② 長期調査員 (89·9) によるM／M

MINUTES OF MEETING BETWEEN THE JAPANESE FOLLOW-UP TEAM TO THE PRELIMINARY SURVEY TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF SINGAPORE ON THE TECHNICAL COOPERATION FOR THE PROJECT ON JAPAN-SINGAPORE AI CENTRE

The Japanese Follow-up Team to the Preliminary Survey Team (hereinafter referred to as "the Team") organised by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr Hiroshi Sawano, Official, Data Processing Administration Division, Data Processing and Service Office, MITI visited the Republic of Singapore from 4 September to 17 September, 1989, for the purpose of following-up on the discussions held between the Japanese Preliminary Survey Team and Singapore and to clarify the major issues that has been highlighted in the minutes of 24th February 1989.

As a result of the discussions, both parties reached understandings concerning the matters referred to in the document attached herewith.

Singapore, 12 September, 1989

Mr Hiroshi Sawano
Leader,
Follow-up Team to the
Japanese Preliminary Survey Team
Japan International Cooperation Agency,
Japan

Mr Edmund Tham
Leader,
Singapore Discussion Team,
National Computer Board,
Ministry of Finance,
Republic of Singapore

Japanese Follow-up Team to the Preliminary Survey Team

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Data Processing Administration Division
Data Processing and Service Office
Ministry of International Trade and Industry (MITI)

Mr Ryuji Mieno
Consultant
Business Administration Division
Center of the International Cooperation for Computerization (CICC)

Mr Taijiro Ohno
Consultant
Business Administration Division
Center of the International Cooperation for Computerization (CICC)

Mr Naoya Kuwahara
Staff
Technical Cooperation Division
Mining and Industrial Development Cooperation Department
Japan International Cooperation Agency (JICA)

In Attendance

Mr Mitsuo Ishizaki
Resident Representative
Singapore Office
Japan International Cooperation Agency (JICA)

Mr Osamu Narumiya
First Secretary
Embassy of Japan
Singapore

Singapore DiscussionTeam

Mr Edmund Tham
Director(Acting),
Industry Development Department

Mr Lim Joo Hong
Senior Manager, Knowledge Systems Laboratory
Information Technology Institute

Mr Foong Tze Foon
Director(Acting),
IT Manpower Department

Mr Lim Swee Cheang
Assistant Director
Institute of Systems Science
National University of Singapore

In Attendance

Jasmine Teo(Miss)
Executive Officer
National Computer Board

A.I. Centre Programmes proposed by the Team

The Team reviewed the Minutes of the Japanese Preliminary Survey Team. Based on the request by the NCB for the inclusion of prototype Expert Systems development in the A.I. Centre, the Team presented a proposal of four programmes known as Programmes A,B,C and D to meet NCB's objective. The Team presented to NCB the definition of the prototype that will be developed under Programme D and how the four programmes together will help NCB to train the knowledge engineers required by Singapore, as well as to develop the prototypes for Expert Systems Applications.

Schedule of Implementation

The Team proposed a schedule of implementation for the A.I. Centre. The schedule includes the training of Singapore counterparts in Japan, preparation and development of course curriculum and the implementation of programmes A,B,C and D during the five-year co-operation period. The scope of co-operation and the role of the Japanese experts were also discussed.

NCB's Response

The NCB commended the Team for the proposal of an excellent set of programmes for the A.I. Centre, especially Programme D, where the expert systems prototype development were incorporated. The NCB is glad to note the presence of prototype development activities in the A.I. Centre and requested that the implementation of this Programme D be brought forward in the schedule. Because of the close relation between programmes B, C and D, they were proposed to be conducted as a package, with the programme D to be held immediately after the completion of B and C.

Conclusion

Based on further discussions, a revised tentative schedule for implementation was drawn up. Both sides agreed that if the recruitment of highly qualified local professionals is more successful than expected, the commencement of the programmes for participants could begin earlier during the second year of co-operation. If everything proceeds smoothly, the Implementation Survey Team will be in Singapore to conclude and sign the Record of Discussions.

The following pages summarises the tentative agreements reached by both sides.

MAJOR ISSUES OF DISCUSSION

1. Objective of the AI Centre (hereinafter referred to as "the Centre")

1.1 The Team and the NCB agreed that the Centre is a good Technical Co-operation Project between Japan and Singapore. The project will transfer Expert Systems and Artificial Intelligence technology to Singapore, and help NCB to train knowledge engineers required by Singapore, as well as to develop the prototypes for Expert Systems Applications.

1.2 Expert Systems Prototype development is defined as follows :

"An initial version of an Expert Systems that is developed to test the effectiveness of the overall knowledge representation and inference strategies being employed to solve a specific practical problem."

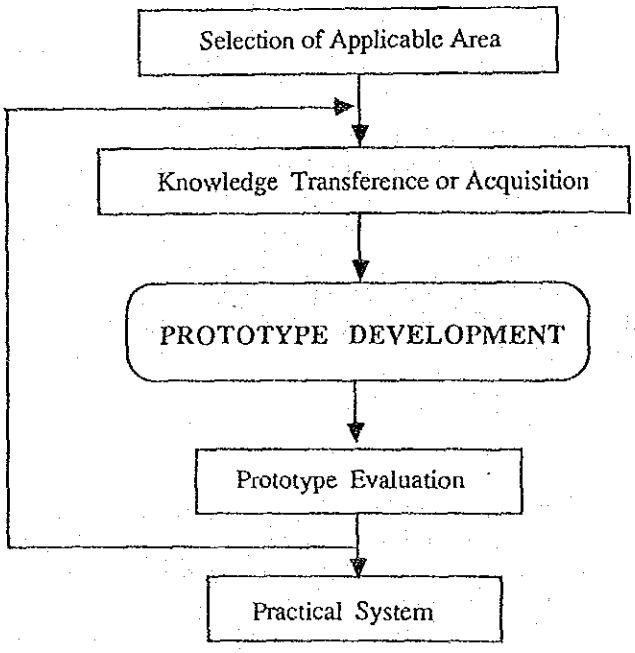

Figure A : This figure shows prototype development as an integral part of a typical expert systems development process

1.3 The primary role of the Centre is to focus on expert systems prototype development and to train knowledge engineers in the process. JICA will assist the NCB in fulfilling this role through the implementation of the programmes mentioned below.

1.4 Both sides agreed that duplication between the activities of the Centre and that of other organisations in Singapore such as the KERC and ISS should be minimised. Through dialogues and collaboration coordinated by the NCB, the programmes in the Centre, KERC and ISS will be planned to complement one another.

2. Core Programmes for the AI Centre

2.1 To achieve the aforesaid objective, the Team has proposed programmes A, B, C and D.

2.2 In programme A, the trainees will be managers who will be taught general knowledge of AI. On completion they will be able to use the knowledge to determine the suitability of expert systems applications in their respective fields.

In programme B, trainees will be engineers and other professionals who will be trained to become knowledge engineers to develop expert systems.

The C programme is designed to provide business professionals with knowledge about AI to analyse and judge the applicability of expert systems in their respective fields and to provide them with some basic knowledge for the representation of their specialised knowledge.

The D programme will teach trainees who will have completed programme B or C to conduct development exercises of expert system prototypes under the guidance of the Centre instructors.

2.3 The Team presented a draft schedule of implemetation of the above programmes. The draft schedule is in Annex I.

2.4 The NCB expressed their support for the proposed programmes, and acknowledged that the programmes are important and valuable in the training of the knowledge engineers.

2.5 The NCB presented several suggestions to the Team as follows :

a) The programme A is proposed to be conducted at least once a year starting from the second year of cooperation. The actual time and frequency for programme A each year will be determined later on a year to year basis.

b) The programme C proposed, which has a duration of two months, be either shortened and/or conducted on a part-time basis, because it would be difficult to get the business professionals and domain experts away from their office for such a long time.

c) The programme B be organised as a 14-week full time programme. Programme C should be done in parallel with the programme B so that both can be completed at about the same time.

d) Programme D should follow immediately after the completion of B and C, as these three programmes are closely related to each other and should be conducted as a package.

e) During the 12-month preparatory periods for programmes C and D, as many software tools as possible should be developed by the local lecturers with the assistance of the Japanese experts to facilitate the construction of prototypes in programme D.

3. Tentative Schedule

3.1 The Team considered the above suggestions from the NCB. Both sides jointly worked out a new tentative schedule in response to the NCB's suggestions. The Team would like to study the revised tentative schedule further before confirmation. The revised schedule proposed is in Annex II .

3.2 Both sides agreed that if the recruitment of highly qualified local professionals is more successful than expected, the commencement of the programmes for participants could begin earlier, during the second year of co-operation.

4. Detailed Curriculum and Hardware, Software Requirement

4.1 The details of the course curriculum and computer hardware and software requirement for the programme A, B, C and D will be studied between Mr Ohno and Mr Mieno and the Singapore Team, after the signing of this Minutes of Meeting.

4.2 These details, after being worked out by both sides, will be recorded separately and serve as a basis for further discussion.

5. Scope of Technical Cooperation

5.1 The Implementation Agency of the Project will be the National Computer Board of the Singapore Ministry of Finance.

5.2 Both sides concurred to the despatch plan of 6 Japanese experts as discussed in the Minutes dated 24 February 1989, including the Chief Advisor, JICA Co-ordinator and 4 technical experts.

5.3 In view of the incorporation of programme D, the NCB requested that some of the Japanese experts need to have extensive project management skills and Expert System development experience. The roles of the Japanese experts were discussed and defined. They would be advisors and consultants to assist the Centre in the following functions:

a. development of course curriculum

b. selection of feasible projects

c. definition of the scope of project development

d. project planning

e. systems design and knowledge acquisition

f. technical problem-solving

5.4 The Team requested that the NCB takes necessary measures to secure and retain high quality Local Lecturers to maximise the impact of technical co-operation.

5.5 The Team agreed that short-term Japanese experts could be despatched to Singapore depending on the requirements during the cooperation period.

5.6 Local lecturers will be provided with 3-month training programme in Japan. The Singapore AI team requested for an additional 3-month attachment for practical application development in Japan. The Team expressed the difficulty for this, but will bring this request back to Japan for further consideration.

5.7 There will be a provision of 20 attachments in Japan for Singapore counterparts over the 5-year co-operation period. An attachment is understood to be generally one person for a three-month period.

5.8 The Team informed the NCB that the request for a portion of hardware and software budget be set aside for the acquisition of new hardware or software during the later stage of the project, is acceptable to the Japanese Government.

5.9 Both sides agreed that the AI Centre project is an important project for Singapore and both the NCB and the Team would like to see the successful implementation of the Centre.

