federation (Federasi Teknologi Informasi Indonesia — FTII) is composed of associations in ICT-related fields with the common aim of promoting the growth of IT applications and the development of the IT industry.

The Indonesia ISP Association (APJII) seeks to develop the Internet in Indonesia. Its concerns include the management of the Indonesia-Network Information (ID-INC) and Indonesia Internet eXchange (IIX), and negotiating the telecommunication service infrastructure fee. APJII provides its members with Network Information Resources (NIR), gives advice to government, and organizes training programs.

The Indonesia Domain Name Registry (PANDI) was established in December 2006 to reduce Indonesia's dependence on overseas domains. Its duties include developing and providing services related with domain names.

The Indonesia Security Incident Response Team on Internet Infrastructure (ID-SIRTII) is responsible for the control of Internet traffic in the country. Its aim is to discourage and eliminate misuse and misapplication of Internet infrastructure particularly through cyber terrorism and Internet crimes like hacking. Its activities include collecting logs from ISPs, conducting traffic system analysis, and fostering collaboration for the protection of information security. **(Source: .id Indonesia** compiled by *Donny B.U & Rapin Mudiardjo*)

ICT PROGRAMMES

The Palapa Ring broadband fiber optic development is designed to connect all of Indonesia in one Internet infrastructure circle. This grand project consists of seven rings to cover 33 provinces and 460 regencies. The project has a budget of USD 255 million for laying 35,280 kilometres of submarine cable and 21,708 kilometres of land cable. Each ring will forward bandwidth frequency access from one point to another in every regency, providing a high-speed connection of 300–1,000 Gbps. The development is expected to take one year (all of 2009) and services will commence in the first quarter of 2010. In May 2007, a consortium of seven companies signed a memorandum of understanding with the government to undertake Palapa Ring Phase I, which will cover east Indonesia. The consortium was committed to deposit USD 11.2 million or 5 percent of the total project value.

At the end of 2007 Indonesia finally implemented **the National Single Window (NSW) system** in Tanjung Priok Harbor, Jakarta. With the NSW system applications for customs clearance and the necessary permits from the Food and Drugs Authority Agency (Badan Pengawas Pusat Obat dan Makanan), Directorate General of Overseas Trade (Dirjen Perdagangan Luar Negeri), Agriculture Quarantine Agency (Badan Karantina Pertanian), and Sea and Fish Quarantine Agency (Pusat Karantina Ikan) are made online at www.insw.go.id (see 'Clearing Customs in 30 Minutes Instead of 5.5 Days').

The USO program aims to build basic telephone infrastructure in 38,741 villages from a fund to which telecommunications operators shall contribute 0.75 percent of their annual gross revenue contribution. The program target is at least one phone line per village by 2010 and Internet access for at least 50 percent of the villages by 2015. In September 2007 the Indonesian government began to implement the USO program through a tender process that began with 23 companies expressing interest. Eleven companies actually made a tender and, after a thorough evaluation, two - PT Telkom and PT Asia Cellular Satellite — were declared as finalists. However, in December 2007 the USO tender was cancelled as the two finalists were found to be unable to meet the technical and administrative requirements.

ICT AND ICT-RELATED INDUSTRIES

ICT Industries

According to the Department of Industry, Indonesia's ICT industries are distributed as follows: hardware, 5–10 percent; multimedia software, 30–40 percent; and consulting services, 50–65 percent. The value of the ICT market is estimated to be USD 979.9 million for hardware, USD 211.7 million for consulting services, and USD 110.3 million for software. In 2006–2007, the sector had an investment value of USD 54.7 million, a production value of IDR 40.3 quintillion, an export value of USD 2.8 million, and an import value of USD 2 million. The industry employs around 58,000–60,000 people.

To give ICT industries a boost, the Indonesian government has set up Regional IT Centers of Excellence (RICE) in 10 cities: Jakarta, Bogor, Cimahi, Bandung, Surabaya, Denpasar, Manado, Makassar, Balikpapan, and Medan. RICE management includes stakeholders from government, academia, and the business community.

Internet Service Providers

According to Dirjen Postel, as of the end of 2007 there were 298 licenced ISPs, 44 licenced Network Access Providers, and 25 multimedia companies. Of the total, only 202 companies have registered with the Indonesia APJII. Many APJII members are companies that need services such as IP address allocation and assistance in connecting to the IIX.

Internet Kiosks

The number of Internet kiosks, called *warnet* (for Warung Internet), is growing steadily. In 2007 there were more than 10,000 Internet kiosks, according to the Indonesian Internet Kiosk Association (Asosiasi Warnet Indonesia — AWARI). Many have been raided by the police for illegal use of proprietary software. Internet kiosks play an important role in providing Internet access in Indonesia, with 40 percent of the 20 million Internet users in Indonesia accessing the Internet from *warnet*. On average, an Internet kiosk has 12 PCs, with each PC being used for up to seven hours per day. Users are charged IDR 4,000 per hour. (Source: **.id Indonesia** compiled by *Donny B.U & Rapin Mudiardjo*)

ICT RESEARCH PRIORITIES

INDONESIA-ICT RESEARCH AND DEVELOPMENT

Rural NGN (R-NGN) refers to research on Next Generation Network (NGN) technology applications for the countryside. It is expected to provide affordable Internet access as well as telephony service for people in the rural areas. *Wajanbolic* (*wajan* is the Javanese word for frying pan) is a parabolic antenna made from a frying pan. It was invented by Gunadi, who lives in Purworejo, Central Java. According to information from his blog, the *wajanbolic* technology allows access to a 2.4 GHz wireless Internet signal from a distance of 3–4 kilometres. In clear line of sight conditions, the signal has 60–70 percent stability and allows for Internet speeds of up to 54 Mbps. Each set costs only about USD 41. Some private institutions, schools, and Internet kiosks are utilizing the *wajanbolic* technology photos of which are available at the inventor's blog, <http://gun001.multiply.com/photos>.

THE DIGITAL MEDIA BROADCASTING

Program was designed to provide better broadcast quality compared to traditional analog broadcast but at a relatively low cost, considering the economic condition of most Indonesians. Based on this reality, Ristek worked with research institutions such as BPPT and LIPI and also with several universities to create some kind of inverter so that analog television (TV) can be used to receive digital broadcasts. In 2006–2007, this program carried out research and development (R&D) in packetized elementary streams (coding, compression, formatting) and stream multiplex and transport stream program. The program will also involve the National Standard Board for the standardization, as well as state-owned enterprises and domestic industries to provide components and equipments.

OPEN SOURCE/OPEN CONTENT INITIATIVES.

Ilmu Komputer.com or IKC (*Ilmu Komputer* means 'Computer Knowledge') is a website that contains free lectures, tutorials, translations, reviewers, and other materials about computer technology, delivered in Bahasa. Hundreds of volunteers from all over Indonesia and abroad contribute to the site, which received recognition at the World Summit on the Information Society (WSIS) as one of 'The 21 Continental Best Practice Examples in the Category e-Learning'. In February 2007, Ristek announced that the ministry would provide a USD 5,300 technology assistance fund for small and medium enterprises willing to use open source software in running their business. The Indonesia Goes Open Source (IGOS) program was launched in 2004 to promote the development and use of open source software in the country. Penggerak Linux Indonesia Foundation, established in 1990, is also supporting open source software development and has developed BlankOn Linux Lontara, which uses Bahasa as the interface language. With the advocacy of these two groups, many local sites now use open source platforms.

INDONESIA-LOCAL WIMAX.

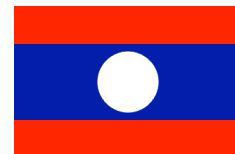
The Directorate General of Post and Telecommunication (Dirjen Postel) will open for tender the development of 2.3 GHz local Worldwide Interoperability for Microwave Access (WiMAX) in 2008. The government has set aside about USD 1.93 million for this purpose. However, as of September 2008, no significant progress had been made in the tender process. WiMAX development will involve government, the private sector, and academic institutions, including the Indonesian Institute of Science (Lembaga Ilmu Pengetahuan Indonesia — LIPI), Technology Institute of Bandung (ITB), University of Indonesia (UI), Gajah Mada University (UGM), Hassanudin University (Unhas), Technology Institute of 10 November (ITS), State Ministry of Research and Technology, Technology Research Group, PT Inti and PT Harif. Each is assigned a specific role: ITB for chipset development, Ristek through the Agency for the Assessment and Application of Technology (Badan Pengkajian dan Penerapan Teknologi — BPPT) for final terminal development, LIPI for baseband radio frequency, UI for antenna, and ITB for operating system. There will be 40 researchers from each group. The Dirjen Postel Director has noted that WiMAX development in Indonesia will develop the local IT and manufacturing industry, which in turn will support downstream industries such as the content industry.

