

JOINT EVALUATION REPORT  
ON  
THE JAPANESE TECHNICAL COOPERATION  
FOR  
THE MALAYSIA AI SYSTEM DEVELOPMENT  
LABORATORY PROJECT

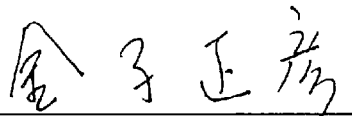
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
JAPAN

SIRIM BERHAD  
MALAYSIA


November 17, 1999  
Shah Alam, MALAYSIA

MUTUALLY ATTESTED AND SUBMITTED  
TO ALL CONCERNED

November 17, 1999  
Shah Alam, MALAYSIA



Mr. Masahiko Kaneko  
Leader, Japanese Evaluation Team  
Japan International Cooperation Agency  
Japan



Dr. Chong Chok Ngee  
Vice President, R&D Division  
SIRIM Berhad  
Malaysia

## CONTENTS

I. INTRODUCTION.....	50
1. Evaluation Teams.....	50
2. Schedule of Joint Evaluation.....	51
3. Members of Evaluation Teams.....	52
II. METHODOLOGY OF EVALUATION.....	54
1. Method of Evaluation.....	54
2. Key Criteria of Evaluation.....	54
3. Sources of Information Used for Evaluation.....	55
III. BACKGROUND AND SUMMARY OF THE PROJECT.....	56
1. Brief Background of the Project.....	56
2. Chronological Review of the Project.....	56
3. Objectives and Outputs of the Project.....	57
4. Tentative Schedule of Implementation.....	57
5. Technical Cooperation Program.....	57
IV. RESULTS OF EVALUATION.....	58
1. Summary.....	58
2. Evaluation by Five Criteria.....	59
2.1. Effectiveness.....	59
2.2. Impact.....	63
2.3. Efficiency.....	65
2.4. Relevance.....	70
2.5. Sustainability.....	72
V. CONCLUSION.....	75
VI. RECOMMENDATION.....	75
VII. LESSONS LEARNED.....	77

## ANNEX

*Ch*

*hvc*

## I. INTRODUCTION

### 1. Evaluation Teams

The Japanese Evaluation Team (hereinafter referred to as "the Japanese Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") visited Malaysia from November 1 to 17, 1999 for the purpose of the joint final evaluation with the Malaysia Evaluation Team (hereinafter referred to as "the Malaysia Team") on the Japanese technical cooperation for the Malaysia AI System Development Laboratory Project (hereinafter referred to as "the Project"), which is scheduled to be complete on February 29, 2000, according to the Record of Discussions (hereinafter referred to as "R/D") signed on October 20, 1994.

Both teams discussed and studied the effectiveness, impact, efficiency, relevance and sustainability and future prospects of the Project in accordance with the Project Cycle Management (hereinafter referred to as "PCM") method.

Through careful studies and discussions, both teams summarized their findings and observations as described in this document.

*M*

*WV*

## 2. Schedule of Joint Evaluation

November 1	Arrival in Malaysia of member in charge of evaluation analysis
November 2	Meeting with Japanese experts at AISDEL Interview with related organizations
November 3	Interview with related organizations
November 4	Interview with counterpart personnel at AISDEL
November 5	Interview with Japanese experts at AISDEL Interview with related organizations
November 6	Analysis of the responses of questionnaire
November 7	Analysis of the information obtained
November 8	Arrival in Malaysia of the main body of the Japanese evaluation team
November 9	Courtesy call at Embassy of Japan Courtesy call at Economic Planning Unit and Ministry of Science Technology and Environment (MOSTE) Visit to JICA Malaysia office
November 10	Meeting with JICA experts at AISDEL Meeting with the Malaysia evaluation team
November 11	Meeting with the SIRIM personnel
November 12	Meeting with the SIRIM personnel
November 13	Information analysis and documentation
November 14	Compilation of information and analysis
November 15	Compilation of information and analysis
November 16	Finalizing Joint Evaluation Report and Minutes of Discussions
November 17	Joint Coordinating Committee Signing of Joint Evaluation Report and Minutes of Discussions Report to Embassy of Japan Report to JICA Malaysia office Departure of the Japanese evaluation team
November 18	Arrival in Japan

