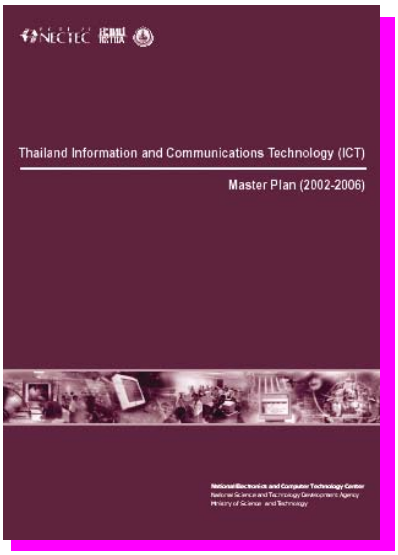
Thailand

Information and Communication Technology (ICT) Master Plan (2002-2006)



Thailand Information and Communication Technology (ICT)
Master Plan (2002-2006)

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Foreword

In the recent history of the development of Information and Communication Technology (ICT) in Thailand, the year 2002 witnessed three remarkable events. First, the government approved the National Information Technology Policy Framework for the year 2001-2010, *IT 2010*, in March. Subsequently in September, the cabinet further endorsed the first National ICT Master Plan for the year 2002-2006. Lastly, the establishment of the Ministry of Information and Communication Technology in October has reinforced the government commitment to the development of ICT for national development.

In compliance to the Cabinet resolution upon the approval of IT 2010, the Thailand ICT Master Plan is developed with a five years coverage. This is a dynamic plan which enables the country to respond to the rapid changes occurred in the technological arena as well as socio-economic sphere in a timely fashion.

The formulation of this Master Plan involved a series of consultative meetings and workshops between all stakeholders involved. Some workshops focused on the high-end policy makers, one of which was chaired by the Prime Minister, as chairman of the National IT Committee. Others were more action-oriented. The activities were carefully planed and directed by the Working Group on Drafting of the Master Plan, comprised of renowned figures from both public and private sector.

The National Electronics and Computer Technology Center (NECTEC), the then secretariat to the National Information Technology Committee, in collaboration with the National Economics and Social Development Board, has been responsible for the drafting of this Master Plan. We have spent around a year to carry out extensive research on best practices around the world, to analyze the strength, weakness, opportunity, and threat (SWOT) of the country ICT development, and to transform it into vision, mission, strategies as well as detailed plan.

The establishment of the Ministry of Information and Communication Technology (MICT) in October 2002, as part of the government reform as well as the reflection of IT 2010 recommendation, provides us with a new height of enthusiasms. The Master Plan set the vision, strategies and guidelines of activities and mechanisms for the ICT development of the country. The plan envisages the MICT to turn this vision and dreams into reality. It is the MICT who will be driving force behind almost all activities outlined in the Master Plan. Recently, we have witnessed that some measures has already been put into action, i.e. the set up of the Software Industry Promotion Agency.

NECTEC would like to express our sincere gratitude to all those contributors who make the drafting of this Master Plan possible. We would like to denote special thanks to the Working Group on Drafting of the Master Plan, who put in enormous efforts and time.

We hope that Thailand ICT Master Plan will serve as a direction as well as practical guideline for the national ICT development during 2002-2006. Although the Ministry of ICT will be a main driving force as we go forward, NECTEC, with our given mandates and capacity, will continue to further our collaboration with all agencies, to strengthen the ICT development in the country in the years to come.

Dr. Thaweesak Koanantakool

Director

National Electronics and Computer Technology Center

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I. Executive Summary

History of the Master Plan

From early beginning of the 21 Century, Thailand has pledged its commitment to reap the benefits of Information and Communication Technology for the country development. The "National IT Policy Framework 2001-2010", approved by the cabinet on March 19, 2002, has identified the goals, strategies and linkage between strategies and development of the country towards the knowledge-based society. In addition, it also recommends *the key to success* as the guideline for policy implementation.

The IT 2010 consists of three principles: building up human capital; promoting innovation; and investing in information infrastructure and promote the information industry. The ICT usage are categorized into five flagships comprising e-Government, e-Commerce, e-Industry, e-Education, and e-Society.

While IT2010 envisions the long-term development, the rapid changes in technology as well as society and economy prompt the requirement for a medium-term dynamic plan. Therefore, the National Information and Communication Technology (ICT) Master Plan (2002-2006) is developed. The plan is composed of vision, missions, objectives, strategies and activities for the first five years of the IT 2010.

To formulate a robust ICT Master Plan, further analysis on the strength, weakness, opportunity and threat (SWOT) facing Thailand ICT development was carried out. This process, as well as the subsequent stages of strategies formulation, involve interactive participation of all stakeholders – from public sector, private sector and civil society. The constant dialogues among stakeholders were initiated via series of meetings and workshops organized by the National Electronics and Computer Technology Center.

In September 2002, the Cabinet approved the National ICT Master Plan 2002-2006. This is also coincided with the establishment of the Ministry of Information and Communication Technology, who will be responsible for the implementation of the Plan.

Focus of the ICT Master Plan 2002-2006

By strategically linking to IT 2010 and the Ninth National Economics and Social Development Plan, the ICT Master Plan provides guidelines for the country to reap the benefits of Information and Communication Technology in order to strengthen the nation's competitiveness as well as to enhance the quality of life of the citizens.

The National ICT Master Plan envisions Thailand to become the regional center for ICT development and business, in particular for software technology. Besides, it aims to provide entrepreneurs and citizens with equitable access to information. Direct benefits of ICT are manifested throughout the Thai economy, adding value to products and services of every sector, including ICT sector, as well as strengthening their competitiveness in the global market. ICT becomes instrumental in the enhancement of Thai quality of life as country moves towards a Knowledge-based Society.

The master plan devises seven key strategies, whose accomplishments in the year 2002-2006 require public-private and people sectors collaboration, including:

Strategy 1: The development of the ICT industry into a regional leader
Strategy 2: The utilization of ICT to enhance the quality of life and society
Strategy 3: The reform and enhancement of the capability on ICT research and development
Strategy 4: The reinforcement of social capacity for future competition
Strategy 5: The development of entrepreneurs capacity for the expansion of international markets
Strategy 6: The utilization of ICT in Small and Medium Enterprises (SMEs)
Strategy 7: The utilization of ICT in government administration and services

The three prime moving areas were emphasized in order to accelerate and kick-start the whole plan, including the development of the software industry (from strategy 1), the development of e-Government (from strategy 7), and the promotion of ICT utilization among Small and Medium Enterprises (from strategy 6).

Policy Implementation

The National ICT Master Plan could not be launched in a better timing. The new Ministry of Information and Communication Technology (MICT), establish in October 2002, will be responsible for the implementation of the plan and materialize vision into reality.

In order to accomplish the ICT development, the Master Plan outlines necessary measures and activities for each strategy. It also defines the role and responsibility of relevant agencies as well as the timeframe of operation for each activity. In this respect, the MICT will take the lead in driving and coordinating all agencies concerned to accelerate those activities. The Master Plan also calls for the creation of Monitoring and Evaluation mechanisms of the ICT Development, in which the MICT will be responsible for initiating and coordinating.

II. Thailand ICT Development Strategies

Vision

Thailand becomes the regional center for ICT development and business, in particular for software technology.

Entrepreneurs and citizens have an equitable access to information. Direct benefits of ICT are manifested throughout the Thai economy, adding value to products and services of every sector, including ICT sector, as well as strengthening their competitiveness in the global market. ICT becomes instrumental in the enhancement of Thai quality of life as country moves towards a Knowledge-based Society.

Missions

Enhancing the collaboration of the public and private sectors to form a development network of information systems and infrastructure, including the reform of ICT management as well as planning for research, education and training.

Objectives

1. Application of ICT to increase the country's economic competitiveness.
2. Application of ICT to develop Knowledge-based Society.
3. Application of ICT for sustainable development through equitable access to all.
4. Development of ICT business and industry to reach its full potential.

Goals

1. Development and upgrading of the economy by using ICT.
2. Enhancement of the competitiveness of the ICT industry.
3. Development of human resources by increasing the application of ICT in education and training.
4. Strengthening the rural community for sustainable development.

Strategies

To achieve the objectives and goals of ICT development, the master plan devises seven key strategies, whose accomplishments in the year 2002-2006 require public-private and people sectors collaboration. These aim to utilize ICT to create the potential for self-reliance and competitiveness in the global market. In addition, they seek to develop knowledge, which will lead to a better quality of life for Thai citizens.

The strategies are:

Strategy 1: The development of the ICT industry into a regional leader

Strategy 2: The utilization of ICT to enhance the quality of life and society

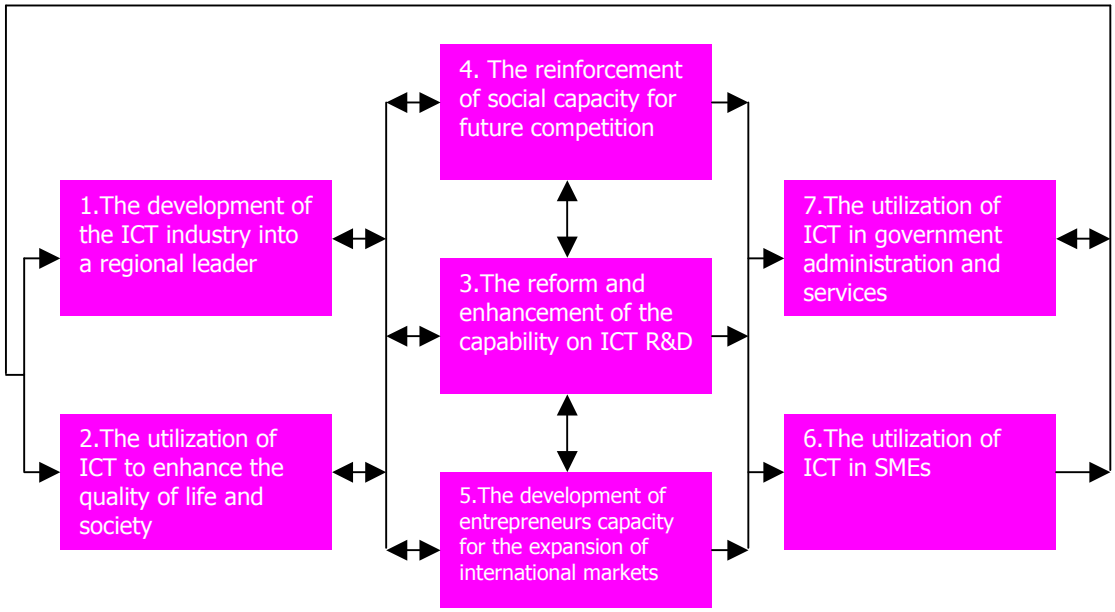
Strategy 3: The reform and enhancement of the capability on ICT research and development

Strategy 4: The reinforcement of social capacity for future competition

Strategy 5: The development of entrepreneurs capacity for the expansion of international markets

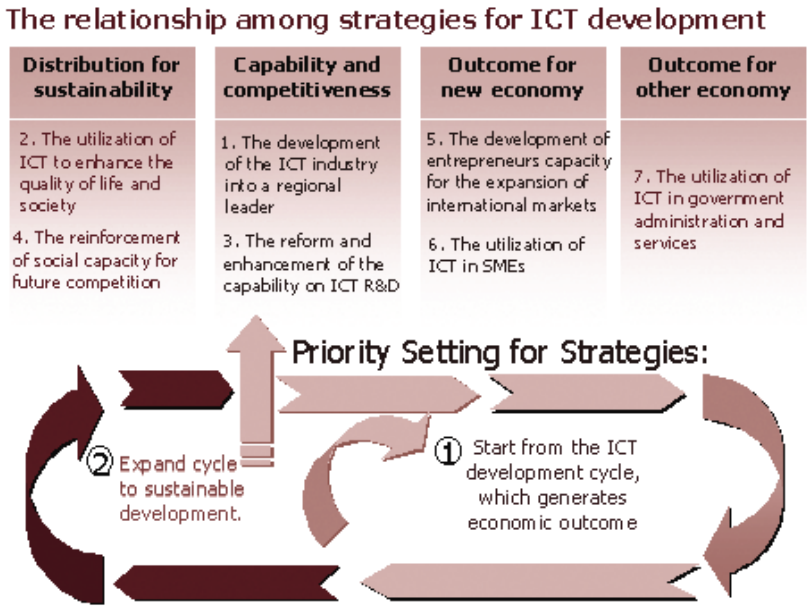
Strategy 6: The utilization of ICT in Small and Medium Enterprises

Strategy 7: The utilization of ICT in government administration and services



The relationship among strategies for ICT development

In setting priorities for turning the strategies into feasible plans and projects in practice, careful attention must be given to budget constraint and the need for short-term results in order to minimize investment costs.



The relationship between strategies, target outcomes, and priority settings

Strategy 1: The development of the ICT industry into a regional leader

"Public and private sectors jointly boost the development of ICT industry, taking full advantage of Thai craftsmanship and local knowledge, as well as using public sector as leading customers in domestic market while creating regional market as a base for overseas market. The investment in hardware and software industry as well as electronics industry are encouraged. Legal infrastructure development to support ICT utilization will be actively pursued."

Goals

1. The software industry to be worth 90 billion baht a year by 2006, of which 75% is the value of export.
2. To have at least 60,000 qualified researchers and software developers, at least 30% of whom are certified developers.
3. To have the Software Industry Promotion Agency (SIPA) to provide a one-stop service to drive investment in the software sector, starting in the year 2003.
4. To build up the domestic software market by using the government ICT projects as a kick-start, having a value of at least 5 billion baht per year by 2006.

5. Utilization of open source software and local software to account for at least 50% of the total software market each year.

