

IT Direction in Thailand: Cultivating an E-Society

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Thailand's new, long-term plans aim to bring technologies to the people—and to nurture a generation to produce IT for the world market.

For decades, advances in information technology have enhanced lives and economies around the world. Attempting to ride this wave, Thailand has worked since the late 1980s to develop a nationwide IT infrastructure that could serve government and the private sector. In 2002, dissatisfied with the limited success of earlier efforts, Thailand's current government established the Ministry of Information and

Communication Technology (ICT), charged with developing and supporting completely electronic processes for government, commerce, industry, and education. The new ICT policies aim to bring IT to bear on every aspect of Thai society and, ultimately, transform the economy.

PAST POLICIES, PRACTICES, AND PROCESSES

In 1986, Thailand established the National Electronics and Computer Technology Center (Nectec,

<http://www.nectec.or.th/tindex.htm>), with the primary mission of transferring technology to the Thai citizenry. Because of government operations that were slow and inefficient, the early Nectec operation required many long processes to perform only one task.

In 1991, to improve the Nectec processes, the government reorganized the center under the umbrella of the National Science and Technology Development Agency (NSTDA, <http://www.nstda.or.th>). It reinvented the NSTDA and Nectec management system as a collection of pri-

ivate enterprise sections that made cooperation between the government and private organizations easier and more effective.

After its inception, NSTDA's first activity in 1992 was to establish National Information Technology Committees, which drew up two National Information Technology policies: *IT 2000*, a short-term policy for 1997 through 2001, and *IT 2010*, a long-term policy for 2001 through 2009. Following these plans, the first target group for training was government staff. Thailand created the CIO position (chief information officer) in all government organizations and established IT education and training for government officers and management.

Then, to transfer IT to the people, in 1996, Princess Maha Chakri Sirindhorn assigned Nectec the task of implementing the Kanchanapisek Network Project to distribute technologies to the Thai citizenry. The project focused on students in rural areas, the disabled, and children in hospitals. Table 1 lists this and other milestones in the growth of Thailand's IT infrastructure.

A FRESH START

By 1999, government and private sectors were cooperating to develop the IT infrastructure, but the improvement rate was still not meeting expectations. Therefore, in 2002, the government announced new ICT policies (*Fundamental Plan for Information and Communication Technology of Thailand*, <http://www.mict.go.th>). A crucial element of these new policies was the creation of the ICT Ministry, with five development goals: e-government, e-commerce, e-industry, e-education, and e-society. By pursuing these five goals, the government believes it will provide a framework in which Thai organizations can develop their own systems—for the front end and back office—using exclusively domestic resources.

Table 1. Developing Thailand's IT infrastructure.

Year	Activities
1987	Nectec initiates the Interuniversity Network Project.
1991	Nectec extends academic electronic mail network to Chulalongkorn University, Thammasat University, Kasetsart University, and itself, using scheduled dial-up lines and a mixture of UUCP (Unix-to-Unix copy) and MHSnet (Message Handling System network) protocols.
1992	Chulalongkorn University acquires the first dedicated leased circuit for academic Internet connection (9,600 bps to UUNET, an Internet service provider in Virginia). The first set of Usenet news and FTP servers go on the air at Nectec under the names news.nectec.or.th and ftp.nectec.or.th.
1993	To accommodate growing demands for bandwidth, Nectec starts its first 64-Kbps international leased circuit with UUNET. Chulalongkorn University acquires a 64-Kbps international circuit to UUNET.
1994	On National Communications Day, Nectec and the Ministry of Transport and Communications demonstrate the first local 2-Mbps Internet links to the Queen Sirikit National Convention Center, with Internet videoteleconferencing as the highlight of the demonstration. After a six-month feasibility study by a joint working group, the Communications Authority of Thailand and Telephone Organization of Thailand approve a Nectec proposal for a joint venture to commercialize the Internet in Thailand.
1997	Princess Maha Chakri Sirindhorn opens the Knowledge Distribution Network portion of the Kanchanapisek Network Project. Through this access network, people from all of Thailand's 20 area codes can dial in to access number 1509 and use a PPP (point-to-point protocol) handshake for free access to the Kanchanapisek Network.
1998	Princess Maha Chakri Sirindhorn declares SchoolNet@1509 open. With this new access network, secondary schools across Thailand can use a local number to access the Internet free of charge. The service's initial capacity is 1,500 schools nationwide.
1999	The Internet in Thailand grows to more than 100 Mbps of international bandwidth, with KSC as the first ISP in Thailand providing a 34-Mbps link (simplex, satellite circuit).

e-Government projects

To establish the Thai e-government, the ICT policies have initiated several projects:

- *The Multi-Application Smart ID Card* project will provide all Thai citizens with smart ID cards that they can use for government identification and many other activities, such as opening bank accounts, applying for credit, and so on.
- *e-Procurement* is an effort to develop an electronic process for all government procurements, increasing their efficiency and ensuring their certification.
- *The Government Data Exchange* will improve management within the government based on the idea that an organization's effective management depends on effective data exchange.
- *The National Spatial Data Infrastructure* focuses on applying the Geographic Information System to the government's strategic management of domestic resources.