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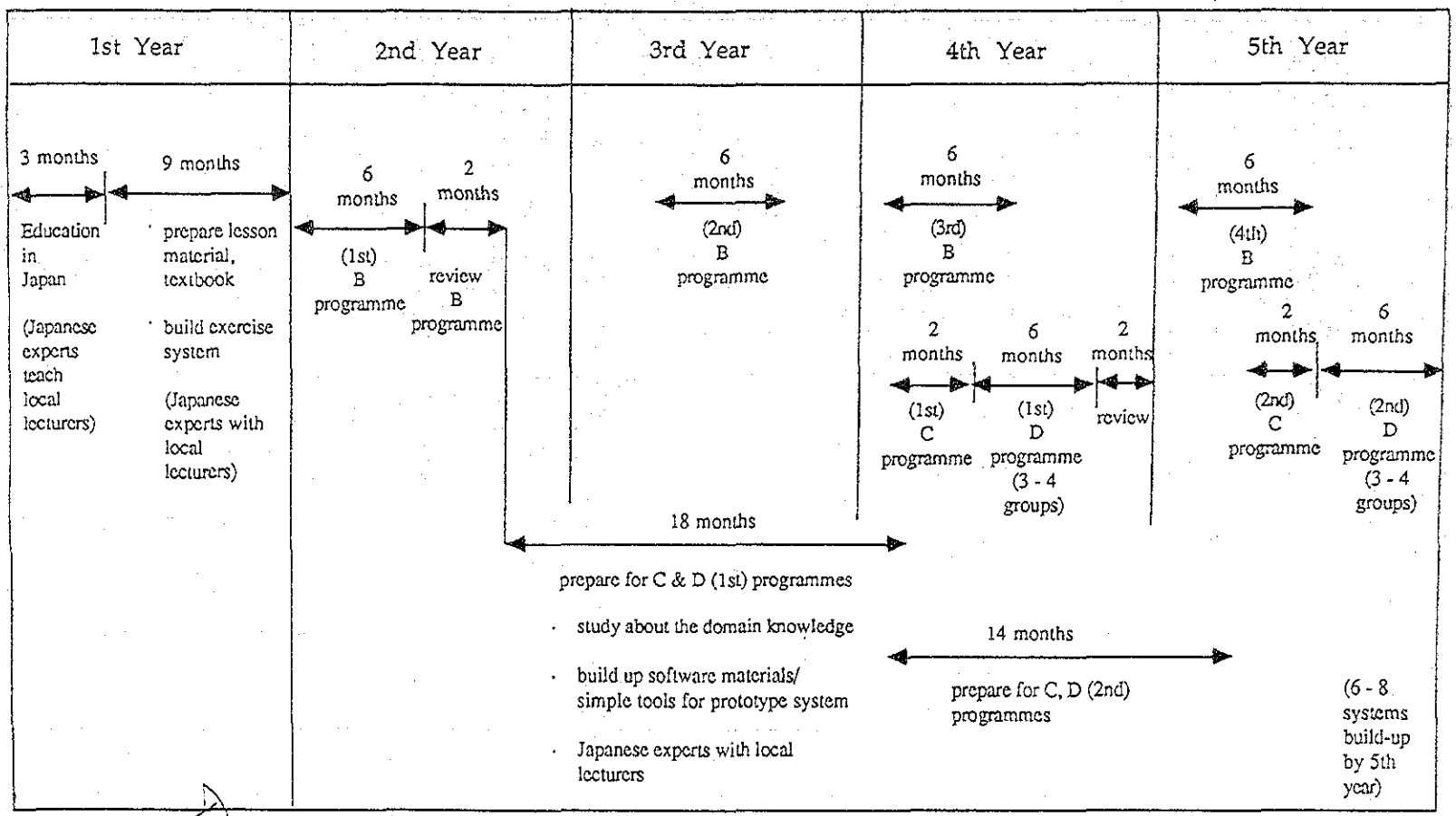
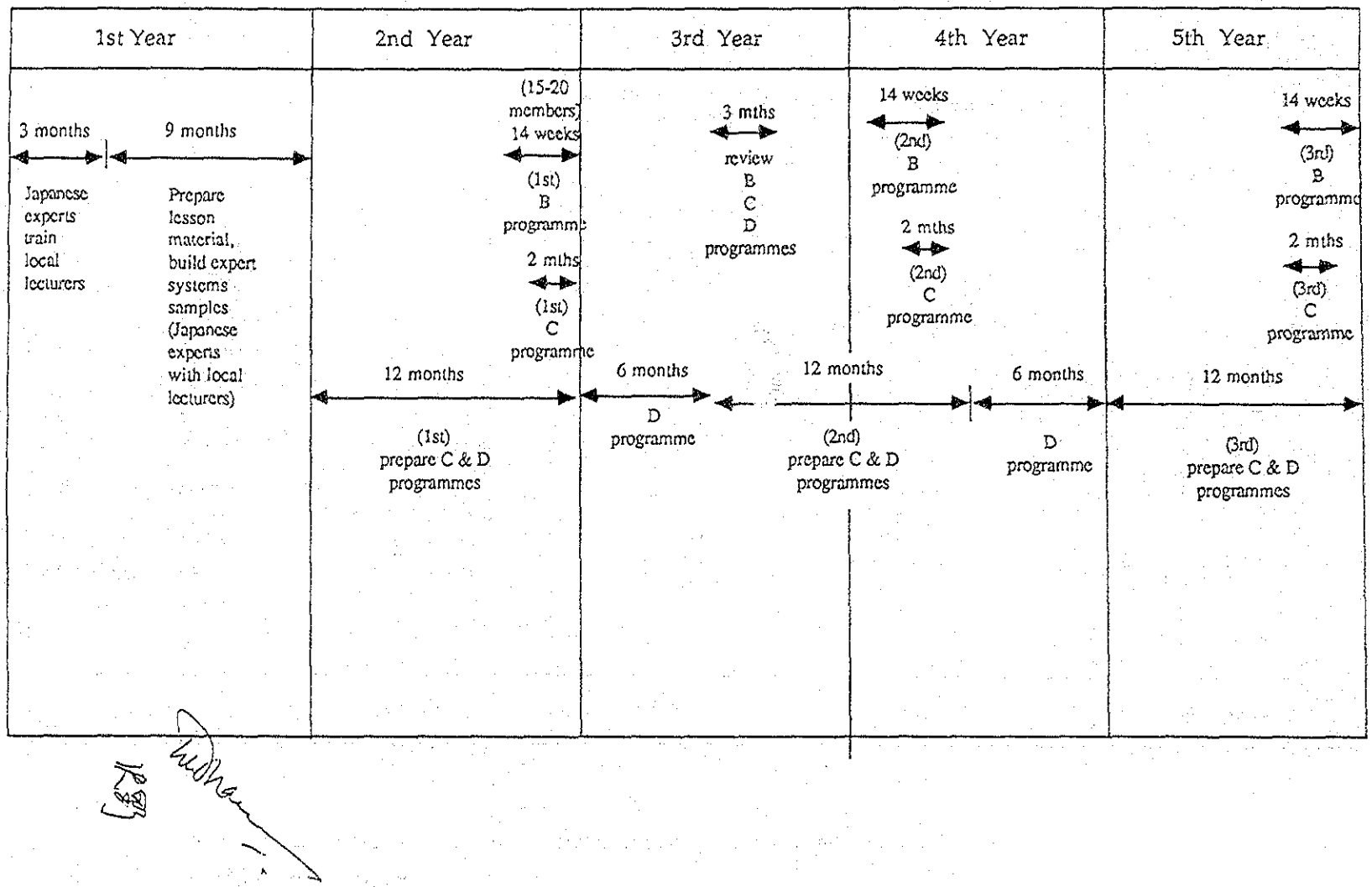
ANNEX I: Original Draft Schedule

(Outline of the Schedule on the curriculum and the roles of Japanese Experts)



ANNEX II: Revised Tentative Schedule



SUMMARY OF DISCUSSIONS

Discussions were held between two members of the Japanese Follow-up Team to the Preliminary Survey Team and the Singapore Discussion Team on the Detailed Programme Curriculum and Hardware, Software Requirements for the Japan-Singapore AI Centre.

Date of Discussion : 13 and 14 September 1989, Singapore

Members

Japan Follow-up Team :	1)	Mr Ryuji Mieno
	2)	Mr Taijiro Ohno
Singapore Discussion Team:	1)	Mr Edmund Tham
	2)	Mr Lim Joo Hong
	3)	Miss Jasmine Teo

The following is a record of the details worked out between both sides on :

1. Details of AI Centre Programmes
   a. Programme A : Expert Systems - A Managerial Perspective
   b. Programme B : Expert Systems Development for Software Professionals
   c. Programme C : Expert Systems for Business Professionals
   d. Programme D : Expert Systems Prototype Development
2. Training Programme in Japan for Singapore Lecturers
3. Requirements of hardware, software, equipment and supplies

14 September 1989

Outline of Curriculum for Programme A

No	Theme	Period	Remarks
1.1	(1) Basic knowledge about AI (2) Basic knowledge about expert systems and its trends	1 day	
1.2	(1) Issues concerning introduction of expert systems into an organisation (2) Managing an expert systems project	0.5 day	
1.3	(1) Selecting an expert systems application (2) Class discussion on potential applications	1.5 days (1.3 and 1.4)	
1.4	(1) Brief survey on expert systems development tools (2) Selected case studies (examples) (3) Demonstration of expert systems		
	TOTAL	3 days	

(2) Programme B : Expert Systems Development for Software Professionals

Duration	:	14 weeks
Target	:	High-level system engineers who want to become expert systems developers.
Overview	:	This course is designed to provide software professionals with the knowledge and technology necessary to develop expert systems.
Goals	:	Software professionals who complete this course will be able to (1) Understand general knowledge about AI (2) Develop expert systems prototypes when specifications for them are provided
Pre-requisites of Participants	:	(1) Computer Science graduates (2) Graduates of Advanced Diploma (3) Non-Computer Science graduates with 2 years of software development experience (4) Selected non-graduates with extensive software development experience

Outline of Curriculum for Programme B

No	Theme	Period	Remarks
2.1	Outline of artificial intelligence and expert systems (1) History of expert systems and examples of their application (2) Representative methods of inference (3) Representative methods of knowledge representation	1 week	
2.2	Explanation of environments for building experts systems (1) UNIX & C Language - UNIX · History, outline, and design concepts of the UNIX System · File control · Execution control · Input/output control · System call · Document preparation function · Network function - C Language · Characteristics of C Language · How to use the standard file · Definition of functions · Kinds of data · System call · Standard input/output · Program exercises	1 week	

Outline of Curriculum for Programme B (Continued)

No	Theme	Period	Remarks
	(2) LISP · Characteristics and symbol handling of LISP · Input/output of the LISP Program · Definition of functions, recursive functions, and repetition · Other functions and system functions · Program exercises	1 week	
	(3) Prolog · Basis of Prolog · Recursive processing and list processing · Execution control · Knowledge representation · Program exercises	1 week	
	(4) Programming exercises (1 of C Language, LISP or Prolog)	3 weeks	
2.3	Expert systems building tools	1 week	
2.4	Expert systems development methodology	1 week	
2.5	Expert systems development exerciese · Inference methods and knowledge expression · Design and development of expert systems · Study of examples · How to operate expert systems development tools · Exercises	5 weeks	
	TOTAL	14 weeks	

(3) Programme C : Expert Systems for Business Professionals

Duration	:	7 days
Target	:	Business professionals who want to be involved in expert systems development.
Overview	:	This course is designed to provide trainees with general knowledge about AI and to provide them with methods for the representation of specialized knowledge.
Goals	:	Trainees who complete this course will be able to (1) Analyze the knowledge in their respective specialty fields and judge whether expert systems can be applied to their business fields. (2) Collaborate with knowledge engineers on the development of expert systems in their fields of speciality.
Pre-requisites of Participants	:	Experienced business professionals who can perform tasks alone in their fields of specialty.

