CHAPTER 2
DESCRIPTION OF THE PROBLEMS

1. Based on the results of previous science and technology development and anticipation of future changes, the main problems to be addressed in the Sixth Plan period can be summarized as follows:

RESEARCH AND DEVELOPMENT

2. Research budgets in developed countries are as high as 2 per cent of GNP. Less interest in research is evident in developing countries where, due to fiscal limitations and the priority of immediate problems, research budgets tend to be below 1 per cent of GNP. Thailand's expenditure on research and development has been very low: estimated at less than 0.5 per cent of GNP, almost all of which is spent within the government sector. Surveys of manpower and research and development activities in 105 companies in 1982 found research and development budgets to be as low as 0.1 per cent of total sales revenue, far behind that of counterparts in developed countries.

3. Realizing the problem, the Fifth Plan set a target for a research and development budget of 0.5 per cent of GNP. Fiscal constraints, however, prevented the government from increasing the budget to this level. Moreover the private sector, which should play an important role, still lacks interest in research and development as a means of improving production efficiency.

Table 4.1
Expenditure on research and survey
by national development sector

Unit: million baht

	1981	1982	1983	1984*	1985*
Economic sector	1,797.96	1,639.14	1,253.37	2,732.12	2,934.75
Agriculture	995.49	1,040.44	920.34	1,783.22	1,464.06
Industry & energy	238.86	154.85	127.85	717.08	782.88
Natural resources	198.16	64.65	17.38	30.79	370.48

	1981	1982	1983	1984*	1985*
Environment & conservation	77.37	62.88	53.99	16.20	108.58
Trade/services/transportation	236.22	211.85	107.16	112.18	208.75
Others	51.86	104.47	26.65	72.65	–
Social sector	389.94	566.85	290.53	496.06	404.91
Social development	113.69	108.50	86.24	280.28	99.50
Education/religion/culture	57.12	156.02	34.64	87.16	127.72
Medical science/public health	125.57	198.24	130.23	104.77	177.69
Others	93.56	104.09	39.42	23.85	–
Political & administrative sector	139.87	241.46	111.57	25.11	117.21
Security & national defence sector	221.99	824.14	0.25	41.47	15.88
Total	2,549.76	3,271.59	1,655.72	3,294.76	3,472.75
Percent of GDP	0.32	0.39	0.18	0.20	0.33
Percent of GNP	0.33	0.40	0.18	0.34	0.34

Source: National Research Council of Thailand
*Including funds from outside the budget from local and foreign sources

4. Topics specified for research and development in the past lacked a clear direction and were not in line with the guidelines laid down for national economic and social development. Although some topics were specified by the responsible agencies, the research institutes of the state did not follow them up. Consequently research and development has failed to fully satisfy the needs of the manufacturing sector while government financial support has not brought the anticipated results. The Fifth Plan saw an attempt to coordinate basic and applied research, particularly in regard to research on production technology for major industries as well as agricultural product processing and research on waste utilization. But problems in research administration and in the implementation of research and development plans prevented the effort from fulfilling expectations and becoming fully integrated. This meant that very few research results have been used in production processes.

5. Research and development in the key private sector should be promoted through government monetary and fiscal measures, such as the revolving fund. These measures would stimulate research and development and the import of technology for further adaptation. The revolving fund has yet to be used to help private sector efforts in research and development because of the government's preoccupation with issuing rules and regulations for the fund's administration. In addition, tax reduction measures are still being considered by the government agencies concerned.

6. From the foregoing, it is evident that the budget for research and development remains low. But the budget figure alone is not an adequate indicator of the nation's actual capacity in the field of science and technology; the quality, results and benefits of research projects requiring

administrative skills must also be considered. In this area, however, there are many problems still to be resolved.

TECHNOLOGY TRANSFER FROM FOREIGN COUNTRIES

7. Technology transfer is necessary for national production and development in countries lacking indigenous technological capabilites in research and development. Indeed, in view of the availability of successful and reliable technology, the import of technology is more economical in terms of time, cost and risk than developing one's own research capabilities. In order to maximize the economic and technological benefits, however, the importer must be able to select, adapt and develop imported technology in line with local production and resource advantages. This is all the more necessary because technologies originating in developed countries are naturally geared to different environments from those that exist in developing countries.

8. Fees and royalties paid to foreign countries for imported technology have increased 14-fold over the past 14 years. Most Thai industries, being medium-sized or small, lack the necessary knowledge to select appropriate technologies and are at a disadvantage when it comes to negotiating fees and contractual terms. A survey of technology purchase contracts by the Bank of Thailand revealed that there was no correlation between fees and such factors as contract duration and technological complexity. For example, the local pharmaceutical industry, including drug and cosmetic manufacturers, are simply engaged in the processing and packaging for sale of imported pharmaceutical ingredients. The technology used is not complex and technical fees range from 0.4 to 28 per cent. In cases where fees are low, the agreements have no termination dates. Where the termination date is specified, the contract period is very long. Either way, payment has to be made continuously and fees are even paid for technologies that are no longer covered by patents.

Table 4.2
Distribution of fees for imported technology
by category

(Unit: million baht)

Year	Royalty	Trademark fee	Technical fee	Commission*	Total
1972	108.05	1.33	32.63	–	142.01
1973	158.57	1.22	40.48	–	200.27
1974	196.93	1.30	28.30	–	226.53
1975	245.67	0.12	51.10	–	296.89
1976	261.52	4.82	95.86	–	362.20
1977	367.36	1.40	94.43	41.53	504.72
1978	347.34	12.82	149.28	34.43	543.87

Year	Royalty	Trademark fee	Technical fee	Commission*	Total
1979	461.28	19.20	189.21	53.50	723.19
1980	581.52	4.44	275.38	75.26	936.60
1981	812.30	3.84	429.53	85.52	1,331.19
1982	861.31	9.85	390.11	181.42	1,442.69
1983	887.10	46.52	468.55	163.67	1,565.84
1984	1,123.36	37.85	722.59	109.61	1,993.41
1985	1,202.40	35.45	723.88	83.11	2,044.84

*No data for 1972–1978.
Source: Technology Transfer Centre, Office of the Permanent Secretary, Ministry of Science, Technology and Energy

9. Additionally, technology transfer contracts often include clauses which limit the buyers' business activities and, as such, constitute an indirect fee on the technology. Contracts may, for example, prohibit the buyer from exporting the product, limit his exports to certain areas or force him to purchase raw materials and machinery from the seller. While some conditions may be necessary, those which are not should be the subject of careful negotiation if the purchaser is to benefit.

Table 4.3
Distribution of commissions, copyright fees, and patent fees paid to various countries

(unit: per cent)

Country	1973	1974	1975	1976	1977	1978	1979	1980	Average
Japan	40.9	41.4	50.5	41.7	38.1	41.6	33.7	42.1	41.25
U.S.A.	34.4	27.0	22.3	32.6	33.9	29.6	27.4	28.1	29.42
U.K.	6.7	14.9	11.3	7.1	5.1	5.9	4.8	3.6	7.42
Hong Kong	1.5	2.6	2.7	1.6	2.6	2.0	2.5	5.3	2.60
Germany	2.4	–	1.7	3.6	1.9	3.0	3.2	2.7	2.31
Others	14.1	14.1	11.5	13.4	18.4	17.9	28.4	18.2	17.00
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bank of Thailand

10. When asked, entrepreneurs paying the fees noted above were mostly aware of the disadvantageous nature of the contracts, especially those that forced buyers to purchase machinery, raw materials and spare parts from the technology supplier. But because they would not be

able to produce without the technology, the buyers have to abide by the suppliers' conditions or enter a joint venture with the supplier. These entrepreneurs have requested the government to supply them with information on technology sources and to advise them on contractual arrangements and legal matters.

11. Medium-sized and small industries have little or no opportunity to use modern technology in their production. Instead, they must sometimes resort to poor quality or outmoded technology, which yields lower quality and less competitive products. Such industries are lacking several key factors: the personnel with basic scientific and technological knowledge; the knowledge to use technology for the highest benefit; the eagerness to develop and improve production technology; the correct information to select the most appropriate technology; the capital to finance technological development; and sufficient government support to create an atmosphere conducive to investment. The lack of these factors has prevented technology transfer from improving local production efficiency as much as it should have done.

HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

12. An important problem faced by a developing country such as Thailand is in developing the human resources necessary to adopt and adapt imported scientific and technological skills to the prevailing socio-economic environment of the country. Dependence on fully fledged technology from abroad without any attempt to modify or enhance it would prevent the country from developing its own potential. Human resource development in science and technology must however be in line with capabilities inherent in the socio-economic structure so that manpower demand and supply in each production sector can be effectively balanced.

13. The changes in the Thai economic structure away from agriculture and towards industry, and the changes in the development concept away from increasing production volume towards improving efficiency and quality, require modern and more complicated production processes and management. This is especially true for new industrial projects in petrochemicals, fertilizers, electronics, etc., which require manpower with a high level of scientific and technological competence. It is clear, therefore, that human resource development in the field of science and technology is of the utmost importance.

14. The status of human resources in the country's science and technology field is as follows:

14.1 Thailand's human resources in science and technology are low compared to those of a more technologically developed country such as South Korea. In 1984 the Ministry of Science, Technology and Energy estimated Thailand's science and technology human resources, including technicians, to number 97.78 per 10,000 people, whereas a UNESCO report revealed that in 1981 South Korea's science and technology workforce for the same population base was 524.8.

14.2 The production of human resources has not followed the changes in the economic structure towards increasing production, efficiency and service. Higher education still concentrates on producing social science graduates. Moreover in the field of science and technology itself there is a lack of cooperation between entrepreneurs and academic institutes. Thus, even though there are few science and technology graduates, they have limited opportunities for employment.

The supply of human resources in the science and technology field does not match demand in the labour market. Surveys of the private and public sector show that there is a much higher demand for personnel in the engineering field than there is in the fields of science and agriculture, but the number of graduates in these 3 fields is almost equal. It is thus extremely important to study and determine forms of cooperation between manpower suppliers and users in science and technology.

Table 4.4
Number of students in state educational institutions
in various fields, 1985

Field	Number of students	Per cent
Humanities	24,270	3.6
Education	96,551	14.3
Fine Arts	1,378	0.2
Social Sciences	306,652	45.4
Law	168,242	24.9
Engineering*	13,925	2.1
Natural Sciences	23,380	3.4
Medical Science and Health Science	24,651	3.6
Agriculture	15,673	2.3
Others	1,209	0.2
Total	675,931	100.0

*Including students of Higher Certificate of Vocational Education at King Mongkut's Institute of Technology
Source: Ministry of University Affairs

14.3 Of more serious concern than the quantity of manpower is its quality, which has not met work requirements.

(1) Engineering graduates lack the skill acquired from working in an industrial plant and their basic knowledge does not keep up with industrial progress and new developments in technology.

(2) Science graduates lack the experience of conducting research in a laboratory.

(3) Agricultural personnel lack field work experience and are not familiar with basic farming methods that are practised by rural farmers.

(4) Middle-ranking personnel and technicians do not get sufficient practice to develop and continuously upgrade their skills.

The causes of the human resource quality problems in the field of science and technology are several. They include the lack of educational equipment related to modern industrial technology, inappropriate curricula and a lack of practical experience on the part of academic staff.

14.4 The use of human resources in the field of science and technology falls below its potential. Many graduates work in areas outside their field of study: in administration, sales, service and teaching. They do not work on a production process or on research, which would lead to increased production efficiency.

CAUSES OF THE PROBLEMS

15. The above problems are caused by the following 3 fundamental factors:

15.1 Lack of a policy and master plan on science and technology. With science and technology playing an important role in every field of socio-economic development, their development must cover extensive ground. Moreover a long and continuous timeframe is needed to implement and accumulate expertise in the 3 major activities mentioned above. At present there is neither a policy nor a plan for science and technology that could serve as the foundation for long-term development.

15.2 Lack of an effective central coordinating agency in science and technology. Development policies and administrative plans in science and technology are currently being implemented by a variety of government agencies. The lack of an effective central agency means that there is no coordination among the agencies, nor between the government and private sectors, to unify the country's development in science and technology.

The Ministry of Science, Technology and Energy was established in 1979 as a central coordinating agency. It combined various organizations which had their own separate structures and laws. The ministry itself lacks a well-defined structure and thus the development of science and technology faces the following problems:

(1) Policy-making in the ministry is not a unified function because most of the constituent organizations have been set up as offices with their own policy-making committees.

(2) Policy-making between the various ministries that conduct research and development and utilize science and technology, such as the Ministry of Science, Technology and Energy, is not coordinated, with each ministry having the authority to make its own policies and plans.

15.3 Lack of interest among private sector users of technology in the development of science and technology as a means of increasing production efficiency. In industries where technology is important to production, entrepreneurs of medium scale and small businesses are not interested in technological change or development. Instead they rely on commercial strategies and government tax measures to increase their competitiveness in the market. Technological development requires knowhow, capability and an understanding of science and technology, and, therefore, most work has been implemented by the state. Since there is no close cooperation and coordination in analysing the problems, the results of implementation have not solved problems nor satisfied needs, and have rarely been adopted for use.

16. To address the foregoing problems and their causes, systematic acceleration of science and technology development is necessary. This can be accomplished by uniting all the public organizations involved in technological development and linking these units to private sector users of technology. The Fifth Plan initiated the joint Thailand-US science and technology project in order to cover matters such as research and development administration and operations. The aims are: to put Thailand in a position to adopt such new technological advances as those in biotechnology, material science and applied electronics; to solve development problems; to review and formulate policies on science and technology; to give support to technology for industry; and to organize and systematize the administration of scientific and technological activities among the various institutions involved. Most of the project's details have been prepared and are scheduled to be enacted during the period of the Sixth Plan.

CHAPTER 3
OBJECTIVES, TARGETS, GUIDELINES AND DEVELOPMENT PROGRAMME

1. The following objectives, targets and guidelines for development are based on an analysis of the problems described in Chapter 2.

1.1 Objectives

(1) To enhance Thailand's capacity for developing science and technology so that the country can satisfy immediate needs for economic and social development.

(2) To lay the foundations for rapid technological development so that the country can ultimately achieve self-reliance.

1.2 Targets

In order to achieve the foregoing objectives the following targets have been set:

(1) Establish a system linking scientific and technological development to other development programmes, such as the Programme for Development of the Production System, Marketing and Employment.

(2) Increase administrative and operational efficiency in science and technology, and emphasize quality rather than quantity.

(3) Promote the role of the private sector in developing and applying science and technology.

(4) Develop a basic structure for formulating policy, to set up an organization and enact laws that would aim at increasing the efficiency of science and technology administration.

(5) Create incentives through monetary, tax, marketing and investment measures and mechanisms which stimulate the role of the private sector.

1.3 Guidelines and measures

(1) To develop the country's policy-making and planning capabilities in science and technology:

(1.1) Prepare long-term national policies and plans for science and technology as guidelines for the various agencies to follow consistently and continuously.

(1.2) Develop an indexing system for science and technology and a technology assessment system in order that policy-making and planning may be more efficient.

(2) To develop the basic organizational structure together with the laws and regulations necessary for science and technology development:

(2.1) Establish a high-level mechanism to formulate policies and plans, coordinating the various science and technology organizations and provide technical advice to government administrators. The current role and structure of the Ministry of Science, Technology and Energy should be reviewed.

(2.2) Create a mechanism for administering science and technology, which will involve collaborative projects between various units, in the style of the Science and Technology Development Board created under the Thailand-US joint Science and Technology for Development Project.

(2.3) Revise outdated laws and regulations that do not facilitate, and may even hamper, the development of science and technology, such as patent and measurement acts. Additionally, laws that directly encourage the development of science and technology, such as science and technology promotion acts and technical qualification acts, will be reviewed and enacted.

(3) To develop manpower efficiency in science and technology by improving the quality and use of manpower:

(3.1) Manpower in engineering

(3.1.1) Encourage institutions now operating in both the government and private sectors to expand production of manpower in the following fields: mechanical engineering, material sciences, electrical engineering and electronics (including computer science), industrial engineering and chemical engineering.

(3.1.2) Improve the quality of graduates by improving the institutional admissions system in order to give more opportunity to interested and appropriately skilled applicants. Equipment available for student practice will be modernized to enable the students to prepare for industry.

(3.1.3) Encourage research and development in the universities so that teachers can upgrade their knowledge and experience and consequently their teaching skills. In addition, incentives will be given to teachers in the form of rewards and job rotation opportunities that will extend their knowledge and practical experience.

(3.2) Manpower in science

(3.2.1) Improve the quality of graduates in this field by improving the admissions system, providing a better education and creating more employment opportunities to attract more scientifically skilled students.

(3.2.2) Restructure the administration of universities to better coordinate research work undertaken by teachers and the academic work of postgraduate students and to bring about more cooperation between industry and the universities.

(3.2.3) Encourage teachers to upgrade themselves by establishing such incentive schemes as work assessment systems, sponsoring participation in training courses and academic seminars and conferences and arranging further education programmes in fields necessary to their work.

(3.3) Manpower in agriculture

(3.3.1) Modify curricula to correspond more to the needs of the labour market in the private sector. More comprehensive training and better training systems will give trainees the opportunity to adapt and advance their basic knowledge to fit in with their assigned work. Universities will coordinate their curricula and the number of graduates they produce in particular fields.

(3.3.2) Develop specific educational programmes, especially the educational programme for improving the agricultural skills of farm children, to give the children of farmers an opportunity for higher education, provided they return to work in their home towns after graduation.

(3.3.3) Improve postgraduate studies to meet the needs of the country.

(3.4) Technical and vocational manpower

(3.4.1) Establish an agency to coordinate the government and private sectors and assess the demand for various qualitative and skill levels of vocational manpower. In this way, the quality and quantity of manpower production can be adjusted according to needs.

(3.4.2) Revise educational curricula to emphasize developing skills through field work. The amount of theoretical study should correspond to employment needs, and curri-

cula for studying theory should be linked to higher education in order to provide graduates who are already in the labour force with the opportunity to upgrade their qualifications.

(3.4.3) Develop theoretical and practical knowledge of vocational teachers in fields where there is a shortage of manpower, and in new fields of study. Universities and the private sector will be asked to help.

(3.5) Manpower in science and technology at the secondary education level

(3.5.1) Give science teachers regular training prior to and throughout their teaching careers in order to update and improve their understanding of science and develop their scientific skills and capabilities.

(3.5.2) Develop and produce equipment and audio-visual aids to be used in the teaching of science and technology.

(3.5.3) Develop a system and instruments for testing and evaluating the results of science education and for ensuring the capability of school leavers.

(3.6) Promote public understanding of the value of science and technology

(3.6.1) Encourage the private sector, academic associations and professional associations to hold science exhibitions and project competitions, to publish books and periodicals and to produce films. The purpose is to publicize basic scientific and technological knowhow relevant to everyday life and work.

(3.6.2) Arrange for knowledgeable people who have carried out outstanding or interesting work in science and technology to give lectures at government offices, universities and schools.

(3.6.3) Encourage the private sector and academics to hold seminars where views may be exchanged on problems and how science and technology can be used to solve them.

(3.6.4) The Ministry of Education will include more practical information on the application of science to daily life in the curricula for non-formal education.

(3.6.5) The government's mass media will cooperate in increasing the dissemination of scientific and technological knowledge and understanding to the public.

(3.7) Increase efficiency in the use of manpower in science and technology to solve national development problems

(3.7.1) Register scientists, engineers and all juristic persons engaged in scientific and technological activities so that information can be current and manpower can be mobilized easily.

(3.7.2) Seriously promote the use of human resources in science and technology for all purposes.

(4) To encourage efficiency in national research and development:

(4.1) Formulate research policies and guidelines that enable the government and state enterprises to conduct research which follows the direction of national economic and social development.

(4.2) Attempt to set the budget for research as close as possible to 2 per cent of total government annual expenditure, or total national research expenditure as close as possible to 0.5 per cent of GNP. Emphasis will be placed on research which aims at solving economic and social development problems currently facing the country rather than academic research. Special support should be given to genetic engineering and biotechnology, metallurgy and material science, and electronics and computer science, where technological progress has been rapid, because they are beneficial to national development in several areas at the same time: agriculture, industry, medicine, transport and communications, environment and ecology, and so on.

(4.3) Improve the administration of research and development in the government sector to ensure that the results of research and development work are put to use instead of being wasted. Research and development topics of national importance should be determined and users of the research results identified before any research project is supported. This can be accomplished as follows:

(4.3.1) Both researchers and users of research results will jointly propose research subjects and projects to sponsors of the research; or

(4.3.2) Users of research results will pay for part of the research and development cost.

(4.4) Establish an organization within the Office of the Permanent Secretary, Ministry of Science, Technology and Energy for promoting and coordinating research and development in the 3 national priority areas of genetic engineering and biotechnology, metallurgy and material science, and electronics and computer technology. Initially the activities of this organization should harmonize with the administrative work of the Science and Technology Development Board, which comes under the purview of the Thailand-US Science and Technology for Development Project.