CHALLENGES AND OPPORTUNITIES

According to Ristek, there are eight weakness that can slow down the growth of the ICT industry in Indonesia: (i) unfavourable business conditions due to weak law enforcement; (ii) relatively weak support for R&D and transfer of technology due to insufficient funding; (iii) lack of a national standard for ICT products; (iv) a limited export market; (v) high dependency on imported components and production equipment, resulting in vulnerability to global price changes; (vi) a limited number of professionals in ICT development; (vii) lack of optimal effort in developing ICT-based enterprise such as an animation industry; and (viii) software piracy. The latter cost the software industry a loss of USD 411 million in 2007. In his note titled 'Strategy and Policy in Communication and ICT Development', the state minister of state-owned enterprise Indonesia, Sofyan Djalil (formerly the Minister of Communication and ICT), said that although Indonesia has the advantage of having a large number of demographic and geographic resources, having many islands could be an obstacle to ICT build-up and development. He recommended giving priority to ICT development in areas with high economic value, such as Java and parts of Sumatra. In a presidential lecture held on 9 May 2008 with Microsoft Chairman Bill Gates in the audience, Indonesian President Susilo Bambang Yudhoyono noted that ICT can help resolve many of the country's problems, such as poverty, corruption, conflict, violence, deadly diseases, natural disasters, and mismanagement. However, although there are more and more computers in the districts and villages, few people understand how they can be harnessed to improve lives and foster development. The President underlined the fact that while there is a lot of useful know-how and creativity with ICT, these initiatives remain scattered and they are not being deployed in a coherent and even way to help the poor. Indeed, harnessing ICT for national development is the challenge confronting ICT advocates in Indonesia.

Source: [.id Indonesia](#) compiled by Donny B.U & Rapin Mudiardjo

LAO PDR



ICT POLICIES

The Government Of Laos (GOL) has identified nine priority areas requiring long term consideration. The following are the policy statements for Infrastructure and Access; Enterprise and Industry; Research and Development; Applications; Human Resource Development; Legal Framework; Awareness; Poverty Alleviation; and Standardization and Localization.

1. Infrastructure and Access

The GOL shall focus on expanding the existing telecommunications infrastructure, linking the most rural and remote areas, particularly in the northern parts of the Lao PDR, using appropriate and feasible technologies to the national infrastructure. Establish a Universal Service Programme to provide telecommunications services to the underserved areas. making Internet costs affordable to the users. The GOL shall encourage the wide usage of ICT by reduce the current level (15%) of import tax on all ICT equipment.

2. Enterprise and Industry

The GOL shall promote enterprise development in the ICT sector. Promote local ICT enterprise development; where possible, government shall give first preference to locally developed software, hardware and ICT services in procurement. Provide favourable investment incentives and taxation environment, including but not limited to reduced software/hardware import duties for business and profit taxes levied on ICT related enterprises. The GOL shall identify and allocate ICT investment zones with appropriate and adequate physical space, infrastructural, facilities, and logistical services and effort in promoting outsourcing businesses in Lao PDR.

Encourage national and foreign investors to compete and to cooperate in investment in the construction, development, and expansion of the telecommunications network and services.

3. Research and Development

Establish national research and development centre/incubator to promote research and development in the fields of information and communication technologies – software, hardware, and services.

The GOL shall mandate the establishment of a National ICT Association (NICTA), which shall be a consortium of private sector ICT companies. After establishment, the NICTA shall operate autonomous from the Government but shall advise the Government on issues relating to the ICT industry.

4. Applications

The GOL has identified three main areas for immediate application of ICT to enhance efficiencies in the delivery of services and management – e-Government, e-Tourism, and banking.

5. Human Resource Development

In formal, non-formal, vocational and skill training, the GOL shall promote and support the continuous learning of ICT to ensure the necessary capacities to meet national goals. The GOL shall focus on world-class curriculum development for Bachelor and Masters Degrees of Computer Science/Engineering and degrees related ICT for the tertiary level of education. The GOL shall ensure the application of ICT to supplements and administer the Ministry of Education five main programmes: 1) Pre-school and General Education Programme, 2) Non-formal Education Programme, 3) Teacher Training Programme, 4) Vocational and Higher Education Programme, and 5) Administration and Management Programme.

In the rural and remote areas, the GOL shall pilot telecentre programmes to ensure opportunities for ICT-enabled learning for those most underserved and without readily access to education. To promote the transfer of technical knowledge and expertise, the Lao diaspora shall be encourage to return to assist in human resource development.

6. Legal Framework

The GOL aims to develop a comprehensive set of Cyber-Laws to govern activities on the Internet and information networks of Lao PDR. The GoL shall begin with a set of cyber laws to encompass e-commerce/e-business, cyber-crimes, consumer protection, and intellectual property rights.

7. Awareness

The GOL will implement a public awareness programme on the benefits, advantages, and importance of ICT. The programme shall focus on the utilization of ICT in achieving MDGs and the NPEP. The GOL shall encourage the private sector and the international community to contribute to this public awareness programme. The GOL will promote the preservation of cultural, social, and political heritage vis a vis the Internet and the cultural imports it makes available to the public at large.

8. Poverty Alleviation

To ensure growth with equity (reduce disparities related to gender, ethnicity, location and returnee status), the GOL shall support and facilitate the application of ICT for the development of participatory social networks (civil society, academia, general public, government and the private sector); focussing on the environment, health, gender, and youth.

9. Standardization and Localization

The GOL shall promote software, hardware, and protocol standards, including telecommunications equipment and services, to ensure interoperability and harmonization with international, regional, and sub-regional standards.

To promote digital interchange in the Lao language, the GOL shall adopt the Unicode standard for the Lao script. The GOL shall establish a network, including national and international experts, academia, government, and the private sector to advise on all issues relating to the localization of ICTs – this include Open Source and proprietary software. The GOL shall establish a set of standards for data and information storage, exchange, and access for all government bodies and agencies, in line with international data standards. The GOL shall adopt Open Standards for all government data/information systems over proprietary standards, wherever possible, to minimize technological lock-in.

ICT PROGRAMMES

The main ICT programme in Lao PDR now is e-Government Project. This project was divided into 4 parts such as: **1. Infrastructure** which build the connection by fiber Optic between Data Centre at NAST and Ministries in order to sharing, upload, download information among government bodies. Also it will deploy WIMAX technology with 10 base stations in Vientiane Capital and each province one WIMAX base station.

2. e-Applications which consist of 7 applications as following: e-Portal; e-Document; e-Archive; e-Map; e-Registration; e-Learning and video conference.

3. Human Resource development (Training)

4. Providing IT facilities such as: Servers, PC desktops, Notebooks, Printers, Photo copies, Video Conference equipment to various ministries, agencies, central and local offices in order to utilize full usage of e-Application.

This project has reached one objective of ICT policies. For more information please visit: www.laopdr.gov.la

Another ICT programmes are computer reseller (both hardware and software), Training, Consultation (solution and application) and service operators (telecom and internet). Only telecom operators which are the biggest investors, invested more than one hundred thousand dollar, which each one were invested more than five million dollars, secondly are Internet Service Provider companies that invested more than two hundred thousand dollar and the third are computer companies that doing many kind of services together (Such doing also reseller, training and consultation) that invested more than fifty thousand dollar. For the small company like computer shop and repair are invested less than ten thousand dollar.

The major number amount ICT companies are focusing the domestic market only, while small number companies is doing the export and some companies having the business in both domestic and oversee market. It is mean that Laos is ICT imported countries. Mostly is reselling the end-user product with very little modification.

ICT RESEARCH PRIORITIES

The main research priorities are Localization.

- With this priority, National Authority for Science and Technology (NAST) who in charge of IT research established PAN Lao Localization Project which has received financial support by International Development and Research Centre (IDRC) of Canada. In this project we focused following:
 1. Lao character set (base on UNICODE)
 2. Lao Keyboard base on UNICODE
 3. Lao Syllabification (Line breaking by Syllable)
 4. Lao Sorting (
 5. Lao Spellchecker
 6. Lao Optical Character Recognition (Lao OCR)
 7. Lao Text to Speech (Lao TTS)

For more information please visit: www.laol10n.info.la

- Another project is Localization Window Vista and MS Office 2007
In this project, we helped Microsoft team to do the translation the interface terms, glossaries, help for both Window Vista and MS Office 2007 in Lao version.
- The rest is providing consulting and database application development.