Outline of Curriculum for Programme C

No	Theme	Period	Remarks
3.1	Outline of artificial intelligence and expert systems . History of expert systems and examples of their applications . Trends	1 day	
	. Lecture on knowledge representation	1 day	
3.2	Rearrangement of knowledge (knowledge acquisition and representation) · Review on contents of actual work for each trainee · Grasping problems in the present situation · Description of specialized knowledge · Discussion of the possibility of knowledge representation methods · Selection of knowledge representation methods · Implementation of speciality knowledge	4 days	
3.3	Expert Systems Development Methodology Tool utilization · How to operate a workstation · How to operate supporting tools · Knowledge expressions in supporting tools	1 day	
	TOTAL	7 days	

(4) Programme D : Expert systems Prototype Development

Duration	:	6 months
Target	:	Those who want to be engaged in the development of expert systems or to become specialists in expert systems development.
Overview	:	This programme will teach trainees to conduct development exercises of expert system prototypes under the guidance of AI center instructors. In the final phase of the programme, trainees will compile reports on their observations and ideas about prototypes systems.
Goals	:	Trainees who complete this programme will be able to carry out the development and implementation of practical expert systems.
Pre-requisites of Participants	:	Those who finished programme B or C or who have equivalent knowledge and experience.

Outline of Curriculum for Programme D

No	Theme	Period	Remarks
4.1	Study of expert systems examples in selected domains · Inference methods · Knowledge expression	2 weeks	
4.2	Development of expert systems prototypes · Discussion of problems given · Analysis and development of protytypes · Evaluation of prototypes	18 weeks	
4.3	Preparation of reports	(4.3 - 4.4) 4 weeks	
4.4	Presentation and discussion of prototype systems		
	TOTAL	6 months	

(5) Training programme in Japan for Singapore lecturers

Duration	:	3 months
Target	:	Those who will serve as instructors at the AI Center.
Overview	:	This course is designed to provide would-be instructors with the knowledge necessary for teaching AI technology centered on expert systems.
Goals	:	Those who complete this course will be able to extend guidance to trainees in accordance with a curriculum while being supported by Japanese specialists.
Qualified persons	:	Computer Science graduates or those who have at least the same level of knowledge as the graduates of the JSIST Advanced Diploma course. They should have some knowledge and experience in UNIX, C, LISP and Prolog.
Forms of Training	:	Lectures, exercises, observation of working systems, and discussions at research institutes.

Curriculum

No	Theme	Period	Remarks
1	Outline of artificial intelligence and expert systems · History and application examples of expert systems · Representative inference methods · Representative knowledge expression · Observation of actual systems	1 week	
2	(1) Advanced LISP Programming (2) Program exercises	1 week 1 week	
3	(1) Advanced Prolog Programming (2) Program exercises	1 week 1 week	
4	Expert Systems Development Methodology	1 week	
5	Expert Systems Development Exercise · How to use development support tools · Knowledge expressions in support tools · Analysis of problems · Decision on the inference method · Decision on the knowledge expression method	6 weeks	
	TOTAL	12 weeks	

14 Sep 1989

ASSISTANCE FROM JAPAN --
Computer hardware, software, equipment and supplies

The following are the items of assistance that Singapore would like to request from Japan in the setting up of the AI Centre :

a. Computer Hardware

- Engineering Workstations (EWS) x 20
  - Main memory — 16 MB
  - Colour monitor

- Engineering Workstations (Extended) x6
  - Main Memory — 24 MB
  - Colour monitor
  - Local disk — about 140 MB each

- Microcomputers x 20
  (Including 5 portable 386 class PCs. Of the rest, at least 5 to be 386 class)
  - Main Memory — 2 MB
  - Colour monitor
  - Local hard disk — about 60 MB each
  - Floppy disk drive

b. Networking

- Network hardware (IEEE 802.3) and software to provide facilities equivalent to 4.2/4.3 BSD and NFS.

c. Shared equipment

- Central disk storage — about 3,000 MB in total
- Laser printer x 3
- High speed line printer x 1
- Dot matrix printer x 4
- 1/2 " tape drive with full system back up facilities x 2
- Cartridge tape drive x 5

- CD-ROM storage device

d. Software

- EWS operating system
- Expert system shell on the EWS
- Expert system shell on the microcomputers
- Software engineering tools on the EWS
  - software analysis and design tools
  - Programming support tools
  - code generators
  - software testing tools
- Office automation software on the EWS and the microcomputer
  - word processors
  - business graphics systems
  - electronic mail
  - other business software (spreedsheets,etc)
- Lisp
- Prolog
- C
- Graphic systems
  - window systems
  - graphic library
  - user interface management systems
- Data base management systems on both the EWS and the microcomputer

e. Initial supply

- One year supply of tape reels, floppy diskettes, print froms, ink ribbons, cartridge tapes.

f. Documentation / Technical literature

- Technical manuals for all computer hardware and software x 5 sets

g. Educational Equipment

- VCR x 2
- TV x 2
- 35 mm slide projector x 2
- Overhead slide projector x 2
- Video projector x 1
- Photocopier x 2
- Video camera x 1

The list covers the initial requirement (first two years) for the AI Centre. NCB has requested that a portion of the total hardware and software budget be set aside for the acquisition of new hardware or software, or upgrade of hardware and software, during the later stage of the project. The Japanese Government is agreeable to this request. The budget to be set aside and the new hardware or software items required will be decided later.

THE RECORD OF DISCUSSIONS BETWEEN THE JAPANESE IMPLEMENTATION SURVEY TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF SINGAPORE ON THE JAPANESE TECHNICAL COOPERATION FOR THE JAPAN-SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY PROJECT

The Japanese Implementation Survey Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as JICA) and headed by Mr Yukitoshi Nagasawa, Director of the Overseas Centers Division, Social Development Cooperation Department, Japan International Cooperation Agency visited the Republic of Singapore from December 8, 1980 to December 20, 1980 for the purpose of working out the details of the technical cooperation program concerning the Japan-Singapore Institute of Software Technology Project in the Republic of Singapore.

During its stay in the Republic of Singapore, the Team exchanged views and had a series of discussions with the Singapore authorities concerned in respect of the desirable measures to be taken by both Governments for the successful implementation of the abovementioned Project.

As a result of the discussions, the Team and the Singapore authorities concerned agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Singapore, December 18, 1980

(Yukitoshi Nagasawa)
Head of the Japanese
Implementation Survey Team

(Ong Wee Hock)
for Chairman
Economic Development Board

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of the Republic of Singapore will cooperate with each other in implementing the Japan-Singapore Institute of Software Technology Project (hereinafter referred to as "the Project") for the purpose of training skilled technical and professional manpower in the fields related to computer software thereby contributing to the social and economic progress of the Republic of Singapore.

2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II. DESPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Japanese experts referred to in 1 above and their families will be granted in the Republic of Singapore the privileges, exemptions and benefits no less favourable than those accorded to experts of third countries working in the Republic of Singapore under the Colombo Plan Technical Cooperation Scheme.

III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials necessary for the implementation of the Project as listed in Annex III, through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The articles referred to in 1 above will become the property of the Government of the Republic of Singapore upon being delivered c.i.f. to the Singapore authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

IV. TRAINING OF SINGAPORE PERSONNEL IN JAPAN

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to receive at its own expense the Singapore personnel connected with the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Government of the Republic of Singapore will take necessary measures to ensure that the knowledge and experience acquired by the Singapore personnel from technical training in Japan will be utilized effectively for the implementation of the Project.

V. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF SINGAPORE

1. In accordance with the laws and regulations in force in the Republic of Singapore, the Government of the Republic of Singapore will take necessary measures to provide at its own expense :

(1) Services of the Singapore counterpart personnel and administrative personnel as listed in Annex IV;

(2) Buildings and facilities as listed in Annex V;

(3) Supply or replacement of machinery, equipment, instrument, tools, spare parts and any other materials necessary for the implementation of the Project other than those provided through JICA under III above;

(4) Transportation facilities and travel allowance for the Japanese experts for the official travel within the Republic of Singapore and according to prevailing transportation rules and regulations in force in EDB;

(5) Suitably furnished accommodations or equivalent housing allowance under the Colombo Plan Scheme for the Japanese experts and their families.

2. In accordance with the laws and regulations in force in the Republic of Singapore, the Government of the Republic of Singapore will take necessary measures to meet:

(1) Expenses necessary for the transportation within the Republic of Singapore of the articles referred to in III above as well as for the installation, operation and maintenance thereof;

(2) Customs duties, internal taxes and any other charges, imposed in the Republic of Singapore on the articles referred to in III above;

(3) All running expenses necessary for the implementation of the Project.

VI ADMINISTRATION OF THE PROJECT

1. The Chairman, Economic Development Board (hereinafter referred to as 'EDB') will be the administrator of the Institute, ex-officio, and have the overall responsibility for the establishment and implementation of the Project especially for the implementation of the measures to be taken by the Government of the Republic of Singapore mentioned in Section V above.

2. The Chairman, EDB, will appoint a Management Council to act on his behalf. The Council will comprise of members as listed in Annex VI.

3. The Director of the Japan-Singapore Institute of Software Technology (hereinafter referred to as 'the Director of the Institute') will be responsible for the management and operation of the Institute.

4. The Japanese Team Leader will assume the control of the Japanese experts and advise the Director of the Institute, the Management Council, and, if necessary, the Chairman, EDB, on technical matters concerning the operation of the Project.

5. The Japanese experts will provide technical guidance and advice concerning the following matters to the Singapore counterpart personnel:

(1) Training programmes and training curricula in each course.

(2) Installation, operation and maintenance of machinery and equipment provided by the Japanese Government.

6. The Director of the Institute and the Japanese Team Leader will work in close consultation in the implementation of the Project.

VII. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of Singapore undertakes to bear claims, if any arises, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Republic of Singapore except for those arising from the wilful misconduct or gross negligence of the Japanese experts.

VIII. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five years from December 18, 1980.

ANNEX I

MASTER PLAN

1. The Japan-Singapore Institute of Software Technology (hereinafter referred to as 'the Institute') will be established for training skilled technical and professional manpower in the field of computer software technology at World Trade Centre in Singapore initially or subsequently at another location which will be mutually agreed upon.

2. The Institute will serve the following objectives.

   (1) To train technicians and professionals to form the core of manpower for the future software industry in Singapore.

   (2) To provide professional training to 'A' level graduates who will manage computer installations.

   (3) To provide training in high-level and state-of-the-art technology to experienced programmers and systems engineers.

   (4) To provide up-to-date overview and latest technique to EDP knowhow to EDP managers.

   (5) To provide middle and senior management training in the appreciation and application of computers.