(5) To encourage technology transfer from abroad and increase its effectiveness in benefitting the economic and technological development of the nation:

(5.1) Establish a national committee for administering technology transfer. The committee will consist of representatives from all the agencies concerned, including the Office of

the Board of Investment, Bank of Thailand, Ministry of Industry and Ministry of Agriculture and Cooperatives, and from the private sector. The Ministry of Science, Technology and Energy will serve as the secretariat. The committee's prime functions will be to prepare national policies for promoting technology transfer, issue laws and procedures for ensuring that technology transfer benefits the development of local technology and determine the areas of responsibility while developing the capabilities of the agencies concerned with technology transfer.

(5.2) Strengthen the technology transfer centre into the government's central agency for coordinating the transfer of foreign technology with the development of domestic technological capabilities. The centre will, for example, establish a data bank on technology transfer to serve the private sector. It will also give advice on importing technology to the agencies responsible for allowing technological imports and remittances outside the country. In addition, it will closely cooperate with scientific and technological research institutes to stimulate knowledge, adaptation and development of imported technologies, which will hasten domestic technological development.

(5.3) The Office of the Board of Investment will be encouraged to attribute importance to technology, as well as economic and environmental aspects, in considering investment promotion.

(5.4) The Bank of Thailand should revise its classification of fees on technology so that information on technology trading will be more detailed and accurate.

(6) To develop a new data and information system for science and technology:

(6.1) Establish a network of scientific and technological information as part of the national information system, and encourage the development of various scientific and technological databases.

(6.1.1) Set up a committee that will coordinate a network of scientific and technological data and information, supervise its operation, establish a format for the data and create connections for communicating within this network.

(6.1.2) Unpgrade the Data and Information Centre in the Ministry of Science, Technology and Energy to be the centre of this network. By linking agencies within the network, the database system will be able to locate all types of scientific and technological information.

(6.1.3) Improve the capability of the scientific and technological information system so that it can be linked to the work system in a similar manner to systems in use abroad.

(6.2) Develop a data indicator system for science and technology which will be used for determining pertinent policies and plans.

(6.2.1) Set up an indicator agency for science and technology in the Office of the Permanent Secretary, Ministry of Science, Technology and Energy. The unit will coordinate the scientific and technological indicator systems of the government and private sectors and foreign countries.

(6.2.2) Upgrade the capability of equipment, instruments and personnel used in collecting and retrieving data, including indexed data, and in keeping the data up to date and accurate.

(6.2.3) Undertake training to raise the knowledge and ability of personnel in providing information services concerning scientific indicators and in forecasting and assessing conditions, with a view to the determination of policies and plans for developing and using scientific and technological resources.

(6.2.4) Prepare a users' manual on the data indexing system for science and technology.

(6.2.5) Encourage the use of science and technology indicators in determining operational policies and plans in fields such as agriculture and industry that rely on science and technology as an important foundation. Obstacles to the coordinated development and use of science and technology indicators will be removed.

(6.2.6) Specify levels of access for each type of user to prevent misuse of the data.

(7) To promote the role of the private sector in developing and using technology:

(7.1) Speed up operation of the research and development revolving fund which supports private industry, by providing low interest loans with long repayment periods. The money will be used in research and development and in applying research results, constructing testing laboratories and using new, high-risk technologies.

(7.2) Encourage the private sector to set aside revenues for establishing technological development funds within their own businesses and in line with the following principles:

(7.2.1) Allow the private sector to deduct the accumulated fund as expenses in calculating income taxes of juristic personnel.

(7.2.2) Allow income tax exemption for a specified period of time on revenues from goodwill, patents and trademarks derived from technological research and development.

(7.2.3) Allow import duty reductions on instruments, machinery and equipment used in implementing research and development and in developing technology.

(7.3) Establish a subcommittee on technological development to coordinate development and use of science and technology by the government and private sectors. The subcommittee will come under the joint committee of the public and private sectors.

(7.4) Encourage academic and professional associations to operate as independent institutions and play an important role in the scientific and technological development of the country.

1.4 Major work plans

To achieve the foregoing objectives and targets, the development of science and technology shall consist of the following 4 work plans:

(1) Work Plan for Developing the Basic Structure and Administrative System

Increase administrative efficiency in science and technology by establishing well-defined targets and directions and by developing basic structures which are important in policy implementation. Combined long-term policies and plans will be specified for science and technology, especially in regard to arranging priorities and assessing plans and projects. The role of the Ministry of Science, Technology and Energy will be reviewed to enable it to function efficiently as an organization for administering science and technology. Laws and regulations that obstruct the development and use of technology will be revised, while others that support a wide and determined development and use of technology, will be reviewed and promulgated if found beneficial.

(2) Work Plan for Increasing Efficiency in Scientific and Technological Activities.

(2.1) Establish organizations to promote research and development, and coordinate investment in this area in the following ways:

(a) Bring together and increase the operational efficiency of different scientific and technological activities such as research and development, technology transfer from abroad and the collection of miscellaneous information. A complete system will be formed, which will satisfy the demand for development and applicability, by establishing a national information system and network on science and technology, developing a data indexing system for science and technology and improving the system for administering research and development and transferring technologies from abroad.

(b) Develop new products and new production processes that will increase the value of manufactured products by using local raw materials. The invention of equipment, tools and instruments will also be encouraged and promoted.

(2.2) Enhance the performance of research and development in specific areas of science and technology.

(2.3) Cooperate with foreign countries and international organizations in research and development, identifying sources of funds and improving the country's capabilities in science and technology.

(2.4) Increase the efficiency of meteorological work by upgrading the quality of equipment, instruments, personnel and the public relations system will be improved so that both short-range and long-range weather forecasts will be more accurate.

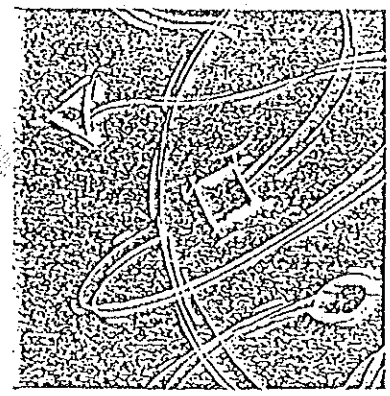
(3) Work Plan for Developing Human Resources and Manpower in Science and Technology

Produce manpower in science and technology with sufficient efficiency and quality to satisfy the development needs of the national economy and society, as well as technology. In addition, the habit of logical thinking will be encouraged among the general public, as will their general acceptance and pursuit of technology. Demand forecasts and plans for manpower in science and technology will be formulated and the educational system will be improved at the university, vocational school and secondary school levels. Understanding of the role and value of science and technology will be inculcated in the general public and the use of manpower in science and technology will become more efficient.

(4) Work Plan for Increasing Efficiency in the Production System through Technology

(This work plan is included in the Programme for Development of the Production System, Marketing and Employment.)

5. The Current Status of Thailand's Information Industry
(Prof. Dr. Pairash Thajchayapong)



THE CURRENT STATUS OF THAILAND'S INFORMATION INDUSTRY

PROF. DR. PAIRASH THAJCHAYAPONG

DIRECTOR, NATIONAL ELECTRONICS AND COMPUTER TECHNOLOGY CENTER

MINISTRY OF SCIENCE, TECHNOLOGY AND ENERGY

THAILAND

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Presented by
Dr. Pairash Thajchayapong
National Electronics and Computer
Technology Center (NECTEC)
Ministry of Science Technology
and Energy (MOSTE)

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1. Introduction

In 1987 - 88, a study was conducted by the National Electronics and Computer Technology Center (NECTEC), Ministry of Science Technology and Energy (MOSTE) to find out the status of the electronics and computer industry in Thailand in six areas of interest e.g. computer hardware, computer software, integrated circuits, communication equipments, domestic electrical appliances, and small electric motors. This paper partially describes the results of the study in computer hardware and computer software industry to reflex the current status of the information industry in this country.

2. Investment in Electronics Industry

Since 1962, there have been 145 electronics companies that receive the promotional previledge from the Board of Investment (BOI) to set up their factories in Thailand. (Table 2.1) Before 1987 there was only 50 companies, however the big jump by 104 companies occured in 1987 upto mid-1988, this jump when worked out in term of investment means 42,924 million baht (~ 1,651 million US $) and 50,000 employment. Hence , the electronics industry will contribute a great deal to the economic development of Thailand. The ownership of the companies are mainly foreign and joint-venture by 65 and 62 respectively. There are only 18 companies whose ownership are Thai. (Table 2.2) When we classify these companies by the nature of market, it turns out that 127 are for export market while 18 are for domestic market (Table 2.3). In this respect, the future of the market will be very much export-oriented.

Fig 2.1 may represent some of the excitement, if one dare to make some forecast in the next 5-10 years to come. If one makes the assumption of maximum growth at 25% and minimum growth at 10%, it is predicted that in the year 1992 the size of investment in this country will be comparable to that of the Republic of China (ROC) in 1983.

By gathering some data on the export value of electronics products during 1986 - 88, it was found out that the growth rate was around 40%. If the growth rate of say 25% of this export trend can be sustained, Fig 2.2 then represents the projected export value of the electronics products in the next 5-10 years e.g. ~ 3,000 million US$ in 1992 and ~ 9,000 million US$ in 1997. This estimation may seem to be exaggerated., however one must take into account that the " information age " has already arrived and electronics are undeniably the main driving industry and technology for such society.

3. Computer Hardware Industry

3.1 Production Sector

Since 1980, there have been three Thai-owned companies that assemble the complete sets of microcomputer in 8 bits, 16 bits and now expanding to 16/32 bits (Table 3.1 (a)). The production is estimated to be around 6,000 units per year and is mainly catered for the local market. In 1983, Data General (Thailand) set up a plant to assemble microcomputers and parts in 1983 under the BOI promotional scheme. However, the major breakthrough may be seen in Table 3.1 (b) and Table 3.2 when the total of 14 companies have been granted the promotional privilege to manufacture peripherals e.g. keyboard, hard disk drive, floppy disk drive and printer. It is estimated that in 1990 when all of these factories are fully operating, Thailand will be able to export the peripheral products around 800 million US $ per year. This figure is equivalent to the export value of Hongkong in 1987

3.2 Market Sector

According to the market survey by IDC in 1987, IBM has the largest share of 81.25% and 38% in the large scale and medium scale respectively. NEC has 40% while IBM has 30% in the small scale computer market (Fig 3.1 and Table 3.3) Another report estimates the number of installed computers in terms of mainframe, minicomputer and microcomputer to be 90 - 120, 900 - 1,200, and 12,000 - 30,000 respectively. The market for small-scale and microcomputer seem therefore to gain better popularity than the others. Table 3.5 and 3.6 show the distribution of computer usage in various applications. Banking, insurance and finance are the main application with 24% while the wholesale and retail applications take 22% (Table 3.5). In term of value, the banking/insurance/finance represent 36% or 78 million US $ (Table 3.6)

Fig 3.2 shows the government expenses for computers in 1986. The major expense of 61.9% or around 15 million US $ is in hardware.

4. Computer Software Industry

The software houses in Thailand may be divided into three groups i.e.

microcomputer, minicomputer and mainframe (Table 4.1) There are about 40 software house companies in microcomputers. Generally they are very small with 2-3 personnels per company; the largest one may have 40 - 50 personnels. The large microcomputer s/w houses also sell microcomputers. There are at least 10 minicomputer s/w houses with at least 10 personnel per company. The mainframe computer s/w houses, estimated to be around 10 companies, normally distributes the ready-made application packages from abroad.

Table 4.2 compares the s/w industry in Thailand with ROC, Korea and Singapore. Although the number of professional is as high as in ROC, our sales and export value are still comparatively low.

The s/w usage/market are mainly in applications in business data processing e.g. account, stock, sale forecast, office, payroll, MIS etc. (Fig 4.1). The value of this application s/w is approximately 72 million US $ (Table 4.3). The computer vendors may be classified into providing consulting/programming and training, and selling materials/parts and computer sets (Table 4.4)

5. Future Prospects

The government of Thailand is fully aware of the impact of the information industry and technology on the national economic and social development. This can be seen on one of the main issue announced recently e.g. the Data Processing Zone (DPZ) whose feasibility study is now being conducted. DPZ is conceptually seen as a thrust to put Thailand toward information age. It is expected that at least four areas of information industries will be promoted e.g. data industry, software industry, telecommunication services industry and computer and communication equipment industry.

Another major project is in progress to set up the Geographic Information System (GIS) at the national level to monitor and manage the natural resources and environments both in the urban and rural areas.

On the R&D aspects, the National Electronics and Computer Technology Center (NECTEC) has already been in operation since 1986. Its main objective

is to develop new technology to support the private sector. During 1987-1988, the center has come up with projects like the National CAD/CAM Center, the VLSI project, the 386 SX microcomputer project etc.

Recently the communication Authority of Thailand (CAT) has announced the X.25 packet switch services and the Telephone Organization of Thailand (TOT) has also announced its new data network services

On the manpower, the Ministry of University Affairs has also started to cope with the high demand of engineering graduates. For example, a few universities have already increase their intake of the students; new universities (private and government) are being set up; 800 scholarships to send students abroad to study in engineering and science.

6. Conclusion

The electronics and computer, which are the basis of information industry, have contributed a major role in the economic growth of Thailand. It is believed that this growth will continue especially towards the export market. Foreign and joint-venture ownership take a major share in the investment. The major computer hardware factories are mainly in peripherals. The software industry is mainly in applications. It is expected that both hardware and software investment will continue to expand.

Finally, the awareness of the infrastructure is felt among the concerned organisations. The government have already issued some new schemes to support the expansion; distinguished among them is the DPZ - The Data Processing Zone.

7. References

1. "The survey and study of the technological status of electronics and computer industry", NECTEC, MOSTE, Decemoer 1988 (in Thai)

2. "The Development of Thailand's Technological Capability in Industry : Capability Development for Electronics and Information Technology-Based Industries " IDRI, October 1988.

3. "The S&T Manpower Situation in Thailand An Analysis of Supply and Demand Issues", STDB, 1988.

4. "Research and Development of software Industry" a paper presented on 25-27 September 1987, at Asia Pattaya Hotel, STDB

Table 2.1 Electronics Investment Growth (1962-88)

Year	No.of Projects	Size of Investment (Million US $)	No. of Employers
1962-86	41	616	37,143
1987	53	437	25,257
1988[1)]	51	599	24,918
Total	145	1,651	87,318

Source : Board of Investment (BOI)

NB : 1) updated to June 10,1988

Table 2.2 Ownership Classification of Investment

	No. of Companies
Thai	18
Joint-Venture	62
Foreign	65
Total	145

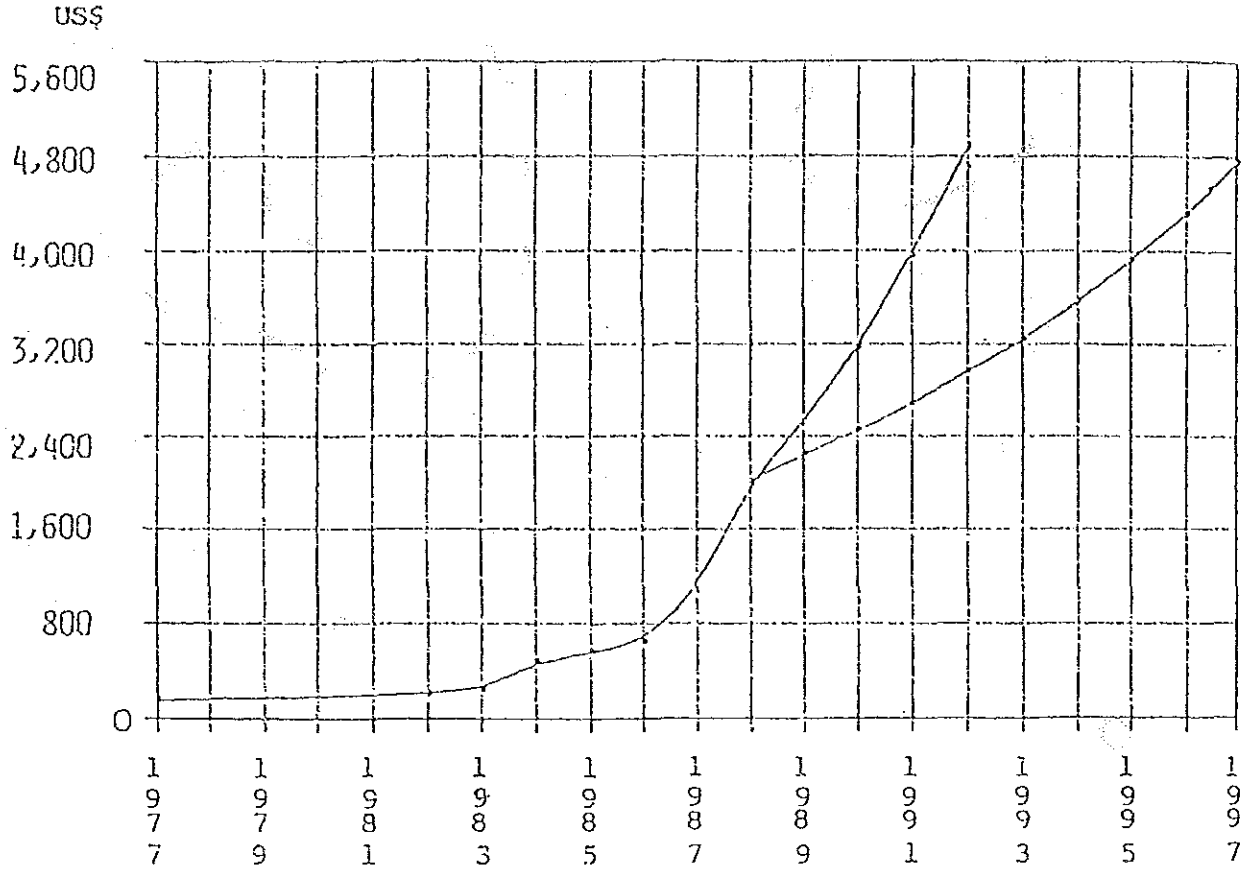
Source : BOI

Table 2.3 Market Classification of Investment

	No. of Companies
Export Market	127
Domestic Market	18
Total	145

Source : BOI

Fig 2.1 Estimated Growth of Investment in the Next 5-10 Years



1992 Size of Investment in Thailand will be comparable to 1983 size of investment in ROC

Fig 2.2 Estimated Export Value in Electronics Products in the next 5 - 10 years.