MALAYSIA



ICT POLICIES

OVERVIEW OF THE ICT POLICY

National ICT Policies available in Malaysia:

- National IT Agenda (detailed explanation in item 2)
- MyICMs 886
- National Broadband Plan
- Critical National Information Infrastructure (CNII)
- National Cyber-Security Policy (NCSP)
- Ninth Malaysia Plan
- Third Outline Perspective Plan
- Third Industrial Master Plan (IMP3)
- Open Source Software Master Plan
- Intellectual Property (IP) Commercialisation Policy
- Science & Technology (S&T) Policy
- Cyberlaws in Malaysia
- Bio-informatics & bio technology

The Ministry of Science, Technology & Innovation (MOSTI) is responsible to formulate ICT strategies, as well as to coordinate and monitor implementation in the country. the development of the national ICT agenda. It's objective is to champion scientific discovery and transform innovation to achieve a knowledge based society for sustainable development through R&D planning, funding and commercialisation.

The national ICT policy sought to leapfrog Malaysia from an industrial society to a postindustrial one, by-passing the 'developed society' phase. ICT was seen as the key driver of future growth in all phases of work & life.

ICT PROGRAMMES

OVERVIEW OF THE MAIN ICT PROGRAMMES IN MALAYSIA

The main ICT programmes in Malaysia launched towards creating an information rich society such are : Multimedia Super Corridor (MSC) project and National IT Committee (NICT) as the driver to create the revolutions in ICT.

1. The MSC is a project to create a high-tech environment and infrastructure that can attract national and international investors. With the MSC project, Malaysia's aim is to replicate the conditions that underpinned the economic success of Silicon Valley. The project is intended as a starting point to develop spin-off applications intended to transform major sectors of the society through the use of ICT. MSC Malaysia is a gateway to growing profits in Asia's booming information and communications technology (ICT) markets.
2. The NITC was formed in 1994 to formulate ICT plans and identify key programmes that will contribute to the transformation of Malaysian society into a knowledge-based society. In 1996 the NITC launched the NITA to provide the framework for wide utilization of ICT to develop Malaysia into a developed nation by 2020. The focus of NITA is in three areas: human development, information infrastructure, and ICT-based applications.

Source : www.nitc.my

Source : Malaysia ICT Outlook 2007 Booklet

THE OBJECTIVES OF THESE PROGRAMMES AND THE MAIN STAKEHOLDERS SETTING AND IMPLEMENTING THEM

Objectives



MSC Malaysia Flagship Application

Multimedia Super Corridor (MSC) Malaysia was driven by Multimedia Development Corporation (MDeC) to provide the platform and enabling environment to further promote the development of ICT industries. The flagship applications are:



ICT RESEARCH PRIORITIES

General research areas fall under 3 broad categories

Knowledge Generation

To generate knowledge to spur the economic advancement through human capital and intellectual property development.

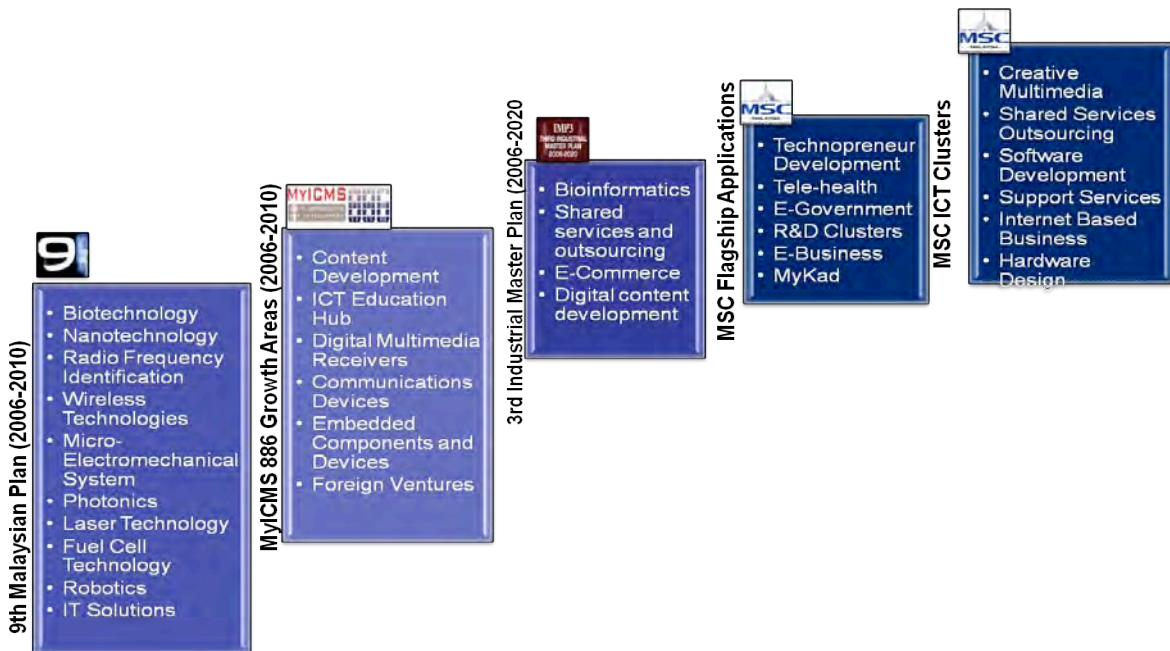
Wealth Creation

To value-add the existing sources of wealth and create new sources towards elevating national competitiveness and ensuring economic advancement.

Societal Well Being

To enhance societal well-being and improve the standard and quality of life.

Source : Ministry of Science, Technology & Innovation <http://www.mosti.gov.my>



PRIORITIES IN APPLIED RESEARCH

MIMOS is Malaysia's leading applied research organisation in Information & Communication Technologies. Its main focus of research areas is as follows:

- Advance Informatics
- Advance Information Security
- Grid Computing
- Green Technology
- Microsystems and MEMS
- Advanced informatics
- Knowledge Technology
- Nano Electronics & Wireless

Source : Malaysian Institute Of Microelectronic Systems www.mimos.my

MYANMAR



ICT POLICIES

Overview of the ICT policy in Myanmar

Myanmar believes that IT plays an important role in implementing political, economic and social objectives for building of the nation to be a developed one. The Government of the Union of Myanmar has taken numerous initiatives designed to position the country as a key global ICT hub. The Government's ICT master plan has the following broad mission elements:

- Widespread application of IT in state management with the intention of providing better services to the public, improving efficiency, and reducing costs;
- Widespread application of IT in business organizations to improve productivity and render better services;
- Utilization of IT as a low-cost communication infrastructure for the smooth operation of socio-economic organizations;
- Utilization of IT as a vehicle for business organizations penetrating the international market;
- Widespread application of IT to improve the educational level of the whole population;
- Development of the IT Industry to become one of the main economic sectors;
- Development of IT human resources;
- Creation of an IT-intelligent society;
- Facilitation of the growth of e-commerce; and
- Reduction of the digital divide.

The role of ICT that plays in the economic and social development of Myanmar

There are indications that the State Peace and Development Council, the governing body of Myanmar, realizes that ICT can help to improve social and economic conditions. There are dedicated and concrete efforts at ICT development. Thus, although Myanmar is at an early stage of ICT development, there is a clear potential for developing a viable ICT industry and effective use of ICT to make the country more productive and competitive in the international market.

Software development and training are the most popular business activities, with more than 50 percent of ICT businesses engaged in these activities. Hardware sales and system integration are the second and third most popular ICT businesses, respectively. This suggests that software-related businesses rather than hardware-related businesses are the key drivers of ICT development in Myanmar, although the hardware sector can be a key driver in the long-term. Since the Yatanarbon cyber city includes an area allocated for hardware manufacturing, it is expected that some foreign manufacturing companies especially from China will set up shop in the cyber city.

Most of the software used in the country is developed locally. A few software houses are doing outsourcing and joint product development with foreign partners. There are more than 100 local and few foreign software companies based at the first Myanmar ICT Park, which was established in January 2002. The Park provides a very good environment for software companies. Issues in ICT industry development in Myanmar include infrastructure, government support, technology transfer, international exposure, quality assurance, legal frameworks, standardization, and business practices.

Authorities responsible for developing ICT policies

The Myanmar Posts and Telecommunications Enterprise provides all telecommunications services, including fixed and mobile access, local, national and international calls, and leased lines.