- *Software for Back Office* addresses the interoperation of software applications that support different government processes under the same government license. This project will make applications such as office automation software and accounting software compatible.
- *The e-Government Institute*, still in its initial state of development, will train and provide continuing education for all government officers so that they can work efficiently in the e-government environment.

In addition, the government plans to establish three information centers—the National Operation Center, the Ministerial Operation Center, and the e-Government Portal—to share useful information among Thailand's businesses and other organizations.

Investment in industry

The ICT policies also call for direct government investment in domestic IT industries to help propel them into the

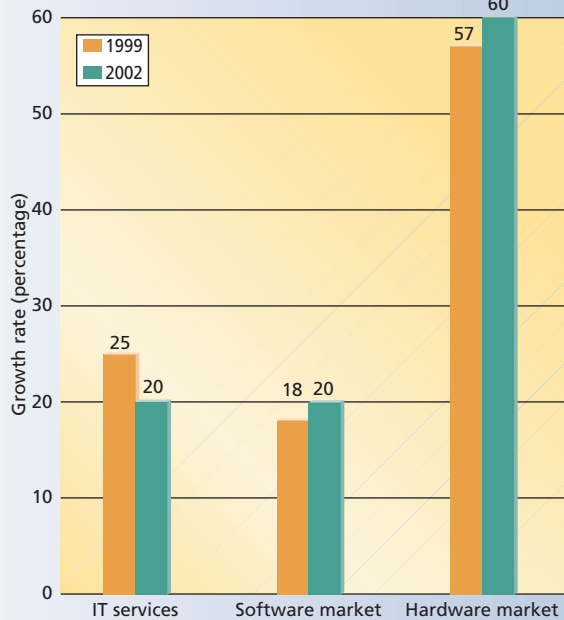
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world market. In 2002, as Figure 1 shows, the growth rates of the Thai software and hardware industries were a bit higher than they were in 1999. In contrast, the growth rate for IT services dropped from 25 percent to 20 percent. Because of this drop, and because of fierce competition in the hardware market—especially with countries such as Taiwan and China,

which can produce hardware with lower investment costs because the salary rate of industrial working staffs in Taiwan and China is lower than Thailand—the Thai government has chosen to focus its aid on the software industry.

Nectec implemented the Software Park project, and many of Thailand's software companies participated (<http://www.nectec.or.th/tindex.htm>). Software Park Thailand offers marketing, business development, and technical support to young software entrepreneurs. It also provides educational activities to Thai IT professionals to broaden their knowledge and enhance their skill. These activities will stimulate the development of the Thai software industry, push it toward a sustainable level, and provide it the means to survive in a rapidly changing global digital economy (<http://www.swpark.or.th/Aboutus/overview.asp>). The government also plans to establish the Software Industry Promotion Agency to support Thailand's software industry for local use and international marketing (*Fundamental Plan for Information and Communication Technology of Thailand*).

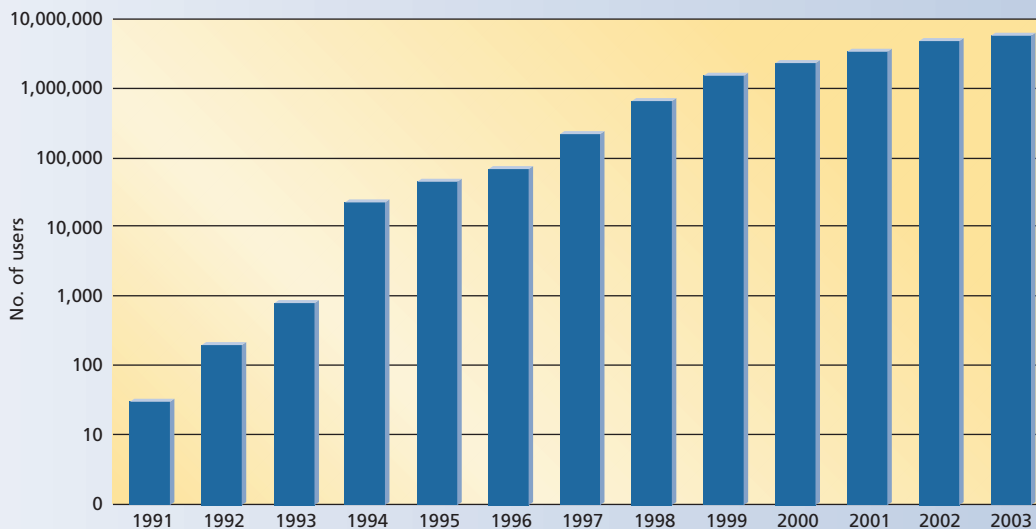
Figure 1. Comparison of the 1999 and 2002 growth rates of IT services, software, and hardware.