Plans and activities

1.1 To drive ICT industry development by focusing on the local software sector through public and private sector collaboration. Major activities are:

(1) Setting up the Software Industry Promotion Board (SIPB), as a joint effort between public and private sectors, to drive the establishment of Software Industry Promotion Agency (SIPA). SIPA management must be flexible and dynamic in order to adjust to changes as well as to respond to entrepreneur requirement efficiently.

(2) Having SIPA define vital directions and measures in the development of software industry including R&D, taking into consideration opportunities presented by open standards, e-logistics applications, and wireless and broadband technologies.

1.2 To support SIPA in building mechanisms for ICT development, as follows:

(1) Providing seed money from government funds and other sources such as venture capital, matching funds, and soft loans from banks. This purpose is to set up funds for various purposes such as to support Thai entrepreneurs to expand into foreign market, funds to support ICT training, and funds to support R&D.

(2) Establishing rules and regulation so that such funds are efficiently managed and have mechanisms to allow SMEs to use the funds conveniently and widely.

(3) Using an investment policy, when and where appropriate, to motivate international software companies to invest in the country with a condition to transfer technology to local entrepreneurs.

1.3 To have public and private organizations co-develop the software market for local developers in order to support them in developing and expanding into international markets, as follows:

(1) Government agencies supporting the procurement of local software, and/or providing local firms with an opportunity to work on larger software development projects.

(2) Encourage collaboration between local and foreign entrepreneurs in software projects in the government sector in order to transfer skills and knowledge to Thai people.

1.4 To develop an evaluation system and appropriate indicators in order to assess the work of and impacts from SIPA on the economy and society.

1.5 To develop a 10-year master plan for ICT human resource development, focusing on both qualitative and quantitative dimensions. In the plan, the development of software personnel receives high priority, with the following principles:

(1) Establishing a joint policy committee comprising the government, industry and education sectors to develop a master plan for human resource development to meet the demand of the software industry.

(2) Developing lecturers and software researchers with greater knowledge and experience in the software industry, aiming to double the number within five years.

(3) Setting up a professional training institute to urgently train qualified software personnel, with emphasis on relevant professional certifications. In order to achieve better effectiveness and efficiency, the institute should be run and managed by the private sector, with partial investment support and tax incentives from the government. The training is a two-prong approach: one to enhance the skills of current software personnel, and the other to provide non-ICT graduates necessary skills to take an active part in the software industry.

(4) Conducting a survey on the availability and type of existing instructors, researchers, and software personnel in the software business, and developing a mechanism to attract foreign experts to work with local people in educational, training and operational matters.

(5) Building a collaborative university-industry network in the following key areas:
- Setting up the mechanism to provide the opportunity for students to work in software companies during or at the end of the course. Private sector expenses incurred in this regard will be recouped through tax incentives.
- Exchanging of personnel among those in the ICT industry, the software business and the education sector by allowing for a sabbatical leave to work on specified program or project(s).

(6) Provision of funds for ICT human resource development, particularly for the software industry, which include converting other profession to work in the ICT industry. This may involve financial institutions offering low-interest loans.

To ensure an effective operational plan over a 10-year period, the ICT human resource master plan should specify the total number of personnel, qualifications, academic knowledge and skills in the following areas:

(1) ICT technology in systems, system equipment, devices, and software related to these systems.

(2) Investment and funds available, as well as other financial mechanism related to ICT business.

(3) ICT production and service delivery procedures.

(4) International open standards used for the production of ICT equipment and ICT services, in both hardware and software.

(5) Business administration, marketing, and management in IT.

1.6 To enhance the skills of Thai entrepreneurs and software developers from merely involving with program coding to having capability to conduct more sophisticated software design, such as mobile Internet applications and web services, by taking advantage of local artistic abilities and craftsmanship.

1.7 To upgrade the quality of Thai software products and services to meet international standards by:

(1) Defining the standards of local software production to meet international requirements.

(2) Having joint public-private agency to support local software standards that are acceptable internationally or being committed through international agreement.

1.8 To promote a standard testing center for ICT products in order to enhance the competitiveness of Thai producers in the international market.

1.9 To promote private sector investment in the hardware manufacturing sectors which have strong linkage to the software industry -- such as the electronics industry, whose products are applied extensively in telecommunications, computers and the automotive sector -- in order to extend the scope of ICT industry through strong clustering.

1.10 To accelerate the drafting of ICT-related laws, and related legal process with the aim to have the laws being in effect in the next one to two years, especially the National Information Infrastructure Law, the Data Protection Law, the Computer Crime Law, and the Electronic Funds Transfer Law.

Strategy 2: The utilization of ICT to enhance the quality of life and society

"Encourage people to utilize useful and suitable information by accelerating the development of equitable information infrastructure to be used as a tool in the search and creation of knowledge, particularly local knowledge, and provide value-added to agricultural and industrial products from rural communities. This foster the development of a Knowledge-based Society in conjunction with proper immunity against possible threats and adverse impacts from globalization."

Goals

1. Provision of at least seven telephone numbers (32 kbps minimum) in every community (village) by 2005.
2. Provision of broadband services at a reasonable price in every province by 2006.
3. Reduction in the price of leased lines to parallel with the advancement in ICT.
4. Giving at least 70% of the Disadvantaged access to ICT services by 2006.
5. Having a community telecenter in every sub-district by 2006.
6. Having at least 300,000 teachers who can use ICT effectively by 2006, of which 70% are outside Bangkok.
7. Having at least one community radio broadcasting station in every province, and at least one community TV broadcasting station in each region by 2006.
8. Enabling sub-districts to create local content for widely dissemination by 2004.
9. Having an organization responsible for the security of information and communication systems.

Plans and activities

2.1 To develop basic telecommunication infrastructure by:

(1) Improving and developing the government-run telecommunication network into a liberalized business in which users have a choice of service provider. The network will be connected throughout the country with advanced technology and high-quality, high-speed communication by using broadband in both backbone and last mile with high quality and reasonable price throughout the country.

(2) Accelerating liberalization of telecommunication services, which will be regulated by an independent organization in order to achieve the first objective.

(3) Bringing the laws on telecommunication business conduct – namely, The Frequency Allocation Act. B.E. 2543 (2000) and the Telecommunication Business Operation Act B.E. 2544 (2001) -- into effect as soon as possible in order to achieve the second objective.

2.2 To materialize the National Information Infrastructure Law which is a by-law under Article 78 of the 1997 Constitution, by urgently undertaking the followings:

(1) Having the draft of the National Information Infrastructure Law undergoing the legal process and coming into effect by the end of 2003.

(2) Setting up an organization in accordance with the law once this law come into effect in order to have in place the infrastructure for social development and public administration, as required under Article 78 of the Constitution.

(3) Having the organization under this legislation to coordinate with the National Telecommunications Commission (NTC) in order to enforce the telecommunication operators to provide services to communities nationwide.

(4) Promoting ICT applications to serve social development, such as healthcare, education, community learning, services for disadvantaged groups, public safety, and to generate economic value from indigenous knowledge.

(5) Transforming the role of post offices to serve as community telecenter.

2.3 To apply ICT in the development of education, content creation and learning activities.

(1) Supporting the private sector and academic institutes in producing high quality electronic-media, and supporting human resources in local education institutes to create local-knowledge content in the form of electronic media.

(2) Providing training courses to enable education personnel to efficiently use electronic media for teaching.

(3) Creating the collaborative network to share IT resources and experiences among academic institutes.

(4) Expanding and developing learning through ICT media, such as distance learning via satellite and the Internet.

(5) The government to establish a data center for educational courseware, hosting the online content of academic institutes free of charge, and to organize the contests on courseware and teaching/learning manual development.

2.4 To promote the translation of books, documents and information from foreign languages into Thai, and vice versa, so that citizens can easily access information, as well as to disseminate Thai information worldwide.

2.5 To promote information and knowledge development that enhances the quality of community life by utilizing ICT in areas such as lifelong education, public health and health promotion, employment, price information for agricultural products, and natural-disaster warnings.

2.6 To promote the role of the mass media in publicizing the benefits of, and disseminating knowledge on, ICT.

2.7 To promote all local administrations to utilize information infrastructure and electronic media in back office operation, public services delivery, and local content dissemination in order to enhance the potential of the communities.

2.8 To develop and prepare human resources to fully benefit from ICT in support of the move towards the Knowledge-based Society/Economy, which is also based on the philosophy of the sufficiency economy. Human resources need to be prepared in terms of:

- Fundamental knowledge of and skills in computer application.
- Skills in searching, analytical thinking, and information utilization.
- Analytical thinking, creative thinking, and life-long learning, as well as the application of religious and cultural principles to the acquisition of knowledge.

2.9 To build up people confidence and trust in the utilization of e-commerce in all economic sectors:-agricultural, industrial and service sectors- by strengthening the legal infrastructure, such as electronic signature, data protection, payment system, security, and related laws.

Strategy 3: Reform and enhancement of the capability on ICT research and development

`Public and private sectors, together with educational institution, will jointly restructure the direction of R&D in ICT so as to meet the demand from industry. Concrete policies and measures for basic education to shape scientific thinking are to be accelerated in order to build up researchers and human resource in the field. There is the need for budget allocation, conducive environments and all critical factors, as well as commercialization of R&D in order to generate indigenous technology and reduce reliance on foreign technology."

Goals

1. Increase of investment in ICT research in both the public and private sectors, to be at least 3% of annual ICT industry value.
2. Provision of large-scale software development projects, which equipped with R&D project, with investment of over 100 man-years, to be at least 5 billion baht, by 2006.
3. The proportion of locally made PCs used in the country to be at least 80%, and of locally developed software to be not less than 50% of total domestic consumption, by 2004.
4. The proportion of software developers who can use network computing technology or web services to be at least 70% of total developers by 2004.

Plans and activities

3.1 The government to set up the education reform policy at the basic, vocational and university levels through coordination between the Ministry of Education, and academic institutes from the public and private sectors, to enhance the skills of students in science and English. This is to produce human resources that have great capability in R&D in ICT, as well as other technologies essential to the country's development.

3.2 The government and the private sector to provide necessary incentives to attract people to join the research profession such as financial rewards and career development.

3.3 The government to provide funding in the form of seed money to support and attract the investment in ICT R&D by academic institutes, public and private research organization, and independent researchers (from the general public sector). This might be a national fund with a mechanism to encourage long-term donations, with tax incentives.

3.4 The government and the private sector to coordinate in estimating the demand for ICT and electronic products -- hardware and software -- in order to define a strategy for the country's ICT R&D through collaboration among the electronics industry, telecommunications, computer hardware and software, and the other industries which will benefit from these such as the automobile industry.

3.5 To promote R&D of products with potential commercialization. These can be high-value components or finished products that can substitute imported products, have the potential for export, or benefit the development of other industries. Examples are:

(1) Computer and telecom equipment products for users that do not require complicated products or services, but need something less expensive, having reasonable quality, that meets both international standards and local environments.

(2) Electrical and electronic components that apply ICT technology, such as circuit boards, sub-assemblies, embedded systems, and telemetering, which meet international standards and are competitively priced.

(3) Development of an open-source software as the basis for developing products with commercial applications.

3.6 To establish excellence centers for the development of knowledge and for the Thais. This will serve as a center of ICT expertise and technology for future sustainable development.

3.7 To monitor and analyze advances in ICT technology, and forecast technology trends in order to set up the direction to support R&D and local ICT production.

Strategy 4: The reinforcement of social capacity for future competition

"Public and private sectors will jointly develop public awareness and understanding of ICT. In this regard, emphasis will be on human resource development, in order to optimize the benefits of ICT for good management and to exploit technological advancement to create value-added to basic economy, which will raise Thailand's competitiveness in the regional and global market."

Goals

1. At least 70% of the workforce can access ICT and at least 40% can access and search information on the Internet, by 2006.
2. At least 90% of new graduates from formal educational programs can use ICT by 2006.

3. An increase of at least 150,000 knowledge workers each year, to be achieved by 2006.

Plans and activities

4.1 Collaboration between public and private sector to build the public knowledge on ICT through academic institutes at the primary, secondary, vocational and higher education levels in all regions and communities. The activities are:

(1) Having computer and communication courses at every education level, with the emphasis on open standard technologies and open source software.

(2) All academic institutes to set up high-quality libraries that are open for general public to access basic ICT, such as the Internet and other learning materials.

(3) Setting up public facilities whereby children can play and learn about ICT.

(4) Every community having a community telecenter to facilitate the application of ICT in individual and community life. These centers will also cover the development of local content to promote the culture, products and tourism of each community.

(5) Supporting the production and distribution of books and manuals at affordable prices.

(6) Supporting citizens, especially the young, in acquiring knowledge and understanding of language including Thai, English or other foreign languages.

4.2 Government agencies to support the private sector in producing suitable ICT equipment and software such as accounting software that meets the market demand and uses up-to-date technology at an affordable price.

4.3 To encourage public awareness and interest in ICT and e-commerce by organizing activities such as community website contests, trade shows and exhibitions, meetings and seminars.

4.4 To develop human resource related to ICT fields such as lawyers, economists, engineers, social workers and the media, so that they have wider ICT knowledge and skills to use ICT in their professions.

Strategy 5: Development of entrepreneurs capacity for the expansion of international markets

"Devise measures and mechanisms to equip entrepreneurs with knowledge and experiences in technology and management, so as to improve production process and marketing. Use open standard to link database and system, as well as apply e-Commerce for cost reduction. In this regard, the government should support export of locally-produced products by improving legal infrastructure to deal with technological change, and protects local knowledge. Furthermore, priority would be given to the development of ICT human resource with qualification that meets international standards, as well as the enhancement of marketing capability of local entrepreneurs."