The Ministry of Science and Technology (MOST) was founded in 1996 and currently there are 25 computer universities and 26 technological universities delivering ICT education under MOST.

Other key institutions dealing with ICT development are the Myanmar Computer Science Development Council (MCSDC), the e-National Task Force (e-NTF), the Myanmar Computer Federation (MCF) and three associations, namely, the Myanmar Computer Professionals Association (MCPA), the Myanmar Computer Industry Association (MCIA), and the Myanmar Computer Enthusiasts Association (MCEA).

Objectives

- To contribute towards the emergence of a modern developed State through ICT;
- To accelerated Human Resource Development;
- To promote ICTs in Education;
- To facilitating Government Administration & Service Delivery – Promoting Electronic Government and Governance;
- To develop export-oriented ICT products and services industry;
- To modernise Agriculture and the development of Agro-Business industry
- To deploy and spread of ICTs in the community.
- To promote National Health through ICT

ICT PROGRAMMES

Main ICT programs in Myanmar

- e-Government

The government officials surveyed and identified that the most important issues to be addressed by e-government: improving efficiency, reducing time spent, and information sharing. They consider public information as one of the most important factors for improving interaction between the government and citizens. Cutting bureaucracy and reducing time spent waiting for public services were also considered to be important.

The project sought to connect ministry buildings to a high-speed network and computerize basic government administration processes. It includes a Basic Database Management System, including common applications and data exchange. The project has been completed and the fibre optic connection, network equipment and servers, data centres, and basic e-government applications are now in place. Two basic applications, the GPMS and EDMS, have been developed. However, the systems have not yet been implemented.

The delay in implementation suggests that getting the commitment of national leaders and improving telecommunication infrastructure are necessary but insufficient. Myanmar needs to put in place other fundamentals, such as setting reasonable e-government goals, developing a citizen-focused and business centred e-government plan, prioritizing projects according to well specified criteria, reengineering business processes, and managing change.

- ICT Human Resource Development

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 and twenty five universities of technology universities are helping to substantially increase the country's supply of ICT professionals. The Ministry of Education and New Century Human Resource Development NHRD Department also have their own programs for developing ICT graduates.

The private sector also plays an important role in ICT human resource development. Currently there are more than 100 computer schools, including 80 in Yangon, providing basic computers skills training. The National Computing Centre (NCC) also accounts for an annual supply of over hundreds International Diplomas, International Advanced Diplomas, and Bachelors in Computers and Information Science.

- e-Education

The ultimate goal of e-education and awareness is to achieve an 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-fl edged 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. The Myanmar government aims to ensure that every child leaving school should be familiar with computers and be scientifically literate. To this end, the government is collaborating with the private sector and local communities to establish multimedia classrooms and small computer laboratories in high schools.

IT learning centres, electronic resource centres and computer training centres are also being set up in colleges and universities. The Ministry of Education is developing an educational Intranet system linking all universities and colleges. Moreover, the Ministry of Education, in cooperation with the Ministry of Information, has launched a data broadcasting system for distance education, with more than 150 learning centres established in various colleges, universities and institutes, and multimedia high schools.

ICT RESEARCH PRIORITIES

ICT research Priorities in Myanmar

- Software Engineering
- ICT for e-Government
- ICT for e-Commerce
- ICT for e-Health
- Networking

- Wireless and Mobile Technology
- Digital Libraries

Key Research Projects

- Natural Language Processing

Natural Language Translation and Localization are very important for bridging the digital divide in Myanmar. The Natural Language Processing (NLP) Research Centre at UCSY is spreading English-Myanmar translation efforts in Myanmar. Currently, English-Myanmar Translation system is developed to initiate the first step to make more information available to the majority of deaf Myanmar who face English Literacy challenges.

- Myanmar Unicode System

Myanmar Character code set was included in ISO 10646 since 1998. Currently, Myanmar Unicode 5 has been published. Apart from NLP, there also have Myanmar Unicode fonts from various developers. Myanmar is still trying for Microsoft to add Myanmar language in the future versions of Windows OS.

- UCSY e-Groupware System

This system is developed to be a secure mailing system inside UCSY campus to meet the following needs:

- to create detail time frame of projects/jobs
- to trace and show bugs status
- to share knowledge and references link
- to declare project lists to send and receive email
- to show all appointments schedule
- to save and show contact address

- UCSY Online e-Learning System (Moodle System)

Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a web application which is Open Source software under the GNU Public License. This system is intended to provide the educators to create effective online learning sites, to build richly collaborative communities of learning around their subject matter (in the social constructionist tradition) and to deliver content to students (such as standard SCORM packages) and assess learning using assignments or quizzes.

- Virtualization Technology in UCSY

Virtualization is a method of running multiple independent virtual operating systems on a single physical computer. It is a way of maximizing physical resources to maximize the investment in hardware.

- UCSY Campus Network Infrastructure

This project aims to construct a highly campus information infrastructure which includes UCSY (Hlaing Campus Network), UCSY (Hlawgar Campus Network), IMCEITS Network and ICTTI Network. The new infrastructure will contribute to society in a variety of fields. It includes several research areas such as security, operation & management, communication, application and deployment.

THE PHILIPPINES



ICT POLICIES

The Information and Communications Technology (ICT) policies of the Philippines are crafted by government officials and policy makers from the legislative and executive branch, in consultation with technical experts and different stakeholders of the country. Aside from Congress, the key agencies are :

- Commission on Information and Communications Technology (CICT)
- National Telecommunications Commission (NTC)
- Information Technology and Electronic Commerce Council (ITECC)
- Telecommunication Office (TELOF)
- Department of Science and Technology

Philippine ICT Policies Created For Economic and Social Development

The Philippines' emerging economy as the international community sees it, are guided with ICT policies which aims to reform the country by building a solid foundation for it to have a vibrant and competitive economy. The existing ICT policies in the Philippines include:

Policy	Description
1. RA 10055	THE PHILIPPINE TECHNOLOGY TRANSFER ACT
2. RA No. 8792	AN ACT PROVIDING FOR THE RECOGNITION AND USE OF ELECTRONIC COMMERCIAL AND NON-COMMERCIAL TRANSACTIONS AND DOCUMENTS, PENALTIES FOR UNLAWFUL USE THEREOF AND FOR OTHER PURPOSES
3. AO 08 series of 2006	PRESCRIBING GUIDELINES FOR THE PROTECTION OF PERSONAL DATA IN INFORMATION COMMUNICATIONS SYSTEM IN THE PRIVATE SECTOR
4. RA No. 7925	PUBLIC TELECOMMUNICATIONS POLICY LAW
5. RA 8792 with IR RA 8754	ELECTRONIC COMMERCE ACT OF 2000 WITH IMPLEMENTING REGULATION
6. EO No. 269 SERIES of 2004	CREATING THE COMMISSION ON INFORMATION AND COMMUNICATIONS TECHNOLOGY (CICT)
7. NITP for the 21st Century (IT21)	NATIONAL INFORMATION TECHNOLOGY PLAN FOR THE 21st CENTURY
8. CICT Roadmap	THE COMMISSION ON INFORMATION AND COMMUNICATIONS TECHNOLOGY PHILIPPINE ICT ROADMAP

Philippine ICT Quality and Quantity Objectives

- To provide an enabling policy, legal, and regulatory environment in ICT development.
- To create a "MultiStakeholder Approach" to ICT development.
- To create ICT as a tool for Sustainable Development.
- To promote digital content that is relevant and meaningful to Filipinos.
- A safe, trustworthy online environment for all Filipinos.

Milestones and Planned Revision of existing policies

Due to certain needs and relevant changes in the local and international demands, certain policies are continuously proposed in order to cope with such situation. Resources as to how these revisions, and milestones are to be established becomes pending, awaiting for its passage as a law and the creation of its implementing rules and regulations. The following are pending policies relevant to ICT:

- Creation of a Department for Information Communications Technology (DICT)- to ensure effective coordination and implementation of ICT national agenda.
- National Telecommunications Commission (NTC) reorganization- To transform NTC into a politically independent, fiscally autonomous regulatory body. It will promote free and fair competition locally and internationally.
- An Act Protecting Individual Personal Data in Information and Communications Systems in the Government and the Private sector- To ensure protection and privacy of personal data and will encourage private sectors (local and international) to deal with the government.