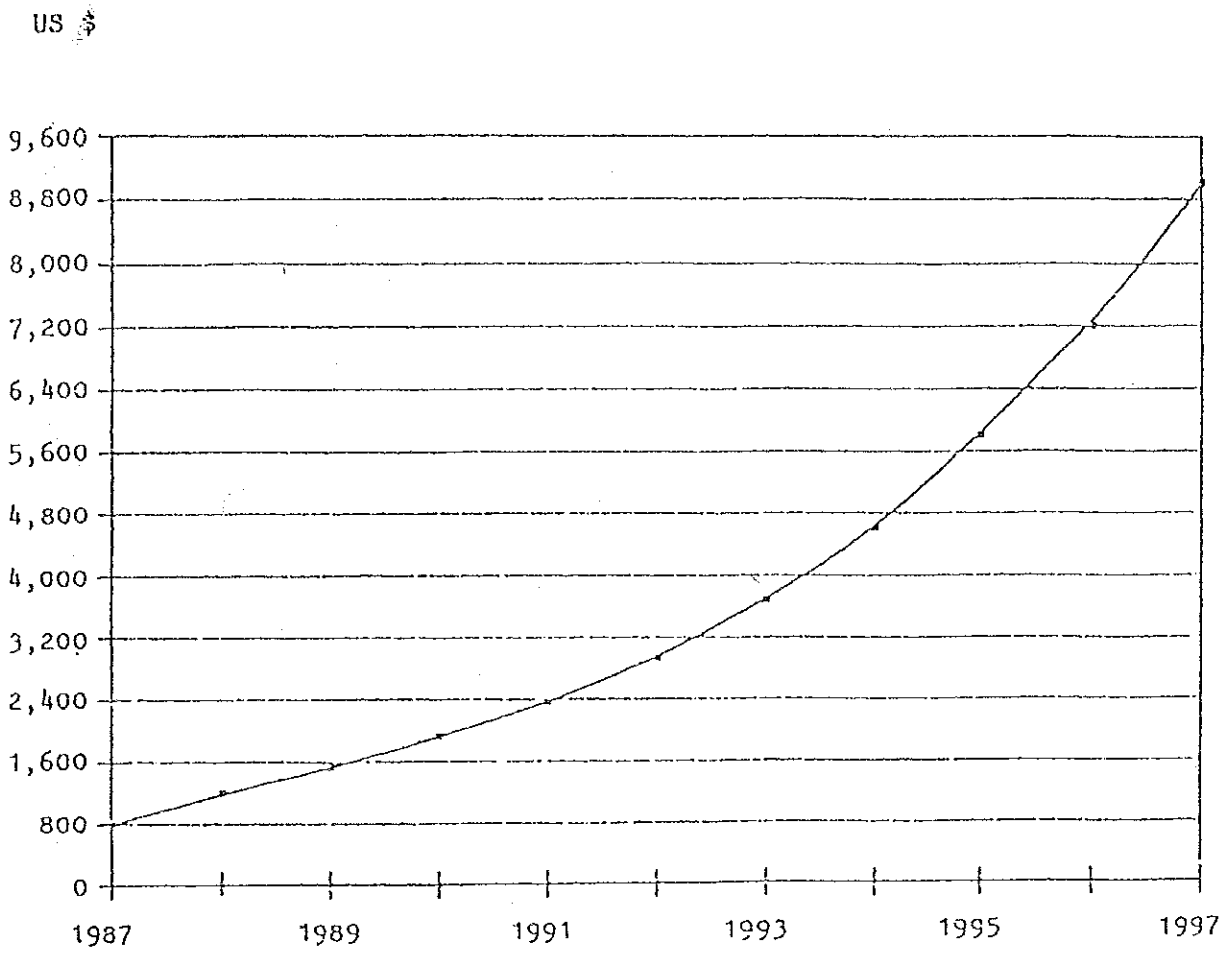


Table 3.1 a) Microcomputer - Assembled Company (1980-1988)

No. of Companies	3
Estimated Production (Unit/Year)	6000

Mainly for domestic market

Table 3.1 b) Peripheral Company (1983-1988)

No. of Companies	14
Capacity (Million Unit/Year)	185.48217
Investment (Million US $)	800
No. of Employee	15,293

Mainly for export market

Table 3.2 BOI - Promoted Companies (1983-88)

COMPANY	PLANT LOCATION	YEAR APPROVED	YEAR STARTED	NATION	PRODUCT	CAP.mil. UNIT/YEAR	INVEST Mil.US$	NO.of Emp.	% of Exp.
1. Data General Thailand Co.,ltd. (E)	Bangkok	1983	1983		Computer Sets & Parts	1.335	10.1	587	100
2. Chicony (Thailand) Co.,Ltd.	Chacheongsao	14 Dec. 1987	-	Taiwan	Computer Keyboard	1.8	2	770	100
3.ElectElTek (Thailand) Ltd. (E)	Pathumthani	10 May 1988	-	Hong Kong	1.Modem/Facsimile/Telecom Equipment 2.PCB Assembly 3.Computer Systems Assembly	0.1728 1.836 0.081	3.7	600	100
4. Kang Yong Electric Manufacturing Co.,Ltd. (E)	Sasulprakarn	24 Feb. 1987	-	Thai/Japan (60) (40)	Carriage for Floppy Disk Drive	0.275	0.3	44	100
5. Melco Manufacturing Thailand	Sasulprakarn	17 Jul. 1987	-	Thai/Japan (20) (80)	Floppy Disk Drive	1.35	8.2	625	100
6. Minibea Thai Limited.	Ayutthaya	17 Jul. 1984	26 Dec. 1984	Japan	1.Stepping Motor and parts 2.Strain Gauge 3.Fan Motor 4.D.C.Motor 5.Transducer 6.Computer Keyboard Mechanical Type -key switch -keyboard without cover -covered keyboard Rubber Type -key switch -keyboard without cover -covered keyboard 7.Printer and parts 8.Micro Speaker	9.42 2.4 2.4 2.4 0.012 60 0.6 1.31 0.24 0.33 0.78 0.15 7.2	160	3984	100

Table 3.2 BOI - Promoted Companies (1983-88) (continued)

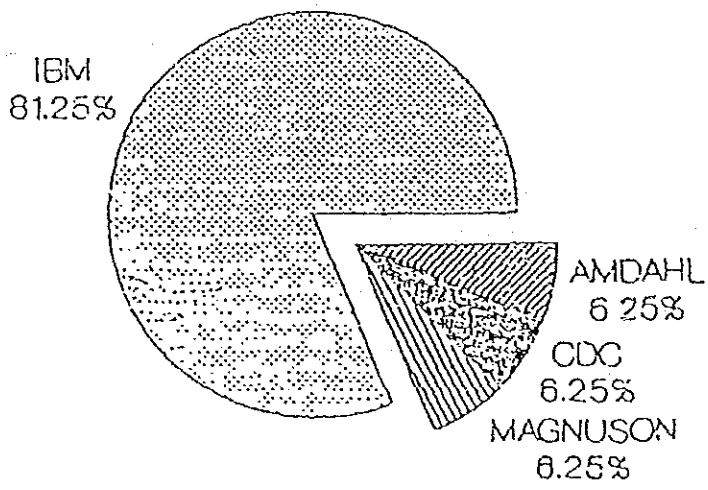
COMPANY	PLANT LOCATION	YEAR APPROVED	YEAR STARTED	NATION	PRODUCT	CAP.mil. UNIT/YEAR	INVEST Mil.US$	NO.of Emp.	% of Exp.
					9.General Speaker	10.8			
					10.Paper Feeder	0.1586			
					11.Switching Power Supply	1			
7. Minibea Thai Limited (E)	Ayutthaya	17 Mar. 1987	-	Japan,Singapore	1.Printer	0.4	10.5	1147	100
					2.Micro Speaker	14.4			
					3.General Speaker	28.8			
8. Minibea Thai Ltd. (E)	Ayutthaya	14 Apr. 1987	-	Japan,Singapore	Floppy Disk Drive Head	3.6	9.8	316	100
9.Minebea Electronics (Thailand)	Lopburi	26 Apr. 1988	-	Thai/Japan (45) (55)	1.PM Stepping Motor	0.00666	113.7	854	100
					2.Mechanical Subasseably for Floppy D	0.003631			
					3.Magnetic Recording Unit	0.00348			
10. Seagate Technology (Thailand) (E)	Pathumthani	31 Aug. 1987	-	USA	Hard Disk Drive	0.936	9.1	1500	100
11. S.H.Sons Co.,Ltd.	Nakornrajcha-sima	12 Oct. 1987	-	Thai	Printer&Disk Drive Components	9.56	3.6	206	80
12.Fujitsu (Thailand) Co.,Ltd.	Pathumthani	2 Aug. 1988.	-	Japan	1.Facsimile	0.18	118.5	2950	90
					2.Printer for Computer	0.36			
					3.Transmission Terminal	0.015			
					4.Transmission Equipment	0.004			
					5.Floppy Disk Drive	0.5			
					6.Personal Computer	0.003			
					7.Printer Head	0.21			
					8.Transformer/Coil	1.36			
					9.Hard Disk Drive Head	3.6			

Table 3.2 BOI - Promoted Companies (1983-88) (continued)

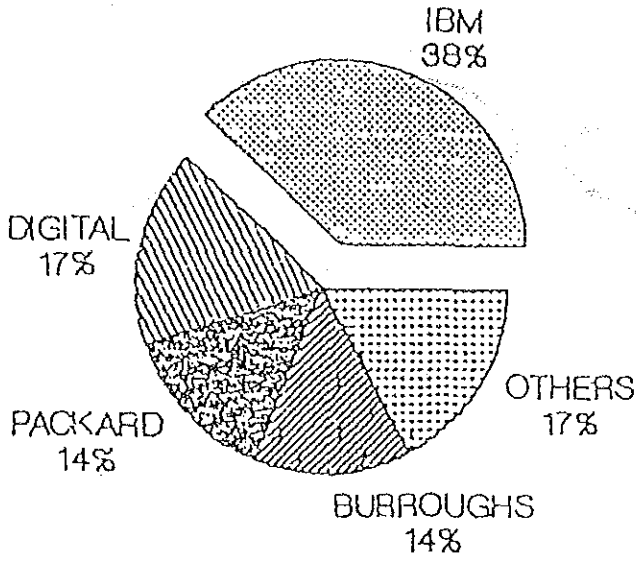
COMPANY	PLANT LOCATION	YEAR APPROVED	YEAR STARTED	NATION	PRODUCT	CAP.mil. UNIT/YEAR	INVEST Mil.US$	NO.of Emp.	% of Exp.
					10.Stepping Motor	4.2			
					11.Noise Filter	1.54			
					12.Floppy Disk Drive Head	4.71			
					13.Camera Accessories	0.84			
13.Tool Products (Thailand) Ltd.	Pathumthani	2 Feb. 1988	-	Singapore/USA	Hard Disk Drive Component	3	4.6	190	100
14.Micropolis (Thailand) Co.,Ltd.	Pathumthani	23 Aug. 1988.	-	USA.	1.Head Positioner	0.875	10.9	1520	100
					2.Hard Disk Drive	0.125			

Source : BOI

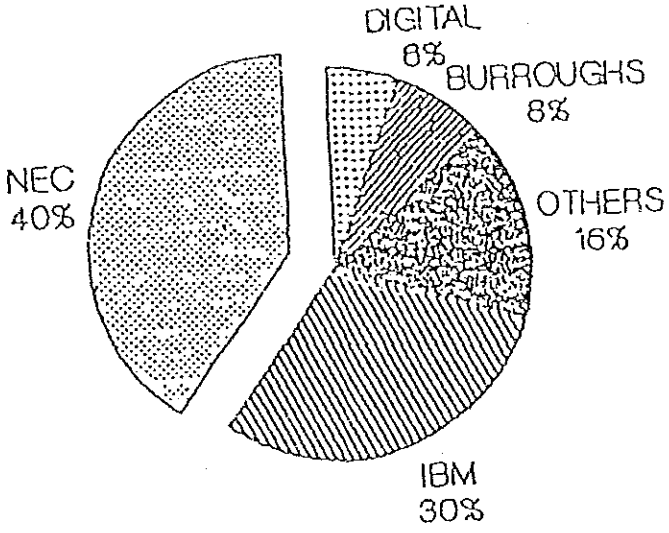
Fig 3.1 Computer Market in Thailand



Large - Scale Computer Market Share.



Medium - Scale Market Share.



Small - Scale Market Share

Source : IDC Asia 1987

Table 3.3 Number of Installed Computers I (upto 1987)

Vendors	Large Scale	Medium Scale	Small Scale	Total
Amdahl	1	-	-	1
Burroughs	-	25	90	115
CDC	1	-	4	5
Data General	-	8	18	26
Digital	-	30	60	90
Hewlett-Packard	-	26	29	55
IBM	13	70	320	403
Magnuson	1	-	-	1
NCR	-	-	51	51
NEC	-	8	420	428
Prime	-	4	17	21
Sperry	-	6	7	13
Tandem	-	6	-	6
Wang	-	5	43	48
Philips	-	-	15	15
Nixdorf	-	-	20	20
Total	16	188	1,094	1,298

Source : Revised from IDC Asia 1987

Table 3.4 Number of Installed Computers II (1984-86)

Types of Computers	Estimated Number
Mainframe	90-120
Minicomputer	900-1200
Microcomputer	12000-30000

Source : "Research and Development of Software Industry" a paper presented on 25-27 September 1787, at Asia Pattaya Hotel, organized by the Science and Technology Development Board (STDB) of Thailand.

Table 3.5 Installed Computers classified by Application.

Industry	Large	Medium	Small	Total	%
Agriculture	-	2	30	32	2.0
Mining	-	-	-	-	-
Construction	-	1	11	12	1.0
Chemicals/petroleum	-	13	32	45	3.0
Utilities/ communications	2	47	59	108	8.0
Manufacturing	-	9	170	179	14.0
Wholesale/retail	-	2	280	282	22.0
Banking/insurance/ finance	8	46	258	312	24.0
Business services	-	8	117	125	10.0
Government	5	41	85	131	10.0
Education	1	19	52	72	6.0
Total	16	188	1,094	1,298	100.0

Source : Revised from IDC Asia 1987

Table 3.6 Estimated Value of Installed Computers Classified by Application

INDUSTRY	LARGE US$ (MILLION)	MEDIUM US$ (MILLION)	SMALL US$ (MILLION)	TOTAL US$ (MILLION)	%
Agriculture	-	0.4	2.3	2.7	1
Banking/insurance/ finance	40.0	19.4	18.6	78.0	36
Business service	-	3.6	7.7	11.3	5
Construction	-	-	0.8	0.8	0.3
Chemicals/petroleum	-	5.8	2.4	8.2	3.7
Education	2.0	6.6	3.9	14.5	7
Government	10.0	18.5	6.4	34.9	16
Mining	-	-	-	-	-
Manufacturing	-	4.1	12.6	16.7	8
Wholesale/retail	-	0.4	20.4	20.8	10
Utilities/communica-	2.0	21.2	4.4	27.6	13
TOTAL	54.0	82.0	79.5	215.5	100

Source : Revised from IDC Asia 1987

Fig 3.2 GOVERNMENT EXPENSES FOR COMPUTERS IN 1986

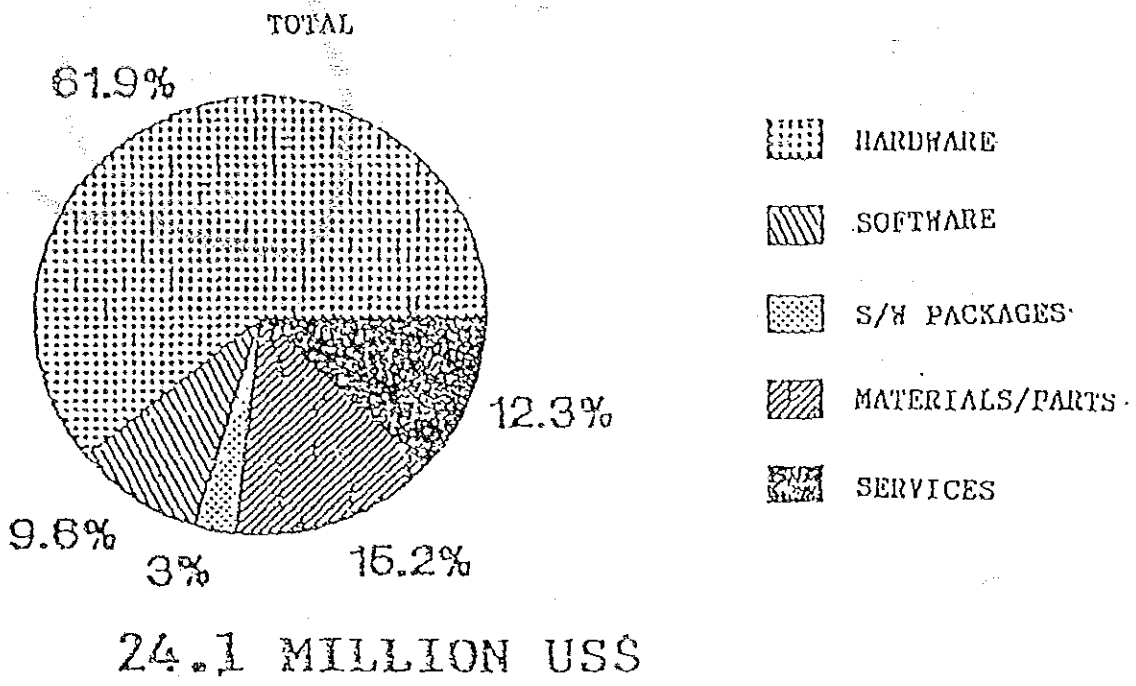
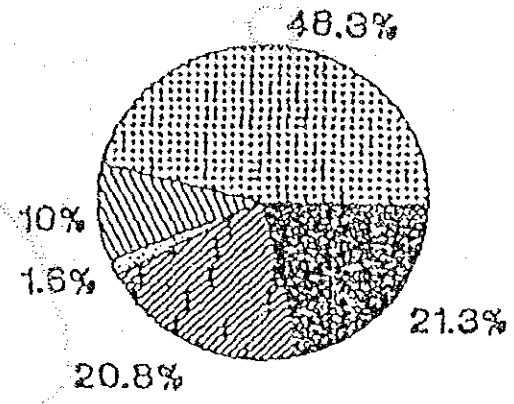
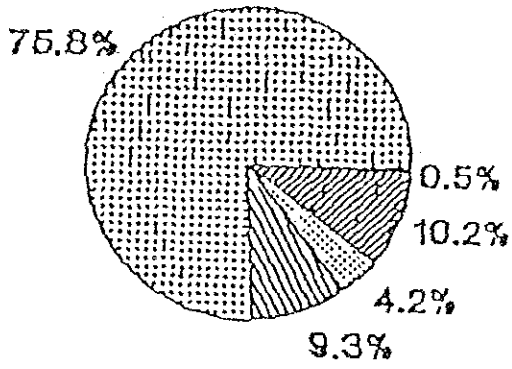


Fig 3.2 GOVERNMENT EXPENSES FOR COMPUTERS IN 1986 (CONTINUED)



STATE ENTERPRISES

11.33 MILLION US$



GOVERNMENTAL OFFICES

12.85 MILLION US$

Table 4.1 Software Houses.

	No. of Companies	Personnel/Company
MICROCOMPUTER	40	2-3 upto 40-50
MINICOMPUTER	>10	10
MAINFRAME	<10	10

Table 4.2 Comparison of S/W Industry (1987)

UNIT : MILLION US$

	THAILAND	ROC	KOREA	SINGAPORE
SALES	46	169	197	144
EXPORT VALUE	1	11	8	39
# OF PROFESSIONAL	6,900	6,900	7,850	3,000
TOTAL INVESTMENT	——	70M	---	60M

Source : MIC/III

NB * APPROXIMATED

Fig 4.1 Application S/W Usage

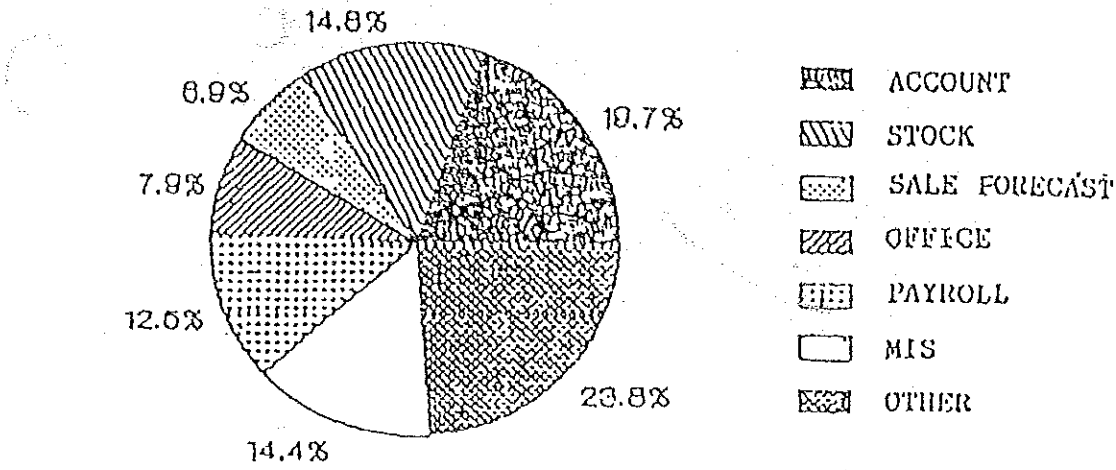


Table 4.3 Estimated S/W Value

UNIT : MILLION US $

TYPE OF S/W	In-House	S/W House	included in H/W	Lease or Buy Package
SYSTEM S/W	N/A	N/A	11.5	3.8
APPLICATION S/W	24.2	14.2	26.9	3.6

Source : "Research and Development of Software Industry" a paper presented on 25-27 September 1787, at Asia Pattaya Hotel, organized by the Science and Technology Development Board (STDB) of Thailand.

Table 4.4 Classification of Computer Companies

TYPE	1982	1983	1984	1985	1986*
Consulting/Programming	5	14	21	36	51
Training	7	12	25	20	20
Materials/Parts	8	17	20	38	70
Computer Set	51	60	109	120	148
Total	71	130	175	214	289

Source : "Research and Development of Software Industry" a paper presented on 25-27 September 1787, at Asia Pattaya Hotel, organized by the Science and Technology Development Board (STDB) of Thailand.

NB* Asia DP Index & Software Register 1987 and Yellow Page Directory

6. General Information(Ministry of University Affairs)

GENERAL INFORMATION

MINISTRY OF UNIVERSITY AFFAIRS THAILAND

THE EDUCATION SYSTEM AND STRUCTURE

The first Education Plan in Thailand was announced in 1898, six years after the founding of the Ministry of Education. The Plan was subsequently revised in 1902 and 1907, taking into account new needs of the country particularly with respect to the development of vocational and technical education.

Thailand underwent an important historic change in 1932 as the country adopted the system of constitutional monarchy. Since then, the National Educational Scheme was formally formulated, taking proper recognition of individual education ability, regardless of sex, social background or physical conditions. The National Educational Scheme as well as the related organizational structure was, as time went, reviewed and revised several times, in order to keep up with the adjustments and changes dictated by the political, economic and social development needs of the country.