Goals

1. Increasing ICT related employment in industries which utilize ICT in their production process and services by around 600,000 people (1% of the total workforce) by 2006.
2. Increasing the value of the e-commerce market by at least 20% per year.
3. Raising the value of the economy of ICT-based manufacturing industries by 10% by 2006.

Plans and activities

5.1 To revise and improve intellectual property related laws -- such as the Copyright Law, Patent Law, and Trademark Law -- in order to better protect knowledge, innovation and products, as well as local know-how. Law enforcement must be undertaken seriously to assure producers and developers of ICT goods of the benefits of these laws, and also to enhance Thai brand recognition.

5.2 To promote industries to apply ICT in manufacturing in order to add value through product differentiation, mass customization, supply chains, clustering, value chains, and Thai branding.

5.3 To promote the application of e-commerce among Thai entrepreneurs in order to lower operation costs, expand into international markets, and increase market share in regional markets by publicizing information, advertising via websites, e-service offering, and conducting e-business with effective measures to prevent the computer crime.

5.4 To promote the use of broadband Internet among business by establishing networks for raw materials, production, management, transportation, and trade both in domestic

and regional markets. In addition, the utilization of this infrastructure in searching for information, knowledge, and technological changes, in order to continuously improve competitiveness should also be promoted.

Strategy 6: The utilization of ICT in SMEs

"Encourage SMEs to apply ICT to develop their businesses and to boost competitiveness, focusing on ICT for management, production, and linkages to large firms. This will prepare SMEs for future competition, as a result of globalization, and also lessen impacts from economic fluctuation."

Goals

1. Enabling at least 100,000 SMEs to utilize ICT in their back-office operations by 2006.
2. Enabling 40% of SMEs to utilize ICT in major business operations -- such as design and engineering -- by 2006.
3. Increasing the number of entrepreneurs in the supply chain by 10% each year.

Plans and activities

6.1 To have mechanisms for technology transfer to SMEs in order to build up their skills and knowledge and minimize the cost related to intellectual property.

6.2 To provide incentives to set up SME alliances in each business sector in which the whole ranges of ICT system integration are used in administration and management in order to boost efficiency and reduce costs among alliance members, as well as enhancing administrative transparency. Major activities are:

(1) Establishing a private sector mentor to efficiently coordinate each alliance.

(2) Choosing a potential business area from each alliance, to be run as a pilot-project model for other members and other groups.

(3) Publicizing the successful results of each alliance as 'best practice' model for further expansion.

(4) Setting up support measures that encourage linkage between both manufacturing and operation of SMEs and those of large industries, in order to enable SMEs to participate in large-scale manufacturing projects and increase their knowledge of technology and management. This will also boost the potential of Thai SMEs.

6.3 To accelerate the promotion and development of e-business -- especially in facilitation of taxing system, telecommunication system, correspondence with government, management and production system, and transportation – among high-potential SMEs, such as electronics and automobile industries. This includes linkage between SME sectors and large enterprise in related industries.

6.4 To utilize ICT in management, business operation and communication -- especially supply chain management -- in order to reduce costs and increase management efficiency from the initial process origin through to the customer. Major activities are:

(1) Having government agencies, the Federation of Thai Industries, Institute for Small and Medium Enterprises Development and academia, jointly transfer knowledge on and create understanding of supply chain management to SMEs.

(2) Establishing the standards to be used for information exchange by modern electronic media, such as UN/CEFACT and XML.

(3) Determining the use of barcode's reading standards and data collection, using EAN.UCC and EANCOM barcodes in order to reduce the number of various communication methods in the B2B business communication.

(4) Improving import-export tax rates for ICT material so that Thai entrepreneurs are not placed at a disadvantage, in comparison with the finished products in terms of ready-made imported products.

6.5 To develop knowledge and understanding among private entrepreneurs of the benefits of using hardware and software from local sources, and the potential cost savings.

6.6 To set up databases for the planning and provision of services to the business, manufacturing, and consumer sectors. In this regard, ICT is viewed as major tools for storing, collecting, analyzing and distributing information to related business.

6.7 Having SME support agencies cooperate in developing an SME Portal, which will provide services for entrepreneurs wanting to contact the relevant parts of government. This should include the management of public information, support policies and other facilities, knowledge about the government, support policies or incentives, including a convenient one-stop services.

6.8 Strengthening the creativity and experience of undergraduate students in order to enhance their entrepreneurship. This will include cooperation with the private sector in field-work training and the promotion of new entrepreneurs in the economic system by using the SME support mechanisms from related agencies.

Strategy 7: The utilization of ICT in government administration and services

"Government to set up a central agency to oversee ICT development and utilization within the public sector. Emphasis will be on the unity and integration of database system, planning, coordination, budget allocation and transparent procurement, to serve each agency's requirement as well as reduce duplication of investment. This will enable the public sector to collect, exchange and share information among themselves, based on secured and open standard platform."

Goals

1. Agencies can exchange data electronically within the same ministry and across the ministries throughout the country by 2006.
2. Every ministry can link and exchange the information electronically through the nationwide network by 2006.
3. At least 60% of public agencies fully utilize IT in back-office operation by 2006.
4. At least 90% of simple transaction services by the government being conducted electronically.
5. At least 50% of public agencies able to provide electronic services related to fee payment in every province, by 2006.
6. At least 100 public services provided as e-citizen services by 2006.
7. The government sector to use e-procurement with the total purchase value of at least 100 billion baht by 2006.
8. Implementation of the ICT system, regulations and enforcement for national security.
9. Develop central standards for IT application in public agencies, such as correspondence, human resource management , budgeting, finance, accounting, and inventory by 2006.

Plans and activities

7.1 To reform the public governance structure by setting up the ministry overseeing ICT planning, promotion, development and implementation.

7.2 To carry out public sector reform by:

(1) Establishing a structure that strengthens CIO operations by:

- Having an ICT division in each ministry to support the work of CIO. This unit is to be responsible for the effective utilization of ICT in all departments under the ministry.
- Setting up the practices, plans and organization structure for provincial CIOs.

(2) Revising rule and regulations and administration procedures which relates to planning, coordination, budget allocation, public administration and services delivery by utilizing ICT to create transparency, efficiency and effectiveness, such as procurement regulations to facilitate e-procurement and e-services.

(3) Allocating the budget for ICT development, in accordance with the ICT Master Plan. This should be organized in the manner that it will minimize the duplication of efforts and discourage piece-meal development. Furthermore, the government should allow private sectors to develop the systems and provide services, whenever appropriate.

7.3 To develop the government database by setting up the data and data exchange standards in order to fully support the e-citizen initiative. Major activities are:

(1) Setting up the Government Data Exchange (GDX) to facilitate the link and exchange of information across ministries via high-speed government Intranet.

(2) Promoting the development of information exchange gateway between the public and private sectors.

(3) Developing ministries' information network in order to support management information systems, as well as back- and front-office systems.

(4) Developing easy-to-use software by investing in common back office software. This should include bulk purchasing of software licenses, and using local software, with open-source technology, where appropriate.

(5) Providing public information access in accordance with the Public Information Act.

(6) Developing a population database through public-private partnership. This database will enable the provision of a smart ID card for each citizen, to be used in their transaction with the government. The database should be developed in an efficient and cost-effective manner as well as being supportive to local industry.

7.4 To implement and apply the Geographic Information System (GIS) in determining appropriate strategies for economic and social development, resource management, and integrated disaster prevention. Major activities are:

(1) Setting up a National Spatial Data Infrastructure (NSDI) committee, comprising representatives from various agencies to determine the policy framework for coordination, budgeting and the updating of information.

(2) The NSDI committee will set up a fundamental geographical data set (FGDS), metadata, GIS Clearing House, and a standard for data interchange among relevant organizations.

(3) Developing GIS data exchange system and the GIS network in order to achieve integrated utilization by public agencies.

(4) Promoting GIS technology development and open-source code software.

7.5 Public agencies in every ministry to utilize the IT network efficiently, without the duplication in investment.

7.6 To develop public-sector human resources by:

(1) Offering appropriate incentives, compensation and career paths to ICT personnel in order to retain the existing staff.

(2) Future recruitment of government personnel to take into account applicants' ICT knowledge. A test on basic ICT knowledge for new recruitment should be in compulsory.

(3) Setting up an e-government institute to be responsible for the development of ICT knowledge and skills for government officers.

7.7 To develop efficient monitoring and evaluation system, based on international recognized indicators, in order to evaluate the accomplishments and analyze the obstacles of ICT development under the master plan.

7.8 To develop a Digital Nervous System for the country, enabling efficient government information management and delivery of services, both in central and local agencies. Major activities are:

(1) Setting up a National Operation Center that can offer rapid and accurate information to Cabinet meetings so that appropriate decision could be made.

(2) Setting up a Ministerial Operation Center in every ministry to collect necessary information from all departments underneath. Furthermore, this will support the e-initiative of the country.

(3) Developing an e-government portal, providing people with convenient and rapid access to public services.

III. Prime Movers

To achieve concrete progress towards development targets, it is essential that prime movers should be urgently conducted in the first two years. The results of which will kick-start the other plans, as the prime movers will enhance potential and competitiveness. This will lead to expansion of the New Economy, thus providing economic outcome that are beneficial to the implementation of other plans. This positive outcome will drive the development of other economic sectors and consequently lead to sustainable development of the society.

The three Prime movers cover the area of: the development of the software industry (from strategy 1), the development of e-Government (from strategy 7), and the promotion of ICT utilization among SMEs (from strategy 6).

The implementation of all activities under these three areas needs government support at the policy level in order make a quick start despite budget constraints. However, during implementation, it is important that crucial factors necessary for future sustainable development be taken into account, even without financial support from the government sector. This is to create intellectual capital as well as wealth creation for further implementation of other projects. These factors are:

- The development of human resources and professionals… to build skilled workforce.
- The standardization of work processes… to reduce problems and costs due to incompatibility.
- The establishment and development of processes and systems... to work efficiently.
- The management and accumulation of intellectual capital… to facilitate new workers acquiring knowledge.

1. Development of the Software Industry

The result of SWOT analysis of ICT development pointed to the potential of the software industry using artistic skills and precision, and the high growth of the software market both locally and globally when compared to other ICT markets. The software industry is, therefore, significant to the economy.

The development of the Thai software industry, however, is still in its infancy and the capability of software development in the country is still limited, resulted in large proportion of imported software. In addition, the value of software exports is minimal.

Therefore, the government needs to foster the development of the software industry and the urgent agenda during 2002-2003 are as follows:

1.1 The institution strengthening for the promotion of software industry development

Urgent projects are:

(1) Setting up the Software Industry Promotion Agency (SIPA) under the Ministry of Information and Communication Technology, which involves two main functions.

- Setting up the Software Industry Promotion Board (SIPB), to high level committee to set up the framework for the development of software industry as a strategic industry which will enhance the country's ICT to be competitive on the international stage.

- The Software Industry Promotion Agency (SIPA) to be the operational arm following the policy set out by the SIPB; SIPA will be responsible for defining measures, practices, and management of the sector. For example, the SIPA to act as a one-stop service for the investors.

  Software Park Thailand should be transformed to take the role and functions of SIPA, as indicated above.

(2) Setting up a promotion and development agency for open source software, to promote the development of open-source software in Thailand and also to act as a clearing house for open-source software that can be used in the public

and private sectors. In addition, it will serve as a knowledge center providing consultancy for other agencies that are interested in using these software.

1.2 The capacity-building of human resource in software

The purpose is to develop software human resources in both qualitative and quantitative terms in order to enable the Thai software industry to timely high quality products and services. Examples of projects are:

(1) Establishing a professional training institute to quickly produce knowledge workers by concentrating on professional certification level. Two main training tracks are needed: one for upgrading ICT human resources, and the other for training of graduates in other fields so as to enhance the capability of ICT and software for other professions. The institute should be run and operated by the private sector, with financial support and/or tax incentives from the government.

(2) Bringing in knowledge workers from abroad to teach and transfer technology, in parallel with local human resources development. The project aims to resolve the problem of the current shortage of personnel and skills of Thai software developers.

(3) Setting up a software excellence center to develop advanced skills and professionals, to promote research and development in ICT and software. This could be a collaboration between the public and private sectors, academic and/or research institutes, both local and international.

1.3 Local market stimulation for Thai software entrepreneurs

The plan is to deploy domestic market as a base to enhance the capability and credibility of local entrepreneurs, so that they can grow and expand into the international market place. The projects are:

(1) Implementing government-led national ICT projects, whereby the public sector are encouraged to buy from or contract to local software firms. This will provide local entrepreneurs with the opportunity to develop larger software projects. It will also attract foreign software companies to form joint ventures with local businesses, which can then enter export markets through outsourcing projects.

(2) Running public relations campaigns to create awareness in and understanding of benefits of ICT utilization among SMEs in order to expand domestic market.

(3) Establishing appropriate software quality standards and software professional certification by defining Thai software development standards to meet international requirements, and defining software professional standards to ensure that software products and services undertaken by Thai entrepreneurs are competitive in both domestic and international markets.

2. The Development of e-Government

In order to establish better administration, management and delivery of public services, public sector reform together with new workflow management are necessary for the application of database. This will be achieved by applying ICT to replace the current processes or improve their efficiency.

E-Government enables citizens and the private sector to use public services more conveniently and more rapidly. A system of transparent administration will create a conducive environment that facilitates economic development. In addition, it will lead to a number of ICT projects in which the private sector can participate. It enables Thai software and hardware companies to use government agencies as leading markets for their products in order to create future opportunities.

Nevertheless, the government sector has to accelerate the amendment of laws and regulations supporting electronic activity, especially in respect of correspondences and inventories.

Major projects for long-term development of the ICT industry are:

(1) The multi-application smart ID card project

The long-term objective of this project is to enable people to conduct all government services by using only one card, creating a more convenient and faster service. It also greatly reduces the use of paper, document filing and copies.