- Freedom of Information Act- To provide clear guidelines on: a) public access to government data, b) sharing and exchanging of information among government agencies; and c) the use of information obtained under such law by the recipient government agency or private sector.
- An Act Defining Cybercrime, Providing for the Prevention, Investigation and Imposition of Penalties Therefore and for other Purposes - To have a legal basis for enforcing security measures and protecting the general public interest.

An Act to Promote the Efficient and Effective Delivery of Converging Communications Services - This aims to propose a policy on convergence of the various technologies and means of communications and a long term strategic national development plan for the Philippines communications program.

ICT PROGRAMMES

The Philippine ICT roadmap, is created by the undeniably envisioned '*ICT serving as the major driver in pushing forward the Philippine economy*', and as a critical tool for better governance, corporate performance, and individual achievement. Government will partner with private entities and international organizations in the implementation of the ICT programmes of the country, in order to maximize resources. The CICT, was able to set forth several strategic programmes to which the country will be guided upon the implementation of the existing and pending policies.

ICT Programmes in the Philippines

- Ensuring Universal Access to Internet.

All citizens and the public in general will benefit from this programme as it supports the right of all to have access to information, government services, and quality education by means of universal access. Resources planned for this programme such as Community e-centers, low cost computing (computers), national access to a broadband internet, and an internet access to remote areas presently not providing internet access (last mile initiative). Resources will come from government funds and collaboration with private sectors, and international partners.

- Human Capital for Sustainable Development

The primary target stakeholders in this programme is the general public. This aims to develop the ICT skills of the people and also to harness the power of ICT for education and life long learning. Resources planned for this will come from government funds, or international bodies to which the government will partner with and still needs to be determined. Among the specific projects to be implemented are, ICT Competency Standards Development, and ICT for Education (ICT4E) . Empowering the public with sufficient ICT education would make them capable to meet the global standard skills of an employee.

- Using ICT in the Government to Promote Efficiency and Transparency.

This will make government transactions and processes more transparent, increasing its accountability and reduce losses from graft, corruption and unnecessary leakages. The government will establish an e-government fund to which the resources of the projects under this program will come from. International bodies, investors who will be transacting with government will have more confidence in dealing with the latter as it ensures efficiency.

- Strategic Business Development to Enhance Competitiveness in the Global Market.

The private sector, major stakeholder of this program, should remain as primary mover of ICT industry with government playing the role as advocate, laying the ground work for regulations and policies that levels off the playing field for entrepreneurs. The specific target sectors for this programme are small and medium entrepreneurs, and local and international investors. More local businessmen will be equipped to engage in international transactions as this programme lays a detailed business plan in shifting to an ICT enabled and capable business establishment.

- ICT Research and Development (R&D)

This aims for the development of innovative ICT technologies, solutions, and knowledge that can be applied to industry, government, and general public. Major stakeholders of this programme are ICT R&D institutions whether private, government or academe.

ICT RESEARCH PRIORITIES

The Advanced Science and Technology Institute (ASTI), a research and development agency under the **Department of Science and Technology (DOST)** of the Philippine government is mandated to conduct scientific research and development in *Information and Communications Technologies (ICT)* and *Microelectronics*. Its mandate is:

- a. Generation of new knowledge and technologies.
- b. Diffusion of knowledge and technologies.

- c. Development of human resources for the S&T sector.
- d. Provision of quality S&T services to industry, as well as public and non-profit sector.

Most of the projects handled by ASTI are leaning towards the following research priorities, which are all related to the policy and programme pertaining to developing ICT infrastructure and solutions, technologies, and knowledge:

2010 ICT RESEARCH PRIORITIES	APPLICATION/OBJECTIVE	Current/ongoing research—projects
Software development	Promotion of the use of open source technologies in replacement of proprietary softwares to the government sector, private sector particularly the SMEs , and the academe.	1) Bayanihan Linux version 5, an open source operating system; 2) e-DOST- Open Standards: Program and Change Management and Implementation of Open Standards to DOST and Development of Interactive Science and Mathematics Courseware for Secondary Level Schools
Internet Applications	Effective management of internet applications, through the improvement of DOST websites in order to be accessible to all Filipinos, and foreign researchers and scientific community.	Information Systems Component eDOST-INFOSYS: Upgrading and Development of DOST Information Systems
Advanced Networking including Grid computing	Promotes high-bandwidth communications and powerful computing.	1) Boosting Grid Computing Using Reconfigurable Hardware Technology (HPRC) (grid computing for science R&D community); and 2) EUAsia Grid - Towards a common e-Science infrastructure for the European and Asian Grids.
Embedded systems and Wireless technologies	Provides for last-mile initiative and non-wired communications and networking.	1) GSM Data terminal , 2) Digital Multimeter; and 3) Wood Moisture Meter (all of which has been commercialized in partnership with private sector manufacturers.)
Some Sources: CT for the Environment	This priority aims to contribute to disaster risk reduction/mitigation through the use of ICT. The target stakeholders are the general public and the environmental management agency of the government.	1) Multicast Experiment Using the WINDS Satellite; 2) Philippine Real-time Environment Data Acquisition and Interpretation for Climate-related Tragedy (PREDICT) 3) Prevention and Mitigation, and Development of a Field Monitoring (FMON) System; and 4) Early Warning System for Tsunami

<http://www.neda.gov.ph/IT21/default.htm>
http://www.ict4d.ph/proceedings/Project_Inventory2.php
<http://www.apdip.net/projects/dig-rev/info/ph/>
http://www.ops.gov.ph/records/eo_no269.htm
<http://www.ops.gov.ph/records/issuances-eo/eo603.pdf>
http://www.congress.gov.ph/download/billtext_14/hbt04300.pdf
<http://www.senate.gov.ph/lisdata/81047327!.pdf>
<http://www.pctc.gov.ph/initiatv/RA8792.htm>

SINGAPORE



ICT POLICIES

The ICT policy in Singapore is largely encapsulated in the iN2015 Masterplan. Intelligent Nation 2015 (or iN2015) is Singapore's 10-year masterplan to help us realise the potential of infocomm over the next decade. Led by the Infocomm Development Authority of Singapore (IDA), iN2015 is a multi-agency effort that is the result of private, public and people sector co-creation. From the people sector, individuals provided their ideas and views through focus groups and the Express IT! iN2015 Competition. The competition attracted thousands of entries from students and the general public on how they envisioned Infocomm would impact the way they live, work, learn and play in 2015. In addition, hundreds of private and public sector representatives participated in numerous discussions to come up with ideas for transforming their sectors through Infocomm, and how to translate these ideas to reality. More information on iN2015 can be found at <http://www.ida.gov.sg/About%20us/20070903145526.aspx>

Through iN2015, Singapore hopes to achieve the following targets for its people:

- to be #1 in the world in harnessing infocomm to add value to the economy and society
- to realise a 2 – fold increase in the value-add of the infocomm industry to S\$26 billion
- to realise a 3 – fold increase in infocomm export revenue to S\$60 billion
- to create 80,000 additional jobs
- to achieve 90% home broadband usage
- to achieve 100% computer ownership in homes with school-going children

To achieve the abovementioned targets, the Masterplan has identified 4 strategic thrusts to drive Singapore's ability to innovate, integrate and internationalise with the help of Infocomm:

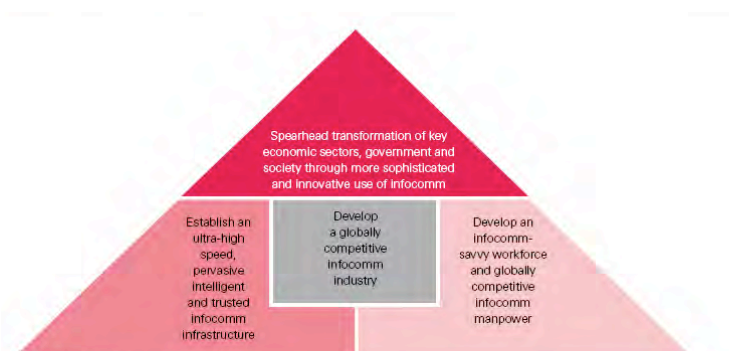


Figure 3-1: iN2015 Strategic Thrusts

- Spearhead the transformation of key economic sectors, government and society through more sophisticated and innovative uses of Infocomm. In the case of economic sectors, 7 key sectors have been identified, namely
 - o Digital Media & Entertainment
 - o Education & Learning
 - o Financial Services
 - o Government
 - o Healthcare & Biomedical Sciences
 - o Manufacturing & Logistics
 - o Tourism, Hospitality & Retail
- Establishing an ultra-high speed, pervasive, intelligent and trusted Infocomm infrastructure (<http://www.ida.gov.sg/Infrastructure/20060919190208.aspx>)
- Develop a globally competitive Infocomm industry (<http://www.ida.gov.sg/Infocomm%20Industry/20060406160952.aspx>)