3. The course structure of the Institute is listed in the following table:-

Course	Recruiting Source	Class Size/Duration/Intake
Programmer Course/ Systems Programmer Course	'A' level graduates/ technicians	25p x 2 classes x 1 intake 1 Year (Full-time) After this course, 50% of the students will be upgraded into systems programmer course for one more year. 25p x 1 class x 1 intake 1 Year (Full-time)
Senior Programmer Course	Experienced Programmers	25p x 1 class x 3 intakes 8W (FT) + 16W (PT)
Systems Engineer Course	Professionals/ Technicians	25p x 2 classes x 3 intakes 8W (FT) + 16W (PT)
Computer Application Course for Management	Middle and Senior Management	25p x 1 class x 3 intakes 1W (FT) + 15W (PT)

4. Training will be carried out by the Singapore counterpart personnel with the advice of the Japanese experts.

ANNEX II

JAPANESE EXPERTS

1. Team Leader

2. Experts on :
   (a) Computer Systems
   (b) Basic Software
   (c) Data Base Management Systems
   (d) Data Communications
   (e) Technical Application
   (f) Business Application

3. Coordinator

4. The Team Leader will be concurrently an expert in one of the above six technical fields.

5. Short-term experts other than those listed above will be despatched, when necessity arises.

ANNEX III

LIST OF THE ARTICLES

1 Computer and Peripheral Equipment
- a) Main frame
- b) Operator console
- c) Magnetic disk equipment
- d) Magnetic tape equipment
- e) Line printer
- f) Card reader
- g) CRT terminal subsystems
- h) Graphic display
- i) Floppy disk drive unit
- j) Data entry equipment

2 Software
- a) Operating systems
- b) Compilers of major languages
- c) Basic utility programmes
- d) Data base management system(s)
- e) Data communication control system(s)
- f) Application programmes

3. Electric Power Regulator (if necessary)

4. Necessary Computer Supplies for Site Adjustment

5. Micro/Office Computers

6. Video Equipment

ANNEX IV

LIST OF SINGAPORE STAFF

1. Director/Dy Director

2. Instructors
   (a) Full-Time Instructors
   (b) Part-Time Instructors

3. Full-Time Computer Operators

4. Administrative Personnel
   (a) Executive Officer
   (b) Personal Assistant
   (c) Clerks
   (d) Storekeepers
   (e) Others

ANNEX V

LIST OF BUILDING AND FACILITIES

Building (Air-conditioned)

(A) Administrative Rooms
- (a) Director's Room
- (b) Japanese Team Leader's Room
- (c) Japanese Experts' Rooms
- (d) Staff (Full-Time/Part-Time) Rooms
- (e) Office
- (f) Conference Rooms
- (g) Library
- (h) Others

(B) Computer Rooms (These rooms should be adequately air-conditioned for the computer operation)
- (a) Main Computer Room
- (b) Mini-Computer Room
- (c) Maintenance Workshop
- (d) Others

(C) Classrooms
- (a) Classrooms
- (b) Audio-Visual Rooms
- (c) Self-Study Room
- (d) Tutorial Rooms

(D) Facilities
- (a) Store
- (b) Car park for the experts
- (c) Other necessary facilities

ANNEX VI

COMPOSITION OF THE MANAGEMENT COUNCIL

The Management Council will be appointed by the Chairman, EDB and is responsible to the EDB.

(a) Singapore

Chairman	-	EDB Representative
Member	-	Director of the Institute
Member	-	These 2 members will be nominated
Member	-	by Chairman, EDB

(b) Japan

Member	-	Japanese Team Leader
Member	-	Coordinator
Member	-	Resident Representative of JICA in Singapore
Observer	-	Representative from the Embassy of Japan

TENTATIVELY ESTIMATED SCALE OF THE PROJECT AND TENTATIVE SCHEDULE OF IMPLEMENTATION ON THE TECHNICAL COOPERATION FOR THE JAPAN-SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY

SINGAPORE, DECEMBER 18, 1980

JAPAN INTERNATIONAL COOPERATION AGENCY

AND

ECONOMIC DEVELOPMENT BOARD

The Japanese Implementation Survey Team and the official authorized by the Chairman of Economic Development Board have jointly formulated, for reference to the 'Record of Discussions between the Japanese Implementation Survey Team and the Authorities concerned of the Government of the Republic of Singapore on the Japanese Technical Cooperation for the Japan-Singapore Institute of Software Technology Project' the Tentatively Estimated Scale of the Project and the Tentative Schedule of Implementation as annexed hereto.

Singapore, December 18, 1980

(Yukitoshi Nagasawa)
Head of the Japanese
Implementation Survey Team

(Ong Wee Hock)
for Chairman
Economic Development Board

ANNEX I

TENTATIVELY ESTIMATED SCALE OF THE PROJECT

Total Amount	approximately 650 million yen
Amount of machinery, equipment and other materials (C.I.F. Singapore)	approximately 300 million yen

Note : Because of the annual budgetting system of Japan, the total cost of Technical Cooperation by the Government of Japan is estimated figures on the assumption that the necessary budget for the Technical Cooperation will be acquired over the period of Technical Cooperation and that the Government of the Republic of Singapore will take necessary measures to implement the Project.

ANNEX II

TENTATIVE SCHEDULE OF IMPLEMENTATION

Item \ Year	1980	1981	1982	1983	1984	1985
Term of Cooperation (R/D)		Five Years				
(DISPATCH OF JAPANESE EXPERTS)						
1. Experts (6)						
(a) Computer Systems						
(b) Basic Software						
(c) Data Base Management Systems						
(d) Data Communications						
(e) Technical Application						
(f) Business Application						
2. Co-ordinator						
3. Short term experts						
(PROVISION OF MACHINERY/ EQUIPMENT)						
(TRAINING OF SINGAPORE PERSONNEL IN JAPAN)						
1. Director		6p	6p	4p	4p	
2. Full-Time Instructors						
(SERVICES OF COUNTERPART PERSONNEL/ADMINISTRATIVE PERSONNEL)						
1. Director/Dy Director (1)						
2. Instructors						
(a) Full-Time Instructors (26)						
(b) Part-Time Instructors						
3. Full-time Computer Operators (4)						
4. Administrative Personnel						
(a) Executive Officer						
(b) Personal Assistant						
(c) Clerks						
(d) Storekeepers						
(e) Others						
(OPENING OF THE TRAINING)						
(CONSTRUCTION OF BUILDING AND FACILITIES)		Aug				

NOTES: This schedule is formulated tentatively on the assumption that necessary budget will be acquired.
This schedule is subject to change within the scope of the 'Record of Discussion' in the future if necessity arises.

JAPAN SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY (JSIST)
MINUTES OF MEETING

The Japanese Implementation Survey Team and officials authorised by the Chairman of the Economic Development Board have jointly agreed upon and executed a 'Record of Discussions' to establish the basis for technical cooperation for the Japan Singapore Institute of Software Technology Project. The following Minutes of Meeting are intended to clarify and specify the issues as described in the Record of Discussions.

1. Provision of Machinery and Equipment

   Both parties agreed that the term "Machinery and Equipment" means computer hardware and peripheral equipment, software and other materials/equipment necessary for the implementation of the project.

2. Administration of the Project

   Both parties agreed that the Chairman EDB or his nominee, will be administrator of the Institute, ex-officio, and will have overall responsibility for the establishment and implementation of the Project.

3. Counterparts Training in Japan

   The EDB stressed that the training of local counterparts in Japan should be brought forward wherever possible. The EDB further requested JICA to consider the following schedules:-

	As Originally Proposed in R/D	EDB Proposed Schedule
1980	-	2
1981	6	10
1982	6	6
1983	4	2
1984	4	-

It is agreed that the training of local counterparts should commence at the earliest possible date of each fiscal year. The Team has requested the EDB to submit the forms A2 and A3 to Japan two months in advance at the latest. The EDB has requested that the technical training in Japan should be at least 6 months and a provision of 1 to 3 months period for the counterparts to learn Japanese language in Japan.

4. Transportation Facility

Both parties agreed that, to be in line with the other training centres and institute, the EDB will not provide any transportation facility in the form of a car or driver to the project. However, the Board will bear the travelling expenses of the experts for official travelling within Singapore in accordance with the prevailing transportation rules and regulations in force in EDB.

5. Objectives of the Institute

Both parties agreed that other than those objectives specified in Annex 1 of the R/D, the JSIST will also serve as a centre for information and dissemination of computer software technology and to promote the development of a software industry.

6. Course Structures

Both parties agreed that besides those details specified in Annex 1 of the R/D, it was agreed that the Institute should operate not only on 40 hours per week basis but also to cater for evening courses. Regular student will spend 40 hours per week in the Institute; approximately 50% of the time will be for theoretical related theory classes and the rest will be on practice. Tutors and instructors will be available during the practice sessions. The total hours for each course will be as follows:-

Courses	Total Hours
Programmer	2,000
Systems Programmer	2,000
Senior Programmer	464
Systems Engineer	464
Computer Application	175

The Institute will be opened in the evening for the evening courses according to schedules to be approved by the Management Council. Such evening operations shall be the responsibility of local authorities.

Both parties agreed that seminars will be conducted in the Institute for specific needs/applications in the EDP fields. The above seminar shall be conducted at the responsibility of the local authorities concerned. The duration of each seminar could range from a few days to 1 or 2 weeks. The Institute will invite EDP experts in Singapore or from overseas to conduct such seminars.

7. Training Standard

Both parties agreed that training programmes should be designed in such way that the trainees of the Institute shall be prepared for examination at a level equivalent to those set by MITI, Japan.

8. Role of Japanese Experts

Both parties agreed that the major job functions of the Japanese experts cover the following:-

- The lectures will be undertaken by the local counterparts. However, on certain subjects, lectures will be directly given by Japanese experts as demonstration. Their job is to achieve technical transfer to the local counterparts during the agreed period of cooperation.

- Technical guidance and advice will be given on training programmes and training curriculum in each course.

- Technical guidance and advice will be given on installation, operations and maintenance of machinery and equipment provided by the Japanese Government.

- To train local counterparts in Singapore.

Although EDB strongly requested that the Team Leader should be the Director of the Institute, the Japanese Team explained that it is not possible due to Japanese Government's policy on technical cooperation. It was therefore agreed that in the initial two years from the assignment of the Team Leader in Singapore or until a Director of the Institute is appointed, whichever is earlier, the Team Leader will function as Head of Project of the Institute. The duties of Head of Project and Dy Director is further described in Annex I of the Minutes of Meeting.

9. Terms and Conditions for the Japanese Experts

Both parties agreed that the Japanese experts will be working in the Institute from 0830 to 1700 hours, Mondays to Fridays, and 0830 to 1300 hours on Saturdays. The experts will be entitled to 20 days annual leave, public holidays in Singapore and up to one month home leave for every 2 years in accordance with JICA practice.

The Team requested that the experts shall be entitled to exemption of road tax for their vehicles. However, the EDB explained that the experts will not be entitled to exemption of road tax for their vehicles. This is to be in line with the current practice given by the Singapore Government to all foreign experts.

10. Computer Club

It was agreed that the Institute may form a computer club, whereby the Part-time Instructors are members who will be allocated certain amount of free computer CPU time for their research and practice. Intention is to serve as an incentive for experienced computer professionals to teach in the Institute on a part-time basis. Similarly, the graduates of the Institute can also join the club and pay certain nominal fees to use the computer facilities. However, such usage should not be for profit-making purposes and shall not cause any inconvenience to the normal operation of the Institute. Rules and regulations governing the club will be made by the Management Council of the Institute.