This should start with pilot public agencies, namely the Ministry of the Interior, the Ministry of Public Health, the Ministry of Labor, the Prime Minister's Office,

and the Ministry of Finance. In this way, the representatives from these pilot projects identify the fundamental data and the responsible government agencies for data collection and the change of data.

For card issuance, it should start with data under the responsibility of the Ministry of the Interior, including data of birth, death, ID number, registration of name/surname. All such data will be included in the smart ID card. Other public agencies have the right to record and amend the data directory and fields for which they are responsible. This will be undertaken based on the data standard of the card-reading machine, the security system, and the communication method of the card and reading machine.

The planning and implementation of the system is based on convenience, safety, durability, cost-effectiveness, high quality and uniform standard across the same database. This will also promote local production of both the necessary hardware and software as much as possible, with Thailand being a manufacturing base of cards and software. In addition, the working process must be able to validate data in the circumstances of card loss or renewal.

Initially, data in the ID cards of several public agencies should be combined as follows:

Types of card	Agencies responsible for data
1. Government official card	Department of Local Administration
2. Identity card	Department of Provincial Administration, Ministry of Interior
3. Tax card	Revenue Department, Ministry of Finance
4. Social security card	Social Security Office, Ministry of Labor
5. Health insurance card	Ministry of Public Health
6. Free-treatment cards	Ministry of Public Health

To achieve the objective of developing the smart ID card, an appropriate sequence of processes should be followed. An agency under the ICT Ministry is to be responsible for cooperation between and integration of the relevant agencies by setting the main conditions and minimum qualifications of the card based on security, the protection of personal data, and scalability.

(2) The e-Procurement project

The objective of this project is to make procurement in the public sector convenient, fast and transparent, enabling the purchase of products at low prices. It is also in line with global trade trends, and will make Thai entrepreneurs more competitive in e-commerce.

The administrative and management agency for general public-sector services in the pilot phase of the project should start work in this area in order to improve the regulations and workflow systems of purchasing offices. It should then encourage the application of ICT in the equipment and material purchasing process, as well as in the employment of construction services. In addition, it should encourage the private sector to transact with the government by electronic means. The pilot project should select suitable types of material and equipment that have well -defined standards. Meanwhile, the amendment of laws and regulations need to be pursued in order to facilitate electronic work processes.

(3) The development of central standards for IT application for the government

The objective of the project is to support the public sector reform by utilizing modern management tools, putting a stop on a piecemeal development approach and moving towards a single government license of software application that serves similar purpose.

The first group of systems that need to be developed are the document registration system, the accounting/finance system, the budget system, the personnel system, and the procurement system.

Projects 2 (e-procurement) and 3 (back-office software) must be conducted in line with the projects to reform the government financial management system which is related to the budget payment system, accounting system, procurement, debt management, assessment, and evaluation system conducted by the committee on government financial management system.

The project should utilize the potential of the private sector in terms of investment in resources and networks while the government pays back through a service charge, in order to reduce duplication of investment and to maximize use of resources. The

organization under the Ministry of Information and Communication Technology has responsibility for monitoring progress by closely coordinating with relevant agencies such as the Prime Minister's Office, which overseeing government procurement.

(4) The Government Data Exchange (GDX) project

The project aims to enable every public organization to exchange data efficiently by using data-code and data-exchange standards through the government's high-speed Intranet.

All government agencies should prepare their database system to allow for data exchange with others electronically. Such preparation includes data directory, identification of specific staff responsible for exchanging data, in the capacity of users and providers, the log-file of operation for recording data enquiries by public organizations, and the use of electronic signature.

Where the public sector has already provided information to the public, the organizations owning the data may offer the private sector such data through the GDX by using the same standards and methods.

The appropriate organization under the ICT Ministry is to take lead responsibility for the establishment and administration of the GDX by coordinating with relevant agencies.

(5) The National Spatial Data Infrastructure project

The project aims to coordinate the implementation of the Geographic Information System (GIS) among relevant organizations and define spatial data standards, so that organizations can run on the same standards with the same metadata. This includes the spatial data improvement of the organization under the Ministry of Information and Communication Technology, which is to have a major role in setting up standards and regulations.

(6) The e-Government Institute project

The objective of the project is to have an agency overseeing the development and enhancement of the standard of human resources in the public sector in preparation for e-government, at both the organizational

and national levels. It also aims to give the public better knowledge and understanding of the e-Government project so as to establish collaboration between the government, the people, and the private sector.

The e-Government institute should be an agency within ICT Ministry, with independent and flexible management system. Their duties are :

- The development of curriculum for training courses both in terms of personnel and course content.
- Providing training for trainers.
- Organizing meetings and seminars, and publicizing knowledge of electronic media and the Internet among government staffs in preparation for e-service provision.
- Upgrading government staffs by developing an ICT career path, and organizing professions standard-testing and trainer knowledge-testing and certification. In addition, a virtual institute should be set up, as a collaboration between government agencies, academic institutes and relevant organizations in both public and private sectors.
- Using electronic media and the Internet to educate people in villages about e-government and ICT utilization for information and fundamental service access.

3. Promotion of ICT Utilization among SMEs

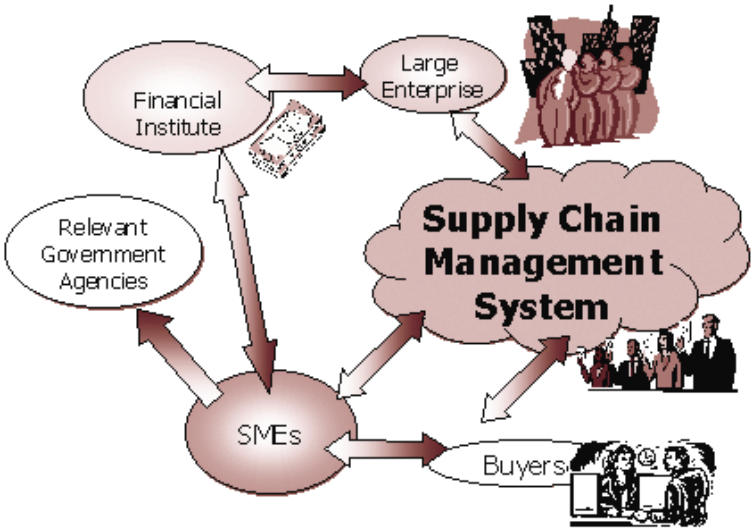
This prime mover is an important strategy for New Economy expansion, building added value to the overall economy and supporting the development of the country's ICT industry. The major projects are:

(1) Strengthening SMEs through ICT

The objective is to promote SMEs to use the basic software programs such as accounting, finance, administration, production management, and link into supply chain management within each industry sectors suitable for clustering. Initially, it should focus on strategic industries, such as tourism, food, automobile parts, textiles, and retailing. The relevant public

organizations, in cooperation with the private sector, will be the hosts supporting SMEs in terms of ICT application, with a target of at least 100,000 SMEs involved by 2006.

The government must create measures enabling SMEs to benefit from ICT utilization in their administration. Examples are: tax incentives (SMEs being able to deduct more than 100% of their ICT investment); and special interest rate for those SMEs that develop standard systems accounting and finance.



The interconnection of the basic ICT systems for SMEs in each industry

(2) Establishing an agency to oversee e-commerce for the One Tambon One Product scheme

The objective is to develop the administration system of the government's One Tambon One Product (OTOP) scheme into complete electronic system.

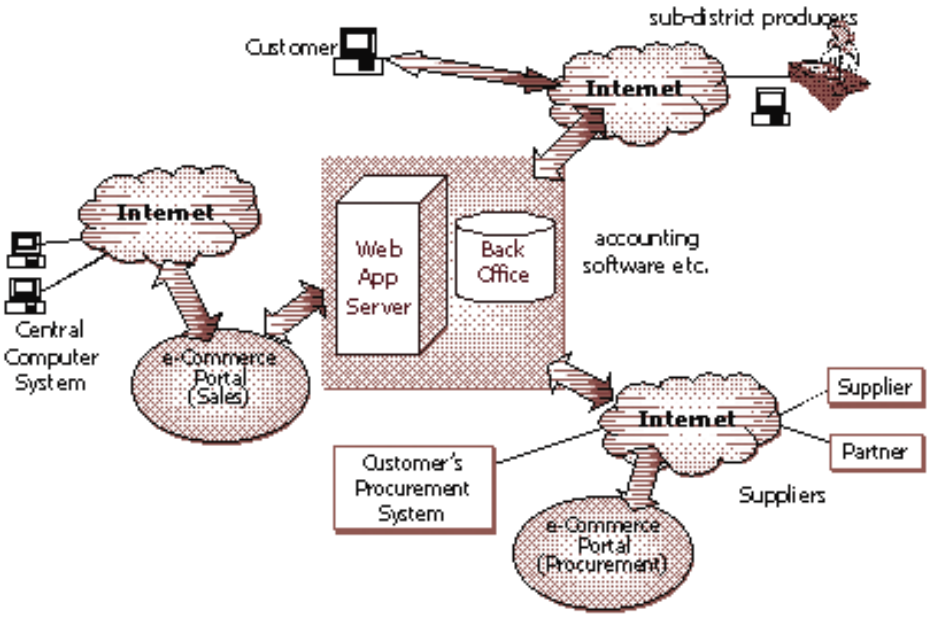
A neutral body is to be responsible for e-commerce administration of the scheme. It will coordinate with sub-district leaders over the provision and upgrading of information.

The project administrator of the e-commerce system will be responsible for

coordination with the service providers of each sub-district, the network of suppliers and the global virtual marketplace.

E-commerce can develop the products of each sub-district by giving direct access to consumers, distributors and dealers. Advertising, marketing, sales promotion, and product lists for consumers and distributors are all efficiently provided through the Internet at a lower cost.

The central e-commerce body of OTOP will provide the standard software and modern technology for data processing to the members in each sub-district for cost accounting, financial accounting, stock accounting, sales accounting, and general ledger work, as well as connecting the sub-district producers to the supply chain system in order to efficiently build up trade in raw materials and products at a lower cost.



(3) Pilot project for the development of e-business in the electronics and automobile industries

The objective of the project is to connect SMEs to larger scale enterprises in order to achieve an efficient business cycle. This implementation includes

promoting automobile assembly manufacturer in Thailand to, and support SMEs in, utilizing ICT in dealing with larger-scale businesses.

The project entails the linkage of the workflow process, e-catalogs, e-procurement, order fulfillment, and information transmission of design and production through the electronic system. The large-scale companies will provide training and computer implementation for SMEs, with the support from government.

The organization responsible for e-commerce promotion under the ICT Ministry will be the main coordinator, conducting the pilot project with relevant bodies in the public sector, associations and councils in the private sector, and private entrepreneurs.

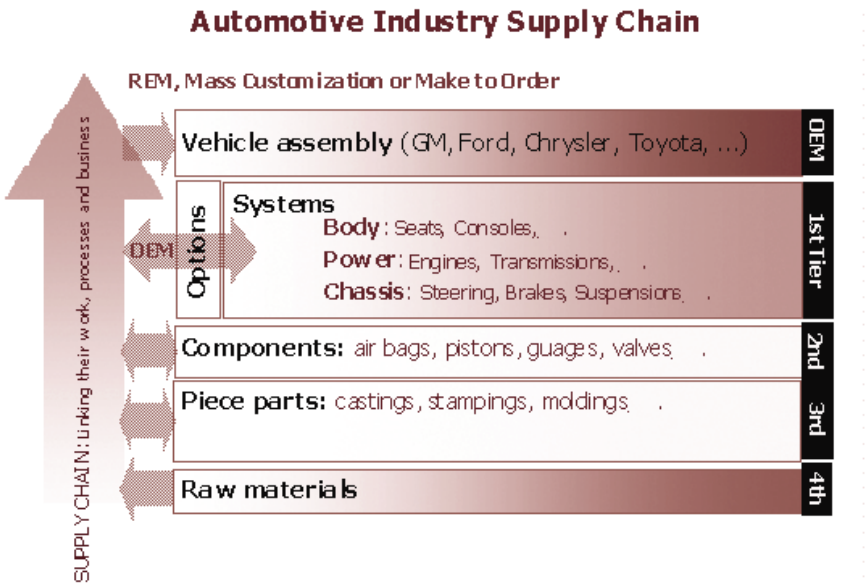


Diagram of a pilot project to develop e-business in the automobile sector

IV. Activities Timeframe

In order to accomplish the ICT development as specified in the ICT Master Plan within five years, each plan/activity should have a clear specified duration. The timeframe of operation can be the basis for the monitoring and evaluation of the ICT Master Plan.

This chapter covers the activities under the seven strategies. The approximate timeframes are defined, with some urgent projects that should be immediately pursued.

Plans and Activities

The plans and activities in the table are the brief summary of those in chapter II.

Relevant Agencies

The relevant agencies are responsible for promoting and carrying out the specified plans and activities. The principal agency and relevant agencies have important roles in executing the planned activities in order to make the plan successful.

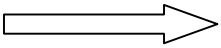
Timeframes for Operations

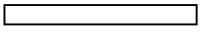
The operational timeframe of the Master Plan comprises five phases, with an overall five-year duration. The first year is 2002 and the last year of the plan is 2006. The year 2007, which is the sixth year, is shown here to indicate that some plans and activities must be continued into the next Master Plan.

The meaning of symbols shown in the tables

1  Duration of planned activity which continues into the next Master Plan

2  Duration of planned activity which shows the beginning and end of the plan

3  Duration of prime moving projects which continues into the next Master Plan

4  Duration of prime moving projects which shows the beginning and end of the plan

Prime Moving Projects

The prime moving projects shown in the plans and activities table of each strategy lead to other possible operations which will be of practical use to bring this Master Plan into implementation. Most prime moving projects are activities that are part of the three main prime-movers.