In the present National Educational Scheme effective since 1977, the school system follows a 6-3-3 structure whereby a 6-year primary schooling is compulsory, followed by a 3-year lower secondary and another 3-year upper secondary for those who are university-bound as well as those who are occupational-bound. The duration for higher education is 4 to 6 years at the bachelor degree level, depending on the fields of study and specialization. A master's degree program requires 2 years, and more advanced studies at the doctorate level at least another 3 years.

The administration of education in Thailand is carried out by the following ministries :

Ministry of Interior supervises municipal primary education administered by municipal authorities;

Ministry of Education is responsible for a major portion of primary education, all secondary education, and most of teachers' education and vocational-technical education, as well as for matters relating to religion and culture;

Ministry of University Affairs oversees government universities and institutes, and private universities and colleges.

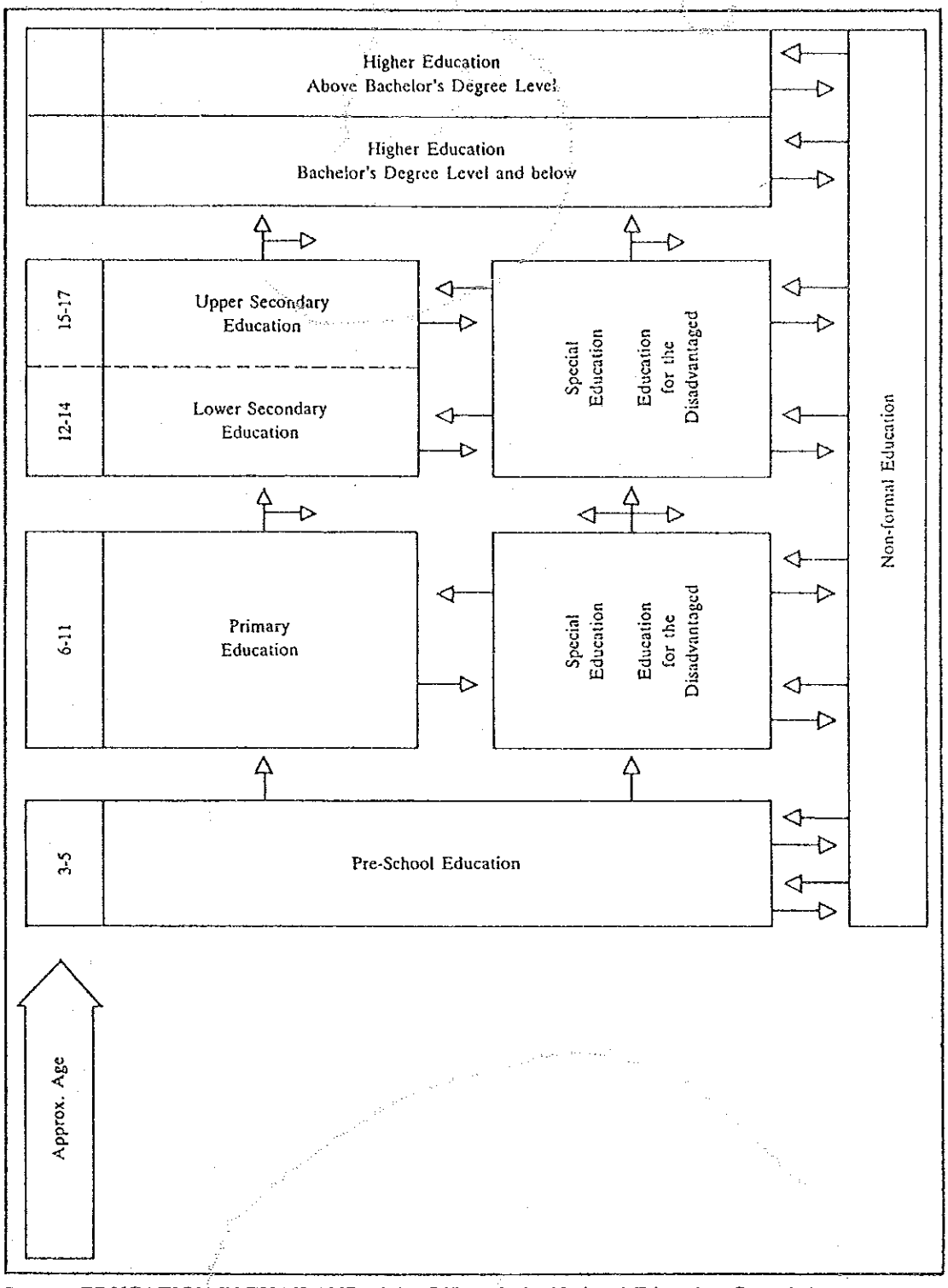
Two other ministries carry out specialized education for specific groups of people, such as the nursing colleges of the Ministry of Public Health and the military academies of the Ministry of Defence, while the Office of the National Education Commission under the Prime Minister's Office looks after the overall long-term policy and planning for all levels of education.

In Thailand, higher education is given in universities and specialized institutions of higher education. These institutions are classified under four categories :

– State universities/institutes and private higher education institutions under the supervision of the Ministry of University Affairs ;

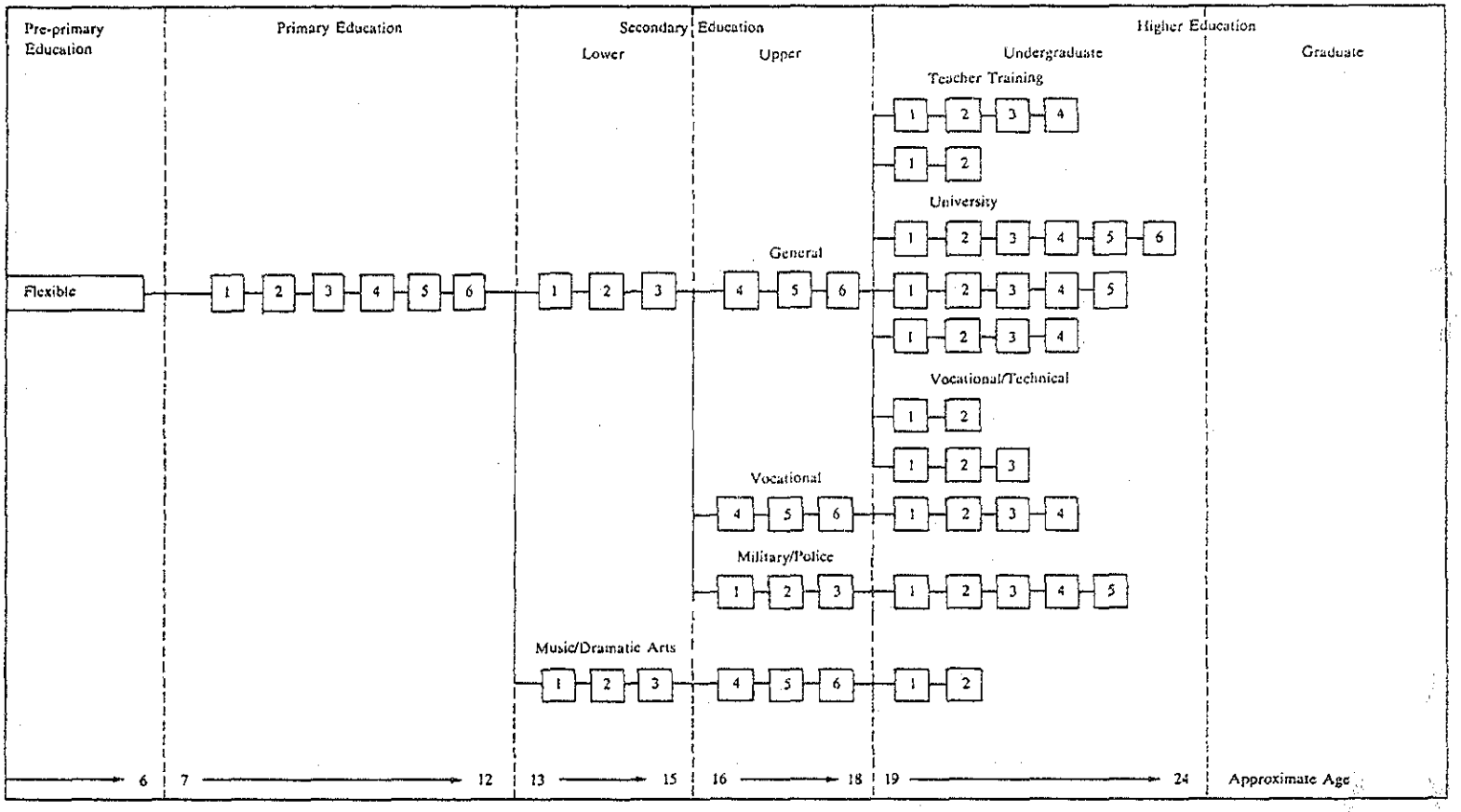
– Technical or vocational, agricultural and teacher training colleges under the jurisdiction of the Ministry of Education ;

Chart No.1 Educational System



Source: EDUCATION IN THAILAND of the Office of the National Education Commission, Office of the Prime Minister (May 1980)

Chart No.2 Structure of the Present School System



Source: EDUCATION IN THAILAND of The Office of the National Education Commission, Office of the Prime Minister

– Other specialized or professional training institutions under other ministries and government organizations e.g., nursing colleges, Buddhist colleges*, military and police academies, etc.,

– An international institute under its own charter granted by the Thai government : The Asian Institute of Technology (AIT).

Policy and Plan

Education, as pronounced in the National Scheme of Education, is conceived as a continuing life-long process which promotes the quality of life of the people, enabling them to lead a useful life in society, while higher education is undertaken for the purpose of further developing the intellect and ideas for academic advancement, creating a task force at higher academic and vocational levels for national development, and at the same time endowing individuals with high morals, ethics and appreciation of arts and culture in order to enable them to lead their lives worthily to the others as well as the society and the nation.

Following the introduction of development planning in Thailand as from 1961, Thailand's higher education development plan, as a component of the overall National Education Plan and with the National Scheme of Education as the guiding principle, has been integrated within the successive 5-year National Economic and Social Development Plans, linking the whole educational activities to the economic, social and cultural goals of the country's development.

The Sixth 5-year Higher Education Development Plan (1987-1991) sets forth the following policy guidelines :-

1. Administratively, to improve the administrative systems, especially the structure of recruiting administrators at all levels, and the rules and regulations that facilitate the development of higher education, to let the State's higher institutions mobilize resources and seek revenue from various sources for their operations, and to let the recipients of education share the responsibility and cost of their education in order to lessen the State's financial burden; to promote cooperation between the public and private sectors through co-operative projects; and to hasten the long-term master plan with consideration of the available resources, social and economic needs, and the local participation.

2. On the operation aspects, to produce graduates with quality, morality and ethics, able to adapt to socio-economic changes and capable of creating jobs on their own; to emphasize the graduate production in the field essential for the maintenance of national identity and academic development; to encourage private institutions to share the higher education responsibility; and to increase the higher education opportunity via open university.

3. Qualitywise, to make the curriculum flexible and congruent with the scientific and technological changes and progress, and to promote a balance between theory and practice; to improve the quality of instructors and personnel with a special emphasis on the instructors' efficiency in teaching and research, and to increase the balance in the proportion of instructor's qualifications; to encourage the production of Thai textbooks, the provision of modern equipment and facilities, and the improvement of information system and libraries for research and other educational purposes. And on equality, to increase the educational opportunity for the financially and socially handicapped by improving the admission and financial aid systems.

4. On research, community services and the promotion of arts and culture, to promote basic research for academic advancement and applied research for national development with a particular emphasis on using research for rural and industrial development; to encourage higher education institutions to

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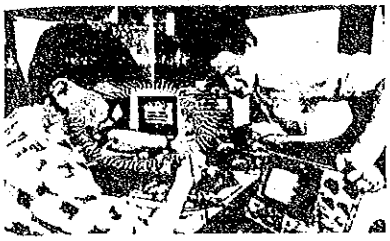
N.B.* Two Buddhist Colleges have been upgraded to university level:
- Mahamakut Buddhist University
- Mahachulalongkorn Buddhist University

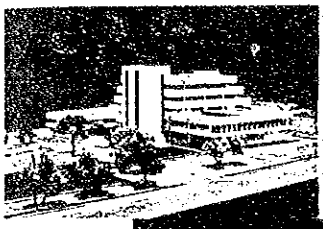
Degrees awarded: Bachelor of Arts (B.A)

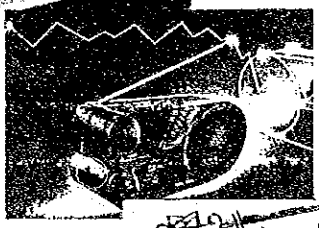
give various forms of academic services to society, emphasizing the lifelong education via a dissemination of knowledge and information, training, evaluation, and sharing management experience in order to enhance academic quality; and to encourage the institutions's activities regarding the maintenance of arts and culture.

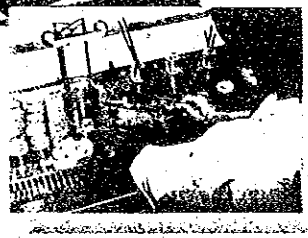
5. Finally on student affairs, to encourage students' participation in educational activities and social services, and to develop their personal growth and adaptability to social environment; to improve the vocational counseling and job placement services for students in higher education institutions; and to follow-up on the unemployment and work performance of graduates.

7. KMITL パンフレット



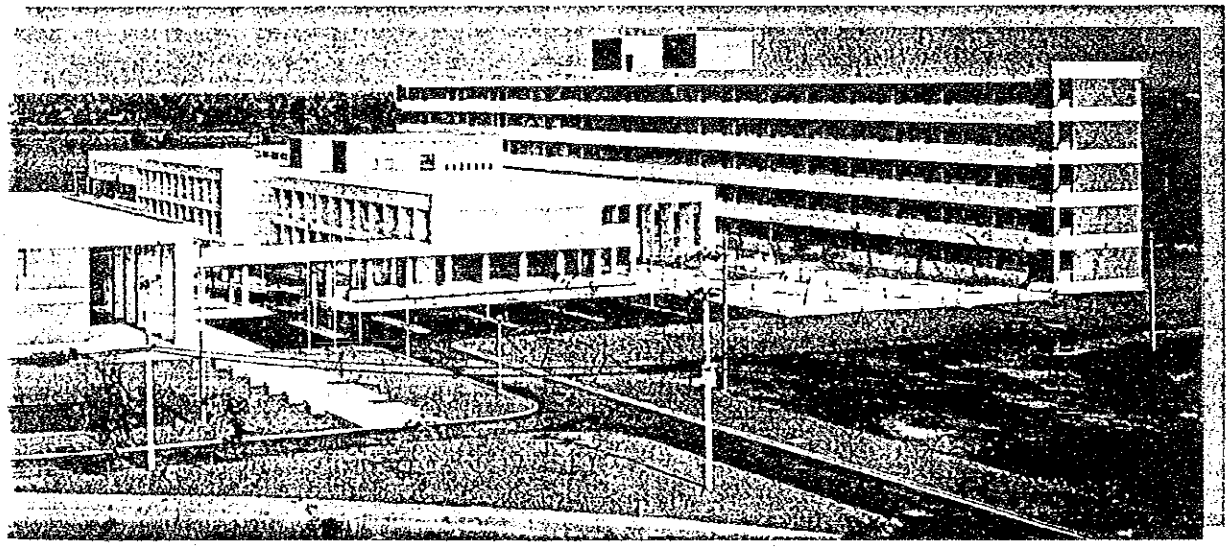






KMITL

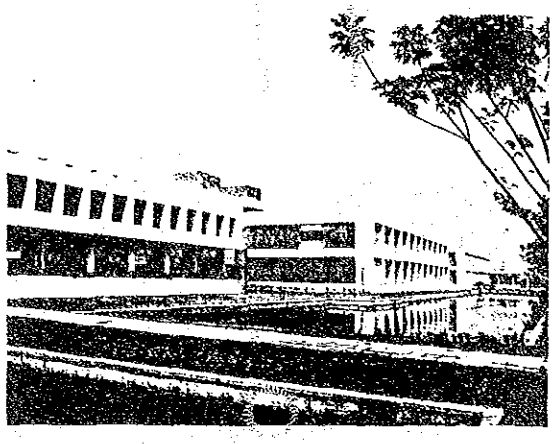
KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG BANGKOK THAILAND

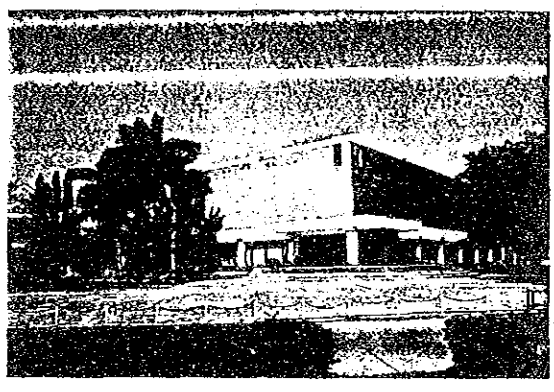


HRH Princess Maha Chakri Sirindhorn Academic Centre.

KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG

The history of King Mongkut's Institute of Technology Ladkrabang (KMITL) goes back to the establishment in 1960 of the Nondhaburi Telecommunications Training Centre with technical cooperation from the Government of Japan, which later became the Nondhaburi Institute of Telecommunications. In 1971, as the Nondhaburi Campus of King Mongkut's Institute of Technology, it merged with Thonburi Technical College and North Bangkok Technical College to form the newly established King Mongkut's Institute of Technology. In the following year the Nondhaburi Campus was relocated to a 160 hectare site in Ladkrabang District of Bangkok, and renamed the Ladkrabang Campus. The Campus began with two faculties : the Faculty of Engineering from the Nondhaburi Institute of Telecommunications and the Faculty of Architecture which was originally the College of Construction. In 1977 the Faculty of Industrial Education and Science was established, and in 1979 the Agricultural College which was on the same land became the Faculty of Agricultural Technology. The Computer Research and Service Centre was added in 1981and the Graduate School in 1986. This same year marked a significant milestone : KMITL was granted the status of an independent state university. In 1988 the Faculty of Industrial Education and Science were seperated into two faculties.





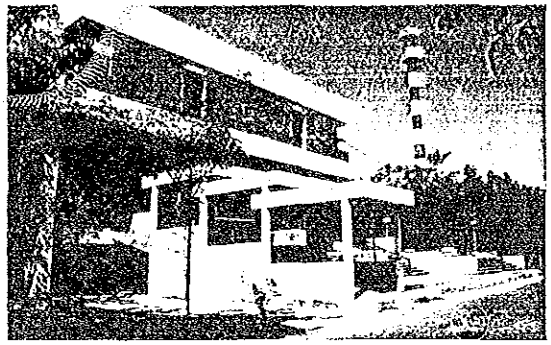
The aims of the Institute are to provide education and to promote research and development in science and technology for the industrial and economic progress of Thailand. The five faculties of KMITL cover in their curricula the widest range of technical disciplines relevant to the present day development of Thailand. But it is also a philosophy of independence and initiative in learning that has won recognition for KMITL graduates in industry as well as in all branches of public and private service where technology plays a role. Project work and industrial training form essential parts of KMITL education. Staff engage in research and technological development, resulting in publications in international journals, international awards, and contributions to industrial, agricultural and technical development.

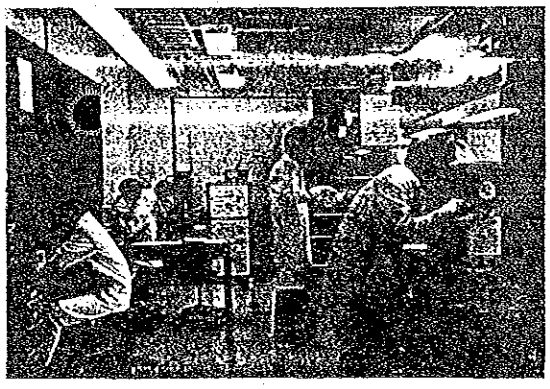
The founding and development of KMITL is a response to the immense expansion of technology occurring in these years. In Thailand, as elsewhere, it was realized that older universities based on the humanities and liberal arts did not adapt easily to the requirements of education in the new technology. KMITL has grown to meet the needs of a critical time for the industrial development of the country. Its advantageous and central location, excellent facilities and widely qualified staff have made it an attractive centre for international conferences and training courses. Both in national development and in an Asian regional role it follows the inspiration of King Mongkut, king from 1851 to 1868 and the Father of Thai Science, whose name it is honoured to bear.