11. Installation of Machinery and Equipment

Both parties agreed that all the machinery and equipment provided by the Japanese Government should preferably be installed within the first two years of operation of the Institute.

12. Commencement Date of First Intake

Both parties agreed that the commencement date of the first intake should be scheduled for the end of 1981. EDB targetted mid-November 1981 or early December 1981 for start-up of operation.

13. Machinery and Equipment

In view of the trainee capacity at any one time, there will be at least 175 trainees in the Institute.
It was agreed that the Team will make the best efforts to supply the equipment listed below by priority order subject to the budgetary provision stipulated in the Record of Discussions.

Priority A

(I) Hardware

(1) Main frame (CPU-2 no. x 2 MB or more)

(2) Operator console

(3) Magnetic disk equipment (1600 MB or more)

(4) Magnetic tape equipment (1600 bpi x 4 no)

(5) Line printer (1500 LPM or more)

(6) Card reader (600 CPM)

(7) CRT terminals (54 no. with 5 printers and 4 smart terminals)

(8) Colour graphic displays (2 no., of which 1 is X-Y plotter (400 steps/sec.))

(9) Floppy disk drive unit

(10) Data entry equipment (key to floppy, card punch, etc)

(11) Business mini-computer (128 KB)

(12) Micro computers

(II) Application Programmes

For the Application Programmes software as specified in R/D, it should include the packages for the following purposes:

(a) Software development

(b) Mathematic, statistic and mathematic programming

(c) Simulation and forecasting techniques

(d) Accounting and financial management

(e) Production, inventory and sale control

(f) Engineering, design and manufacturing

(g) Information retrieval

Priority B

(1) CRT terminals (27 no., 4 with printers and 4 smart terminals)
(2) Line printer (2000 LPM)
(3) Colour graphic displays (10 no., of which 1 is X-Y plotter)
(4) Data entry equipment (including OCR, MICR, mark sheet reader, etc)
(5) Business mini-computer (128 KB)
(6) Scientific mini-computers (128 KB x 2 no.)
(7) CRT terminals (19 no., with some printers and smart terminals)
(8) Special purpose or industrial mini-computers (128 KB x 2 no.)
(9) Micro/office computers
(10) Card reader (600 CPM)
(11) Paper tape reader
(12) Paper tape punch

14. Provision for Expansion

Both parties agreed that the Institute may expand its intakes and enrolment depending upon the demand for the Institute's services and subjected to availability of qualified staff and organizational strength of the Institute. This provision is within the authority of the Management Council. Such expansion will be at the responsibility and expense of the EDB and will not entail further request for equipment, experts or scholarships.

15. Measures to be Taken by Both Governments for the Computer Installation and Operation

Both parties agreed that the measures specified in Annex II of the Minutes of Meeting should be taken by both governments for the smooth installation and operation of the computer system.

16. Assignment of Local Staff

Both parties agreed that substantial number of counterparts and administrative staff should be assigned prior to the arrival of the Japanese experts in Singapore. It was agreed that EDB will take the necessary measures to ensure the continuous assignment of those counterparts in the Institute for the efficient implementation of transfer of technology.

17. Safety and Security of the Institute

Both parties agreed that EDB will take necessary measures to ensure the safety and security of the Institute.

18. Custom Formality Concerning Machinery and Equipment

Both parties agreed that EDB will take necessary measures to ensure the rapid custom clearance of the articles referred to in Section III of the R/D for the smooth implementation of the project.

19. Communication and Plan of Operation

The EDB proposed a regular communication and consultation at least once in 3 months both in Singapore and in Japan. The EDB will be responsible for the cost on the Singapore part.

The object is to draw up a detailed Plan of Operation to ensure smooth implementation.

The Team explained that due to the budgetary limitation, JICA is unable to send such a mission to Singapore at a regular interval. However, the Team will make efforts to recommend to the Japanese Government to despatch relevant short term experts to Singapore when the necessity arises.

20. Recorded as a correct interpretation of our understanding.

Singapore, December 18, 1980

(Yukitoshi Nagasawa)
Head of the Japanese
Implementation Survey Team

(Ong Wee Hock)
for Chairman
Economic Development Board

Annex 1

COMBINED TERMS OF REFERENCE OF HEAD OF PROJECT (JAPANESE EXPERT) AND DEPUTY DIRECTOR (LOCAL COUNTERPART) FOR THE JAPAN SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY (JSIST)

The organisation of JSIST is such that the Head of Project is seconded from the Government of Japan and has been chosen for his competence in training and technical administration and expertise in the field of computer software technology. He will be supported by a local deputy director.

The main function of the Head of Project is to take the lead in building up the quality of instruction and development of curriculum and training administration while his local counterpart, the Dy Director of the Institute, is responsible for the day to day administration of the Institute. The Head of Project and his deputy will work very closely together. The Dy Director of the Institute should understudy the Head of Project and be involved in the planning and decision making processes of all aspects of training and technical administration. The responsibility and authority of the Head of Project and the Dy Director of the Institute are set out as follows:-

1. Responsibility

1.1 To the Management Council in respect of -

(a)	planning, development, organisation and implementation of training programme	- Head of Project
(b)	trainees, staff, financial matters and day to day administration of the Institute in accordance with the guidelines and policies established by the Council	- Dy DOI

1.2	(a) For the Japanese experts of the Institute	-	Head of Project
	(b) For the local staff and trainees of the Institute	-	Dy DOI
2.	Objectives		
2.1	Training Programme	- To plan and review the training programme from time to time with his team of experts, in consultation with EDB, to ensure that they are in line with Singapore's industrial development and manpower requirement.	- Head of Project
2.2	Budget	- To operate within the approved budget and financial regulations of the Institute.	- Dy DOI in consultation with Head of Project
2.3	Organisation	- To plan and to ensure the effective implementation of the administrative, financial and inventory control systems of the Institute.	- Dy DOI

2.4	Staff Development	- To plan and implement programmes for the training and development of local teaching staff through on-the-job training, special courses or overseas training. It is aimed that a core of local teaching staff be developed and upgraded within 5 years to acquire the skill, knowledge, experience and capability to take over the duties and responsibilities of the experts.	- Head of Project and Dy DOI
3.	Duties and Authority		
3.1	To select trainees for recruitment, to supervise, counsel, guide and discipline them according to the Institute's Disciplinary Procedure.		- Dy DOI
3.2	To supervise, counsel and discipline the local staff of the Institute, to recommend to the Management Council the employment, promotion, salary variations, termination or disciplinary measures against them in accordance with the normal operating procedure or terms established by the Staff Committee, Economic Development Board.		- Dy DOI in consultation with Head of Project

3.3	To employ or dismiss temporary staff.	-	Dy DOI
3.4	To approve jointly recurrent expenditure not exceeding $5,000 within budgetary levels and in accordance with the Financial Regulations of the Institute.	-	Head of Project and Dy DOI
3.5	To recommend approval of any recurrent expenditure within budgetary levels for the concurrence of the Chairman, Management Council for expenditure exceeding $5,000 but below $10,000 or the Management Council/EXCO.EDB for expenditure exceeding $10,000.		Can be prepared by Dy DOI in consultation with Head of Project
3.6	To recommend approval to the Chairman, Management Council of any capital expenditure within budgetary levels not exceeding $10,000 or the Management Council/EXCO.EDB for capital expenditure exceeding $10,000.		
3.7	To recommend to the Management Council the selections of tenders.		Can be prepared by Dy DOI in consultation with Head of Project
3.8	To prepare annual budgets for the Institute.		

4	Functional Contacts		
4.1	Chairman, Management Council, in respect of matters involving policy, budgets, implementation and development plans, staff development, etc.	-	Head of Project and/or Dy DOI
4.2	Chief Financial Officer, Economic Development Board in respect of accounts and financial matters.	-	Dy DOI
4.3	Internal Auditor, Economic Development Board in respect of audit queries.	-	Dy DOI
4.4	Staff Section, Economic Development Board on staff matters.	-	Dy DOI
4.5	Manpower Division, Economic Development Board in respect of administrative matters concerning operation of the Institute, recruitment of trainees, placement of graduates, etc.	-	Dy DOI
4.6	Manpower Division, Economic Development Board in respect of development of the Institute.	-	Head of Project and Dy DOI

5 Reports

5.1 Each month to the Management Council on the financial staffing, training and other matters of the Institute.

- All reports can be prepared by Dy DOI in consultation with Head of Project

5.2 To send by the first week of each month, the statement of accounts including a bank statement to the Chief Financial Officer, Economic Development Board for the purpose of reimbursing the Institute's account.

5.3 Half yearly, to prepare a report of the operations.

5.4 To prepare and cause to be prepared, staff appraisals.

5.5 Half yearly on local instructors training and development programme.

Annex II

Table 1

Allocation of Expenditure for Computer Installation

		Allocation of Expenditure	
		Singapore	Japan
1.	Transportation		
	(a) Japan to Port of Singapore including insurance (CIF)		X
	(b) Custom formality and from port to the Institute	X	
2.	Installation and Adjustment		
	(a) Despatch of supervisors for installation and adjustment		X
	(b) Installation workers	X	
	(c) Recruitment of operators (At least one person should be experienced)	X	
	(d) Training for operators		X
3.	Maintenance Contract		
	(a) Maintenance contract/ expenditure	X	
4.	Boundary of Installation		
	(a) Power Supply		
	(i) Distribution panel and after AVR wiring in computer room		X
	(ii) Materials for secondary wiring from distribution panel.		X
	(iii) Installation of above (i) and (ii)	X	

		Allocation of Expenditure	
		Singapore	Japan
(b)	Wiring materials between each computer equipment		X
(c)	Construction of above (b)	X	
(d)	Airconditioning facilities	X	
(e)	Airconditioning for each equipment (underfloor type) (Note: Anti-dew materials such as special paint, special cement, etc. could be applied)	X	
(f)	Construction of free-access floor	X	
(g)	Cutting of free-access floor	X	
(h)	Layout of computer equipment (Detailed specification and layout plan of hardware/equipment should be provided through JICA, tentatively, by end of February 1981)		X
(i)	Halon fire protection system	X	
(j)	AVR (Automatic Voltage Regulator) facilities		X
(k)	Installation of AVR	X	
(l)	Installation of electric power point	X	
5.	Fixture of Computer Room		
(a)	Fireproof safe for master magnetic tape/disk pack	X	
(b)	Shelves for magnetic tape, disk pack, line printer paper and article, etc.	X	

		Allocation of Expenditure	
		Singapore	Japan
(c)	Carrier for magnetic tape, disk pack and general article, etc.	X	
(d)	Boxes for punch card and floppy disk, etc.	X	
(e)	Desks and chairs for debugging and operator	X	
(f)	White boards	X	
(g)	Schedule white boards	X	
(h)	File cabinets and book shelves	X	
(i)	Others	X	
6.	Fixture of Maintenance Room		
(a)	Desks, chairs, electric stands	X	
(b)	Shelves for article	X	
(c)	Schedule white boards	X	
(d)	Bookcases for manual and drawing	X	
(e)	Work desks	X	
(f)	Others	X	