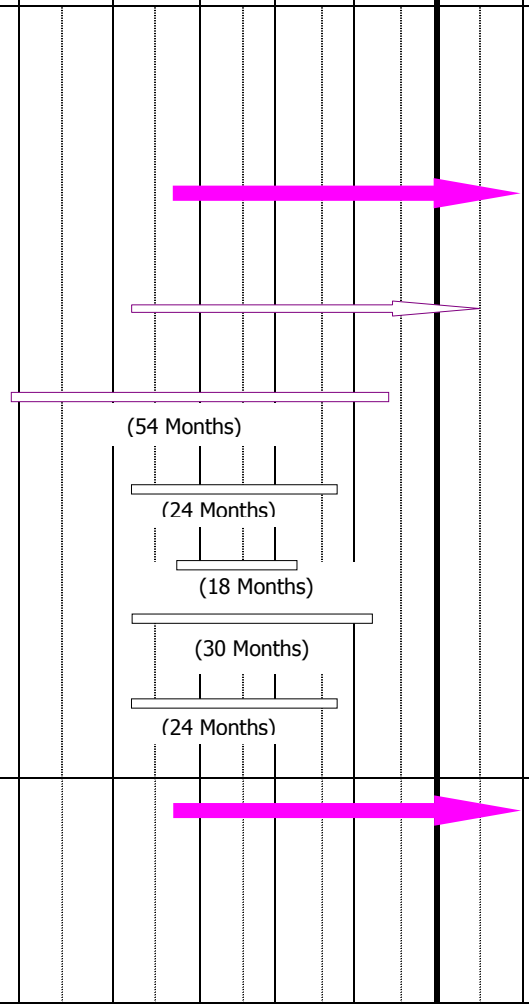
Table of plans and activities, relevant agencies and timeframes for operations

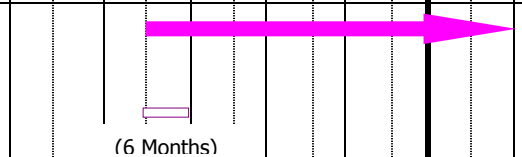
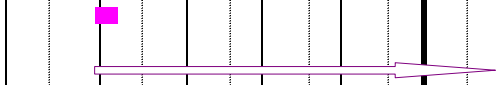
Strategy 1: The development of the ICT industry into a regional leader

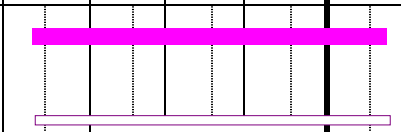
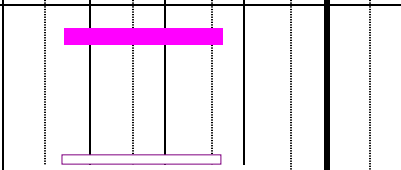
"Public and private sectors jointly boost the development of ICT industry, taking full advantage of Thai craftsmanship and local knowledge, as well as exploiting public sector as leading customers in domestic market while creating regional market as a base for overseas market. The investment in hardware and software industry as well as electronics industry are encouraged. Legal infrastructure development to support ICT utilization will be actively pursued."

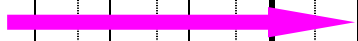
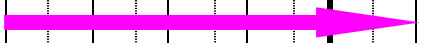
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
1.1 To drive ICT industry development by focusing on the local software sector through public and private sector collaboration. Major activities are: (1) Setting up the Software Industry Promotion Board (SIPB) to drive the establishment of Software Industry Promotion Agency (SIPA).	- **Ministry of Information and Communication Technology** - Ministry of Industry - The Association of Thai Software Industry - The Federation of Thai Industries - The Board of Investment of Thailand							- Setting up the Software Industry Promotion Board (SIPB) - Setting up the Software Industry Promotion Agency (SIPA)
(2) Having SIPA define vital directions and measures in the development of software industry including R&D.	- **Software Industry Promotion Agency** - Software Industry Promotion Board - Ministry of Information and Communication Technology - The Association of Thai Software Industry - The Federation of Thai Industries							

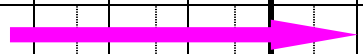
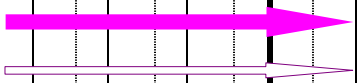
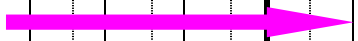
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
1.2 To support SIPA in building mechanisms for ICT development (1) Providing seed money from government funds and other sources.	- **Software Industry Promotion Agency** - Industrial Finance Corporation of Thailand - Small and Medium Enterprise Development Bank of Thailand - Commercial Banks							
(2) Establishing rules and regulation so that such funds are efficiently managed and have mechanisms to allow SMEs to use the funds conveniently and widely.	- **Software Industry Promotion Agency** - Industrial Finance Corporation of Thailand - Small and Medium Enterprise Development Bank of Thailand							
(3) Using an investment policy, when and where appropriate, to motivate international software companies to invest in the country with a condition to transfer technology to local entrepreneurs.	- **Software Industry Promotion Agency** - The Board of Investment of Thailand							

Plans and activities	Relevant agencies	Timeframes for operations	Prime moving projects
1.3 To have public and private organizations co-develop the software market for local developers in order to support them in developing and expanding into international markets, as follows: (1) Government agencies supporting the procurement of local software, and/or providing local firms with an opportunity to work on larger software development projects.	- **Ministry of Information and Communication Technology** - Software Industry Promotion Agency - The Bureau of the Budget - Office of the Prime Minister - All government agencies - The Thai Chambers of Commerce		- Government-led national ICT projects - The multi-application smart ID card project - The e-Procurement project - The back-office project - The Government Data Exchange (GDX) project - The National Spatial Data Infrastructure project
(2) Encourage collaboration between local and foreign entrepreneurs in software projects in the government sector in order to transfer skills and knowledge to Thai people.	- **Ministry of Information and Communication Technology** - Ministry of Commerce - Software Industry Promotion Agency - The Association of Thai Software Industry		

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
	- The Association of Thai Computer Industry - Department of Industrial Promotion - The Board of Investment of Thailand							
1.4 To develop an evaluation system and appropriate indicators in order to assess the work of and impacts from SIPA on the economy and society.	- **Ministry of Information and Communication Technology** - Software Industry Promotion Agency - The Association of Thai Software Industry - The Association of Thai Computer Industry - Department of Industrial Promotion - The Thai Chambers of Commerce - Ministry of Finance - Ministry of Commerce - Ministry of Industry							- ICT Master Plan monitoring and evaluation project
1.5 To develop a 10-year master plan for ICT human resource development, focusing on both qualitative and quantitative dimensions. (1) Establishing a joint policy committee comprising the government, industry and education sectors to develop a master plan for human resource development to meet the demand of the software industry.	- **Ministry of Information and Communication Technology** - Ministry of Education - The Federation of Thai Industries - The Thai Federation of Information Technology - The Software Industry Promotion Board							- Software capacity-building projects

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(2) Developing lecturers and software researchers with greater knowledge and experience in the software industry, aiming to double the number within five years.	- **Ministry of Education & Ministry of Information and Communication Technology** - Higher Education Institutions - The Federation of Thai Industries - The Thai Federation of Information Technology - Software Industry Promotion Agency							- Software professional research and instructor development projects
(3) Setting up a professional training institute to urgently train qualified software personnel, with emphasis on relevant professional certifications.	- **Ministry of Information and Communication Technology** - Higher Education Institutions - The Federation of Thai Industries - The Association of Thai Software Industry - Software Industry Promotion Agency - The Thai Bankers' Association - The Board of Investment of Thailand							- Establishing a professional training institute
(4) Conducting a survey on the availability and type of existing instructors, researchers, and software personnel in the software business, and developing a mechanism to attract foreign experts to work with local people in educational, training and operational matters.	- **Ministry of Information and Communication Technology** - The Association of Thai Software Industry - Software Industry Promotion Agency - The Board of Investment of Thailand							- Bringing in knowledge workers from abroad to teach and transfer technology

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(5) Building a collaborative High-level education institutions-industry network in the following key areas: • Setting up the mechanism to provide the opportunity for students to work in software companies during or at the end of the course. • Exchanging of personnel among those in the ICT industry, the software business and the education sector by allowing for a sabbatical leave to work on specified program or project(s).	- **Higher Education Institutions** - The Association of Thai Software Industry - Ministry of Finance - Software Industry Promotion Agency							
(6) Provision of funds for ICT human resource development, particularly for the software industry, which include converting other profession to work in the ICT industry. This may involve financial institutions offering low-interest loans.	- **Ministry of Finance** - Financial Institutions - Industrial Finance Corporation of Thailand - Small and Medium Enterprise Development Bank of Thailand - Software Industry Promotion Agency and Software Industry Promotion Board							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
1.6 To enhance the skills of Thai entrepreneurs and software developers to conduct more sophisticated software design, such as mobile Internet applications and web services, by taking advantage of local artistic abilities and craftsmanship.	- **Ministry of Information and Communication Technology** - Ministry of Education - Ministry of Industry - Software Industry Promotion Agency - The Association of Thai Software Industry - The Association of Thai Computer Industry							
1.7 To upgrade the quality of Thai software products and services to meet international standards by: (1) Defining the standards of local software production to meet international requirements.	- **Ministry of Information and Communication Technology** - Ministry of Industry - Software Industry Promotion Agency The Association of Thai Software Industry - The Association of Thai Computer Industry							- Standards and software professional certification project
(2) Having joint public-private agency to support local software standards that are acceptable internationally or being committed through international agreement.	- **The Industrial Standards Institute** - Software Industry Promotion Agency							

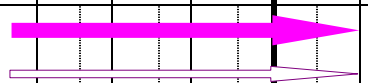
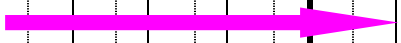
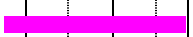
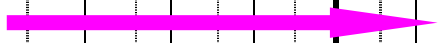
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
1.8 To promote a standard testing center for ICT products in order to enhance the competitiveness of Thai producers in the international market.	- **Ministry of Information and Communication Technology** - Software Industry Promotion Agency - Electrical and Electronics Institute							- The project to set up product quality standard in compliance with mutual recognition agreement: MRAs
1.9 To promote private sector investment in the hardware manufacturing sectors which have strong linkage to the software industry in order to extend the scope of ICT industry through strong clustering.	- **Ministry of Information and Communication Technology** - Ministry of Industry - Ministry of Finance - Software Industry Promotion Agency - The Federation of Thai Industries - The Thai Federation of Information Technology - The Board of Investment of Thailand - Competitive Management Unit							
1.10 To accelerate the drafting of ICT-related laws, and related legal process with the aim to have the laws being in effect in the next one to two years.	- **Ministry of Information and Communication Technology** - Office of the Council of State - Government Administration - Senate of Thailand							

Table of plans and activities, relevant agencies and timeframes for operations

Strategy 2: The utilization of ICT to enhance the quality of life and society

"Encourage people to utilize useful and suitable information by accelerating the development of equitable information infrastructure to be used as a tool in the search and creation of knowledge, particularly local knowledge, and provide value-added to agricultural and industrial products from rural communities. This foster the development of a Knowledge-based Society in conjunction with proper immunity against possible threats and adverse impacts from globalization."

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
2.1 To develop basic telecommunication infrastructure by: (1) Improving and developing the government-run telecommunication network into a liberalized business in which users have a choice of service provider.	- **National Telecommunications Commission** - Telecommunication Operators							
(2) Accelerating liberalization of telecommunication services, which will be regulated by an independent organization.	- **National Telecommunications Commission**							(Setting up The National Telecommunications Commission (NTC)/National Broadcasting Commission NBC)

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(3) Bringing the laws on telecommunication business conduct -- namely The Frequency Allocation Act. B.E. 2543 (2000) and the Telecommunication Business Operation Act B.E. 2544 (2001) -- into effect as soon as possible.	- **Senate of Thailand / Government Administration** - National Telecommunications Commission/National Broadcasting Commission							
2.2 To materialize the National Information Infrastructure Law by urgently undertaking the followings: (1) Having the draft of the National Information Infrastructure Law undergoing the legal process and coming into effect by the end of 2003.	- **Ministry of Information and Communication Technology** - Government Administration - Parliament							
(2) Setting up an organization in accordance with the law once this law come into effect in order to have in place the infrastructure for social development and public administration, as required under Article 78 of the Constitution.	- **Ministry of Information and Communication Technology**							
(3) Having the organization under this legislation to coordinate with the National Telecommunications Commission (NTC) in order to enforce the telecommunication operators to provide services to communities nationwide.	- **The organization as specified in the draft of National Information Infrastructure Law** - National Telecommunications Commission							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(4) Promoting ICT applications to serve social development, such as healthcare, education, community learning, services for disadvantaged groups, public safety, and to generate economic value from indigenous knowledge.	- **The organization as specified in the draft of National Information Infrastructure Law** - Communities Administration		→	→	→	→	→	
(5) Transforming the role of post offices to serve as community telecenter.	- **Ministry of Information and Communication Technology** - Postal Service Operators - Communities Administration		→	→	→	→	→	
2.3 To apply ICT in the development of education, content creation and learning activities. (1) Supporting the private sector and Educational Institutions in producing high quality electronic-media, and supporting human resources in local education institutes to create local-knowledge content in the form of electronic media.	- **Ministry of Education** - Educational Technology Office - Ministry of Information and Communication Technology - Educational Institutions which are not within the Jurisdiction of the Ministry of Education - Private Sector		→	→	→	→	→	

