

National Electronics and Computer Technology Center



NECTEC Today

Driving towards a Knowledge-Based Economy

The National Electronics and Computer Technology Center (NECTEC), founded in 1986, has been the central body for the development and promotion of information technology of Thailand. Information technology is one key area in which the present government identifies as the key economic driver to make Thailand truly competitive as well as a transforming agent to make knowledge and information a key component of the new economy. As a technology development arm of the Thai government, NECTEC is driving Thailand towards a Knowledge-Based Economy and Society.

NECTEC serves the IT-related research community as well as the industrial clusters. The technology focus is on electronic, computing, telecommunication and information (ETCI). The industrial clusters being served are the Hard Disk Drive, Embedded Systems, Radio Frequency Identification (RFID) and Smart Card, and Automotive electronics.

The past records of NECTEC included the successful implementation of the first Internet in Thailand (ThaiSarn), SchoolNet Thailand, Electronic Product Testing Center (PTEC), Software Park Thailand, and Government Information Technology Services (GITS). These organizations are now in full-fledged operations. In addition, NECTEC was instrumental to the government in creating the Electronic Transactions Act of 2002, and the forthcoming IT laws for data protection (privacy), anti computer crime, promotion of the National Information infrastructure, and promoting the electronic payment.

NECTEC in Brief

Vision

“ A leading organization to strengthen the Thai economy and sustain the knowledge-based society through research and development in electronic, computing, telecommunication and information (ECTI) technologies. ”

Missions

- To develop the capability of Thailand in ECTI technologies through
- R&D, design and engineering (both operation and funding)
 - Technology transfer to industries and communities
 - Human resource development in the fields of ECTI
 - construction of necessary physical and knowledge infrastructure and development of relevant policies in the mission areas

Who are we ?

NECTEC is a statutory government organization designed to run with dynamism to meet the rapidly changing scenario of information technology. It was established originally as a unit of Ministry of Science and Technology. In 1991, NECTEC became a strategic center under the National Science and Technology Development Agency (NSTDA) operating under a new law which enabled the organization to operate more autonomously.

Between 1992 and 2002, NECTEC was appointed the secretariat of National IT Committee, the policy body for IT chaired by the Prime Minister. In 2002, the government approved the first ICT Master Plan for Thailand and the establishment of the Ministry of Information and Communications Technology.

National Science and Technology Development Agency (NSTDA) (<http://www.nstda.or.th/>)
Ministry of Science and Technology (<http://www.most.go.th/>)



Recent Records

1992-2002	Secretariat to the National Information Technology Committee
1995-2003	SchoolNet Thailand Project
1998	Establishment of Software Park Thailand and the Government IT Service programs
1999	The Public Internet Exchange of Thailand
2000	Launch of “Parsit” the first English-to-Thai web translation service “ThaiCERT” the computer emergency response team began its services
2001	The Electronic Transactions Act, B.E.2544
2002	IT 2010 - The Second IT Policy of Thailand The ICT Master Plan for Thailand
2003	Center of Advanced Study for Hydro and Agro-informatics
2004	The first MEMS-based alcohol sensor was fabricated The first 0.5µm silicon wafer was fabricated in Thailand
2005	The first micro pressure sensor for medical application was fabricated

Research Interests

NECTEC research activities are set out in *The Strategic Master Plan on Electronic, Computing, Telecommunication and Information Technologies (2000-2009)*.

Thirteen research programs have been established in R&D groups as follows:

Electronic R&D Group (RD-E) RD-E group focuses on electronics and photonics. The scope of work includes embedded software and systems, sensors, automation, micro electro-mechanical systems (MEMS), power electronics. The group also spun off the Electronic Products Testing Center (PTEC), Solar Cell R&D Center.

In addition, microelectronics and silicon wafer processes are handled by the **Thai Microelectronic Center (TMEC)** (<http://tmec.nectec.or.th>).

The areas of interest are:

- Embedded systems
- Automation, Robotics and Industrial Electronics
- Photonics
- Microelectronics
- MEMS and nanoelectronics

Computing R&D Group (RD-C) Acting as a single team, RD-C laboratory focuses on high-performance computing application towards informatic and computing science. The areas of current interests are Digital Archive, Knowledge Management Tools, Bio-informatics, Cluster and Grid Computing, Finite Element Analysis, and Computational Nanotechnology.

Telecommunications and Network R&D Group (RD-T) RD-T group targets at the future telecommunication platforms on which Thailand can lead and be more independent. The work covers wireline and wireless communication, advanced coding techniques, 3G mobile phones, and quantum cryptography.

Closely related to RD-T are the **Next-Generation Internet (NGI) Group** and the **Thailand Computer Emergency Response Team (ThaiCERT)** (<http://thaicert.nectec.or.th>).