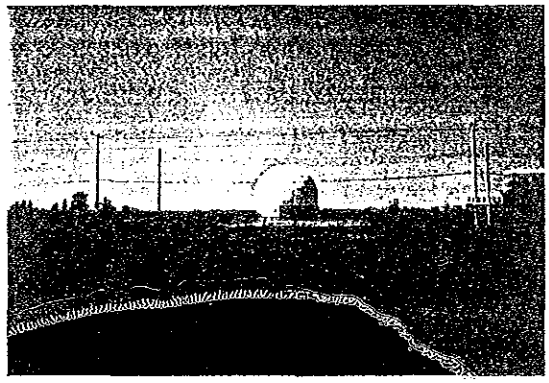
FACULTY OF ENGINEERING

The Faculty of Engineering, both in its undergraduate teaching and postgraduate research activities, covers a wide range of specializations. The undergraduate curriculum is broadly based to give a thorough and practice-oriented grounding in the theory and application of current engineering technology. Having learned basic theory and laboratory techniques in their first year, students choose their area of specialization and have a wide choice of elective courses. Emphasis is placed on an interactive relationship with staff in their research interests, and in the final year students devote most of their time to individual projects. Such project work frequently leads to commercial products or research results which have been published in local and international journals. Reflecting the very rapid development of computerization in Thailand, there is growing emphasis on computer applications.

Master's degree and doctoral programmes further promote specialization and research that are particularly relevant to the needs of the country. The success of the Faculty's educational programme is reflected in the immediate employment opportunities of graduates, many of whom undertake design and development work for local industry as well as international firms.







Programmes of Study

Bachelor of Engineering (B.Eng.)

Telecommunications Engineering
Electrical Engineering
Electronics
Computer Engineering
Control Engineering
Mechanical Engineering
Construction Engineering
Instrumentation Engineering
Agricultural Engineering

Bachelor of Industrial Technology (B.Ind.Tech.)

Telecommunications Technology
Industrial Electronics Technology
Industrial Computer Technology

Master of Engineering (M.Eng.)

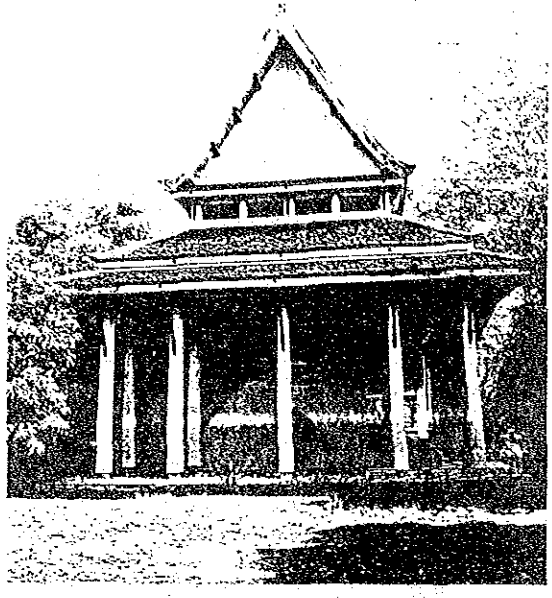
Electrical Engineering

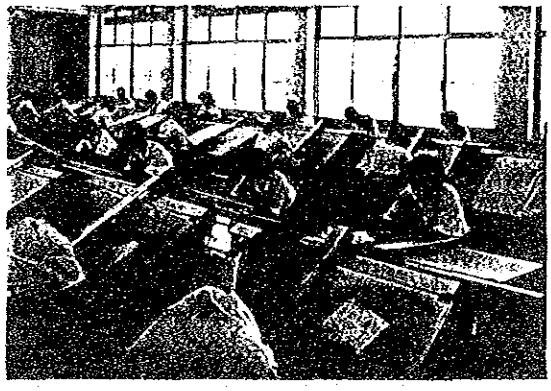
Doctor of Engineering (D.Eng.)

Electrical Engineering

FACULTY OF ARCHITECTURE

The teaching philosophy of the Faculty of Architecture has always been to apply knowledge in arts and technology acquired from academic learning and research to serve practical needs. Students are required to have at least one month of professional internship in the course of their study and, in the final semester, to carry out an individual project or thesis in the area of their specialization, based on the actual needs and problems of society. They are encouraged to participate in research projects and competitions, both at local and international levels, in which they have won a number of major awards. These efforts result in the good recognition our students and graduates receive from both academic and professional circles. At present the Faculty has its own library, well – equipped workshops, studios and laboratories.





Programmes of Study

Bachelor of Architecture (B.Arch.)

Architecture
Interior Architecture
Industrial Design, Furniture Design

Bachelor of Fine Arts (B.F.A.)

Communication Arts and Design

Master of Urban and Regional Planning (M.U.P.)

Urban and Environmental Planning

Master of Architecture (M.Arch.)

Tropical Architecture

Master of Interior Architecture (M.Arch)

Interior Architecture

FACULTY OF INDUSTRIAL EDUCATION

The Faculty of Industrial Education was originally established as the Faculty of Industrial Education and Science. The two distinct disciplines were separated to form two faculties in 1988. As the faculty responsible primarily for industrial education, its objectives are threefold:

1. To produce vocational teachers at degree level in order to teach professional subjects and technology in vocational colleges, technical colleges and professional training units in nonconventional education programmes.

2. To organize education in humanities, social science and languages, which are fundamental disciplines, for students in other faculties of the Institute.

3. To provide academic service to faculty staff and students for further study and research in humanities, social science and languages.

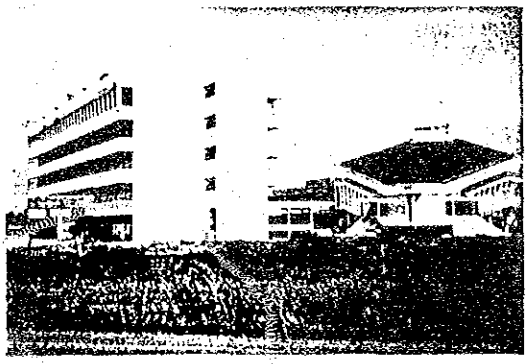
Programmes of Study

Bachelor of Science in Industrial Education (B.S.I.Ed.)

Architectural Education
Interior Architectural Education
Industrial Design Education
Telecommunications Engineering Education
Plant Production Technology Education
Animal Production Technology Education

Master of Industrial Education (M.I.Ed.)

Architecture
Vocational Education Administration



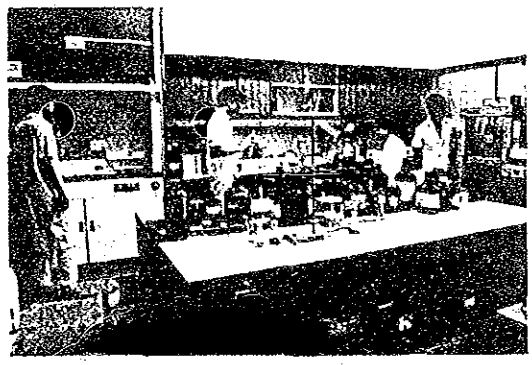
FACULTY OF SCIENCE

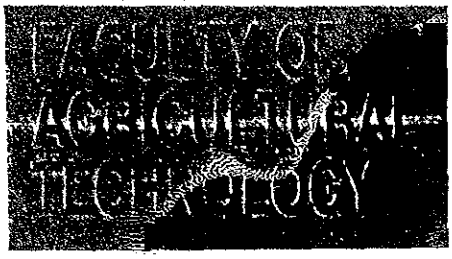
The Faculty of Science, the youngest faculty of the Institute, was formed in 1988 as the offshoot of the former Faculty of Industrial Education and Science. It offers four-year bachelor's degree programmes in five scientific disciplines, i.e. physics, chemistry, biology, statistics and mathematics, and conducts research and development in these areas. In addition, the Faculty organizes courses in basic science subjects for students of other specializations. In its activities on education, research and development in science, emphasis is placed on its applications, which are essential to the well-being of mankind. The basic and fundamental principles, however, are never neglected since proper applications are only possible through realization and understanding of such foundations. A strong industrial relation is recognized and has been developed.

Programmes of Study

Bachelor of Science (B.Sc.)

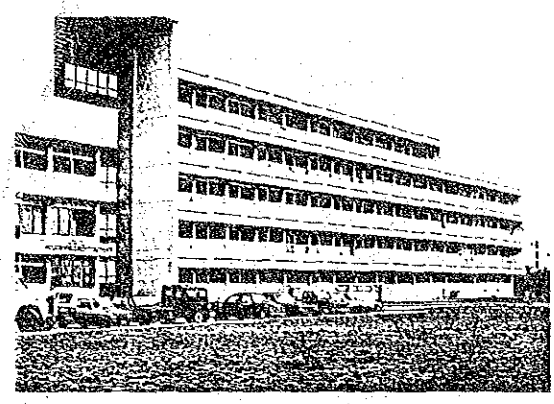
Applied Physics
Industrial Chemistry
Biotechnology
Applied Statistics
Applied Mathematics

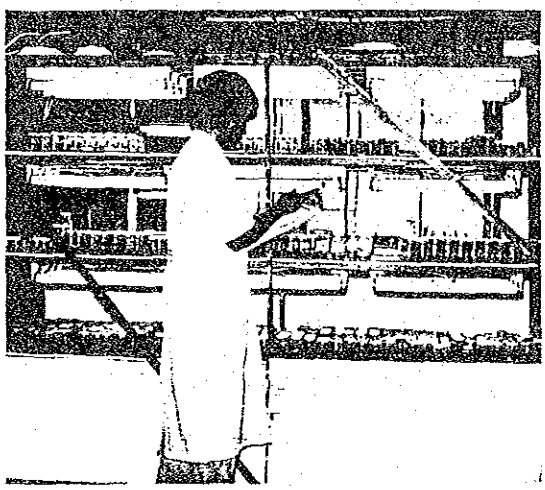


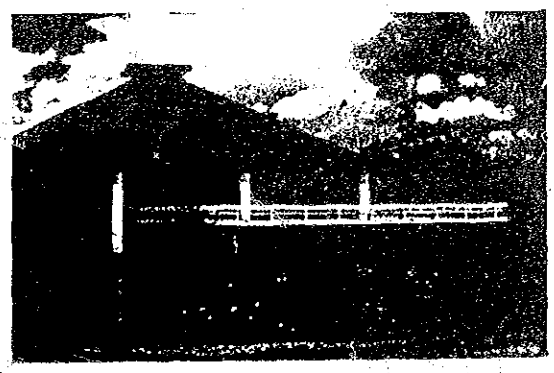


The Faculty of Agricultural Technology is dedicated to higher education in agriculture and is concerned with basic academic education, agricultural technology and research. In addition, the Faculty provides information on appropriate technology of local and national interest, and short training courses in various fields of agriculture.

The main purpose of the faculty is to maintain academic excellence in various fields of agricultural science, business and production by four-year bachelor's degree programmes. Upon graduation the graduates work in both private and government sectors and can further their technical experience as well as conduct research in their selected fields.







Programmes of Study

Bachelor of Science (B.Sc.)

- Plant Production Technology
- Animal Production Technology
- Agricultural Business Administration
- Agricultural Industry
- Agricultural Development
- Agriculture
  - Plant Pest Management
  - Agronomy
  - Horticulture
  - Soil Science
  - Animal Science

COMPUTER RESEARCH AND SERVICE CENTRE

The Computer Research and Service Centre houses a mainframe computer system, a number of microcomputers and workstations. The computing time and facilities are offered freely to all students and members of the Institute for the purposes of education, research and administration. Services are open during the normal office hours and also, by request, late at night and on weekends. Apart from the usual routine operations, the staff members of the Centre have consistently produced many outstanding research, development and engineering results. These are published in international journals of well-known and prestigious institutes such as the IEEE (USA) and the IEE (UK). The Centre has also won local recognition through awards from established organizations such as the National Research Council of Thailand (NRCT).

GRADUATE SCHOOL

The function of the Graduate School is to coordinate graduate studies in various faculties. Current graduate programmes include the following

Master of Engineering in Electrical Engineering
Master of Industrial Education in Architecture
Master of Industrial Education in Vocational Education Administration
Master of Urban and Regional Planning in Urban and Environment Planning
Master of Architecture in Tropical Architecture
Doctor of Engineering in Electrical Engineering

The following programmes have been proposed and will be offered in the near future.

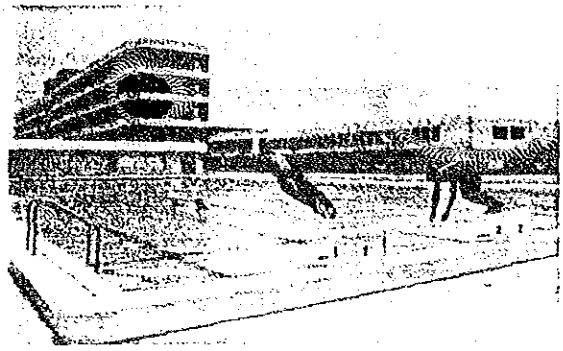
Master of Engineering in Mechnical Engineering
Master of Science in Applied Chemistry
Master of Science in Applied Physics
Master of Technology Management
Master of Science in Applied Mathematics
Master of Engineering in Computer

INTERNATIONAL TRAINING COURSES, WORKSHOPS AND OTHER ACTIVITIES

The Group training Course in Telecommunications Technology, jointly supported by the Royal Thai Government and the Government of Japan, has been organized annually since 1978. This three-month training course attracts about 20 telecommunications engineers from a majority of countries in Asia and the Pacific : Afghanistan, Bangladesh, Bhutan, Brunei, Burma, People's Republic of China, Fiji, Indonesia, Iran, Republic of Korea, Malaysia, Maldives, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand and Western Samoa.

Regional and national workshops, most of which are supported by Unesco, are organized 5-6 times a year. In addition there is professional training in various areas, e.g. telecommunications, industrial instrumentation, computer service, industrial chemistry, commercial beekeeping, animal husbandry, plant production technology and technical English. Industrial liaison is encouraged and participation is good.

STUDENT LIFE

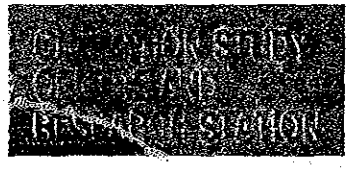


Realizing the significance of student activities as an integral part of education, the Institute strongly supports such activities and encourages students to participate. There are 21 student clubs organized for sports, academic subjects, hobbies, culture and communal service.

A large number of scholarships and financial assistance are available to students every year. Student services include accommodation, counselling, medical service, industrial training, career guidance and job placement service.

Student Enrolment 1987-1988

Undergraduates	3,931
Graduates	262
Total	4,193
Foreign student (Japanese)	1
Women as a percentage of total enrolment	19%
Teaching staff	372
Student:teacher ratio	11:1
Administrative staff	240



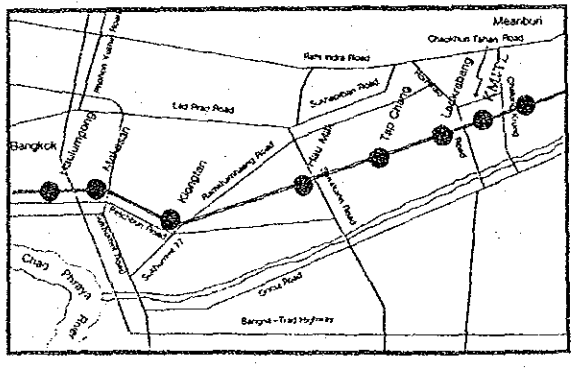
KMITL has acquired 11,224 rais (1,800 hectares) of land at Pathiu District, Chumphon Province to be used as the research field station for its expanding and diverse activities in all disciplines, covering agricultural technology, engineering, science, architecture and industrial education. Agricultural projects are now in progress.

FUTURE OF KMITL

In response to the needs of the country in science and technology, and to make a real contribution as a university dedicated to education, research and development in science and technology, KMITL plans to strengthen current faculties and establish new ones as follows:

1. Engineering
2. Architecture
3. Industrial Education
4. Agricultural Technology
5. Science
6. Heavy Engineering
7. Industrial Technology
8. Industrial Design and Communication Arts
9. Management Science

The completion in 1986 of the H.R.H. Princess Maha Chakri Sirindhorn Academic Centre, constructed with a grant aid from the Government of Japan for education and training of students in their first two years, has provided more facilities and will enable KMITL to increase student enrolment from 4,000 to 6,000 over 5 years. In the same period of time graduate studies will also be strengthened. With good planning, administration and operation, KMITL will develop toward the goal that is worthy of the respected name of King Mongkut, the Father of Thai Science.



Postal Address
King Mongkut's Institute of Technology Ladkrabang
Chalongkrung Road, Ladkrabang
Bangkok 10520, THAILAND
Office of the Rector
Tel. 326-9157, 326-9964
Telex 84967 INSMONG TH
Fax 3267333

8. History of Cooperation with the Government of Japan(KMITL)

สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง

ประวัติความร่วมมือกับรัฐบาลญี่ปุ่น

KING MONGKUTS'S INSTITUTE OF TECHNOLOGY LADKRABANG

HISTORY OF COOPERATION

WITH

THE GOVERNMENT OF JAPAN

สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง

ประวัติความร่วมมือกับรัฐบาลญี่ปุ่น

KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG

HISTORY OF COOPERATION

WITH

THE GOVERNMENT OF JAPAN

2503

21 สิงหาคม

ลงนามในข้อตกลงความช่วยเหลือทางวิชาการจากรัฐบาลญี่ปุ่นในการก่อตั้งศูนย์ฝึกโทรคมนาคม นนทบุรี

2504

16 กุมภาพันธ์

เปิดศูนย์ฝึกโทรคมนาคม นนทบุรี มี 2 หลักสูตร คือ

(1) หลักสูตรพิเศษ 6 เดือนสำหรับช่างเทคนิคที่ทำงานอยู่ในหน่วยงานสื่อสารโทรคมนาคมต่าง ๆ

(2) หลักสูตร 1 ปี สำหรับนักศึกษาที่สำเร็จ ชั้นปีที่ 2 ของหลักสูตรประกาศนียบัตรวิชาชีพ

หลักสูตรที่สอนประกอบด้วยวิชางานติดตั้งภายนอก โทรศัพท์ โทรเลข เทเลกซ์ คลื่นพาห์ วิทยุวีเอชเอฟ ไมโครเวฟ และการกระจายเสียงวิทยุ ในปีแรกนี้รับนักศึกษาเพียง 23 คน

พฤศจิกายน

ฯพณฯ เอช อิเคดะ นายกรัฐมนตรีญี่ปุ่น ได้เดินทางมาเยี่ยมชมศูนย์ฝึกโทรคมนาคม นนทบุรี

มิถุนายน

หลักสูตร 1 ปี ได้ปรับปรุงเป็นหลักสูตร 3 ปี ระดับประกาศนียบัตรวิชาชีพชั้นสูง (ปวส.) และรับนักศึกษาจำนวนเพิ่มขึ้น ได้เริ่มเปิดสอนวิชาการแพร่ภาพโทรทัศน์

2507

พฤษภาคม

ศูนย์ฝึกโทรคมนาคม นนทบุรี เปลี่ยนฐานะเป็นวิทยาลัยโทรคมนาคม นนทบุรี และได้รับอุปกรณ์การสอนภาคปฏิบัติการจากญี่ปุ่นเพิ่มขึ้น รวมทั้งรับนักศึกษาเพิ่มขึ้นด้วย

ธันวาคม

การก่อสร้างอาคาร 4 ชั้น ของวิทยาลัยโทรคมนาคม นนทบุรี เสร็จเรียบร้อย

2508

พฤษภาคม

มีพิธีมอบประกาศนียบัตรครั้งแรกของวิทยาลัยโทรคมนาคม นนทบุรี มีผู้สำเร็จการศึกษา 38 คน

1960

August 24

The Agreement of Japanese Technical Cooperation for the establishment of the Nondhaburi Telecommunications Training Center was signed between the representatives of the Royal Government of Thailand and the Government of Japan.

1961

February 16

The Nondhaburi Telecommunications Training Center was inaugurated. Two courses were offered:

(1) Six-month specialized course for technicians.

(2) One-year course for second-year vocational high school graduates.

The courses covered Outside Plant, Automatic Telephone, Telegraph, Telex, Carrier, VHF Radio, Microwave and Radio Broadcasting. In the first year there were 23 studetns.

November

The Prime Minister of Japan, H.E. Mr. H. Ikeda, visited the Nonhaburi Telecommunications Training Center.

June

The one-year course was expanded into a three-year technician diploma course with larger enrolment. The Television Broadcasting Section was started.

1964

May

The Nondhaburi Telecommunications Training Center was promoted to be the Nondhaburi Institute of Telecommunications (NIT), with upgraded facilities and expanded enrolment.

December

The construction of a 4-storey building at Nondhaburi was completed.

1965

May

The first graduation ceremony was held with 38 graduates.

สิงหาคม
ข้อตกลงความช่วยเหลือที่ได้กระทำไว้เมื่อปี 2503 สิ้นสุดลง แต่ความช่วยเหลือทางวิชาการจากรัฐบาลญี่ปุ่น ในด้านผู้เชี่ยวชาญ ทุนการศึกษา และอุปกรณ์การสอน ยังมีต่อไปภายใต้แผนโคลัมโบ

August
The 1960 Agreement of Japanese Technical Co-operation ended. But technical assistance, in terms of experts, fellowships and equipment was still provided by the Government of Japan under the Colombo Plan.