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(2) Providing training courses to enable education personnel to efficiently use electronic media for teaching.	- **Ministry of Education** - Public and Private Educational Institutions							
(3) Creating the collaborative network to share IT resources and experiences among Educational Institutions.	- **Ministry of Education** - Ministry of Information and Communication Technology - Educational Institutions							
(4) Expanding and developing learning through ICT media, such as distance learning via satellite and the Internet.	- **Ministry of Education** - Ministry of Information and Communication Technology - Educational Institutions							
(5) The government to establish a data center for educational courseware, hosting the online content of Educational Institutions free of charge, and to organize the contests on courseware and teaching/learning manual development.	- **Ministry of Education** - Ministry of Information and Communication Technology - Educational Institutions							
2.4 To promote the translation of books, documents and information from foreign languages into Thai and vice versa so that citizens can easily access information, as well as to disseminate Thai information worldwide.	- **Ministry of Education**							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
2.5 To promote information and knowledge development that enhances the quality of community life by utilizing ICT in areas such as life-long education, public health and health promotion, employment, price information for agricultural products, and natural-disaster warnings.	- **Ministry of Information and Communication Technology** - All Ministries - Local Administration, Communities Administration							
2.6 To promote the role of the mass media in publicizing the benefit of, and disseminating knowledge on, ICT.	- **The Public Relations Department** - The Mass Communication Organization of Thailand - Ministry of Information and Communication Technology - Mass Media Sector							
2.7 To promote all local administrations to utilize information infrastructure and electronic media in back office operation, public services delivery, and local content dissemination in order to enhance the potential of the communities.	- **Ministry of Interior** - Ministry of Information and Communication Technology							
2.8 To develop and prepare human resources to fully benefit from ICT in support of the move towards the Knowledge-based Society/Economy.	- **Ministry of Information and Communication Technology** - Ministry of Education - All Ministries - Local Administration - Educational Institutions							

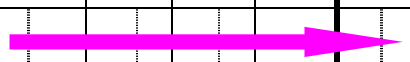
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
2.9 To build up people confidence and trust in the utilization of e-commerce in all economic sectors:- agricultural, industrial and service sectors- by strengthening the legal infrastructure, such as electronic signature, data protection, payment system, security, and related laws.	- **Ministry of Information and Communication Technology** - Electronic Transaction Commission - All Ministries							

Table of plans and activities, relevant agencies and timeframes for operations

Strategy 3: Reform and enhancement of the capability on ICT research and development

"Public and private sectors, together with educational institution, will jointly restructure the direction of R&D in ICT so as to meet the demand from industry. Concrete policies and measures for basic education to shape scientific thinking are to be accelerated in order to build up researchers and human resource in the field. There is the need for budget allocation, conducive environments and all critical factors, as well as commercialization of R&D in order to generate indigenous technology and reduce reliance on foreign technology."

Plans and activities	Relevant agencies	Timeframes for Operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
3.1 The government to set up the education reform policy at the basic, vocational and high-level education institutions levels, to enhance the skills of students in Science and English.	- **Ministry of Education** - Ministry of Information and Communication Technology - Ministry of Science and Technology - Educational Institutions - The Bureau of the Budget							
3.2 The government and the private sector to provide necessary incentives to attract people to join the research profession such as financial rewards and career development.	- **Ministry of Information and Communication Technology** - Ministry of Education - Ministry of Science and Technology - Ministry of Labor - Office of the Civil Service Commission - Private Sector							

Plans and activities	Relevant agencies	Timeframes for Operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
3.3 The government to provide funding in the form of seed money to support and attract the investment in ICT R&D by Educational Institutions, public and private research organization, and independent researchers (from the general public sector).	- **Ministry of Information and Communication Technology** - Ministry of Finance - The Bureau of the Budget - Financial Institutions - Private Sector							
3.4 The government and the private sector to coordinate in estimating the demand for ICT and electronic products -- hardware and software -- in order to define a strategy for the country's ICT R&D through collaboration among the electronics industry, telecommunications, computer hardware and software, and the other industries, which will benefit from these such as the automobile industry.	- **Ministry of Information and Communication Technology** - Ministry of Industry - Software Industry Promotion Agency - National Telecommunications Commission - Thailand Automotive Institute - The Federation of Thai Industries - National Science and Technology Development Agency - The Thailand Research Fund - National Research Council of Thailand - Thailand Institute of Scientific and Technological Research							

Plans and activities	Relevant agencies	Timeframes for Operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
3.5 To promote R&D of products with potential commercialization. These can be high-value components or finished products, that can substitute imported products, have the potential for export, or benefit the development of other industries. Examples are: (1) Computer and telecom equipment products for users that do not require complicated products or services, but need some things less expensive, having reasonable quality, that meets both international standards and local.	- **Ministry of Information and Communication Technology** - Ministry of Industry - Ministry of Science and Technology - The Federation of Thai Industries							
(2) Electrical and electronic components that apply ICT technology, such as circuit boards, sub-assemblies, embedded systems, and telemetering, which meet international standards and are competitively priced.	- **Ministry of Information and Communication Technology** - Ministry of Industry - Ministry of Science and Technology - The Federation of Thai Industries							
(3) Development of an open-source software as the basis for developing products with commercial applications.	- **Ministry of Information and Communication Technology** - Ministry of Industry - Ministry of Science and Technology - Software Industry Promotion Agency - Educational Institutions - The Association of Thai Software Industry							

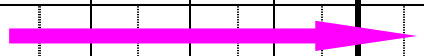
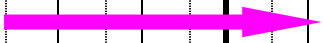
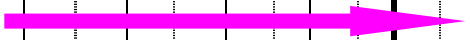
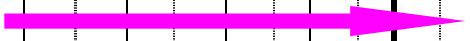
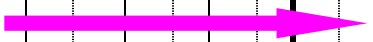
Plans and activities	Relevant agencies	Timeframes for Operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
3.6 To establish excellence centers for the development of knowledge and Thai wisdom. This will serve as a center of ICT expertise and technology for future sustainable development.	- **Ministry of Information and Communication Technology** - Software Industry Promotion Agency - Ministry of Education - Ministry of Science and Technology - Higher Education Institutions - Technopreneur		(24 Months)					- Setting up software excellence center project
3.7 To monitor and analyze advances in ICT technology, and forecast technology trends in order to set up the support direction to support R&D and local ICT production.	- **Ministry of Information and Communication Technology**							

Table of plans and activities, relevant agencies and timeframes for operations

Strategy 4: The reinforcement of social capacity for future competition

"Public and private sectors will jointly develop public awareness and understanding of ICT. In this regard, emphasis will be on human resource development, in order to optimize the benefits of ICT for good management and to exploit technological advancement to create value-added to basic economy, which will raise Thailand's competitiveness in the regional and global market."

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
4.1 Collaboration between public and private sector to build the public knowledge on ICT through educational institutions at the primary, secondary, vocational and higher education levels in all regions and communities. The activities are (1) Having computer and communication courses at every education level, with the emphasis on open standard technologies and open source software.	- **Ministry of Education** - Ministry of Information and Communication Technology							
(2) All Educational Institutions to set up high-quality libraries that are open for general public to access basic ICT, such as the Internet and other learning materials.	- **Ministry of Education** - Ministry of Information and Communication Technology - Educational Institutions							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(3) Setting up public facilities where by children can play and learn about ICT.	- **Ministry of Information and Communication Technology** - Ministry of Education - Communities Administration							
(4) Every community having a community telecenter to facilitate the application of ICT in individual and community life. These centers will also cover the development of local content to promote the culture, products and tourism of each community.	- **Ministry of Information and Communication Technology** - Local Administration and Communities Administration - Non-Governmental Organization							
(5) Supporting the production and distribution of books and manuals at affordable prices.	- **Ministry of Education**							
(6) Supporting citizens, especially the young, in acquiring knowledge and understanding of language including Thai, English or other foreign languages.	- **Ministry of Education**							
4.2 Government agencies to support the private sector in producing suitable ICT equipment and software such as accounting software that meets the market demand and uses up-to-date technology at an affordable price.	- **Ministry of Information and Communication Technology** - Ministry of Industry - The Federation of Thai Industries							

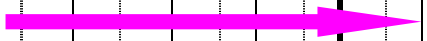
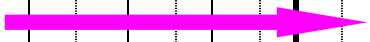
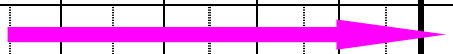
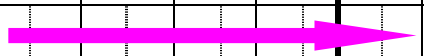
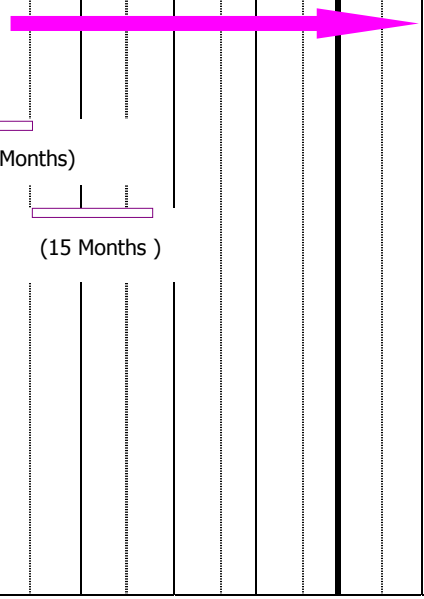
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
	- The Thai Federation of Information Technology - Software Industry Promotion Agency							
4.3 To encourage public awareness and interest in ICT and e-commerce by organizing activities such as community website contests, trade shows and exhibitions, meetings and seminars.	- **Ministry of Information and Communication Technology** - Ministry of Commerce - Ministry of Interior - Ministry of Industry - Tourism Authority of Thailand - Electronic Transaction Commission							
4.4 To develop human resource related to ICT fields such as lawyers, economists, engineers, social workers and the media, so that they have wider ICT knowledge and skills to use ICT in their professions.	- **Ministry of Education** - Ministry of Labor - Ministry of Information and Communication Technology - Ministry of Finance							

Table of plans and activities, relevant agencies and timeframes for operations

Strategy 5: Development of entrepreneurs capacity for the expansion of international markets

"Devise measures and mechanisms to equip entrepreneurs with knowledge and experiences in technology and management, so as to improve production process and marketing. Use open standard to link database and system, as well as apply e-Commerce for cost reduction. In this regard, the government should support export of locally-produced products by improving legal infrastructure to deal with technological change, and protects local knowledge. Furthermore, priority would be given to the development of ICT human resource with qualification that meets international standards, as well as the enhancement of marketing capability of local entrepreneurs."

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
5.1 To revise and improve intellectual property related laws -- such as the Copyright Law, Patent Law, and Trademark Law -- in order to better protect knowledge, innovation and products, as well as local know-how.	- **Ministry of Information and Communication Technology** - Ministry of Commerce (Department of Intellectual Property) - Ministry of Foreign Affairs - Ministry of Justice - The Thai Chambers of Commerce - The Federation of Thai Industries							

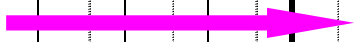
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
5.2 To promote industries to apply ICT in manufacturing in order to add value through product differentiation, mass customization, supply chains, clustering, value chains, and Thai branding.	- **Ministry of Information and Communication Technology** - Ministry of Industry - Ministry of Science and Technology - Ministry of Commerce - The Federation of Thai Industries - The Thai Chambers of Commerce - The Thai Bankers' Association - Software Industry Promotion Agency							
5.3 To promote the application of e-commerce among Thai entrepreneurs in order to lower operation costs, expand into international markets, and increase market share in regional markets.	- **Ministry of Information and Communication Technology** - Ministry of Commerce - Ministry of Industry - Ministry of Agriculture and Cooperatives - The Federation of Thai Industries - The Thai Chambers of Commerce - Financial Institutions - Service Sectors - Software Industry Promotion Agency - Ministry of Science and Technology - Ministry of Finance							- Setting up Electronic Transaction Commission - Issuing 4 Royal Decrees, in pursuant to Electronic Transactions Act

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
5.4 To promote the use of broadband Internet among business by establishing networks for raw materials, production, management, transportation, and trade, both in domestic and regional markets. In addition, the utilization of this infrastructure in searching for information, knowledge, and technological changes, in order to continuously improve competitiveness should also be promoted.	- **Ministry of Information and Communication Technology** - Ministry of Education - Ministry of Commerce - Ministry of Transport - Educational Institutions - The Federation of Thai Industries - The Thai Chambers of Commerce							

Table of plans and activities, relevant agencies and timeframes for operations

Strategy 6: The utilization of ICT in Small and Medium Enterprises

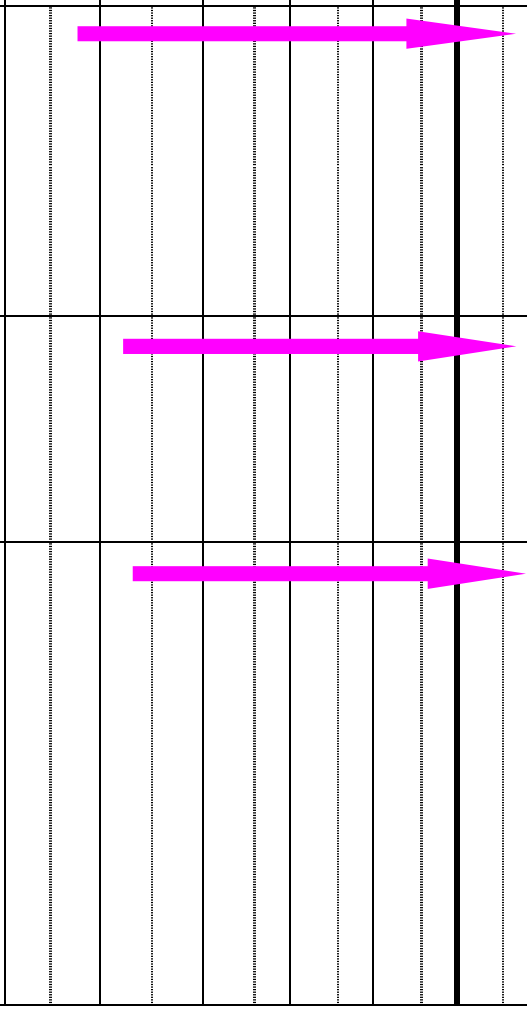
"Encourage SMEs to apply ICT to develop their businesses and to boost competitiveness, focusing on ICT for management, production, and linkages to large firms. This will prepare SMEs for future competition, as a result of globalization, and also lessen impacts from economic fluctuation."