REACHING THE INTERNET AGE

Meanwhile, the general public's technology use in Thailand continues to grow. As the Internet has become a part of life in Thailand, Internet service providers (ISPs) have sprung up to support local demand; 18 commercial ISPs provide various kinds of Internet connections (<http://ntl.nectec.or.th/internet/index.html>). In addition, although Thailand's economy is not as strong as those of Asian countries such as Singapore, the government has sponsored three free Internet Service Departments: Government Information Technology Service (GITS), Office of Information Technology Administration for Education Development (OITAED), and TOT Corporation Public Company

Figure 2. Thailand's Internet user population, 1991 to 2003.



Limited. The GITS provides Internet service for all government sectors, while OITAED provides Internet linkages among universities in Thailand. TOT is the only organization that provides free Internet service for Thai citizens. Thus, Thai citizens can now access the Internet from everywhere in the country.

Figure 2 charts the growth in Thailand's population of Internet users from 1991 to 2003 (T. Koanantakool, "Information Security Concerns in e-Government," *2nd Government IT Week*, 2003, http://www.comtechthailand.com/govitweek/ppt/205_1_21-3-46-PU.Htk.%20Security%20e-Gov%20.17.03.46.ppt.)

Nectec research in 2001 indicated, however, that most of Thailand's Internet accesses occurred in Bangkok and its suburbs, and that e-mail was the most common Internet use.

As Thailand's Internet access rate grows, so does the need for Internet security. Figure 3 presents the distribution of problems that Internet users encountered from 2001 to 2003. The main problem in 2001 and 2002 was the spread of the spam mail; this year, viruses, worms, and Trojan horses are proving more troublesome (Koanantakool, 2003).

Although the growth rate of Thailand's Internet user population is high, Nectec's usage record during 2002, as Figure 4 shows, indicates that 58.1 percent of Internet use still takes place through dial-up access, with leased-line access second, at 23.9 percent (Koanantakool, 2003). Because the method of Internet access depends on the population's financial situation, it comes as no surprise that dial-up access, which requires the smallest investment per person, is the most popular access route. For business organizations, leased-line Internet access is the general solution.

New access technologies—such as mobile Internet, satellite systems, and ADSL (asymmetric digital subscriber line)—still see little use in Thailand. Investment costs for these technologies are prohibitive to most organizations, including those in the government sector. In addition, few companies in Thailand provide these services; for the most part, they are available only in the big cities, primarily Bangkok.

Figure 3. Security concerns for online Thailand, 2001 to 2003.

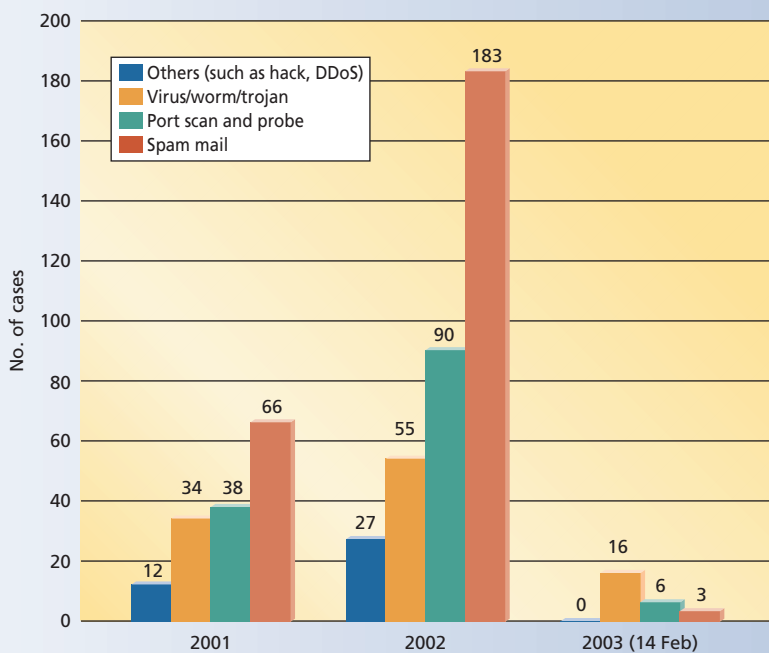
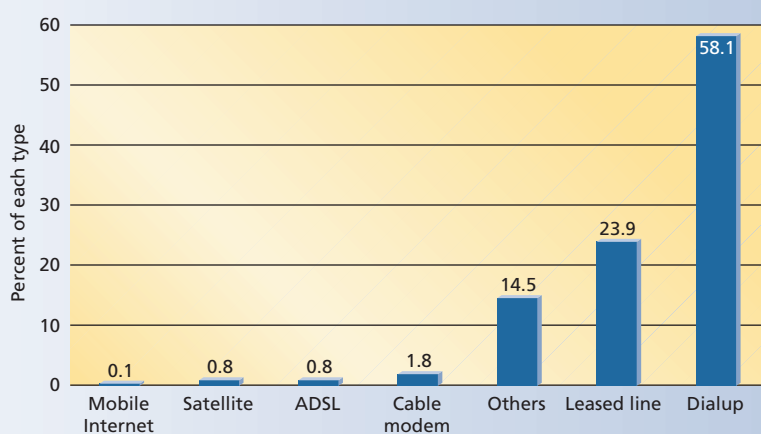