Table 2

Building Requirement for Computer Room

		Allocation of Expenditure	
		Singapore	Japan
1.	Requirements in Computer Room		
	(a) Floor (free-access)		X
	(i) Floor height : 200-300 mm		X
	(ii) Loading capacity : 300-350 kg/sq m		X
	(iii) Slope ratio : 1/5		X
	(iv) Panels cutting and additional pedestals		X
	(b) Ceiling height (from free-access floor) : At least 2.3 m		X
	(c) Lighting : Approximately 350 luxes		X
	(d) Acoustical treatment : Necessary		X
	(e) Power points : 5 outlets or more for adjustment and maintenance instruments		X
	(f) Fire protection system: Halon system		X
	(g) File storage room (magnetic tape, disk pack and card) : Locate in computer room		X
	(h) Airconditioning for computer and computer room: Necessary		X

			Allocation of Expenditure	
			Singapore	Japan
2.	Power Supply System			
	(a) Voltage to AVR	: 200V + or - 6% 3 phase (non grounding system)	X	
	(b) Frequency	: 50 Hz + or - 1%	X	
	(c) Electrical grounding	: 10 ohm or less (it would be advisable to have an independent earthing wire)	X	
	(d) Distribution panel (installed in the computer room)	: (i) Branch circuits (circuit breakers, circuit breakers for maintenance)		X
		(ii) Monitoring instruments, operation, display and grounding terminal of power supply		X
	(e) Abnormality detection			X
	(f) Earthing wire	: At least 38 sq mm	X	
	(g) Wiring of main line	: Should not be built across the computer room's ceiling or under the free access floor	X	

		Allocation of Expenditure	
		Singapore	Japan
(h)	Space for AVR : Space (2.4 x 3.1 m)	X	
(i)	AVR		X
(j)	Power supply capacity : 100 KVA	X	
3.	Airconditioning System		
(a)	Under floor type	X	
(b)	Airconditioning distribution duct	X	
(c)	Detector for temperature and humidity : Under floor	X	
(d)	Automatic recorder for temperature and humidity	X	
(e)	Air cleaner	X	
(f)	Water protection	X	
4.	Fire Protection		
(a)	Fire protection of building	X	
(b)	Automatic fire alarm system	X	
(c)	Fire extinguishers	X	
5.	Water Damage Protection	X	
6.	Security Precautions	X	
7.	Rat Banishment	X	

Note: All building specifications in this Annex should be in line with the local Building Control Regulations.

THE RECORD OF DISCUSSIONS BETWEEN THE JAPANESE IMPLEMENTATION SURVEY TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF SINGAPORE ON THE JAPANESE TECHNICAL COOPERATION FOR THE JAPAN-SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY SECOND PHASE PROJECT

The Japanese Implementation Survey Team organized by the Japan International Cooperation Agency (hereinafter referred to as 'JICA') and headed by Dr Kazuto Nakazawa, Executive Director of JICA visited the Republic of Singapore from January 8, 1986 to January 14, 1986 for the purpose of working out the details of the technical cooperation program concerning the Japan-Singapore Institute of Software Technology Second Phase Project.

During its stay in the Republic of Singapore, the Team exchanged views and had a series of discussions with the Singapore Authorities concerned in respect of the desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions, both parties agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Singapore, January 13, 1986

Dr Kazuto Nakazawa
Leader
Implementation Survey Team
Japan International Cooperation Agency
Japan

Mr Philip Yeo Liat Kok
Chairman
Economic Development Board
Singapore

Mr Hirosni Tanaka
Resident Representative
JICA Singapore Office

Mr Lin Cheng Ton
Divisional Director (Manpower)
Economic Development Board
Singapore

THE ATTACHED DOCUMENT

I COOPERATION BETWEEN BOTH GOVERNMENTS

1 The Government of Japan and the Government of the Republic of Singapore will cooperate with each other in implementing the Japan-Singapore Institute of Software Technology Second Phase Project (hereinafter referred to as "the Project") for the purpose of training skilled technical and professional manpower in the fields related to computer software thereby contributing to the social and economic progress of the Republic of Singapore.

2 The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II DISPATCH OF JAPANESE EXPERTS

1 In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2 The Japanese experts referred to in II (1) above and their families will be granted in the Republic of Singapore the privileges, exemptions and benefits no less favorable than those accorded to experts of third countries working in the Republic of Singapore under the Colombo Plan Technical Cooperation Scheme.

III PROVISION OF MACHINERY AND EQUIPMENT

1 In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials necessary for the implementation of the Project as listed in Annex III, through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2 The articles referred to in III (1) above will become the property of the Government of the Republic of Singapore upon being delivered C.I.F. to the Singapore authorities concerned at the port and/or airport of disembarkation, and will be utilized exclusively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

IV TRAINING OF SINGAPORE PERSONNEL IN JAPAN

1 In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to receive at its own expense the Singapore personnel connected with the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2 The Government of the Republic of Singapore will take necessary measures to ensure that the knowledge and experience acquired by the Singapore personnel from technical training in Japan will be utilized effectively for the implementation of the Project.

V MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF SINGAPORE

1 In accordance with the laws and regulations in force in the Republic of Singapore, the Government of the Republic of Singapore will take necessary measures to provide at its own expense:

(1) Services of the Singapore counterpart personnel and administrative personnel as listed in Annex IV;

(2) Building and facilities as listed in Annex V;

(3) Supply or replacement of machinery, equipment, instrument, tools, spare parts and any other materials necessary for the implementation of the Project other than those provided through JICA under III above;

(4) Transportation facilities and/or travel allowance for the Japanese experts for the official travel within the Republic of Singapore and according to prevailing transportation rules and regulations in force in EDB;

(5) Suitably furnished accomodations or equivalent housing allowance under the Colombo Plan Technical Cooperation Scheme for the Japanese experts and their families.

2 In accordance with the laws and regulations in force in the Republic of Singapore, the Government of the Republic of Singapore will take necessary measures to meet:

(1) Expenses necessary for the transportation within the Republic of Singapore of the articles referred to in III above as well as for the installation, operation and maintenance thereof;

(2) Customs duties, internal taxes and any other charges, imposed in the Republic of Singapore on the articles referred to in III above;

(3) All running expenses necessary for the implementation of the Project.

VI ADMINISTRATION OF THE PROJECT

1 The Chairman, Economic Development Board (hereinafter referred to as 'EDB') will have the overall responsibility for the establishment and implementation of the Project.

2 The Director of the Japan-Singapore Institute of Software Technology (hereinafter referred to as 'the Director of the Institute') will be responsible for the management and operation of the Institute.

3 The Japanese Team Leader will assume the control of the Japanese experts and will provide necessary recommendation and advice on technical and administrative matters concerning the implementation of the Project to the Director of the Institute, Management Council and, if necessary, to the Chairman of EDB.

4 The Japanese experts will provide technical guidance and advice to the Singapore counterpart personnel on matters pertaining to the implementation of the Project, especially on training programme and curricula development.

5 The Director of the Institute and the Japanese Team Leader will work in close consultation in the implementation of the Project.

6 The Chairman, EDB will appoint a Management Council to act on his behalf. The Council will comprise members listed in Annex VI.

7 The organization chart of the Project is shown in Annex VII.

VII CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of Singapore undertakes to bear claims, if any arises, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Republic of Singapore except for those arising from the wilful misconduct or gross negligence of the Japanese experts.

VIII MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

IX TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from January 13, 1986.

ANNEX I

MASTER PLAN

1 OBJECTIVE OF THE PROJECT

The objective of the Project is to train the Analyst/Programmers who can play a leading part in the development of system program and large-scale application programme in the field of computer software technology through providing the practical and theoretical training on the advanced programming and system analysis techniques.

2 TRAINING PROGRAMME

(1) Course:

Advanced Diploma Course for Analyst/Programmer

(2) Entry Requirements:

Graduates of JSIST A/P Course or person who has the equivalent ability

(3) Training period:

One (1) year/full time
(nine month; in-house training, three month; practice in corporations)

(4) Intake Plan:

First year; 25 trainees x 1 intake
Second year; 25 trainees x 2 intakes
6 month interval

(5) Training Curriculum:

the curriculum/syllabus would cover the scope of MITI Type I Examination

3

The training will be carried out by the Singapore Counterparts personnel with the advice of the Japanese experts.

ANNEX II

JAPANESE EXPERTS

1 Team Leader

2 Experts in the fields of:

(a) Programming Technique

(b) System Software

(c) Application System

(d) Data Communications

3 Coordinator

4 Several short-term experts will be dispatched for smooth and successful implementation, when necessity arises.

ANNEX III

LIST OF THE ARTICLES

1 Computer and Peripheral Equipment

- (a) Main Frame
- (b) Operator Console
- (c) Magnetic disk equipment
- (d) Magnetic tape equipment
- (e) Line Printer
- (f) Laser Printer
- (g) Intelligent terminal subsystems
- (h) Optical character reader
- (i) Floppy disk drive unit
- (j) Data entry equipment

2 Software

- (a) Operating systems
- (b) Compilers of major languages
- (c) Basic utility programmes
- (d) Data base management system(s)
- (e) Data communication control system(s)

3 Uninterruptible Power Supply

4 Necessary Computer Supplies for Site Adjustment

5 Personal Computers

6 Other supplementary equipment

ANNEX IV

LIST OF SINGAPORE STAFF

1 Director/Dy Director

2 Assistant Director

3 Lecturers (Full-Time Lecturers)

4 Full-Time Computer Operators

5 Administrative Personnel

(a) Executive Officer

(b) Personal Assistant

(c) Clerks

(d) Storekeepers

(e) Others

ANNEX V

LIST OF BUILDING AND FACILITIES

Building (Air-conditioned)

(A) Administrative Rooms

(a) Director's Room
(b) Japanese Team Leader's Room
(c) Japanese Experts' Room
(d) Co-ordinator Room
(e) Staff Rooms
(f) Office
(g) Conference Rooms
(h) Library
(i) Teaching Material Store
(j) Room for Preparation of Teaching Material
(k) Others

(B) Computer Rooms (These rooms should be adequately air-conditioned for the computer operation)

(a) Main Computer Room
(b) Terminal Room
(c) Operater Room
(d) Others

(C) Classrooms

(a) Classrooms
(b) Audio-Visual Room
(c) Self-Study Room
(d) Tutorial Rooms
(e) Trainees Locker Room
(f) Others

(D) Meeting Room

(E) Recreation Room

(F) Facilities

(a) Store
(b) Car park for the experts
(c) Other necessary facilities

ANNEX VI

COMPOSITION OF THE MANAGEMENT COUNCIL

1 The Management Council will be appointed by the Chairman, EDB and is responsible to the EDB.

(a) Singapore

Chairman	-	EDB Representative
Member	-	)4 members nominated by
Member	-	)Chairman, EDB
Member	-	)
Member	-	)