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
6.1 To have mechanisms for technology transfer to SMEs in order to build up their skills and knowledge and minimize the cost related to intellectual property.	- **Ministry of Information and Communication Technology** - Ministry of Science and Technology - Ministry of Commerce - The Office of Small and Medium Enterprises Promotion - The Federation of Thai Industries - The Thai Chambers of Commerce							
6.2 To provide incentives to set up SME alliances in each business sector in which the whole ranges of ICT system integration are used in administration and management in order to boost efficiency and reduce costs among alliance members, as well as enhancing administrative transparency. Major activities are: (1) Establishing a private sector mentor to efficiently coordinate each alliance.	- **The Office of Small and Medium Enterprises Promotion** - The Federation of Thai Industries							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
	- The Thai Chambers of Commerce - Educational Institutions - Ministry of Information and Communication Technology							- The strengthening of SMEs through ICT projects
(2) Choosing a potential business area from each alliance, to be run as a pilot-project model for other members and other group.	- **The Office of Small and Medium Enterprises Promotion** - The Federation of Thai Industries - The Thai Chambers of Commerce							- The center agency to oversee e-commerce for the One Tambon One Product scheme (OTOP)
(3) Publicizing the successful results of each alliance as 'best practice' model for further expansion.	- **The Office of Small and Medium Enterprises Promotion**							- Public campaign to raise awareness on the benefits of ICT
(4) Setting up support measures that encourage linkage between both manufacturing and operation of SMEs and those of large industries, in order to enable SMEs to participate in large-scale manufacturing projects and increase their knowledge of technology and management. This will also boost the potential of Thai SMEs.	- **The Office of Small and Medium Enterprises Promotion** - The Federation of Thai Industries - The Thai Chambers of Commerce - Ministry of Industry - Ministry of Commerce							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
6.3 To accelerate the promotion and development of e-business among high-potential SMEs, such as electronics and automobile industries. This includes linkage between SME sectors and large enterprise in related industries.	- **Ministry of Information and Communication Technology** - Ministry of Finance - Ministry of Industry - Ministry of Commerce - Ministry of Transport - The Office of Small and Medium Enterprises Promotion							- Pilot project for the development of e-business in the electronics and automobile industries
6.4 To utilize ICT in management, business operation and communication -- especially supply chain management -- in order to reduce costs and increase management efficiency from the initial process origin through to the customer. Major activities are: (1) Having government agencies, the Federation of Thai Industries, Institute for Small and Medium Enterprises Development and academia, jointly transfer knowledge on and create understanding of supply chain management to SMEs.	- **Ministry of Information and Communication Technology** - Ministry of Education - The Federation of Thai Industries - The Office of Small and Medium Enterprises Promotion - The Thai Chambers of Commerce							- The strengthening of SMEs through ICT projects *(as same as the project in 6.2(1))* - Pilot project for the development of e-business in the electronics and automobile industries *project (as same as the project in 6.3)*

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(2) Establishing the standards to be used for information exchange by modern electronic media, such as UN/CEFACT and XML.	- **Ministry of Information and Communication Technology** - Thai Industrial Standards Institute - The Office of Small and Medium Enterprises Promotion - The Federation of Thai Industries - The Thai Chambers of Commerce							
(3) Determining the use of barcode's reading standards and data collection, using EAN.UCC and EANCOM barcodes in order to reduce the number of various communication methods in the B2B business communication.	- **Ministry of Information and Communication Technology** - Thai Industrial Standards Institute - The Office of Small and Medium Enterprises Promotion - The Federation of Thai Industries - The Thai Chambers of Commerce							
(4) Improving import-export tax rates for ICT material so that Thai entrepreneurs are not placed at a disadvantage, in comparison with the finished products in terms of ready-made imported products.	- **Ministry of Information and Communication Technology** - Ministry of Finance - Ministry of Commerce - The Federation of Thai Industries - The Thai Chambers of Commerce - The Association of Thai Computer Industry		(6 Months)					(Measures to prevent the relocation of manufacturing base from Thailand as well as to induce new investors to the Country.)

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
6.5 To develop knowledge and understanding among private entrepreneurs of the benefits of using hardware and software from local sources, and the potential cost savings.	- **Ministry of Information and Communication Technology** - The Office of Small and Medium Enterprises Promotion - Software Industry Promotion Agency - The Thai Chambers of Commerce - The Federation of Thai Industries							
6.6 To set up databases for the planning and provision of services to the business, manufacturing, and consumer sectors.	- **Ministry of Information and Communication Technology** - All Government Agencies - The Federation of Thai Industries - The Thai Chambers of Commerce							
6.7 Having SMEs support agencies cooperate in developing an SME Portal, which will provide services for entrepreneurs wanting to contact the relevant parts of government. This should include the management of public information, support policies and other facilities, knowledge about the government, support policies or incentives, including a convenient one-stop services.	- **Ministry of Industry** - Ministry of Information and Communication Technology - All Government Agencies - The Office of Small and Medium Enterprises Promotion							

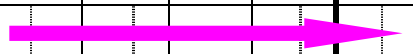
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
6.8 Strengthening the creativity and experience of undergraduate students in order to enhance their entrepreneurship. This will include cooperation with the private sector in field-work training and the promotion of new entrepreneurs in the economic system by using the SMEs support mechanisms from related agencies.	- **Ministry of Education** - Ministry of Information and Communication Technology - Educational Institutions - The Board of Investment of Thailand - Ministry of Industry - SMEs – related government agencies							

Table of plans and activities, relevant agencies and timeframes for operations

Strategy 7: The utilization of ICT in government administration and services

"Government to set up a central agency to oversee ICT development and utilization within the public sector. Emphasis will be on the unity and integration of database system, planning, coordination, budget allocation and transparent procurement, to serve each agency's requirement as well as reduce duplication of investment. This will enable the public sector to collect, exchange and share information among themselves, based on secured and open standard platform."

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
7.1 To reform the public governance structure by setting up the ministry overseeing ICT planning, promotion, development and implementation.	- **The Government Administration** - Senate of Thailand							(Established MICT on 2nd October 2005, in accordance with the Government Reform Act)
7.2 To carry out public sector reform by: (1) Establishing a structure that strengthens CIO operations by: ▪ Having an ICT division in each ministry to be support the work of CIO. This unit is to responsible for the effective utilization of ICT in all departments under the ministry. ▪ Setting up the practices, plans and organization structure for provincial CIOs.	- **Ministry of Information and Communication Technology** - Ministry of Interior - Office of the Civil Service Commission - All government agencies at departmental and ministerial levels - Local Administration							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(2) Revising rule and regulations and administration procedures which relates to planning, coordination, budget allocation, public administration and services delivery by utilizing ICT to create transparency, efficiency and effectiveness, such as procurement regulations to facilitate e-procurement and e-services.	- **Ministry of Information and Communication Technology** - Office of the Prime Minister - Office of the Council of State - Office of the Civil Service Commission - The Bureau of the Budget - All Ministries		→	→	→	→		
(3) Allocating the budget for ICT development, in accordance with the ICT Master Plan. It will minimize the duplication of efforts and discourage piece-meal development.	- **Ministry of Information and Communication Technology** - The Bureau of the Budget - All Government Agencies			→	→	→		
7.3 To develop the government database by setting up the data and data exchange standards in order to fully support the e-citizen initiative. Major activities are: (1) Setting up the Government Data Exchange (GDX) to facilitate the link and exchange of information across ministries via high-speed government Intranet.	- **Ministry of Information and Communication Technology** - CIO Office in All Government Agencies			→	→	→		- The Government Data Exchange (GDX) project *(as same as the project in 1.3(1))*

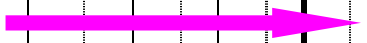
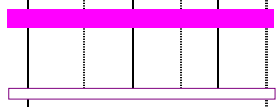
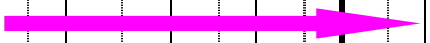
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(2) Promoting the development of information exchange gateway between the public and private sectors.	- **Ministry of Information and Communication Technology** - CIO Office in All Government Agencies							
(3) Developing ministries' information network in order to support management information systems, as well as back- and front-office systems.	- **Ministry of Information and Communication Technology** - CIO Office in All Government Agencies							- The e-Procurement project *(as same as the project in 1.3(1))* - The back-office project - The Government Data *(as same as the project in 1.3(1))*
(4) Developing easy-to-use software by investing in common back office software. This should include bulk purchasing of software licenses, and using local software, with open-source technology, where appropriate.	- **Ministry of Information and Communication Technology** - Government Agencies - The Association of Thai Software Industry - Thai Embedded System Association							
(5) Providing public information access in accordance with the Public Information Act.	- Government Agencies							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(6) Developing a population database through public-private partnership. This database will enable the provision of a smart ID card for each citizen, to be used in their transaction with the government. The database should be developed in an efficient and cost-effective manner as well as being supportive to local industry.	- **Ministry of Information and Communication Technology** - Ministry of Interior - The Federation of Thai Industries - Ministry of Finance - Office of the Civil Service Commission - Ministry of Agriculture and Cooperatives - Ministry of Labor - Ministry of Public Health - The Association of Thai Computer Industry - The Association of Thai Software Industry							- The multi-application smart ID card project *(as same as the project in 1.3(1))*

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
7.4 To implement and apply the Geographic Information System (GIS) in determining appropriate strategies for economic and social development, resource management, and integrated disaster prevention. Major activities are: (1) Setting up a National Spatial Data Infrastructure (NSDI) committee, comprising representatives from various agencies to determine the policy framework for coordination, budgeting and the updating of information.	- **Ministry of Information and Communication Technology** - Royal Thai Survey Department - Department of Town and Country Planning - Geo-Information and Space Technology Development Agency - National Electronics and Computer Technology Center - Educational Institutions - Professional Associations relating to Geography - The Bureau of the Budget							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(2) The NSDI committee will set up a fundamental geographical dataset (FGDS), metadata, GIS Clearing House, and a standard for data interchange among relevant organizations.	- **Ministry of Information and Communication Technology** - Royal Thai Survey Department - Department of Town and Country Planning - Geo-Information and Space Technology Development Agency - National Electronics and Computer Technology Center - Educational Institutions - Professional Associations relating to Geography		→	→	→	→	→	- The National Spatial Data Infrastructure project *(as same as the project in 1.3(1))*
(3) Developing GIS data exchange system and the GIS network in order to achieve integrated utilization by public agencies.	- **Ministry of Information and Communication Technology** - Royal Thai Survey Department - Department of Town and Country Planning - Geo-Information and Space Technology Development Agency - National Electronics and Computer Technology Center - Educational Institutions - Professional Associations relating to Geography							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(4) Promoting GIS technology development and open-source code software.	- **Ministry of Information and Communication Technology** - Royal Thai Survey Department - Department of Town and Country Planning - Geo-Information and Space Technology Development Agency - National Electronics and Computer Technology Center - Educational Institutions - Professional Associations relating to Geography							
7.5 Public agencies in all ministries to utilize the IT network efficiently, without the duplication in investment.	- **Ministry of Information and Communication Technology** - All Government Agencies - Office of the Prime Minister - The Bureau of the Budget							
7.6 To develop public-sector human resources by: (1) Offering appropriate incentives, compensation and career paths to ICT personnel in order to retain the existing staff.	- **Office of the Civil Service Commission** - Ministry of Information and Communication Technology							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(2) Future recruitment of government personnel to take into account applicants' ICT knowledge. A test on basic ICT knowledge for new recruitment should be in compulsory.	- **Office of the Civil Service Commission** - All Ministries							
(3) Setting up an e-government institute to be responsible for the development of ICT knowledge and skills for government officers.	- **Ministry of Information and Communication Technology** - Ministry of Education - The Bureau of the Budget - Office of the Civil Service Commission - Educational Institutions							- The setting up e-Government Institute project
7.7 To develop efficient monitoring and evaluation system, based on international recognized indicators, in order to evaluate the accomplishments and analyze the obstacles of ICT development under the master plan.	- **Ministry of Information and Communication Technology** - National Economic and Social Development Board - Office for Monitoring and Evaluation in each Ministry							

Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
7.8 To develop a Digital Nervous System for the country, enabling efficient government information management and delivery of services, both in central and local agencies. Major activities are: (1) Setting up a National Operation Center that can offer rapid and accurate information to Cabinet meetings so that appropriate decision could be made.	- **Ministry of Information and Communication Technology** - The Secretariat of the Prime Minister - National Economic and Social Development Board - Geo-Information and Space Technology Development Agency - National Electronics and Computer Technology Center							
(2) Setting up a Ministerial Operation Center in all ministries to collect necessary information from all departments underneath. Furthermore, this will support the e-initiative of the country.	- **All Ministries** - Ministry of Information and Communication Technology - National Electronics and Computer Technology Center							

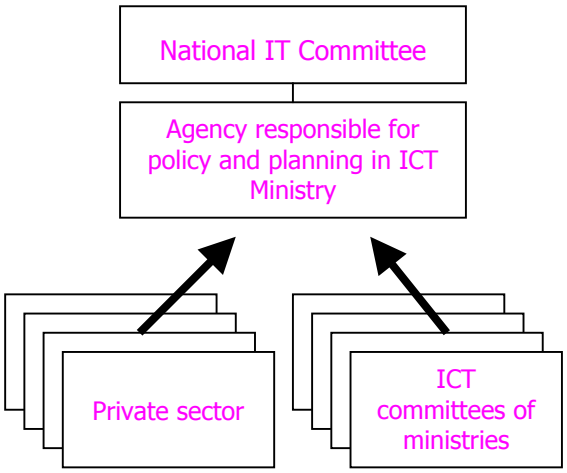
Plans and activities	Relevant agencies	Timeframes for operations						Prime moving projects
		2002	2003	2004	2005	2006	2007	
(3) Developing an e-government portal, providing people with convenient and rapid access to public services.	- **Ministry of Information and Communication Technology** - National Electronics and Computer Technology Center							

V. Policy Implementation: Monitoring and Evaluation Mechanisms

The successful implementation of the ICT Master Plan requires cooperation and alliance between public and private sector. For the public sector, responsible agencies in all ministries, located centrally as well as provincially, need to cooperate closely. Each government agency must formulate a five-year ICT Master Plan in accordance with the direction of the National ICT Master Plan.