Figure 4. Types of Internet access in Thailand, 2002.



THE HUMAN FACTOR

Perhaps the factor most crucial to Thailand's achieving its ICT goals is ensuring that the country's population is qualified to work in IT. Many institutes in Thailand, providing training at certificate through graduate levels, have implemented courses such as computer engineering, computer science, IT, and so on. Nonetheless, most graduates of polytechnic schools aren't qualified to work in IT; qualified grad-

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uates, even from government and private universities, are still very few (*The Fundamental Plan for Information and Communication Technology of Thailand*). Thailand clearly must enhance its education system to support the society's IT needs.

In 1989, the government initiated the SchoolNet project to provide Internet access to every school in the country. Currently, 4,758 schools around Thailand access the Internet through SchoolNet, and students from these schools have the opportunity to learn new technologies from the Internet. Although it is certainly a step in the right direction to ensure that basic knowledge in technology isn't limited to the big city, Internet access alone does not create a sufficient pool of IT-qualified workers. Thus, Thailand is pursuing several additional strategies.

One method is IT short-course training, which Nectec and some government universities have organized and opened to Thai citizens. The e-Government Institute provides another training venue. However, some groups of people need more flexible education opportunities. Therefore, many of Thailand's universities—such as Chulalongkorn University, Chiangmai University, and Kasetsart University—have opened free Web sites for people who wish to undertake an independent study of IT. These Web sites contain up-to-date general information along with tutorials that instructors use in the classrooms. In addition, Chulalongkorn University has initiated the first IT distance-learning program, offering a degree in software development.

Thailand's commercial sector is also contributing to the education of IT-qualified personnel. Total Access Communication Corp., Telecom Asia (Thailand), Bangkok Bank Limited, and other solid organizations have established in-house IT training centers.

A 2001 report by the United Nations Development Program (UNDP) indicated that Thailand's development of human IT resources in 2001 was 66th out of 162 countries (*Fundamental Plan for Information and Communication*



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Technology of Thailand). The government expects that by applying the educational techniques outlined here, Thailand will produce sufficient IT-qualified per-

sonnel to serve the country within 10 years. Furthermore, this talent pool should be able to drive the transformation of the country into a producer of IT for the world market.

Thailand's government has recognized for years that IT is an aspect of life that no modern country can ignore. The country's early efforts to develop an IT infrastructure, however, didn't go far enough. The 1986 implementation of Nectec, although admirable in intent, wasn't fully successful because the organization was too small to serve the whole country's IT needs. Similarly, previous efforts to educate the population in IT—such as SchoolNet, university independent learning systems, and Nectec's IT training programs—weren't extensive enough to transform the culture completely.

Thailand's new ICT ministry and policies, implemented in 2002, have set IT development on the right track. If the country fully implements all five of its strategies—e-government, e-commerce, e-industry, e-education, and e-society—it will bring IT to every facet of daily life. Under the IT Laws and the Government Security Management System, Thai people will be able to use a single smart card to efficiently perform many previously time-consuming activities. The strong e-commerce policies, with support from the Government Banking System, will make commerce in Thailand more flexible and efficient. The e-industry strategy focuses on performance and marketing in each industry, especially for small and medium enterprises. Such companies can benefit from market information from the National Operation Center, the Ministerial Operation Center, and the e-Government Portal. In addition, the new e-education strategy aims to reform Thailand's unequal education system, which has historically favored students in urban areas.

Although the government would like to fully implement all five strategies at once, Thailand's current major problem is that the country lacks qualified IT personnel. For government organizations, establishing the e-Government Institute will solve this problem. On a wider scale, full implementation of e-education will increase the pool of qualified IT workers and help make Thailand a country with full electronic services for everybody, everywhere. ■

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