- Develop an Infocomm-savvy workforce and globally competitive Infocomm manpower (<http://www.ida.gov.sg/Manpower/20060414201723.aspx>)

Source: www.ida.gov.sg

ICT PROGRAMMES

IDA has a number of ICT programmes established to support the iN2015 Masterplan and the local economy in the following broad areas:

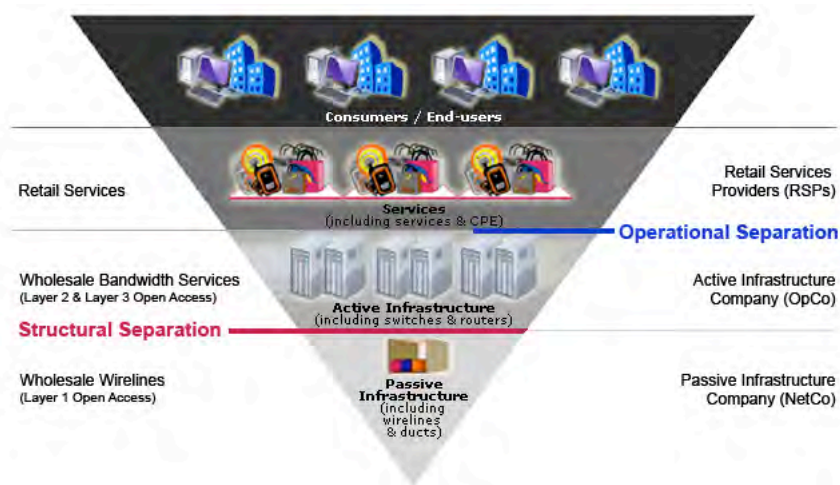
- Infocomm Industry
- Sector Development
- Manpower
- Infrastructure
- Technology

Selected programmes include

- Infocomm Industry - Infocomm Local Industry Upgrading Programme (iLIUP) – Programme to promote strategic and mutually beneficial partnerships between Singapore enterprises and multinational corporations (MNCs) in the infocomm sector (<http://www.ida.gov.sg/Programmes/20060418222823.aspx?getPagetype=33>)
- Sector Development – iGov2010 (2006-2010) – iGov2010 is the Singapore Government's five-year masterplan that leverages infocomm to continue to delight its citizenry. To achieve this vision, four thrusts have been identified: Increasing Reach and Richness of e-Services; Increasing Citizens Mindshare in e-Engagement; Enhancing the Capacity and Synergy in Government; and Enhancing the National Competitive Advantage (http://www.igov.gov.sg/Strategic_Plans/iGov_2010/iGov2010.htm)



- Manpower – Critical Infocomm Technology Resource Programme (CITREP) - CITREP is a training incentive programme to equip Singapore infocomm professionals with critical and emerging skills thus enabling them to enhance their employability and to improve their organisation's competitive advantage (<http://www.ida.gov.sg/Programmes/20060419151233.aspx?getPagetype=35>)
- Infrastructure - Next Generation National Broadband Network (NGNBN) - Singapore's Next Generation National Infocomm Infrastructure comprises the ultra high-speed Next Generation NBN and the pervasive Wireless Broadband Network (WBN). The Next Gen NBN will entrench Singapore's Infocomm hub status and open the doors to new economic opportunities, business growth and social vibrancy for the country. Next Gen NBN will be capable of ultra high speeds of symmetric 1Gbps or more (<http://www.ida.gov.sg/Infrastructure/20060919190208.aspx>)



- Technology - Specification for Contactless e-Purse Application (CEPAS) – CEPAS is a significant milestone for Singapore's micro-payment landscape. A key pillar of the national ePayment infrastructure, outlined in the iN2015 Masterplan, CEPAS is a result of a collaboration spearheaded by IDA working closely with the Land Transport Authority (LTA) and the industry to develop a cashless nation-wide e-payment platform (<http://www.ida.gov.sg/Programmes/20061214105256.aspx?getPagetype=40>)

Source: www.ida.gov.sg

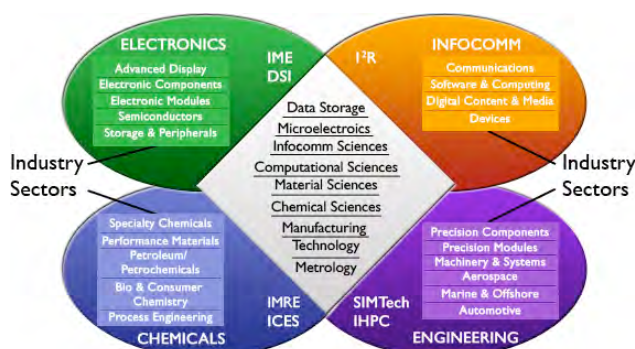
ICT RESEARCH PRIORITIES

The Agency for Science, Technology and Research (A*STAR) has a mission to drive and sustain world-class scientific research that will be meaningful and impactful for Singapore. A*STAR's activities are centred in Biopolis and Fusionopolis, Singapore's twin research hubs of biomedical, physical science and engineering research. This provides unique opportunities for scientists to interact and develop collaborations across institutes, organisations and other communities of researchers. A*STAR's spectrum of capabilities in the biomedical, physical and engineering sciences, all in one compact location, also allows Singapore the ability to conduct groundbreaking interdisciplinary research.

A*STAR's Science and Engineering Research Council (SERC) promotes public sector research and development in the physical sciences & engineering. SERC supports world-class research in A*STAR institutes in a wide range of fields including communications, data storage, materials, chemicals, computational sciences, microelectronics, advanced manufacturing and metrology. SERC manages seven research institutes and several state-of-the art centres and facilities with core competencies in the above-mentioned fields to tackle global technological challenges and create future industries from its headquarters at Fusionopolis, Singapore's iconic hub for science and technology research.

The core research activities of the SERC research institutes are in Singapore's economically important industry clusters:

- IME, DSI, I²R, IMRE and ICES are positioned to develop technologies relevant to specific industries in the electronics, infocomm, engineering and chemicals clusters
- SIMTech is positioned closer to industry to help solve advanced manufacturing problems
- IHPC provides supporting computational science and engineering capabilities.



Source: www.a-star.edu.sg

THAILAND



ICT POLICIES

Thailand initially launched the “Information and Communication Technology (ICT) Policy for 2001 – 2010” or “IT 2010 Policy” that has placed a priority on the role of ICT in social and economic development by emphasising the improvement of the quality of life and society through developing a knowledge based society. The Policy provided the First ICT Master plan (2002 - 2006) with an extension until 2008.

At present the Ministry of Information and Communication Technology is responsible for the formulation of national ICT policies and plans. Ministry of ICT in collaboration with the National Electronics and Computer Technology Center (NECTEC), a statutory government organisation under the National Science and Technology Development Agency (NSTDA), Ministry of Science and Technology, developed **the Second Thailand ICT Master Plan (2009– 2013)** http://www.mict.go.th/download/Master_Plan.pdf. The 2nd ICT Master Plan carries forward policies from the IT 2010 Policy and the 1st ICT Master Plan and puts in place new policies with focusing on certain key areas, in response to technological, economic and social changes that have presented both opportunities and challenges to Thailand. The vision of the 2nd ICT Master Plan is “Driving toward Smart Thailand through ICT”.

The objectives are:

1. To develop ICT professionals of adequate quantity and quality to meet market demand and personnel in other fields, at all levels, that are knowledgeable, skilled in the efficient use of technology, and information literate, in order to develop Thailand into a knowledge- and innovation-based society and economy that are sustainable and stable.
2. To develop good ICT governance using the “Sufficiency Economy” philosophy.
3. To support the economic sector restructuring for value creation of goods and services on the basis of knowledge and innovation by using ICT.
4. To strengthen communities and individuals to access and use information.
5. To build the capacity of ICT businesses and industries by emphasising on the increase of domestic value-added, R&D, and the use of local wisdom, Thai culture and Thai identity.

The goals of the 2nd ICT master Plan are set as:

1. At least 50 per cent of the population will have knowledge and capacity to access, create and use information in an information-literate way in order to benefit education, work and daily life.
2. Raise the ranking of Thailand on the ICT readiness to being at the top quartile group of the Networked Readiness Rankings by 2013.
3. Enhance the role and importance of the ICT industry in the national economic development by increasing its share of GDP to at least 15 per cent by 2013.