In addition, there must be a mechanism to link the operational plan with the budget as well as human resources plans. The framework and guidelines to assess the operational plan as well as ICT projects of government agencies should be established, by cooperation among the central agencies including the policy unit of the MICT, the budget bureau, and the Office of Civil Service Commission. Furthermore, there must also be a system of monitoring and evaluation, as well as a list of indices for the measurement of success. The unit overseeing the ICT policies and plans in the ICT Ministry will be assigned to undertake these tasks.

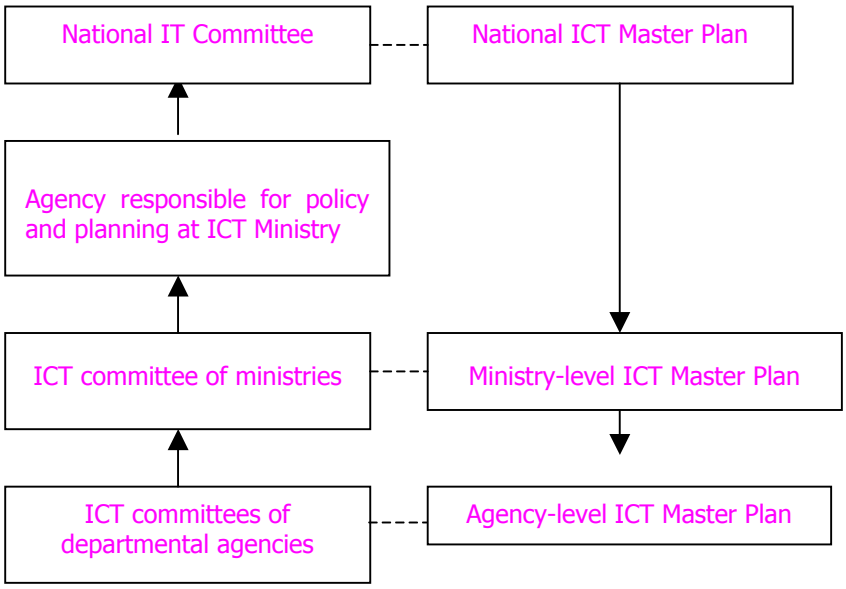
The process of management and administration, monitoring and evaluation



The process of management and administration, monitoring and evaluation

Each ministry and its department must set up an ICT committee to oversee their ICT Master Plan and implementation. At the ministry level, the CIO of each ministry is assigned as chairman of the committee. The committee must report the progress on its ICT projects every six months to the relevant higher-level committees. The National Information Technology Committee (NITC) will oversee the management of the National ICT Master Plan, while the unit responsible for ICT policy and planning in the ICT Ministry will support the work of the NITC.

Relationship between the National ICT Master Plan and the IT Master Plans of ministries and departments



The relationship between the National ICT Master Plan and the organizational ICT Master Plans of ministries/agencies, and the administration of plans at each level

Monitoring and Evaluation

There must be a system of monitoring and evaluation to ensure that the work of every government agency is moving forward in the same direction as the ICT Master Plan. The process of monitoring and evaluation can be summarized as follows:

1. Creating a list of indices that can be applied to monitor and evaluate the level of success and impact of the master plan. There are at least three levels of measurement indices: outcome, output and organizational efficiency.

2. Developing a database covering each level of measurement indices, as well as creating the database network.

The unit responsible for the policies/plans within ICT Ministry is the main organization responsible for developing performance indicators and database system. In this regard, this unit should coordinate with other central government agencies -- such as the National Economic and Social Development Board, the Bureau of Budget, the Office of the Civil Service Commission, and the Office of the Auditor General of Thailand -- in order to ensure the same database standards.

In addition, the policy unit under the ICT Ministry will be responsible for

monitoring and evaluation. The monitoring of work plan will be done yearly while the evaluation will be done at the middle of the ICT implementation plan (2004). The results of the monitoring and evaluation will also be used for revising and adjusting the ICT Plan of each government agency.

To evaluate the overall success of the master plan, or to measure outcomes from the ICT master plan indices that will be used are:

1 Index of the ICT contribution to the economy

- 1.1 The ICT growth rate to the growth rate of the economy
- 1.2 The ICT employment ratio to total employment
- 1.3 Rate of increase of ICT diffusion among SMEs
- 1.4 Improvement of the country's ranking in the Technology Achievement Index of the United Nations Development Programme (UNDP)

2 Index of the competitiveness of the country's ICT industry

- 2.1 Ratio of ICT expenditures to GDP
- 2.2 Total value of software: domestic and export
- 2.3 Share of Thai software industry in the world market
- 2.4 Increase in the proportion of the electrical and electronics industries to GDP

3 Index of role of ICT in community development

- 3.1 Value of local content of ICT products and services in Thailand
- 3.2 Amount of local traffic in relation to total Internet access
- 3.3 Increase in Thai-content Web pages

4 Index of ICT role in human resource development

- 4.1 Increase use of e-learning
- 4.2 Availability of ICT tools and experts in both formal and non-formal education systems
- 4.3 Ratio of knowledge workers to the total workforce

Measurement of the Effectiveness of the Development Strategy

The first strategy: index of the development of the ICT industry into a regional leader

1.1 Number of qualified researchers, software developers, and certified professional developers
1.2 Total value of government IT projects in which Thai entrepreneurs are participated
1.3 Government's IT budget (for both hardware and software)
1.4 Expansion of software market in the country
1.5 Total value of exported software
1.6 Total value of exported ICT products
1.7 Ratio of domestic software development and open-source software systems to total value of software market in each year
1.8 Increase in number of software entrepreneurs and market capitalization
1.9 Decline in imported software
1.10 Increasing demand for IT recruitment in newspaper advertisements
1.11 Increase in salaries of IT professionals
1.12 Number of open-source training and service centers

The second strategy: index of the utilization of ICT to enhance the quality of life and society

2.1 Teledensity, urban and rural
2.2 Mobile phone penetration
2.3 Number of public phones and public Internet access points
2.4 Number of fixed-line telephones, which can transmit data at the rate of 32Kbps, in a community
2.5 Speed of backbone access
2.6 Decline in Internet access cost
2.7 Number of districts with telecenter
2.8 Ratio of Tambon Administration Organizations with websites
2.9 Number of community radio and television stations
2.10 Number of schools connected to Internet and the average number of connected computers in each school
2.11 Number of IT training courses for teachers
2.12 Number of teachers with IT access and utilizing IT as educational tools

The third strategy: index of reform and enhancement the capability on ICT research and development

3.1 Expenditures on ICT research and development in both the government and private sectors
3.2 Ratio of locally assembled PCs usage
3.3 Ratio of locally developed software usage
3.4 Number of locally assembled lower-cost PCs
3.5 Number of network computing courses taught in universities
3.6 Number of graduate students in network computing
3.7 Number of software developers with skills in network computing

The fourth strategy: index of The reinforcement of social capacity for future competition

4.1 Number of workforce that can access ICT
4.2 Number of workforce that can access ICT and research information from Internet
4.3 Number of graduates in any levels that can utilize ICT
4.4 Ratio of computers to the number of students at all levels
4.5 Computer course that is taught at every educational level
4.6 Number of people attended professional training courses and being certified
4.7 Number of people receiving ICT training courses from the Ministry of Labor
4.8 Number of communities that can apply ICT to their local economy
4.9 Number of Thai Web pages

The fifth strategy: index of development of entrepreneurs capacity for the expansion of international markets

5.1 Market value of e-commerce
5.2 ICT employment in every industry
5.3 Increase in the ratio of IT occupation employment to the increase in overall employment
5.4 IT investment in every industry
5.5 Ratio of ICT expenditures to the total increase in economic value
5.6 Number of people with IT skills training from the Ministry of Labor

The sixth strategy: index of the utilization of ICT in SMEs

6.1 Number of SMEs utilizing ICT in their back-office systems

6.2 Number of SMEs utilizing ICT in mainstream operation

6.3 Number of SMEs joining supply chain management

6.4 Value of ICT investment by SMEs

6.5 Number of SMEs on the government's Web portal sites

6.6 Number of SME websites

The seventh strategy: index of the utilization of ICT in government administration and services

7.1 Number of government agencies fully utilizing ICT in their administration

7.2 Internal administration system of government agencies which utilize ICT in organization

7.3 Number of basic e-government services at any levels

7.4 Number of e-government services at all levels

7.5 Government services that are linked to other agencies

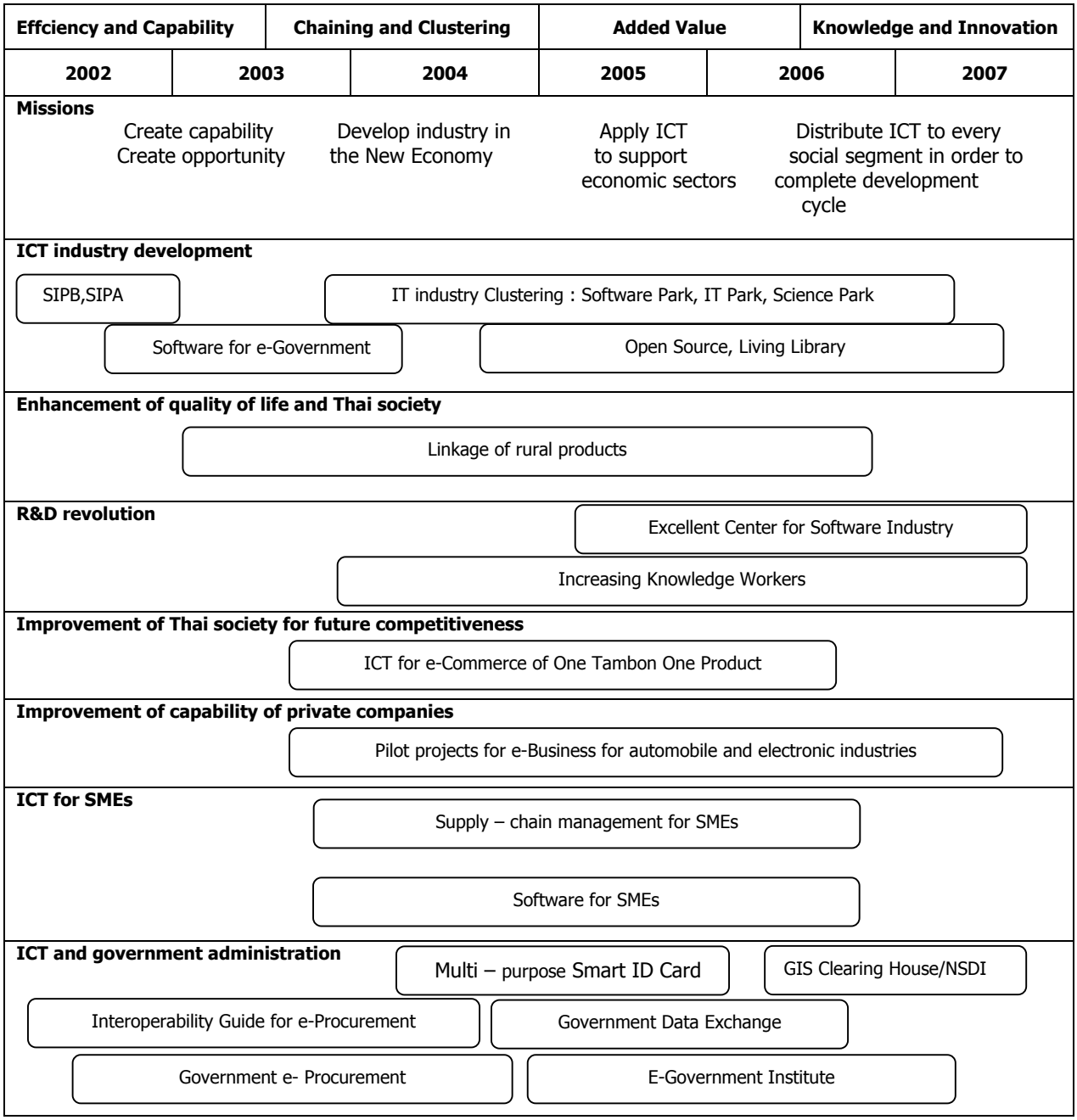
7.6 Government procurement by electronic means

7.7 Number of government agencies with secure information systems and security-code systems especially government agencies whose work is related to the security of the country

The unit within ICT Ministry that is responsible for the policies and plans might revise the measurement indices and evaluation framework. Every ministry and agency must also adjust the indices and evaluation in line with the ICT Master Plan.

Monitoring and evaluation will assist in measuring the country's ICT development progress, as shown below.

The relationship between urgent projects, expected results and timeframe



The relationship between urgent projects, expected results and timeframes

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