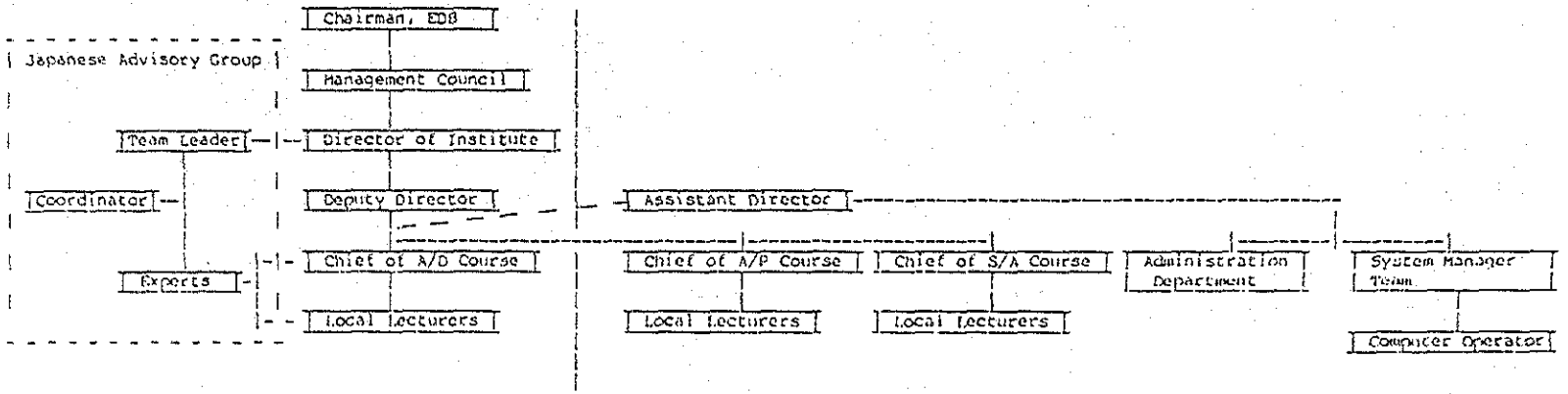
(b) Japan

Member	-	Japanese Team Leader
Member	-	Co-ordinator
Member	-	Resident Representative of JICA in Singapore
Member	-	Expert nominated by the Team Leader if necessary
Observer	-	Representative from the Embassy of Japan

2 The terms of reference of Japanese member is limited to effective and successful implementation of second phase project.

ANNEX VII

ORGANIZATION CHART OF THE PROJECT



TENTATIVE SCHEDULE OF IMPLEMENTATION ON THE
JAPANESE TECHNICAL COOPERATION
FOR THE
JAPAN-SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY
SECOND PHASE PROJECT

The Japanese Implementation Survey Team and Singapore authorities concerned have jointly formulated the Tentative Schedule for the implementation of the Project annexed hereto.

This Schedule has been formulated in connection with the Attached Document of the Record of Discussions signed between the Leader of the Japanese Implementation Survey Team and the JICA Resident Representative, and the Chairman, Economic Development Board, and the Divisional Director (Manpower), EDB, on the Japanese technical cooperation for the Japan-Singapore Institute of Software Technology Second Phase Project, on the conditions that necessary budget will be allocated for the implementation of the Project by both sides and that the Schedule is subject to change within the framework of the Record of Discussions when necessity arises in the course of the implementation of the Project.

Singapore, January 13, 1986

Dr Kazuto Nakazawa
Leader
Implementation Survey Team
Japan International Cooperation Agency
Japan

Mr Philip Yeo Liat Kok
Chairman
Economic Development Board
Singapore

Mr Hiroshi Tanaka
Resident Representative
JICA Singapore Office

Mr Lin Cheng Ton
Divisional Director (Manpower)
Economic Development Board
Singapore

TENTATIVE SCHEDULE OF IMPLEMENTATION

Item \ Year	1986	1987	1988	1989	1990	1991
DISPATCH OF JAPANESE EXPERTS						
1 Team Leader	———	———	———	———	———	–
2 Experts	———	———	———	———	———	–
(a) Programming Technique						
(b) System Software						
(c) Application System						
(d) Data Communication						
3 Coordinator	———	———	———	———	———	–
4 Short Term Experts	———	———	———	———	———	–
(PROVISION OF MACHINERY/EQUIPMENT)	———	———				
(TRAINING OF SINGAPORE PERSONNEL JAPAN)						
Full-Time Lecturers	2P —	2x2P ———	2x2P ———	2x2P ———		
(SERVICE OF COUNTERPART PERSONNEL/ ADMINISTRATIVE PERSONNEL)						
1 Director/Dy Director	———	———	———	———	———	–
2 Lecturers						
(a) Full-Time Lecturers	———	———	———	———	———	–
(b) Part-Time Lecturers	———	———	———	———	———	–
3 Full-time Computer Operators	———	———	———	———	———	–
4 Administrative Personnel						
(a) Executive Officer	)					
(b) Personal Assistant	)					
(c) Clerk	)———	———	———	———	———	–
(d) Storekeepers	)					
(e) Others	)					
(COMMENCEMENT OF TRAINING)		—	———	———	———	———
(CONSTRUCTION OF BUILDING AND FACILITIES)	———					

NOTE: This schedule is formulated tentatively on the assumption that the necessary budget will be acquired.

This schedule is subject to change within the scope of the 'Record of Discussions' in the future if necessity arises.

JAPAN-SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY
SECOND PHASE PROJECT
MINUTES OF MEETING

The Japanese Implementation Survey Team and officials of the Economic Development Board have jointly agreed upon and signed a 'Record of Discussions' to establish the basis for technical cooperation for the Japan-Singapore Institute of Software Technology Second Phase Project. The following Minutes of Meeting are intended to clarify and specify the issues as described in the Record of Discussions.

1 The JSIST First Phase Project

The EDB officials informed the Team that in accordance to the Record of Discussions, the JSIST First Phase Project was successfully completed by 17 Dec 1985. The EDB expressed their appreciation and thanks for the cooperation of the Government of Japan, and the support and assistance extended by the officials from the Embassy and JICA in Singapore, Team Leader and the Japanese Experts.

2 Management Council

Both parties agreed on the formation of the Management Council of the Project. It was agreed that although the Institute will report to this Management Council on the development and operation of the Phase I and Phase II of JSIST, the term of reference of the Japanese members is limited to the effective and successful implementation of the second phase project.

3 Provision of Computers and Peripherals Equipment

For planning purposes, EDB inquired on the configuration of the Equipment to be provided for the Project. The Team informed that the tentative configuration comprises a mainframe with twice the speed and larger memory capacity of the existing computer system; in addition the Institute will be provided with about sixty intelligent terminals, about ten personal computers and necessary peripherals.

4 Assignment of Local Staff

The EDB officials informed the Team that the provision of local staff for the project will be allocated in accordance to the norm adopted by the Ministry of Finance. It was agreed that at least twelve experienced counterparts will be attached to the Second Phase Project from the beginning for the efficient implementation of transfer of technology. Of the twelve counterparts, ten of them will be attached to the experts and the remaining two will be despatched for the six months training in Japan for each fiscal year.

5 Counterpart Training In Japan

The Team clarified that the provision of four training fellowships per annum as indicated in the Tentative Schedule Of Implementation implies that for each fiscal year, there will be two batches of two counterparts each to be despatched to Japan for training. The training duration for each batch is six months.

6 Commencement Date of Advanced Diploma Course

The EDB preferred to commence the first Advanced Diploma Course in Aug 1987 and had requested the Government of Japan, if possible, to expedite the delivery and installation of the equipment prior to such date. The Team expressed the view that it would be difficult to deliver and install the equipment before October 1987; however, the Government of Japan will try its best to expedite the delivery and installation. Both parties agreed that if Japanese Government could expedite the equipment delivery, the commencement date of the first Advanced Diploma Course will start from Aug 1987.

7 Recorded as a correct interpretation of our understanding.

Dr Kazuo Nakazawa
Leader
Implementation Survey Team
Japan International Cooperation Agency
Japan

Mr Lin Cheng Ton
Divisional Director (Manpower)
Economic Development Board
Singapore

⑤　「シ」側に送付した Questionnaireとその回答

1. ⓐ ISS　ⓑ KERC　ⓒ LS Lab 等、他のAI関連機関と AI センターとのデマケ（① 目的（役割）② 業務内容）はどのようになるのか？ 例えば AI センターと他の機関とのカリキュラムが一致した場合、AIセンターのカリキュラムをどのように扱われるか？（長期調査員による M/M 1.4項にある「NCB による調整」とは具体的にどのように行われる計画であるか？）

2. Industry Liaison Officerとはどういう条件／資格でもって人選され、具体的にどのような役割を担われるか？

3. traineesの募集を考慮して、B ~ D コースの開始時期は学生の卒業／入学時期等に合わせる必要はないか？

4. L/L および trainees の募集および選考は、具体的にどのように行われる計画であるか？

ITI 3/8/001

6th January 1990

Mr Mitsuo Ishizaki
Resident Representative
Japan International Cooperation Agency
Rm 801, RELC Building
30, Orange Grove Road
Singapore 1025

Dear

JAPAN - SINGAPORE AI CENTRE

We have provided some brief answers to the questionnaire as requested. We have also included a few questions which we hope will be addressed by the Japan AI Team when they visit us in January, 1990.

In addition, we propose some adjustments to the "Revised Tentative Schedule", we would appreciate some comments from the AI Team. A copy of the proposed revised schedule is attached.

Thank you.

Yours sincerely

Edmund Tham
Director
Industry Development Department

enc.

NATIONAL COMPUTER BOARD
71 Science Park Drive, NCB Building, Singapore 0511
Telephone: 7782211 • Telex: RS 38610 NCB • Telefax: 7769641

1. As far as AI is concerned, the focus of ISS R&D Division is neural network, not expert systems. The ISS diploma course on knowledge engineering is a 10-month full time course that attempts to give as comprehensive coverage on AI as possible. ISS's Diploma program is purely a training program.

KERC focuses mainly on planning/scheduling type applications, and occasionally on diagnostic type applications. KERC operates on a very small scale.