In order to achieve the objectives and goals in developing ICT in Thailand, the 2nd ICT Master Plan has issued 6 main strategies of which the implementation targets on the collaboration between the public and private sectors. Its aim is to use ICT in building the national capacity to become self-sufficient and globally competitive, and for developing a knowledge-based society and economy that will lead to better quality of life of people in the country as a whole. The six strategies are as follows:

- Strategy 1: Develop ICT professionals and general population to be information literate
- Strategy 2: Strengthen the national ICT governance
- Strategy 3: Develop ICT infrastructure
- Strategy 4: Use of ICT to support good governance in public administration and services
- Strategy 5: Upgrade the competitive capacity of the ICT industry to add value and increase earnings
- Strategy 6: Use ICT to build the sustainable competitiveness for Thai industries

The 2nd ICT Master Plan also requires the setting up of governance mechanisms for managing, monitoring and evaluating the performance and activities to ensure the efficiency and effectiveness of the Plan.

ICT PROGRAMMES

In Thailand, the Tenth National Economic and Social Development Plan (2007 – 2011) is the primary plan directing the nation's economic and social development. Its vision is to create the "Green and Happiness Society" which should be managed under a system of good governance, as a dignified member of the world community. This vision is strengthened by the 2nd Thailand ICT Master Plan (2009 – 2013) of which six ICT strategic programmes are aimed at the use of ICT for building the nation's capacity to become self-sufficient and globally competitive, and for developing a knowledge-based society and economy that will lead to the better quality of life of people in the country as a whole. Considering the objectives and goals of the 2nd Thailand ICT Master Plan (2009 – 2013), Thailand has committed herself in the international arena, notably the development of information infrastructure as declared in the Declaration of Principle at the World Summit on the Information Society and APEC's Bangkok Declaration.
http://www.mict.go.th/download/Master_Plan.pdf)

ICT PROGRAMME IMPLEMENTATION

ICT PROGRAMME	IMPLEMENTATION
1. Develop ICT professionals and general population to be information literate	1. Improve the format and methodology of teaching/learning in vocational schools and universities by using ICT as a tool for teaching/learning at all levels of the educational system. 2. Increase the quality and quantity of high-skilled professionals, ICT teachers and ICT personnel. 3. Develop ICT skills for business establishments, manufacturing and service sectors and the public sector.
2. Strengthen the national ICT governance	1. Improve the national ICT governance structure 2. Improve the process of proposing and allocating budgets related to ICT by the public sector 3. Develop or improve related laws and regulations and their enforcement mechanisms 4. Improve the national ICT development indicator database system
3. Develop ICT Infrastructure	1. Expand types of services and service coverage areas, and improve the efficiency of the telecommunication network 2. Develop ICT infrastructure for enhancing the education and life-long learning and for key social sectors responsible for public safety and the quality of life of the citizen 3. Accelerate the achievement of the information security system
4. Use of ICT to support good governance in public administration and services	1. Strengthen central agencies responsible for setting the framework and standards needed for developing electronic government services in an integrated manner 2. Strengthen ICT capacity for provincial government agencies and local government units
5. Upgrade competitive capacity of the ICT industry to add value and increase earnings	1. Provide funding support or subsidies to incubate new businesses 2. Upgrade Thai ICT product and service standards to meet global standard level 3. Create opportunities in marketing and competition for Thai businesses 4. Promote domestic and foreign investment in ICT industries 5. Promote open source software businesses and services in the country

ICT RESEARCH PRIORITIES

In Thailand, the National Electronics and Computer Technology Center (NECTEC) is a statutory government organisation under the National Science and Technology Development Agency, Ministry of Science and Technology. In accordance with the Science and Technology Development Act of 1991, NECTEC's the first and foremost mandate is the research and development in ICT with technology transfer to industries and communities. NECTEC also provides a linkage between research communities and industries through the established industrial clusters and programmes. Since 2008, NECTEC has set up 3 flagships: the "Digitized Thailand" flagship, "Smart Health" flagship and "Smart Farm" flagship, aimed to drive NECTEC's research works into applications in relevant real sectors of Thai economy for the nation's solutions.

Digitized Thailand Flagship

To build up the country's intellectual infrastructure as designated in the 2nd **Thailand ICT Master Plan (2009 – 2013)**, strategy 3: ICT Infrastructure Development, NECTEC has initiated a new flagship called "Digitized Thailand" to develop the national archive by collecting and transforming all physical data scattered around the nation into a digital form and allow people at all levels to get access to enormous knowledge at anytime and anywhere through the Internet network for free of charge. The Digitized Thailand Flagship suggests a framework including the standard development on interoperability, data management, information searching and information security to allow all data to be digitised, stored, shared and accessed under the same format while facilitating information exchange across the network.

Smart Health Flagship

Smart Health Project is conducted by NECTEC in an effort to respond to the Thai government's policy of turning Thailand into a world class health service hub and promoting the "Health for All" project that enable more people to get access to good medical and health services. The Smart Health flagship comprises of 3 following programmes: (1) National Health Information System (NHIS); (2) Tele-medicine; and (3) Smart Home for Independent Living.

Smart Farm Flagship

NECTEC's concept of Smart Farm is to apply IT and electronics technologies in the conventional agriculture sector in order to amplify the productivity and quality of agricultural products that will ultimately raise the quality of living of farmers in rural areas. The Smart Farm Flagship concentrates on 4 main agricultural products: rice, cassava, rubber and sugar cane. NECTEC operates this flagship by providing the research and development, especially the supply of basic field-level sensors capable of reading pH (soil acidity or alkalinity), humidity and temperature, and developing a database of agricultural knowledge with the accessibility for farmers.

At present, NECTEC has undertaken the R&D in electronics and computer technologies by categorising its in-house laboratories into 2 groups: the Research Unit Group and the Development Unit Group.

NECTEC's research and development priorities are shown in the table below:

Unit Title	Description
RESEARCH UNIT	
1. Digital Media & Human Interface Research Unit	digital content development tools, digital archive technology and tools, adaptive e-learning and authoring technology and tools, speech, text, image processing and searching technology and tools
2. Saving & Security Technology Research Unit	wireless security, quantum cryptography and computing, digital forensics technology
3. Electronics & Automation Research Unit	embedded system, wireless sensor network, SCADA and control system, robotics and automation system, energy management
4. Information & Communication Research Unit	open source operating system and applications, open standard and standard, meta data, data warehouse and data mining, simulation and modelling, IPV6, next generation Internet, biomedical signal processing
5. Intelligent Devices and System Research Unit	photonics, optical signal processing, micro- and nano-electromechanical system, CMOS design and fabrication
DEVELOPMENT UNIT	
1. Microelectronics Fabrication Engineering Unit	CMOS design and fabrication
2. Rehabilitation Engineering and Assistive Technology Development Unit	assistive technology for ICT accessibility, communication aids for disable people, technology for independent living, rehabilitation technology
3. Product Development, Engineering and Testing Unit	hardware design and engineering, software architecture, software and hardware testing

VIETNAM



ICT POLICIES

Traditionally, many important documents of the government such as S&T Strategy to 2010 considered ICT as one of the top priorities. The most important policy documents are Resolution No. 07/2000/NQ-CP of 05/06/2000 of PM on "Creation and development of software industry up to 2000-2005" and Directive No. 58-CT/TW of 17/10/2000 of the Party Politburo on "Fostering the application and development of ICT to serve the need of industrialization and modernization". For the last few years, several key policy documents and laws have been issued, related to ICT development perspective for 2006-2010 and beyond.

Many ICT-related policies were promulgated in 2005-2006, such as Decision No. 191/2005/QĐ-TTg by the Prime Minister to support enterprises in the application of ICT and serve the need for integration and development in 2005-2010; Decision No. 222/2005/QĐ-TTg for a master plan to develop e-commerce in 2006-2010; Decision No. 246/2005/QĐ-TTg to develop ICT in Vietnam until 2010 and orientation up to 2020; and Decision No. 32/2006/QĐ-TTg to develop telecommunications and the Internet in Vietnam until 2010.

In 2007 new policies were adopted to further enhance ICT development in Vietnam. Resolution No. 51/2007 to develop the software industry until 2010 was issued. The resolution adopts a more practical approach and realistic targets for the software industry. Decree No. 71/2007 targets the development of the ICT industry in general. Resolution No. 6/2007 calls for the development of the content industry up to 2010.