2510
กันยายน
ฯพณฯ อี ซาโตะ นายกรัฐมนตรี เดินทางมาเยี่ยมชมวิทยาลัยโทรคมนาคม นนทบุรี

1967
September
The Prime Minister of Japan, H.E. Mr. E. Sato, visited Nondhaburi Institute of Telecommunications.

2512
มิถุนายน
เปิดสอนหลักสูตรปริญญาตรี 2 ปี วิศวกรรมโทรคมนาคม ต่อจากหลักสูตร 3 ปี ประกาศนียบัตรวิชาชีพชั้นสูง ในปีแรกของหลักสูตรปริญญาตรี มีนักศึกษา 44 คน

1969
June
The three-year technician diploma course was extended by two more years to be a five-year engineering degree course in telecommunications. The first year of the degree course had 44 students.

2514
24 เมษายน
ได้มีพระบรมราชโองการให้จัดตั้งสถาบันเทคโนโลยีพระจอมเกล้าขึ้น โดยนัยแห่งพระราชบัญญัติสถาบันเทคโนโลยีพระจอมเกล้า พ.ศ. 2514 ด้วยการรวมวิทยาลัย 3 แห่งคือ วิทยาลัยโทรคมนาคม นนทบุรี วิทยาลัยเทคนิคพระนครเหนือ และวิทยาลัยเทคนิคธนบุรี และให้แต่ละแห่งเป็นวิทยาเขตของสถาบันฯ วิทยาลัยโทรคมนาคม นนทบุรี เปลี่ยนสถานะเป็นคณะวิศวกรรมศาสตร์ สถาบันเทคโนโลยีพระจอมเกล้าวิทยาเขตนนทบุรี ได้มีการตัดสินใจสร้างวิทยาเขตใหม่ขึ้นที่ลาดกระบัง ในที่ดินที่ท่านเลี่ยม พรตพิทยพยัต ทายาทของท่านเจ้าพระยาสุรวงษ์ไชยวัฒน์ (วร บุนนาค) บริจาคให้แก่ กระทรวงศึกษาธิการ ในปี พ.ศ. 2492 และตั้งชื่อวิทยาเขตว่า "วิทยาเขตเจ้าคุณทหาร ลาดกระบัง" เพื่อเป็นอนุสรณ์แด่ ท่านเจ้าพระยาสุรวงษ์ไชยวัฒน์

1971
April 24
King Mongkut's Institute of Technology (KMIT) was established by combining three technical colleges: **Nondhaburi Institute of Telecommunications, North Bangkok Technical College** and **Thonburi Technical College**, each as a campus of KMIT. The **Nondhaburi Institute of Telecommunications** became the **Faculty of Engineering, King Mongkut's Institute of Technology, Nondhaburi Campus.** The decision of construction of a new site in a land of about 250 acres at Ladkrabang was made. The land was donated to the Thai Government by the heiress of Chao Khun Taharn. The new campus is called "Chao Khun Taharn Ladkrabang Campus" in honour of the donor, or in short "KMIT Ladkrabang."

พฤษภาคม
นักศึกษาหลักสูตรปริญญาตรีรุ่นแรก จำนวน 34 คนสำเร็จการศึกษา

May
The first 34 students of the five-year engineering degree course graduated.

พฤศจิกายน
เริ่มตั้งกองทุนการศึกษาบริษัทร่วมทุนอิเล็กทรอนิกส์ญี่ปุ่น

November
The J.E.C. Scholarship (Japanese Electronic Companies Scholarship) was started.

2515
วิทยาลัยวิชาการก่อสร้างได้รับการเปลี่ยนสถานะ และโอนมาเป็นคณะสถาปัตยกรรมศาสตร์ สถาบันเทคโนโลยีพระจอมเกล้า วิทยาเขตเจ้าคุณทหาร ลาดกระบัง วิทยาเขตนนทบุรี ได้เริ่มย้ายมาดำเนินการที่วิทยาเขตลาดกระบัง

ตุลาคม
ประธานองค์การสื่อสารต่างประเทศญี่ปุ่น นายคานโนะ เดินทางมาเยี่ยมสถาบันฯ ที่นนทบุรี

18 ตุลาคม
พระบาทสมเด็จพระเจ้าอยู่หัวและสมเด็จพระนางเจ้าสิริกิติ์ พระบรมราชินีนาถ เสด็จพระราชดำเนินพระราชทานปริญญาบัตรแก่บัณฑิตของสถาบันฯ เป็นครั้งแรก

2516
มิถุนายน
การก่อสร้างอาคาร 6 ชั้นของคณะวิศวกรรมศาสตร์ ที่ลาดกระบังเสร็จเรียบร้อย

พฤศจิกายน
สถาบันเทคโนโลยีพระจอมเกล้าได้รับการโอนจากกระทรวงศึกษาธิการไปสังกัดทบวงมหาวิทยาลัย

2517
28 มิถุนายน
มีการลงนามในข้อตกลงให้ความช่วยเหลือแบบให้เปล่าจากรัฐบาลญี่ปุ่น ในการก่อสร้างอาคาร หอประชุมใหญ่ เมมมอเรียลฮอลล์ ห้องสมุด ยิมเนเซียม และอาคารปฏิบัติการวิศวกรรมโทรคมนาคม ให้แก่สถาบันเทคโนโลยีพระจอมเกล้าวิทยาเขตเจ้าคุณทหาร ลาดกระบัง

2518
มิถุนายน
คณะวิศวกรรมศาสตร์เปิดสอนหลักสูตรปริญญาโททางสาขาวิศวกรรมไฟฟ้า

18 พฤศจิกายน
การสร้างอาคารด้วยความช่วยเหลือแบบให้เปล่าจากรัฐบาลญี่ปุ่นเสร็จเรียบร้อย

1972
The Construction College which was in the same land at Ladkrabang joined KMIT Ladkrabang as the Faculty of Architecture. KMIT Nondhaburi began to operate at Ladkrabang.

October
The President of K.D.D., Mr. Kanno, visited KMIT at Nondhaburi.

October 18
Their Majesties the King and Queen presided over the graduation ceremony for the first group of the degree graduates.

1973
June
The construction of the main six-storey building of the Faculty of Engineering at Ladkrabang was completed.

November
King Mongkut's Institute of Technology was transferred from the Ministry of Education to the Ministry of University Affairs.

1974
June 28
The Agreement of Grant Aid from the Government of Japan for construction of buildings at ladkrabang Campus was made. The buildings consisted of Auditorium, Memorial Hall, Library, Gymmasium and Telecommunications Laboratory.

1975
June
The master's degree programme in electrical engineering was started in the Faculty of Engineering.

November 18
The construction of buildings under the Japanese Grant Aid was completed.

2519

16 มิถุนายน

พระบาทสมเด็จพระเจ้าอยู่หัวและสมเด็จพระนางเจ้าบรมราชินีนาถ เสด็จพระราชดำเนินทรงเปิดวิทยาเขตเจ้าคุณทหารลาดกระบัง และทอดพระเนตร "ลาดกระบังนิทรรศน์ ครั้งที่ 1"

1976

June 16

Their Majesties the King and Queen inaugurated Ladkrabang Campus and opened the First KMIT Ladkrabang Exhibition.

2520

จัดตั้งคณะครุศาสตร์อุตสาหกรรมและวิทยาศาสตร์ขึ้น โดยมีวัตถุประสงค์เพื่อผลิตครูอาชีวศึกษา สำหรับวิทยาลัยเทคนิคและโรงเรียนอาชีวต่าง ๆ และเพื่อการศึกษา ค้นคว้าและวิจัยทางด้านวิทยาศาสตร์

1977

The Faculty of Industrial Education and Science was established in KMIT Ladkrabang for training vocational teachers for technical and vocational schools and for providing education and promotion research in science.

18 ตุลาคม

ศาสตราจารย์ ดร.ชิงโยชิ มัทสุมาเอะ อธิการบดีมหาวิทยาลัยโตไก ประเทศญี่ปุ่น ได้รับพระราชทานปริญญาดุษฎีบัณฑิตกิตติมศักดิ์ สาขาวิศวกรรมศาสตร์

October 18

Professor Shigeyoshi Matsumae, President of Tokai University, received a Honorary Doctorate in Engineering from His Majesty the King at the graduation ceremony.

2521

20 กุมภาพันธ์

จัดอบรมนานาชาติด้านเทคโนโลยีโทรคมนาคมขึ้นเป็นครั้งแรก ให้แก่ผู้เข้าอบรมจากประเทศต่าง ๆ ในเอเชีย เป็นหลักสูตร 3 เดือน ด้วยความร่วมมือระหว่างรัฐบาลไทยและรัฐบาลญี่ปุ่น

1978

February 20

The first "Third Country" Group Training Course (3 months) in Telecommunications Technology was organized and jointly supported by the Government of Thailand and the Government of Japan.

12 กรกฎาคม

อดีตนายกรัฐมนตรีญี่ปุ่น นายเอ็น คิชิ เดินทางมาเยี่ยมชมสถาบันเทคโนโลยีพระจอมเกล้า ลาดกระบัง

July 12

The former Prime Minister of Japan, Mr. N. Kishi, visited KMIT Ladkrabang.

12 ธันวาคม

มีการลงนามในข้อตกลงความช่วยเหลือทางวิชาการกับรัฐบาลญี่ปุ่น ในด้านคอมพิวเตอร์ โซลิดสเตทอิเล็กทรอนิกส์และวิศวกรรมไฟฟ้า

December 12

The Agreement of Japanese Technical Cooperation for the Expansion Project was signed. The cooperation was in the field of computer, solid state electronics and electrical engineering.

2522

วิทยาลัยเกษตรกรรมเจ้าคุณทหาร ลาดกระบัง ได้รับการโอนมาสังกัดเป็นคณะเทคโนโลยีการเกษตร สถาบันเทคโนโลยีพระจอมเกล้า วิทยาเขตเจ้าคุณทหารลาดกระบัง

1979

The Agricultural College which was in the same land at Ladkrabang joined KMIT Ladkrabang as the Faculty of Agricultural Technology.

23 มิถุนายน

ประธานองค์การโทรศัพท์ญี่ปุ่น นายที อะคิคุซะ เดินทางมาเยี่ยมชมสถาบันเทคโนโลยีพระจอมเกล้าลาดกระบัง

June 23

The President of Nippon Telegraph and Telephone Public Cooperation, Mr. T. Akikusa, visited KMIT Ladkrabang.

18 ตุลาคม
ดร.เอส โยเนซาวา อดีตประธานองค์การโทรศัพท์ญี่ปุ่น ได้รับพระราชทานปริญญาดุษฎีบัณฑิตกิตติมศักดิ์ สาขาวิศวกรรมศาสตร์

2523
2 พฤษภาคม
นายเค อะริตะ ประธานองค์การความร่วมมือต่างประเทศของญี่ปุ่น เดินทางมาเยี่ยมชม สถาบันเทคโนโลยีพระจอมเกล้าลาดกระบัง

22 สิงหาคม
จัดงานฉลองครบรอบ 20 ปีของความร่วมมือของรัฐบาลญี่ปุ่นแก่สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง

2524
จัดตั้งสำนักวิจัยและบริการคอมพิวเตอร์

2525
พฤษภาคม
คณะวิศวกรรมศาสตร์ เปิดสอนหลักสูตรปริญญาเอกทางสาขาวิศวกรรมไฟฟ้า

18 ตุลาคม
นาย เอส ทานากะ อธิบดีกรมควบคุมการสื่อสารวิทยุ กระทรวงไปรษณีย์และโทรคมนาคม ญี่ปุ่น อดีตหัวหน้าผู้เชี่ยวชาญประจำพระจอมเกล้า ลาดกระบัง (2511-2524) ได้รับพระราชทานปริญญาดุษฎีบัณฑิตกิตติมศักดิ์ สาขาวิศวกรรมศาสตร์

2526
16 มิถุนายน
พระบาทสมเด็จพระเจ้าอยู่หัว และสมเด็จพระเทพรัตนราชสุดา สยามบรมราชกุมารี เสด็จพระราชดำเนินมาทรงเปิดและทอดพระเนตร "งานลาดกระบังนิทรรศน์ ครั้งที่ 2"

27 พฤศจิกายน
สมเด็จพระเทพรัตนราชสุดา สยามบรมราชกุมารี เสด็จพระราชดำเนินมาทรงดนตรีไทยร่วมกับนักศึกษา

October 18
Dr. S. Yonezawa, former President of NTTPC, received an Honorary Doctorate in Engineering from His Majesty the King at the graduation ceremony.

1980
May 2
The President of JICA, Mr. K. Arita, visit KMIT Ladkrabang.

August 22
The Celebration Ceremony of the Twentieth Anniversary of Japanese Cooperation with KMIT Ladkrabang.

1981
The Computer Research and Service Center was established.

1982
May
The doctor's degree programme in electrical engineering was started in the Faculty of Engineering.

October 18
Mr. S. Tanaka, Director-General of Radio Regulatory Bureau, Ministry of Posts and Telecommunications of Japan, and former Chief Expert at KMIT Nondhaburi, received an Honorary Doctorate in Engineering from His Majesty the King at the graduation ceremony.

1983
June 16
His Majesty the King and H.R.H. Princess Maha Chakri Sirindhorn graciously opened the Second KMIT Ladkrabang Exhibition.

November 27
H.R.H. Princess Maha Chakri Sirindhorn graciously joined the annual university Thai classical music concert which was organized by the students.

2527

15 กรกฎาคม

มีการลงนามในข้อตกลงให้ความช่วยเหลือแบบให้เปล่าของรัฐบาลญี่ปุ่น ในการก่อสร้างอาคารเรียน และอาคารต่าง ๆ เช่น อาคารอำนวยการ อาคารสันทนาการ อาคารศูนย์สนเทศ หอพักนักศึกษา เป็นมูลค่า 3,690 ล้านเยน (ถ้าคิดอัตราแลกเปลี่ยน 11 บาท ต่อ 100 เยน จะเป็นเงินประมาณ 400 ล้านบาท) พิธีลงนามมีขึ้นที่ทำเนียบรัฐบาล โดย ฯพณฯ รัฐมนตรีต่างประเทศของไทย และญี่ปุ่นลงนามร่วมกัน

2528

20 มีนาคม

สมเด็จพระเทพรัตนราชสุดา สยามบรมราชกุมารี เสด็จพระราชดำเนินทรงวางศิลาฤกษ์กลุ่มอาคารศูนย์เรียนรวม "สมเด็จพระเทพรัตนราชสุดาฯ" ที่ก่อสร้างด้วยความช่วยเหลือแบบให้เปล่าของรัฐบาลญี่ปุ่น

23 สิงหาคม

จัดงานฉลองครบรอบ 25 ปี ของความร่วมมือของรัฐบาลญี่ปุ่นแก่สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง

2529

20 กุมภาพันธ์

สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง ได้เปลี่ยนฐานะจาก "วิทยาเขต" เป็น "มหาวิทยาลัย" ตามบัญญัติสถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบังฯ พ.ศ. 2528

2530

16 มิถุนายน

พระบาทสมเด็จพระเจ้าอยู่หัว และสมเด็จพระนางเจ้าพระบรมราชินีนาถ เสด็จพระราชดำเนินมาทรงเปิดพระบรมราชานุสาวรีย์ พระบาทสมเด็จพระจอมเกล้าเจ้าอยู่หัว กลุ่มอาคารศูนย์เรียนรวมสมเด็จพระเทพรัตนราชสุดาฯ และทอดพระเนตรงาน "ลาดกระบังนิทรรศน์ ครั้งที่ 3"

1984

July 15

The Agreement of Grant Aid from the Government of Japan for the Expansion of KMIT Ladkrabang was signed at the Government House by the Foreign Ministers of Thailand and Japan. The Grant Aid provided 3,690 million yens for construction of classroom buildings as well as information center building, administration building, cafeteria building and domitories.

1985

March 20

H.R.H. Princess Maha Chakri Sirindhorn presided over the Foundation Stone Laying Ceremony of the buildings of the H.R.H. Princess Maha Chakri Sirindhorn Academic Center constructed under grant aid from the Government of Japan.

August 23

Celebration of the Twenty-fifth Anniversary of Japanese Cooperation with KMIT Ladkrabang.

1986

February 20

KMIT Ladkrabang (KMITL) became a full state university as the result of KMITL Royal Act 1985.

1987

June 16

Their Majesties the King and Queen graciously inaugurated King Mongkut's Statue, the H.R.H. Princess Maha Chakri Sirindhron Academic Center, and opened the Third KMITL Ladkrabang Exhibition.

LIST OF JAPANESE EXPERTS AT KMIT
(NONDHABURI-LADKRABANG)
1960-1983

No.	Name	Duration	Home Post
1	S. Suzuki	Nov. 18, 1960 – Jul. 17, 1961	NTT
2	J. Nagai	Nov. 18, 1960 – Jul. 30, 1963	〃
3	S. Arai	Nov. 18, 1960 – Nov. 27, 1963	〃
4	Y. Inada	Nov. 18, 1960 – Jul. 30, 1963	〃
5	M. Okada	Nov. 18, 1960 – Jul. 11, 1963	〃
6	R. Inano	Nov. 18, 1960 – Dec. 3, 1963	〃
7	T. Fukai	Nov. 18, 1960 – Dec. 5, 1963	〃
8	Y. Oshima	Nov. 17, 1961 – Aug. 31, 1965	〃
9	I. Hirajima	Jul. 1, 1961 – Jul. 22, 1965	〃
10	K. Watanabe	Jul. 1, 1963 – Jul. 25, 1965	〃
11	A. Aoyama	Jul. 1, 1963 – Aug. 28, 1965	〃
12	K. Muramatsu	Nov. 4, 1963 – Aug. 24, 1965	〃
13	I. Kinoshita	Nov. 4, 1963 – Aug. 26, 1965	〃
14	Enomoto	Nov. 4, 1963 – Aug. 21, 1965	〃
15	S. Matsumura	Oct. 2, 1963 – May 4, 1965	KDD
16	T. Yonezawa	Feb. 1964 – Sep. 9, 1965	NHK
17	K. Inchinose	Feb. 10, 1964 – Sep. 10, 1965	〃
18	T. Iwashimizu	Jun. 24, 1965 – Jun. 23, 1967	NTT
19	M. Nidaira	Jun. 24, 1965 – Jun. 23, 1968	〃
20	S. Nakamura	Jul. 22, 1965 – Aug. 21, 1968	MPT
21	M. Yamada	Jul. 22, 1965 – Jul. 21, 1967	NTT
22	J. Uno	Jul. 22, 1965 – Jul. 21, 1967	NHK
23	H. Okui	Jul. 22, 1965 – Jul. 21, 1967	〃
24	H. Ishii	Jun. 7, 1967 – Jun. 6, 1970	NTT
25	H. Inatomi	Jun. 30, 1967 – Jun. 29, 1970	NHK
26	Y. Komazawa	Jun. 30, 1967 – Jun. 29, 1970	〃
27	M. Matsumoto	Jun. 30, 1967 – Jun. 29, 1970	NTT
28	T. Masuda	Jun. 10, 1968 – Jun. 9, 1971	〃
29	S. Tanaka	Aug. 7, 1968 – Aug. 6, 1971	MPT
30	S. Saito	Oct. 25, 1968 – Oct. 24, 1971	NTT
31	M. Okuma	Oct. 25, 1968 – Oct. 24, 1971	KDD
32	S. Hata	May 30, 1970 – Jul. 10, 1971	NHK
33	Y. Tamura	May 30, 1970 – May 29, 1972	〃
34	M. Soga	May 30, 1970 – May 29, 1972	NTT
35	Y. Ito	Jun. 24, 1970 – Oct. 23, 1972	〃
36	S. Tokuda	Oct. 20, 1971 – Apr. 30, 1974	MPT
37	S. Higuma	Oct. 20, 1971 – May 19, 1974	KDD
38	H. Enomoto	May 1, 1972 – Apr. 30, 1974	NTT
39	M. Iida	May 20, 1972 – May 19, 1974	Tokai
40	K. Karasaki	Jul. 10, 1972 – Jul. 9, 1974	NHK
41	M. Ando	Jul. 10, 1972 – Apr. 15, 1977	NTT
42	M. Tsuji	Oct. 13, 1972 – Oct. 12, 1974	〃
43	M. Teramoto	Jun. 2, 1973 – Apr. 15, 1977	Tokai
44	K. Nakada	Apr. 16, 1974 – Jan. 14, 1975	MPT
45	S. Michihiro	May 8, 1974 – Jan. 31, 1976	Tokai
46	K. Nagayama	Jun. 28, 1974 – Aug. 31, 1976	NHK
47	Y. Ito	Mar. 28, 1975 – Oct. 15, 1977	NTT
48	K. Kubota	Jan. 17, 1978 – Mar. 30, 1981	〃
49	K. Sato	Sep. 20, 1979 – Feb. 1, 1983	Tokai
50	I. Kinoshita	Mar. 7, 1980 – Mar. 6, 1982	MPT
51	T. Utsumi	Jul. 4, 1980 – Jul. 3, 1982	Tokai
52	Y. Kaku	May 29, 1981 – Aug. 30, 1983	NTT
53	Y. Yasumura	Feb. 2, 1983 – Aug. 30, 1983	Tokai
54	M. Komoto	Aug. 18, 1986 –	NTT