The main areas focused by the three groups are Voice over Internet Protocol (VOIP), next generation Internet research, broadband wireless applications, and wireless security. Three areas are being addressed:

- Wireline/Wireless Telecommunication
- Internet Protocols (TCP/IP)
- Information Security and Information Warfare

Information, Language and Knowledge R&D Group (RD-I)

Key strategic software in the areas of Thai Human-Computer Interaction have been developed by RD-I lab for speech input/output systems, image processing and recognition, machine translation, and search engine. The group focuses in three areas:

- Human-Computer Interaction
- Open Source Software
- Information Management

Center for Assistive Technology (ASTEC) serves people with disabilities (PWD) and the elderly through research and development, technology transfer and appropriate use of IT solutions to make them live comfortably and more independently. ASTEC partners with Ministry of Education, Ministry of Public Health, and Ministry of Social Development and Human Security to introduce assistive technology to the independent living of PWDs in Thailand (<http://astec.nectec.or.th/>).

The central programs at ASTEC deal with universal design, web accessibility, talking devices, talking books in DAISY format, speech training/therapy, PC peripheral devices for physically disabled persons including cerebral palsy and autistic, and electric wheel chairs. Novel designs for tables, track balls, single switches, key guards, bowl with spoon have been created, patented, and manufactured for PWDs.

Industrial Clusters

NECTEC provides linkage between the research communities with the industries through the established industrial clusters. Research funding to the industrial cluster is made through the joint proposal made by the cluster members in order to share core technologies and HRD programs among the industrial members. Special training courses have been designed and conducted in cooperation with universities such as Thammasat University, Asian Institute of Technology, King Mongkut Institute of Technology. Existing clusters are:

- **Biomedical Engineering Cluster**, a program for health care, medical electronics, and hospital equipment.
- **Hard Disk Drive Cluster**, a program to boost Thailand's sustainability to be number one in the global HDD production for the next decade.
- **RFID and Smart Card Cluster**, a program to capture the new opportunities from the new devices which can be applied for several scenarios. Radio Frequency Identification (RFID) is positioned as a hot emerging technology which can be used to supplement the production and export of consumer products, logistic, and traceability of food export.
- **Embedded Systems Cluster**, a program to supplement the design and construction of solutions for precision automation, factory automation, electronic terminals for RFID and smart card, automotive electronics, and general household gadgets.

The clusters are supported by NECTEC's laboratories, clean room, and electronic design automation for integrated circuits. Several instruments are made available for shared use by industries through our Open Lab program.



Technology Licensing and Transfer

Intellectual properties at NECTEC are accessible to the industry and individuals by means of technology licensing. Several license agreements have been issued to the local industry as well as to foreign companies. In addition to licensing, other activities are supported by NECTEC:

- **Open Laboratory and Incubator services** - The local industries can enjoy our world-class facilities at Thailand Science Park for their research work environment and close proximity with researchers. For small entrepreneurs, a low cost shared office and lab is available as “open lab”, and larger areas are made available for rent as the “incubator areas”
- **Joint Research and Contract Research** - For the private companies to extend their product design capabilities, NECTEC offers a joint research program so that new intellectual properties can be attained through cooperation. For companies without their own researchers, NECTEC can enter a research contract with a company so that we can help in producing new results. Full intellectual property right protection and non disclosure practice are supported.
- **Industrial training** - NECTEC conducts regular training programs to appropriate industry groups to introduce new prototypes or core technology which can become a useful platform for the industry. So far, we run this program on CNC software, medical imaging software for dental planning, UPS technology, and community radio design.

Human Resource Development

The HRD undertakings of NECTEC covers two major programs

- **IT Professional Development** through our training center located in the Bangkok city center. The training center accommodates more than 200 attendees in five modernly equipped classrooms. It provides regular professional training to the open public. The center also supports major professional certification examinations including those of Microsoft, Oracle, Cisco and CISSP. The center also hosts a good collection of online courseware and e-learning materials (<http://elearning.nectec.or.th/ite/>).
- **New Generation Researchers Development Program** is a unique program in Thailand where a number of funding and award platforms have been established in order to promote the interest for the young generation in the exciting fields of ICT. These activities consist of financial support to thousands of small term projects and senior projects in universities and secondary schools from all over the country. There are five flavours for the students to choose from:
 - **Young Scientist Competition in Computer Science (YSC.CS) and in Engineering (YSC.EN):** the flagship competition with the top winner being supported for entering in the world-class “Intel International Engineering Fair” or Intel-ISEF every year.
 - **The National Software Contest (NSC):** the flagship national contest where more than 2,000 students nationwide enter each year.
 - **NECTEC e-Camp:** an exploratory camp for secondary school kids to learn, play and build electronic projects as a preparation for their engineering career.
 - **NECTEC Linux Installation Competition:** a platform to promote learning Linux and its broad usability for general applications. This competition also encourages students to become open source software users in the future.