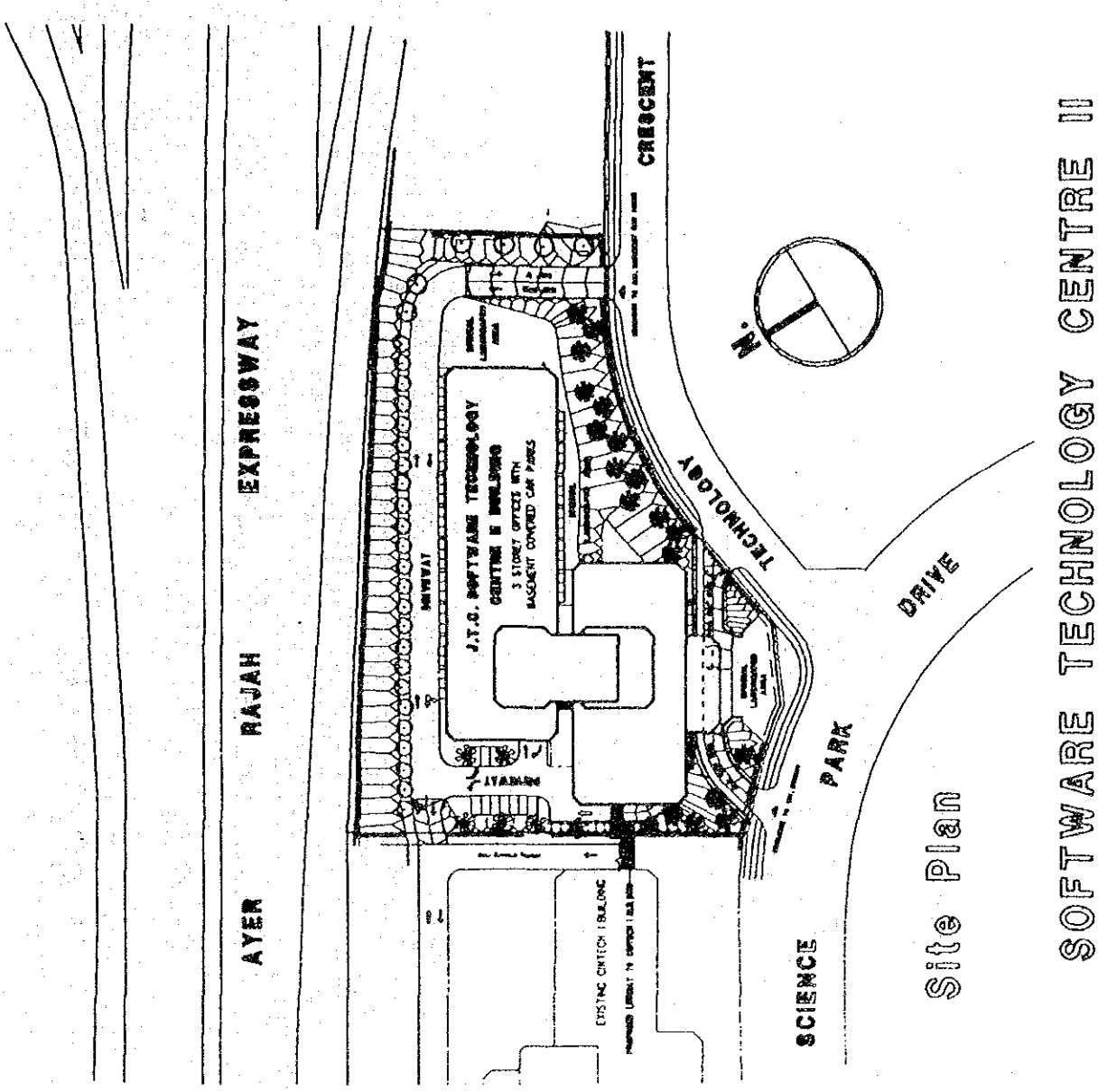
The proposed AI Centre, will concentrate on preparing software engineers for solving specific classes of practical industry problems (eg. manufacturing), using expert system technology, through an apprenticeship oriented technology transfer arrangement with minimal classroom training. Japan has a lot to teach Singapore in AI technology and we realise that the knowledge of Japanese AI technology in Singapore is lacking. The Proposed AI Centre will provide a means for such knowledge to be channeled into Singapore. The Centre will be developed into a centre of excellence which "incubates" expert systems applications in the industry, and any training that is to be done will be a means to this end.

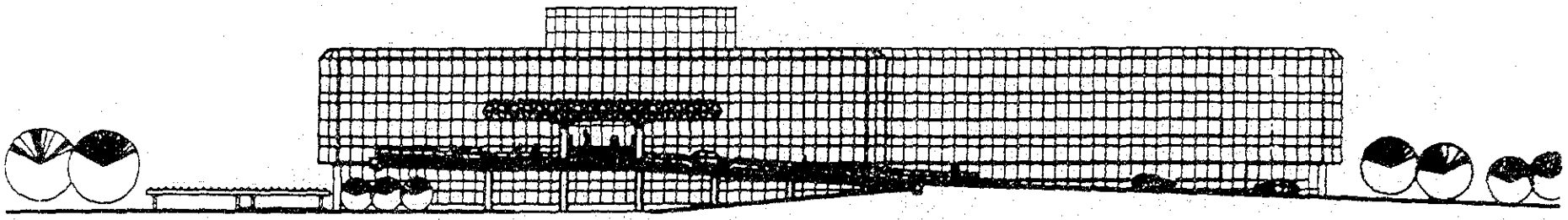
The related organisations will meet regularly, under the co-ordination and guidance of the NCB, to keep each other informed on new programs and development within their organisations. Through these dialogues, there will be discussions made to determine the areas of focus and future plans of each organisation. In this way, we will be able to minimise any duplications of activities.

2. The Industry Liaison Officer will publicise and promote the AI Center, handle all public relationship matters, but most importantly, secure industry participation and projects for the AI Center. He or she will be a graduate, not necessarily of a strong technical background, but preferably with some public relation or marketting experience. He will be playing an important role in the above inter-organisational co-ordination.

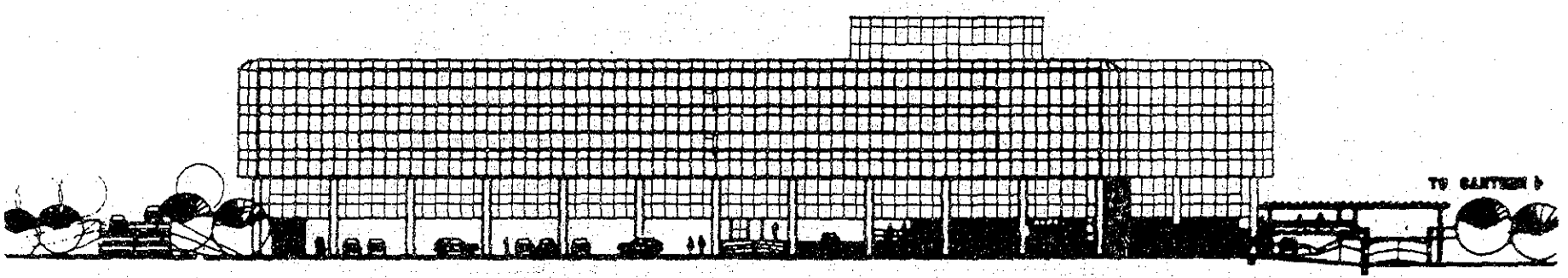
3. Yes. This is an execellent point. We will certainly take this into consideration in the planning of the detailed course schedules.

4. Some of the staff will be recruited through internal posting within NCB, the rest through recruitment by newspaper advertisement, in the open job market as well as through local and overseas campus recruitment.


SOFTWARE TECHNOLOGY CENTRE II
Site Plan
AYER RAJAH EXPRESSWAY
CRESCENT
TECHNOLOGY
DRIVE
PARK
SCIENCE
N



Southwest Elevation



Northeast Elevation

SOFTWARE TECHNOLOGY CENTRE

BUSINESS TIMES, Friday, December 22, 1989

EWS

...the minister of state told the guests at japore offered many investment and joint venture inessmen

Myanmar Airways to resume flights here

NMAR Airways is to resume its to Singapore from next sday, after a break of more a ye

"This is part of our efforts to ourage more tourists to come Myanmar," said Win Aung, rge d'Affaires with the Myan- (Burma) embassy here.

With more Singaporeans trav- g abroad for holidays, Myan- is keen on attracting some is tourist traffic.

The once weekly flight from gon (Rangoon) to Singapore Penang will make it more venient for Singapore busi- smen to visit Myanmar, he ed. Previously, they could reach the country with its from Bangkok.

Flights of Myanmar Airways nd from Singapore were halt- during the political turmoil in nmar in 1988. Visitors to nmar trickled to a stop when government stopped issuing ist visas in the last quarter of year. It only started re-issu- tourist visas in the middle of year and they are now good two weeks.

Tour agencies have begun ertising tour packages to nmar. One travel agent con- ed by BT said that the num- a trickle at the moment but she expects it to grow by next year.

Myanmar Airways (previously Burma Airways Corporation) has appointed Singapore Airlines as its general sales agent in Singapore. The airline will be using a 80-seater Fokker F28. Singapore Airport Terminal Services has been awarded the ground handling contract.

An SIA spokesman said the airline has no immediate plans to fly there. However, he said that Tradewinds, an SIA subsidiary which offers charter flights, is planning to do so, though no specific date has been fixed.

Myanmar's new open-door economic policies emphasises foreign investment and free enterprise in order to pull the country out of its economic stagnation.

Singapore has been actively engaged in Myanmar's economic development efforts. Recently, the Minister of State for Trade and Industry, Mah Bow Tan, led a 40-member trade and investment mission to that country.

Myanmar has enlisted the help of a local chamber of commerce official, George Abraham, to help the Myanmar Chamber of Commerce and Industry get off

NCB expected to set up IT institute with Japan

By JAYARAM MENON

THE NATIONAL Computer Board (NCB) is expected to team up with Japan to set up an institute to train information technology professionals in artificial intelligence (AI).

Negotiations are still going on with the Japan International Cooperation Agency (JICA). If all goes well, a formal signing ceremony is expected to take place next month.

The idea of setting up an artificial intelligence institute arose from discussions between NCB and JICA officials.

JICA has been instrumental in the setting-up of institutions in Singapore to facilitate the transfer of technology from Japan to Singapore.

An AI institute would help alleviate the critical shortage of experts in a field regarded as the forefront of information technology (IT). Artificial intelligence is at the core of smart systems, that is, machines that can think and make decisions on their own.

Systems using AI are the higher value-added products of IT — an industry estimated to be worth US$1.7 billion next year.

A strong base of AI professionals could help Singapore increase its competitive edge, as AI can prove a useful tool in strategic planning and productivity improvement in the manufacturing and service sectors.

As Japan is in the forefront of AI research, and has pumped more than US$1 billion into such efforts, its involvement in the institute can help Singapore plug into Japanese AI developments.

Currently, the National University of Singapore, the Nanyang Technological Institute, the Institute of System Sciences and the Information Technology Institute are some of the institutions involved in providing AI courses or are engaged in AI projects. These are, however, limited to aspects of AI.

An AI institute could provide a more comprehensive range of courses.

It is not known whether a separate building will be built to house the new institute.

In previous collaborative efforts with Japan, Singapore provided the building space while the Japanese provided the experts and equipment.

These include the Japan Singapore Institute of Software Technology (JSIST) sited within the World Trade Centre (it is to be re-sited in a new building within the Singapore Polytechnic campus in 1991) and the Japan Singapore Technical Institute in Bukit Merah.

Sources say that IT graduates from the National University of Singapore, Nanyang Technological Institute and the JSIST are expected to be eligible for courses at the new institute.

Details regarding course structure, cost and where the new institute is to be sited are still being discussed.

Shaw's Woodlands cinemas now multiplex movie houses

THE SIXTH and latest of Shaw Brothers-owned cinemas to be converted into multiplex movie-houses opens in Woodlands today.

A Shaw Brothers statement yesterday said its Woodlands 1 and 2 cinemas, renovated and converted into multiplex movie-houses at a cost of $2.5 million, include sound-proof walls between the two units, a new sound system, refurbished seats and new screens.

The cinemas, both on the ground floor of Woodlands Centre, will also be complemented fast-food outlet soon.

Woodlands 1 seats 400 people while Woodlands 2 seats 219 people.

The statement said the new cinemas will screen both English and Chinese movies in order to bring "a greater variety of films currently shown in the city" to people living in the Woodlands and Yishun area.

The Shaw Brothers' renovation and conversion plan started last year. So far, it has resulted in the Prince 1 and 2, Jade 1 and 2, Savoy 1 and 2, Changi 1, 2, and 3, and the Republic 1, 2, and