Note: MPT : Ministry of Posts and Telecommunications
NTT : Nippon Telegraph & Telephone Public Corporation
KDD : Kokusai Denshin Denwa Co., Ltd.
NHK : Japan Broadcasting Corporation (Nippon Hoso Kyokai)
Tokai : Tokai University

Current Japanese Experts at KMITL

54.	M. Komoto	18 Aug. 1986 - present	NTT	Telecommunications
55.	T. Iijima	18 Apr. 1988 - present	Tokai	Mechanical Engineering
56.	M. Kawamura	31 May 1988 - present	MPT	Data Communication
57.	Y. Tamura	31 May 1988 - present	NHK	Broadcasting
58.	H. Kato	30 Jun. 1988 - 29 Sep. 1989	JICA	Coordinator
59.	H. Sakuraba	20 Sep. 1989 - present	JICA	Coordinator

Technical Cooperation Project
from the Government of Japan
to King Mongkut's Institue of Technology Ladkrabang

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1. Duration

   5 years from 1988 - 1993

2. Fields

   (I) Telecommunications

   (II) Broadcasting

   (III) Data Communication

   (IV) Mechanical Engineering

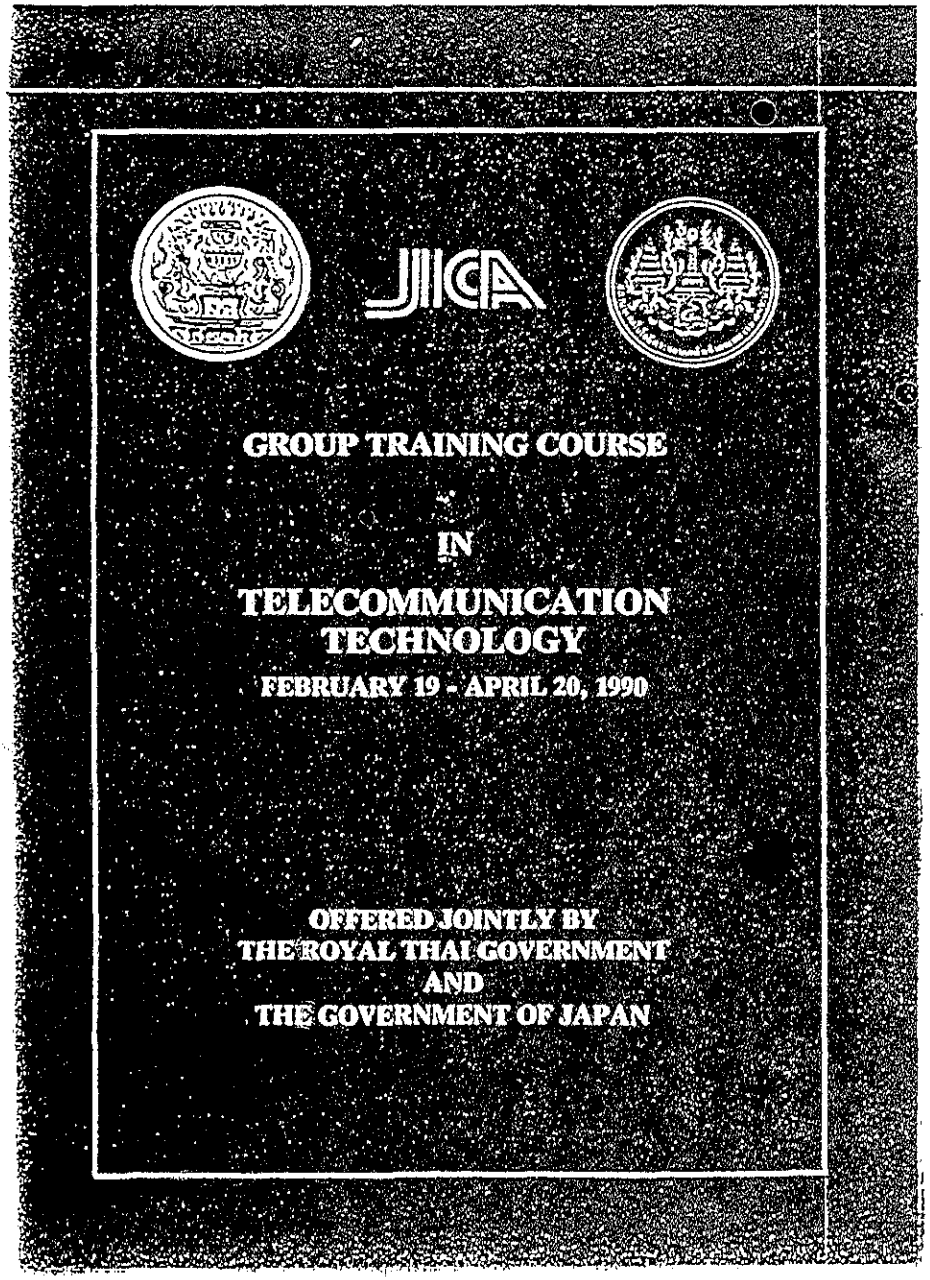
3. Components

   (I) Equipment

   (II) Experts from Japan

   (III) Fellowships for KMITL counterparts for training in Japan

9. Group Training Course in Telecommunication Technology(KMITL)



GROUP TRAINING COURSE IN TELECOMMUNICATION TECHNOLOGY

FEBRUARY 19 - APRIL 20, 1990

The Group Training Course in Telecommunication Technology with special emphasis on digital communication will be conducted jointly by the Royal Thai Government and the Government of Japan as part of its Technical Cooperation Programme.

The course arrangements are made by the Department of Technical and Economic Cooperation (DTEC) and the Japan International Cooperation Agency (JICA) in collaboration with the King Mongkut's Institute of Technology Ladkrabang (KMITL) and other related organizations in Thailand.

PURPOSE

The purpose of this course is to provide participants with comprehensive theoretical and practical training in telecommunication technology so that participants will be able to acquire sufficient knowledge in this field.

QUALIFICATIONS

Applicants should :

(1) be nominated by their governments.
(2) have completed, at least, the associated degree or diploma in science or engineering or equivalent ;
(3) have sufficient command of spoken and written English ;
(4) be under forty (40) years of age ;
(5) have appropriate physical fitness ;
(6) have at least three years working experience in telecommunication field.
(7) pregnancy is regarded as a disqualifying condition for participation in the course.

DURATION

9 weeks from February 19 - April 20, 1990.

LANGUAGE

The course will be conducted in English.

INSTITUTION

The course will be conducted by :

Faculty of Engineering
King Mongkut's Institute of Technology - Ladkrabang
Bangkok 10250, Thailand
TELEX : 84967 INSMONG TH, FAX : 3267333

PROCEDURES FOR APPLICATION

(1) A government desiring to nominate an applicant for the course should fill in and forward three (3) copies of the Nomination Form for each applicant to the Government of Thailand through the Royal Thai Embassy or Consular Representative in their countries or send directly to the Thai International Cooperation Programme, Department of Technical and Economic Cooperation, 962 Krung Kasem Road, Bangkok 10100, THAILAND, not later than December 10, 1989. For the convenience in accommodation arrangement, it is recommended to nominate in even number.
(2) the Royal Thai Government will inform the applying governments whether or not the nominees are acceptable in the course not later than January 15, 1990.

ALLOWANCE AND EXPENSES

The following allowance and expenses will be borne by the Royal Thai Government and the Government of Japan :

(1) Economy class round trip air ticket to and from the International Airport and Bangkok designated by DTEC will be issued to the approved candidate. ONE WAY AIR TICKET will be sent to the applicant in advance by the representative of the Thai Airways International Ltd., in the participant's country. A return air ticket will be issued to each participant prior to the course completion. THOSE WHO BUY THE AIR TICKETS BY THEM-

SELVES SHOULD TAKE THEIR OWN FULL RESPONSIBILITY, THE EXPENSE OF WHICH COULD NOT BE REIMBURSED FROM THE COURSE MANAGEMENT.

(2) Living allowance at the rate of ฿ 700 per day (equivalent to approximately US $ 27, will be paid to the participant when arriving Bangkok. This living allowance is to cover boarding and lodging, local transportation and other personal daily expenses. However, each participant is suggested to have a pocket money for a few day expenses prior to the allowance payment.

(3) In accordance with relevant regulation. Free minor medical treatment will be provided for participant who becomes ill during his/her stay in Thailand. Health Insurance will be provided.

(4) Transportation for observation tour outside Bangkok will be provided by the Royal Thai Government for authorized study tours in Thailand.

FACILITIES PROVIDED

The following facilities will be provided by the Royal Thai Government through the Department of Technical and Economic Cooperation :-

(1) Arrangements for the training programme ;

(2) Tax clearance including the arrangement for the extension of the permit to stay in Thailand.

(3) Orientations (Briefing upon arrival) :

(4) Accommodation reservation.

CERTIFICATE

Participants who have successfully completed the course will have the right to receive certificate awarded by JICA/DTEC/KMITL.

OTHER INFORMATION

(1) Participants are required to arrive in Thailand on the date as designated by the DTEC after its confirmation of acceptance. However, it will be finally confirmed through the airtickets sent to the participants. (See also Allowance & Expenses item 1)

(2) Participants should assume responsibility for other expenses occured during travel between the participants' home countries and Thailand.

(3) Participants shall make their own arrangements for any financial matters of private nature not provided for by DTEC.

(4) Upon arrival at Bangkok International Airport, participants will be met by a representative of DTEC. If not, each participant must take an AIRPORT JOINING BUS (Not a Taxi/Limousine) at the airport to the reserved hotel (Royal Hotel, Ratchadomnoen Avenue Tel : 2229111-9). The Payment for Bus-service could be reimbursed afterwards. PARTICIPANTS WHO DO NOT FOLLOW THIS SUGGESTION SHOULD TAKE THEIR OWN RESPONSIBILITY. Necessary care of the participants, thereafter, will be taken by DTEC and KMITL throughout the course duration.

(5) Participants are required to observe strictly on the course schedule.

(6) Application to change or alter the training subject or to extend the training period will not be accepted.

(7) Participants are requested not to bring any member of their families. The living allowance paid by the Royal Thai Government and the Government of Japan is sufficient only to cover normal living expenses for one person. No allowance of any kind will be paid for their dependants.

(8) For administrative arrangements, participants are requested to provide four (4) copies of their photograph attached to their Application Forms.

(9) The Royal Thai Government and the Government of Japan will not be indemnified or liable for accident disability and loss of life resulting from participation in the programme.

(10) Further relevant information is available at the following address :-

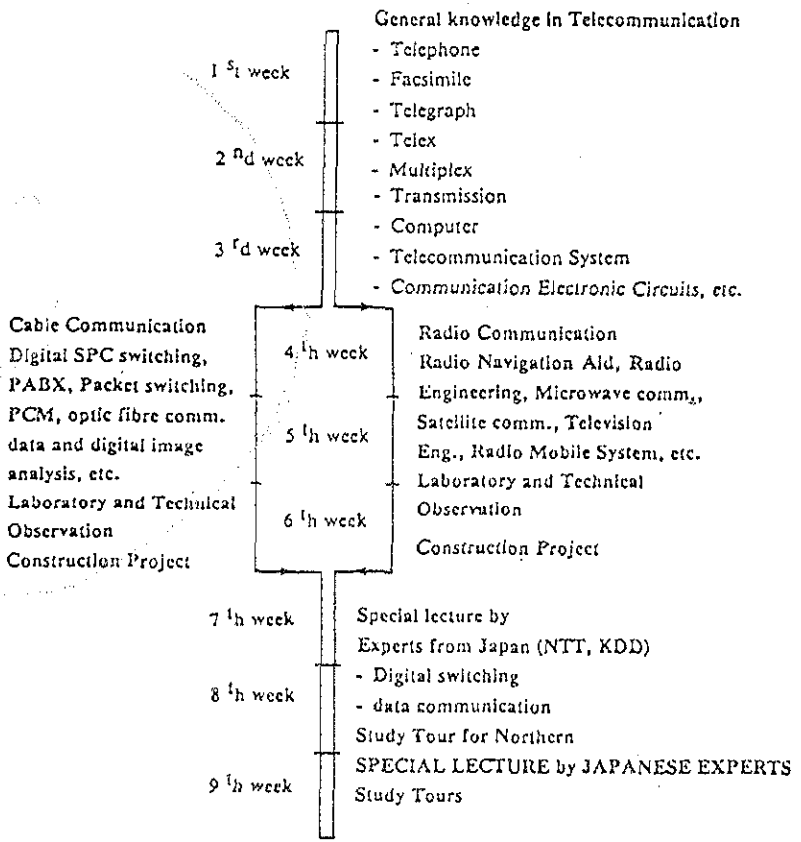
Thai International Cooperation Programme
Department of Technical and Economic
Cooperation (DTEC)
962 Krung Kasem Road, Bangkok 10100
THAILAND
Tel. (02) 2810552, 2821188
Cable address "DEPTECO THAILAND"

(11) Prior to arrival in Thailand, all participants must first obtain the appropriate visas from the Royal Thai Embassy or Consular Representative in their countries.

(12) Those, who are from countries where the Royal Thai Embassy or Consulate is not available, can apply "THE VISA ON ARRIVAL" at Bangkok International Airport upon their arrival. The advance payment for application fee for "THE VISA ON ARRIVAL" is Baht 300.- which will be reimbursed afterwards.

(13) Participants are requested to confirm the flight details and date of arrival in Bangkok to the DTEC at least 3 days before the course commencement.

TENTATIVE PROGRAMME



NOTICE: At the beginning of the forth week participants will be divided into two groups. The first group for cable communication and the second group for radio communication as indicated above.

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10. 1978-87 10th Anniversary The Group Training Course in Telecommunications Technology(KMITL)

1978 – 1987

10th ANNIVERSARY

The Group Training Course

in

Telecommunications Technology

Jointly Conducted by

THE ROYAL GOVERNMENT OF THAILAND

and

THE GOVERNMENT OF JAPAN

at

Faculty of Engineering

King Mongkut's Institute of Technology Ladkrabang

Bangkok, Thailand.

TEN YEARS
OF
THE GROUP TRAINING COURSE IN TELECOMMUNICATIONS TECHNOLOGY

The Group Training Course in Telecommunications Technology was started in 1978 with joint support from the Royal Government of Thailand under the Thai Aid Programme of Department of Technical and Economic Cooperation (DTEC) and the Government of Japan under the Third Country Training Programme of Japan International Cooperation Agency (JICA)

The course was conducted every year in January to March with approximately three-month period at the Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang (KMITL), Bangkok. The course was offered to telecommunication engineers in almost all countries in Asia and the Pacific. The countries and the number of participants in the past ten years from 1978 to 1987 are shown in Table 1.

Table 1 Countries and Number of Participants.

YEAR / COUNTRY	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Total
1. Afghanistan	2	2	–	–	–	–	–	–	–	–	4
2. Bangladesh	–	1	–	4	–	–	–	1	–	1	7
3. Bhutan	–	–	–	1	–	1	1	–	–	2	5
4. Brunei	–	–	–	–	1	1	1	2	2	1	8
5. Burma	–	–	–	–	–	–	–	3	1	–	4
6. China P.R.	–	–	–	2	2	3	–	2	–	–	9
7. Fiji	–	–	–	–	–	1	–	1	–	1	3
8. Indonesia	2	2	1	2	–	3	–	–	4	2	16
9. Iran	2	–	1	–	1	–	2	2	–	–	8
10. Korea (S)	–	–	–	–	1	1	–	1	–	–	3
11. Malaysia	2	–	–	–	–	2	–	1	3	2	10
12. Maldives	–	–	1	–	–	–	–	1	1	1	4
13. Napal	1	1	2	2	–	–	2	–	1	1	10
14. Pakistan	–	–	–	–	1	1	2	1	1	–	6
15. Papua New Gainea	–	–	–	–	2	–	2	–	–	–	4
16. Philippines	3	2	2	2	1	1	–	2	1	1	15
17. Singapore	2	–	1	1	1	–	–	–	–	–	5
18. Sri Lanka	2	2	1	3	–	1	2	1	2	2	16
19. Vanuatu	–	–	–	–	–	–	–	–	–	2	2
20. Thailand	–	–	–	2	3	3	4	4	4	5	25
Total	16	10	9	19	13	18	16	22	20	21	164
Grand Total											164

The programme of the training course covers almost all important topics in telecommunications technology : telegraphy, telephony, cable communication, radio communication, microwaves, television broadcasting, navigational aid, digital switching, optical communication, satellite communication, etc.

Each year experts from Japan were invited to give lectures on special topics. The list of topics and names of experts in the past 10 years 25 shown in Table II.

Table II Special Lectures by Japanese Experts

Year	Topic	Expert		Organization
1979	Facsimile	Mr. Yuzo	SUGIURA	NTT
1980	Radio Navigational Sids	Mr. Kouhei	TAKAO	MPT
	Radar	Mr. Yoshio	FUTAKAMI	JRC
		Mr. Takao	IWASHIMIZU	NTT
1981	Optical Communication	Mr. Hideaki	TAKASHIMA	NTT
	"	Mr. Hajime	TAKASHIMA	NTT
1982	Microwave	Mr. Kiyahiko	SUZUKI	KDD
	Transmission	Mr. Kanio	OKURA	NTT
	Telephone Switching	Mr. Masayoshi	SHIMITSU	NTT
1983	Digital Microwave	Mr. K.	AMANO	KDD
	Optical Communication	Mr. Tetsuro	YAMAZOE	NTT
1984	Digital Telephone Switching	Mr. Ichiro	TAKENAKA	NTT
	Digital Facsimile	Mr. Kazuo	HASUIKE	KDD
1985	Digital Telephone Switching	Mr. Katsuyuki	YAMAZAKI	KDD
	"	Mr. Norihiko	SATO	KDD
	Digital Transmission	Mr. Tsunehiro	SUZUKI	NTT
	New Communication Service Network	Mr. Yoshiaki	SHIODA	NTT
1986	Digital Microwave Communication System	Mr. Akira	SATO	KDD
	Optical Communication System	Mr. Kenji	TANAKA	NTT
1987	Local Area Network	Mr. Shigeru	KITAHARA	NTT
	Business Satellite Services	Mr. Shigenobu	HATAKEYAMA	KDD

Notes: MPT - Ministry of Post of Telecommunications
NTT - Nippon Telegraph and Telephone Corporation
KDD - Kokusai Denshin Denwa
JRC - Japan Radio Co., Ltd.

The training course also have contributions from senior engineers from local telecommunication authorities. The list of contributors is shown in Table III.