For the last few years, several new legal documents coming into action.

- 1) Law on electronic transaction – by Decision No. 51/2005/QH11 on 29/11/2005 of the National Assembly (having effect from 1/3/2006)
- 2) Law on information technology - National Assembly passed on 22/6/2006 (having effect from 1/1/2007)
- 3) Law on IPR – by Decision No. 28/2005/L/CTN on 12/12/2005, with a special section related to software development.
- 4) Decree on e-commerce No. 57/2006/NĐ-CP on 9/6/2006 of PM.

To concretize these laws and decrees, specific regulations have been enacted in 2007. Some of them are more notable, including:

- 1) Regulation No. 67/2006 on financial management of Fund for public telecom services
- 2) Directive No. 04/2007 on enhancing protection of copyright on software
- 3) Decree No. 26/2007 on digital signature
- 4) Decree No. 35/2007 on electronic transaction in banking
- 5) Directive No. 03/2007 to enhance information security over Internet

In addition, the Law on Telecommunication was drafted and passed by the National Assembly in 2009.

Ministry of Science and Technology (until the creation of Ministry of Post and Telematics which is now Ministry of Information and Communication, MIC) and MIC are main players in setting up policies on ICT.

ICT PROGRAMMES

Following mentioned policies and legal documents, there are a number of ICT programmes to implement policies in promoting ICT development in the country.

1. Program to support enterprises in application of ICT, to serve the need of integration and development for period 2005-2010 by Decision No. 191/2005/QĐ-TTg on 29/7/2005 of Prime Minister.
2. Master Plan to develop e-commerce period 2006-2010 by Decision No. 222/2005/QĐ-TTg on 15/9/2005 of PM.
3. Strategy to develop ICT Vietnam until 2010 and orientation up to 2020 by Decision No. 246/2005/QĐ-TTg on 6/10/2005 of PM. In this Strategy, the goals for 2010 are : (i) ICT industry has growth rate of 20-25% per year,

total revenue is around 6-7 bln. USD in 2010; average growth rate is 20-25%, with training of 100,000 laborers. At the same time, the contribution of the digital content industry should reach annual growth rate is 30-40%; revenue by 2010 is about 500 mln. USD, attracting 10,000 laborers, of which more than ¼ is technical labour.

4. Development planning to develop telecommunication and Internet in Vietnam until 2010 by Decision No. 32/2006/QĐ-TTg on 7/2/2006 of PM.
5. Resolution No. 51 /2007 dated April 12, 2007 of PM on the program to develop software industry until 2010.
6. Decree No. 71/2007 on developing ICT industry.
7. Resolution No. 56/2007 dated May 3, 2007 of PM on the program to develop digital content industry up to 2010.
8. The Project 112 on the State administrative management computerization in the 2001-2005 period.
9. Decision No. 331/QĐ-TTg of Prime Minister (6/4/2004) on the program to develop human resources for ICT until 2010. By 2005, MPT (now Ministry of Information and Communication) has been assigned to develop Master Plan of ICT human resources development.
10. Mater plan on development of Vietnam electronics industry up to 2010, with a vision topward 2020 by PM Decision No. 75/2007, dated of May 28 2007.
11. Regulation on management of the Program on software industry development and the Program on Vietnam's digital content industry development by PM Decision No. 50/2009, dated of April 3 2009.
12. Decision No. 698/QĐ-TTg on June 1, 2009 by the PM to introduce a Master Plan to develop human resources for ICT up to 2015 and oriented to 2020. Under this particular Master Plan, there are:

Objectives to 2015:

a) Strong development of ICT human resources to sufficiently meet the needs of the development and application of ICT and electronics industry, telecom, for the purpose of building knowledge-based economy, industrialization and modernization, international integration

b) Increasing ICT applicaiton in training and education, enhance the competitiveness of training system on ICT, gradually to become suppliers of the ICT human resources of high quality to countries in the region and the world

Objectives to 2020:

a) To create ICT human resources to sufficiently meet the needs of the modern economy and information society with appropriate structure for the purposes of building knowledge-based economy, industrialization and modernization, international integration. 70% of labors in firms were trained on ICT

b) To improve quality and increase quantity of teachers on ICT, electronics and telecom in universities, colleges, and vocational schools. Up to 2020, more than 90% of university lecturers and more than 70% college teachers on ICT have degrees of Master and above; more than 30% of university lecturers have PhD degrees.

c) Up to 2020, all students of schools and other educational organizations are learning applied ICT.

13. Resolution No. 05/2005/NQ-CP on 18/4/2005 of the government on promoting socialization of activities such as education, culture, healthcare and sport. This emphasized the development of non public organizations in education and training, leading to growth of ICT training organization.
14. Decision No. 235/QDD-TTG of PM on 2/3/2004, on Applying and Developing Open Source Software in Vietnam for the 2004-2008 period in the format of a Master Plan. According to the Plan, OSS will be tested in selected organizations. To support this, a range of incentive policies and programs have been designed such as training human resources, technical assistance, standard creation, etc. The roadmap set up by the Master Plan aims at creating some key software products. Ministry of Science and Technology has formed a special National Steering group to work on OSS development.
15. Ministry of Science and Technology continued support the state research programme coded KC-01 in ICT related R&D. Among main direction of R&D is establishing a close link between the market, research and education, including a special orientation toward a Vietnamese-machine interface such as voice recognition.
16. Policy to promote procurement of domestic ICT and open source products by the Decision No. 169/2006 by PM.
17. On the application aspect, there are Plan for ICT application in government organizations by the Decsion No. 43/2008 of PM and national program on ICT application in public organization up to 2015 by the Decision No. 48/2009 of PM.

The latest programme is Programme "Turn Vietnam into a powerhouse in ICT" which is in a drafting process. Tentatively the program aims at following content.

1. General objective

To create domestic enterprises with international competitiveness, while ICT became a key industry, with focus on digital content industry. In application, media technologies can penetrate into most households and citizens, with service usage rate is as high as of advanced industrial countries.

During period 2015-2020, Vietnam ranks 60 and above in the ranking of ITU on ICT; Average rate of annual growth is about 2.5 times of GDP growth rate.

2. Specific objectives:

2.1. On telecom infrastructure:

Coverage of mobile with large bandwidth is around 70% of total population; in majority to complete large bandwidth network for all communes; to deploy fiber cable to each of household in all new cities; to complete transfer to digital broadcasting in five national cities.

2.2. Introducing telephones, media equipment and computers to households

Most households have telephones; around 50% households have computers on large bandwidth Internet; more than 90% households have TV.

2.3. On ICT application

To improve technology infrastructure to meet demand of ICT application in government agencies down to commune level; supply most of online services to people and firms (online payment and receiving electronics file)

2.4. On ICT industry

ICT industry begins to move from assembling electronics hardware for foreign companies to production of parts and development of supporting industries, substitute imported parts, increasing localization of products. Vietnam is among top 15 most attractive suppliers of software production and digital content of the world

2.5. On development of human resources for ICT

Human resources in ICT achieve international standard to meet domestic demand and export to region and international ICT markets.

ICT RESEARCH PRIORITIES

Depending on various background and orientation, there are a number of ICT research priorities in Vietnam, namely:

- Next Generation Broadband Network
- High performance and grid computing
- Pervasive nationwide hotspot coverage
- Chip design and embedded systems
- Infocomm Infrastructure, Services & Technology Devt, Advanced information systems
- E-Govt
- Network Security and Information systems security
- MEMS/NEMS
- Digital Media Vault - Digital and E-Library, E-learning
- E-Health systems: Electronic Health records; Management of Pandemics
- Open Source software
- Desktop publishing
- RFID: for food traceability
- ICT for agriculture & forestry
- ICT and Internet for Community and Rural area
- Remote sensing and GIS (Multi-criteria Spatial Decision Support Systems)
- Informatics for Land Management and Planning
- Environmental modeling: Detection of natural disasters
- Geometric modeling
- Semantic web
- Processing natural language, Processing image
- Research algorithm (heuristic, genetic, neural network), language.

Among these, application of ICT has high priority in the context of developing country. Ministry of Information and Communication (MIC) pursues these activities in cooperation with many professional associations such as VAIP, VINASA, VCCI, HANICT. However, R&D mainly is done in VAST, R&D institutes of Ministries, Faculties of ICT in universities and ICT national labs supported by MOST and national research programmes. Some international cooperation have been pursued with the EU (FP6 and FP7), France, Germany, UK, Italy, the US, Japan, Australia and ASEAN.