Policy and Legal Infrastructure Development (PLD)

The PLD team conducts policy research to provide a roadmap for **ECTI research** directions. Market and technology trends are studied and published in the form of white papers for individual sectors. The team also develop the **ICT indicators for Thailand** in cooperation with the National Statistical Office (Ministry of ICT) which is published annually.

In the legal infrastructure development, PLD is the secretariat office for the Electronic Transactions Commission, a policy body for e-Commerce of Thailand which was established under the Electronic Transactions Act of 2001. The responsibilities include running five working groups and Thailand PKI Forum. A number of laws related to e-commerce have been drafted by the Electronic Transactions Commission.

The IT Projects under the Initiatives of Her Royal Highness Princess Maha Chakri Sirindhorn

NECTEC is proud to be associated, as a technology supporter with the IT Projects of HRH Princess Maha Chakri Sirindhorn, the IT Princess of Thailand. The projects aim to develop human resources and reduce poverty by means of education and skill development. IT skill has been identified as the key for self-reliance. Four key areas have been investigated:

- **IT for education in rural schools** - enabling poor schools to be competent in reading, typing, and using computers in education.
- **IT for people with disabilities** - applying appropriate technologies and IT to make PWDs to learn and live more independently.
- **IT for sick children in hospitals** - solving the problems of isolation for kids who have to be staying in hospital for a long period of time. They have been compensated with an opportunity to learn with a small computer classroom in hospitals with an instructor.
- **IT for inmates** - a novel implementation of computer skill development classes for inmates. The project's success prompts the Department of Correction to expand the program to nearly all prisons. The trained inmates are rewarded with IT service jobs such as document preparation, brochure designs, graphic editing and design. Once they serve their terms, several ex-inmates find their jobs.

International Collaboration

NECTEC is a member of APNIC (Asia Pacific Network Information Center), APAN (Asia Pacific Advanced Network), FIRST (Forum of Incident Response and Security Team), Asia PKI Forum, APT (Asia Pacific Telecommunity), PRAGMA (Pacific Rim Applications and Grid Middleware Assembly), PNC (Pacific Neighbourhood Consortium), APGrid (Asia Pacific Grid), and TEIN (Trans-Eurasia Information Network phase 2).

NECTEC is an active participant in the APEC ECSG (E-Commerce Steering Group), APEC TEL, ASEAN TELMIN/TELSOM, UNCTAD, UNCITRAL, UNESCO Asian SchoolNet Project, UNESCAP, ITU World Summit for the Information Society, and ITU spam mail protection.

Infrastructure Development

Crucial infrastructure required for the national development of science and technology have been developed by NECTEC.

- **The Internet** - this was initiated in 1992 under the name "Thai Social/Scientific, Academic and Research Network" or ThaiSarn. Since then the Internet in Thailand became a commodity and is widely used by all sectors. ThaiSarn continues to be the research network backbone for several organizations and now has direct linkage with Internet2 and the Asia Pacific Advanced Network (APAN). The project is partially supported by the government of Japan (<http://www.thaisarn.net.th/>).
- **SchoolNet** - the project is a natural extension of ThaiSarn where schools Internet access was supported by NECTEC. Initiation of Internet in schools in the 1990s was difficult and expensive. Once the difficult tasks have been accomplished, the project was transferred to the Ministry of Education in September 2003. NECTEC continues to support in the creation of contents and learning objects for schools.
- **Government Information Technology Services (GITS)** - a special unit established in 1998 under a cabinet resolution to run a nationwide network service for government agencies. This unit is the main supporter for Thailand's e-Government and the Prime-Minister Operation Center. As from 2004, GITS is now running independently from NECTEC (<http://www.gits.net.th/>).
- **Government Information Technology Infrastructure (GITI)** - a unit which is responsible for developing e-Government information infrastructure for IT project coordination, integration and monitoring systems. GITI works closely with the Ministry of ICT to provide monitoring reports on the status of e-Government and to assist in the training of Government Chief Information Officers (GCIO).



Contact Addresses

Director: Thaweesak Koanantakool, Ph.D.
 Deputy Directors: Pansak Siriruchatapong, Ph.D.
 Itti Rittaporn, Ph.D.
 Kwanchai Lamubol
 Assistant Director: Chadamas Thuvasethakul, Ph.D.

htk@nectec.or.th
 pansak@nectec.or.th
 itti@nectec.or.th
 kwanchai@nectec.or.th
 chadamas@nectec.or.th

National Electronics and Computer Technology Center
 National Science and Technology Development Agency
 Ministry of Science and Technology
 112 Thailand Science Park, Phahonyothin Road,
 Klong Luang, Pathumthani 12120, Thailand.

Tel: +662 564 6900
 Fax: +662 564 6901..2
 e-mail: info@nectec.or.th
 http://www.nectec.or.th/