Table III. Names of Thai Contributors

Name	Position	Organization
Mr. Surin Vanichsonee	Director, Director Office	TOT
Mr. Direk Charoenphol	Director, Telephone Management Project Office	Telephone Organization of Thailand (TOT)
Dr. Paiboon Limpaphayom	Assistant Director General	TOT
Dr. Kittin Udomkiat	Director, Telecom Services Division	Communication Authority of Thailand (CAT)
Dr. Somkaun Bruraminhent	Director NCOM and NAOM Center	TOT
Dr. Suthi Aksornkitti	Dean, Faculty of Engineering	KMIT North Bangkok
Mr. Boonklee Plungsiri	Director, Telex Division	CAT
Mr. Udom Janopas	Station Master Engineer	Channel 3, Television Station
Mr. Sukit Tirawatanawit	Senior Engineer Planning and Project Division	TOT
Mr. Suvit Viboolsreth	Director, Remote Seming Division	Thailand Remote Seming National Research Council
Lt. Un Suntornwat	Instructor Transmission Eng. TTC.	TOT
Mr. Kraisorn Pornsutee	Director, Radio Reguration Division	Postand Telegraph Department
Mr. Chaichana Phibulthanuvat	Chief, Com. maintenance Section	Civil Aviation Training Center of Thailand
Mr. Udom Chomsin	Station Master Receiving Station	Aeronautical Radio of Thailand
Dr. Tawat Meksawarn	Deputy Director General	Public Relation Department
Mr. Chaya Jivacate	Director, Communication System Division	Electricity Generating An thority of Thailand (EGAT)
Dr. Amarit Bhumiratana	Director, Communication System Division	EGAT
Mr. Thamanoon Julmanichoti	Director, International Switching	CAT
Mr. Ardharn Kullavanijana	Chief, Air Navigation Sids Maintenance Sectives	Department of Aviation
Mr. Swat Srikam	Assistant Director General	TOT

Name	Position	Organization
Dr. Priti Hetrakul	Director, International Telecom Division	CAT
Mr. Vorabhandha Menasveta	Director, Radio Service Division	CAT
Mr. Pairoj Pimkaew	Chief, Maintenance Division	Mass Communication Organization of Thailand
Mr. Mustapha Man-nga	Engineer, Domastic Telecommunication Division	CAT
Mr. Manij Sukchayee	Radio Service Division	CAT
Mr. Saran Virutamawongsa	Chief, Engineer	Channel 7, Television Station
Mr. Sumrej Srestasathiern	Engineering Division	TOT
Mr. Pattanawit Kosithum	Chief, Software Support Center	TOT
Mr. Apisak Narigawit	Chief, NCOM Software	TOT
Mr. Bhumisathit Jampathom	Manager of Planning and Project	Aeronantical Radio of Thailand
Mr. Phisal Jorphochaudom	Engineer, Communication Division	CAT
Mrs. Kruawan Kanchanaphitak	Instructor, TTC	TOT
Mr. Chainarong Chuacharern	Aeronautical Telecom Telecommunication Engineering Division	Aeronautical Radio of Thailand
Mr. Somkait Sucharitpanich	International Satellite Division	CAT

Notes: TOT - Telephone Organization of Thailand
CAT - Communication Authority of Thailand
EGAT - Electricity Generating Authority of Thailand

Table IV KMITL members who regularly contributed in the training course

No.	Name of members of staff		Department	No.	Name of members of staff		Department
1	Mr. Apinant	Manyanoon	Telecomunication	20	Dr. Kosol	Petchsuwan	Control Engineering
2	Mr. Manoon	Sukkasem	Engineering	21	Dr. Pairash	Thajchayarong	Computer Engineering
3	Mr. Narong	Haemakorn	"	22	Dr. Sithichai	Pookaiyudom	Electronics
4	Mr. Tawil	Kingtong	"	23	Dr. Srisakdi	Charmonman	Computer Engineering
5	Mr. Sompole	Kosalwit	"	24	Mr.Manus	Sangwornsit	Electronics
6	Dr. Wiwat	Kiranon	"	25	Dr. Daniel	Breen	
7	Dr. Churay	Surawatrunya	"	26	Mr. Prakit	Tangtisanon	"
8	Dr. Fusak	Cheevasuvit	"	27	Dr. Wanlop	Surakampontorn	"
9	Mr. Sukon	Nampeteh	"	28	Mr. Somkiat	Supadej	Electronics Research Center
10	Mr. Suchin	Jamjod	"	29	Mr. Chom	Kimpan	Computer Engineering
11	Mr. Rung	Potisuwan	"	30	Mr. Vichai	Surapat	Industrial Technology
12	Mrs. Nipa	Leeraruji	"	31	Mr. Kanok	Jainjirapongvej	
13	Mr. Tawil	Paungma	"	32	Mr. Wuthichai	Rujirapraphа	Computer Research and Service Center
14	Mr. Kobchai	Dejhan	"				
15	Mr. Monai	Kraitriksh	"	33	Mr. Surasit	Wanakrairoj	
16	Mr. Wisit	Supasa	"				
17	Mr. Suthichai	Nopnakeepong	"				
18	Mr. Somyot	Jumpiya	"				
19	Mr. Punya	Thitimajshima	"				

Table V Participants

Country	Year	Name	Organization
AFGHANISTAN	1978	1) Mr. N.A. Bahram	Telecom. Training Center Ministry of Telecommunication
		2) Mr. F. Khuram	Telecom. Training Center Ministry of Telecommunication
	1979	1) Mr. Abdul Hag Abhar	Ministry of Telecommunication
		2) Mr. Mohammad Kassim	Ministry of Telecommunication
BANGLADESH	1979	Mr. Sharful Huda	Bangladesh T&T Dept.
	1981	1) Mr. M.A. Mamnan Miah	Bangladesh T&T Dept.
		2) Mr. M. Eunus Ali mallah	Telecentre, Jejgaon Dacca-8
		3) Mr. A.K.M. Abdul Manman	Bangladesh T&T Dept.
		4) Mr. M.R. Tarafder	Bangladesh T&T Dept.
	1985	Mr. Mohamed Nurul Islam Mondal	Bangladesh T&T Dept.
	1987	Mr. MD. Abdul Khaleque	Bangladesh T&T Dept.
BHUTAN	1981	Mr. Bishmulal Sharma	Ministry of Communication Thimphu, Bhutan
	1983	Mr. K.K. Pradhan	Ministry of Communication Thimphu, Bhutan
	1984	Mr. Sangay Norbu	Ministry of Communication Thimphu, Bhutan
	1987	1) Mr. Gembo Dorji	Dept. of Telecom. Thimphu
		2) Mr. Dil Bahadul Chetri	Dept. of Telecommunication P.O. Phuntshalina
BRUNEI	1982	Mr. Buntar Bin Osman	Telecommunications Dept. Bandar Seri Begawan
	1983	Mr. Song Kin Koi	Telecommunications Dept. Bandar Seri Begawan
	1984	Mr. Ak. Zainal Ariffin PG. Haji Ahmad	Central ATE Telecom. Dept. Bandar Seri Begawan
	1985	1) Miss Dayang Hajjah Norliha bte Hj Abu Bakar	Telecommunications Dept. Bandar Seri Begawan
		2) Mr. Haji bini bin bin Haji Tengah	Telecommunications Dept. Bandar Seri Begawan
	1986	1) Miss Han Chock Lee	Telecommunications Dept. Bandar Seri Begawan
		2) Mr. Saifulbahri Haji Jaya	Telecommunications Dept. Bandar Seri Begawan
	1987	Mr. Poh Eng Gee	Telecommunications Dept. Bandar Seri Begawan

Country	Year	Name	Organization
BURMA	1985	1) Mr. Khin Myint	Long Distant Communication Dept. Post & Telecommunication Corp. Rangoon
		2) Mr. Myo Win Aung	Telecommunications and Postal Training Centre. Post & Telecommunication Corp.
		3) Mr. Nyan Tun	Auto Exchange Post & Telecommunication Corp.
	1986	U Khim Maung Win	Construction and Maintenance West Area. Post & Telecommunication Corp.
CHINA (People's Republic)	1981	1) Mr. Zhan Dao Shuang	The Radio Department Beijing Broadcasting Colledge
		2) Mrs. Chem Zhuo Jun	The Central Administration Television Broadcasting
	1982	1) Mrs. Lu Siang Ying	Ministry of Post and Telecommunications
		2) Mrs. Gi Chai Yun	The Academy of Electronic Information Technology
	1983	1) Mr. Wang Huatian	Research Institute of Data Telecommunications, Beijing
		2) Mr. Li Zonghao	Beijing Institute of Post and Telecommunications, Beijing
		3) Mr. Wu Shixiong	Research Institute of Telecommunication and Transmission. Beijing.
	1985	1) Mr. Xiang Gao	Shenyang Telecommunication Bureau
		2) Mr. Ruogi Guan	Ministry of Post and Telecommunications
FIJI	1983	Mr. Jayant P. Narayan	Post and Telecommunication Dept.
	1985	Mr. Hari Narain	Post and Telecommunication Dept.
	1987	Mr. Baunivadra Ululakeba	Post and Telecommunication Dept.
INDONESIA	1978	1) Mr. Benjamin Suganda	Telephone and Telegraph Pub. Corp.
		2) Mr. Komarudin Sastrakoosoomah	Research and Development Center of PERUMTEL
	1979	1) Mr. Moerdijono	PERUMTEL Public Corporation
		2) Mr. S. Wardi	Research and Development Center Jl. Gegerkating Hilir Bundung

Country	Year	Name	Organization
	1980	1) Mr. Adang Sudrajaj W.	Telecommunication Test & Development Center JL. Gegerkalong Hilir Bundung
	1981	1) Mrs. Anna Resmimah	Ksi PPMP Wilayah Dsahalv Slipi JL.S. Parman Jakarta
		2) Mr. B.R. Sariyo	"
	1983	1) Mr. Pudja Sujitna	Research and Development Center of PERUMTEL JL. Gegerkalong. Hilir Bundung
		2) Mr. Vilal Nasution	"
		3) Mr. Sudarji	"
	1986	1) Mr. Wawan Hernawan	Puslitbangtel Perumtel Jalan Geger Kalong Hilir
		2) Mr. Pande Putu Gede	47-59 Bundung-Jawa Barat
		2) Mr. Pande Putu Gede Dharma	PT. INTI (Persere) JL. Moh. Toha 77, Bundung
		3) Mr. Herry Wahyona	LABDATA PUSLITBA NGTEL Jalan Geger Kalong Hilis Bundung-Jawa Barat
		4) Mr. Warwan Batubara	PT. INDOSAT Wisma Antara LN. 18 merdeka selatan 17 Jakarta
	1987	1) Mr. Tokit	Operation and Maintenance of Telephone Exchange JL. Tronojoyo & Bundung
		2) Mrs. Anie Sulistiani	Research and Development Center of RERUMTEL JL. Gegerkalong Hilir 47 Bundung
IRAN	1978	1) Mr. Moosavi Mahvelati Abolghassem	Ministry of Post Telegram and Telephone
		2) Mr. Hohamad-Teghi Habibi Shashri	"
	1980	Mr. Mahmood Ghalamkari	Ministry of P.T.T. Drali Shariaty Ave. Tehran. Iran.
	1982	Mr. Nosratalla Ebrahimi	Instructor of MUX.Eg. Telecom. Training Center of Iran
	1984	1) Mr. Mohammad Hassan Moghimian	Telecommunication Co. of Iran Tahedan. Iran
		2) Mr. Hasseim Ghane Motlagh	Telecommunication Co. of Iran Hamadan. Iran

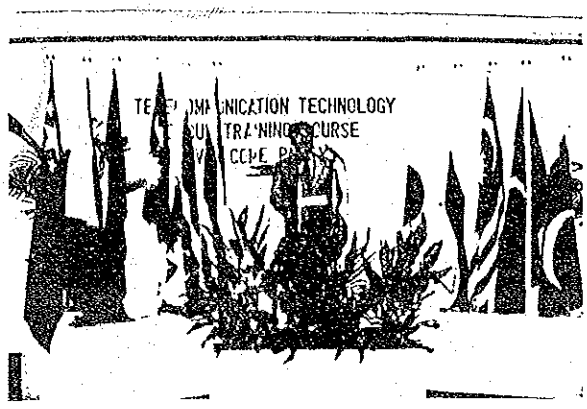
Country	Year	Name	Organization
	1985	1) Mr. A.R. Emami Gortani	Telex Exchange, Beheshti Bldg. Telecommunication of Esfahn
		2) Mr. S.A. Nabavi Zadeh	Telex Exchang, Telecom. Co. 22 Bahaman Ave. Shiraz Iran
KOREA (S)	1982	Mr. Lee Moon Ho	Research Staff Korea Elutrotechnology & Telecom. Research Instituteseoul.
	1983	Mr. Ann Che Hong	P.O. Box 125 Gwang Hwa Moon Switching System II Seoul
	1985	Mr. Hyup Jong Kim	Chung Nam Dee Duch Dan JI. C.P.O. Box 8 Transmission Dept. South Korea
MALAYSIA	1978	1) Mr. Ahmad Hashim Hawari Bin Mustapha	Telecommunication of Malaysia
		2) Mr. Md. Samsuri Bin Dol Walab	Telecommunication of Malaysia
	1983	1) Mr. Zukiflee Bin Mahamad	Telecom Training Center Curney Road Kuola Lumpur
		2) Mr. Umar Bin Bustaman	Bahagian Sambony Jaarl Polis. IBU. Resabat Telecom Negara Kuala Lumpur
	1985	Mrs. Normahman bte Ismail	Bahagian Dendalian Ramgkaian Sais. Jabatan Telecom Malaysia Kuala Lumpur
	1986	1) Mr. Cheh Beng	Ibu Pejabat Telecom. Negara Bahagian Rangkaian Jauh-JPA Kuala Lumpur
		2) Mr. Michael Chin Lubi	Ibu Pejabat Telecom. Negara Bahagian Rangkaian Suis Bukit Mahkamah, Kuala Lumpur
		3) Mr. Abdul Majid Abdullah	Research and Training, Telecom. Training Center Jalan Gurney 54100 Kuala Lumpur
	1987	1) Mrs. Kong Siow Lan	Telecommunication Training Center Jalan Gurney, Kuala Lumpur West Malaysia
		2) Mr. W. Mohamad Bin Wan Abu Bakar	Malaysian Telecom Company West Malaysia

Country	Year	Name	Organization
MALDIVES	1980	Mr. Abdullah Rasheed	Telecommunication Dept. Male, Maldives
	1985	Mr. Mohamad Shareef	Dept. of Post & Telecom. Marine Drive, Male, Maldive's
	1986	Mr Ahmed Adil	Dept. of Post and Telecom Marine Drive, Male, Maldives
	1987	Mr. Mohamed Siraj	Dept. of Posts & Telecom. Marine, Drive, Male.
NEPAL	1978	Mr. Srish Prasak Sen	Nepal Telecommunication Corporation
	1979	Mr. Rajendra Ratna Bajracharya	Nepal Telecommunication Corporation
	1980	1) Mr. Jethakaji Shreotha	Telecommunication Office Rapti Road, Hetauda, Nepal
		2) Mr. Bidur Bahadur Bhandary	Central Telegraph Office Tripureswar Marga, Kathmandu, Nepal
	1981	1) Mr. Dilli Raj Adhikary	Supervisor, Telecommunication Office, Tulsipur Dang
		2) Mr. Dan Bhakta Phaiji	Telecommunication Office Bhaikahawa Lumbini Zone
	1984	1) Mr. Khadka Nripa Dhoj	Institute of Engineering Pulchwak Campus, Lalitpar Kathmandu, Nepal
		2) Mr. Arjun Lumar Thapa	
	1986	Mr. Jamardan Mishra	Nepal Telecom. Corp. Regional Office, Birgani, Nepal
	1987	Mr. Ram Chandra Gharma	Nepal Telecom. Corp. Regional Office, Kathmandu
PAKISTAN	1982	Mr. Rashid Ahmad	Telegraph & Telephone Dept. College Hari Par Hazara, Lahore
	1983	Mr. Musta Q. Ahmad	Telegraph & Telephone Dept. Quetta, Baluchistan
	1984	1) Mr. Mishahul Hasam Qureshi	Space and Upper Atmosphere Research Commission P.O. Box 3209, Karachi
		2) Mr. Mohammad Ilyas Khan	Space and Upper Atmosphere Research Commission P.O. Box 3209, Karachi
	1985	Mr. Ghulam Murtaza Khichi	Telegraph & Telephone Dept. 500 Telegraph Khairpur (Sind)
	1986	Mr. Wakeel Zada	Telegraph & Telephone Dept. Islamabad.

Country	Year	Name	Organization
PAPUA NENGUINEA	1982	Mr. John Maso	Postal & Telecom Corperation
		Mr. Peter Manau	Department of Public Utilities
	1984	1) Mr. Neil Anthony	Postal & Telecom Corperation Boroko
		2) Mr. Mut Amenu	Postal & Telecom Corperation Head Quarter, Boroko
PHILIPPINES	1978	1) Mr. Danilo Danny Balajadia	Philippine Communications Satellite Corporation
		2) Mr. Oscar D. Sosmena	Communications and Technique Institute Philippine Army Training Command Dept. of Xational Detence
		3) Mr. Edgardo Cubuning	Bureau of Telecommunication
	1979	1) Mr. Leomcio D. Adamoss III	Board of Communications
		2) Mr. Edgardo R. Celorico	Board of Communications
	1980	1) Mr. Carlas D. Salivan Jr.	National Telecommunications Commission, Quezon City.
		2) Mr. Ramon D. Pabon	Communications-Electronics Service Camp. Aquinalds., Quezon City.
	1981	1) Mr. Leonardo S. Macelo	Signal Service Maintenance on Communication-Electronics SAFP. Quezon City
		2) Mr. Rudy S. Pranga	Bureau of Telecommunication Region VI Iloilo City.
	1982	Mr. Mario G. Basinang	Bureau of Telecommunication Region VI Iloilo City.
	1983	Mr. Edgardo N. De Leon	Bureau of Telecommunication Quezon City
	1985	1) Mr. Jaselito C. Leynes	National Telecommunication Commission Diliman, Quezon City, Metro-Manila
		2) Mr. Guido C. Agon	Bureau of Telecommunication Quezon City
	1986	Mr. Danilo O. Cuenca	National Telecommunication Commission., Quezon City Metro-Manila
	1987	1) Mr. Etren F. Salido	Armed Forces of The Philippines Makati
SINGAPORE	1978	1) Mr. Poc Khong Seow	Telecom. Authority of Singapore
		2) Miss Chee Hoon Tan	"
	1980	Mr. Jimmy H.H. Tan	Telecom. Authority of Singapore
	1981	Mr. Chan Kiat Chee	Telecom. Authority of Singapore
	1982	Mr. Jumadi Bin Ridwan	Telecom. Authority of Singapore

Country	Year	Name	Organization
SRI-LANKA	1978	1) Mr. Kanagasabai Mahadevan	Post & Telecommunication Dept.
		2) Mr. Don Nandasena Hettiarachchi	Overseas Telecommunication Service
	1979	1) Mr. Kandaswamy Nadanasabapthy	Post & Telecommunication Dept.
		2) Mr. Nimal Silva	Overseas Telecommunication Service
	1980	1) Mr. S.J. Withanawasam	Post & Telecommunication Dept. Colombo 1.
	1981	1) Mrs. B.T.E.A. Perera	Telecommunication Dept., Lotus Road, Colombo 1.
		2) Mr. G.S.P. Rodrigo	Regional Telecom., Dept. of Telecommunication, Ratarapura.
		3) Mr. S. Canagasooriyar	Regional Telecom., Dept. of Telecommunication
	1983	Mr. P.L.C. Perera	Central Telegraph Office Post and Telecommunication Dept. Colombo 1.
	1984	1) Miss Vijitha Samamalie Dodampe Gamage	Telecommunication Training Center, Welisara, Ragama
		2) Mr. Arachchige Harold Dabare	Central Regional Telecommunication Colombo
	1985	Mr. M.B.M. Prajnaratne	Regional Telecom., Ratanapura, Sri Lanka
	1986	1) Mr. O.K. Thilakaratne	D.I.T. (S.F.T), Telephone Exchange Panadura, Sri Lanka
		2) Mr. D.A.L.B. Talpawela	D.I.T. Office, DITT'S Office Kotte
	1987	1) Miss H.M.S.K. Herath	Radio Lab, Telecommunication Dept., Dickmonird, C0-5
		2) Mr. H.M.S.K. Ferdinando	Telecommunication Dept. Lotus Road, Colombo 1.
VANUATU	1987	1) Mr. Tom Hakwa	Telephone Section., Post and Telecommunications Port Vila, Vanuatu (S.W. Pacific)
		2) Mr. Barnaba F. Boe	Radio Section., Post and Telecommunications.

Country	Year	Name	Organization
THAILAND	1981	1) Mr. Charchawal K. Naroj	Telex Div., Communication Authority of Thailand (CAT)
		2) Mr. Pitjapal Jantanasaro	Planning Div., Post and Telegraph Department (PTD)
	1982	1) Mr. Sumrej Srestasathiern	Plant Engineering Dept., Telephone Organization of Thailand (TOT)
		2) Mr. Kajornsak Sinhaseni	Telegraph Div., CAT
		3) Mr. Pichit Mumimtorwat	Maintenance Section, PTD
	1983	1) Mr. Segsan Roylapcharoenporn	International Telecom. Div., CAT
		2) Mr. Nopadol Lhaosangdham	Planning Div. PTD.
		3) Mr. Phirat Sittakul	Engineering and Planning Div., Electrical Generating Authority of Thailand (EGAT)
	1984	1) Mr. Patomchai Chaotunont	Trokchan Telephone Exchange, TOT
		2) Mr. Phairoj Chinprahusta	Planning Div., PTD.
		3) Mr. Paitoon Suksamonsorn	Radio Telecom. Div., EGAT
		4) Mr. Surapon Sanguansilp	Telegraph Div. CAT
	1985	1) Mr. Suwan Niyom-Udom Watana	Engineering Dept., TOT
		2) Mr. Prasitchai Kanjanadecha	Submarine Cable Div., CAT
		3) Mr. Sampant Porprapant	Communication Office, EGAT
		4) Mr. Prawit Tangtanapong	R&D Div., PTD.
	1986	1) Mr. Chumni Leangbumrung	International Telecom. Div., CAT.
		2) Mr. Wiwat Suttipak	PTD.
		3) Mr. Sathianphong Chamthasiriwan	Long Distance Plant Div., TOT
		4) Mr. Santiwat Kanchanapanka	Telecom. System Dept., EGAT
	1987	1) Mr. Wichai Wanidvaranun	International Telecom. Div., CAT.
		2) Mr. Pairojana Pairojana	Planning Div.,
		3) Mr. Banleng Nithakorn	Communication Dept., EGAT
		4) Mr. Teerawat Boonyapope	Mainkenance and Construction Center., TOT
		5) Mr. Kosol Nairuangroong	Singburi Technical College Department of Vocational Education

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