*M*

*WV*

### 3. Members of Evaluation Teams

#### Japanese Team

Mr. Masahiko Kaneko (Leader)	Deputy Managing Director Mining and Industrial Development Cooperation Department, Japan International Cooperation Agency (JICA)
Mr. Osamu Sano (Technical Cooperation Program)	Researcher, Industrial Electronic Division, Machinery and Information Industries Bureau, Ministry of International Trade and Industry
Mr. Atsuo Miyazaki (Expert Systems)	General Manager of Computer Education Division, Center of the International Cooperation for Computerization (CICC)
Ms. Mayumi Murota (Training Course Evaluation Analysis)	Special Advisor, First Technical Cooperation Division, Mining and Industrial Development Cooperation Department, Japan International Cooperation Agency (JICA)
Mr. Kenji Tobita (Evaluation Management)	Deputy Director, First Technical Cooperation Division, Mining and Industrial Development Cooperation Department, Japan International Cooperation Agency (JICA)
Mr. Shinichiro Tsuji (Evaluation Analysis)	Researcher, Social Development Department, Global Link Management, Inc.

*Mu*

*WNL*

Malaysia Team

Dr. Chong Chok Ngee  
(Team Leader)

Vice President,  
Research and Development Division,  
SIRIM Berhad

Dr. Chen Sau Soon

Programme Coordinator,  
Environment and Energy Technology Centre,  
SIRIM Berhad

Ms. Jayamalar Savarimuthu

Senior Manager,  
Corporate Planning and Development Section,  
SIRIM Berhad

Mr. Izhar Shaari

Researcher, Foundry & Tooling Technology Centre,  
SIRIM Berhad

*AS*

*W/C*

## II. METHODOLOGY OF EVALUATION

### 1. Method of Evaluation

The Malaysia and Japanese teams jointly evaluated the Project based on the PCM method.

- Both teams examined the Project Design Matrix (PDM). A PDM is a summary table of overall description of the Project, its objectives and environments.
- Both teams confirmed the achievements of the Project in terms of objectives, outputs, activities and inputs stated in the PDM.
- Both teams conducted evaluation on the five (5) criteria, namely Effectiveness, Efficiency, Impact, Relevance and Sustainability, the content of which is stated below.

### 2. Key Criteria of Evaluation

The evaluation was conducted based on the following five (5) criteria, which are the major points of consideration when assessing the development of projects.

- 1) Effectiveness: Effectiveness concerns the extent to which the project purpose has been achieved, or is expected to be achieved, in relation to the outputs produced by the project.
- 2) Impact: Impact is intended and unintended, direct and indirect, positive and negative changed as a result of the project.
- 3) Efficiency: Efficiency is a major of productivity of the implementation process; how efficiently the various inputs are converted into outputs.
- 4) Relevance: Relevance determines whether the outputs, project purpose and overall goal are still in keeping with the priority needs and concerns at the time of evaluation.
- 5) Sustainability: Sustainability of the development project determines whether the project benefits are likely to continue after the external aid comes to an end.

*AL*

*INC*



### 3. Sources of Information Used for Evaluation

Following sources of information were used in the evaluation study.

- 1) Documents agreed by both sides prior to and in the course of the Project implementation.
  - R/D
  - Minutes of Discussions (M/D)
  - Tentative Schedule of Implementation (TSI)
  - Technical Cooperation Program (TCP) and others
- 2) PDM
- 3) Records of inputs from both sides and activities of the Project.
- 4) Organizational Charts
- 5) Statistics
- 6) Results of a series of interviews, questionnaires and focus group meetings

*Am*

*W*

### III. BACKGROUND AND SUMMARY OF THE PROJECT

#### 1. Brief Background of the Project

Malaysia established the basis for industrialization through the implementation of "The First Outline Perspective Plan 1981-1990 (OPP1)" and four (4) consecutive "Five Year Malaysia Plan" (2MP-5MP) that aimed to eradicate poverty in Malaysia.

Following OPP1, the government announced in "Vision 2020" her intention to become an industrialized nation by the year 2020. The Government launched "The Second Outline Perspective Plan 1991-2000 (OPP2)" with the objective to create sustainable economic growth and social development. OPP2 emphasizes Science & Technology, particularly with regards to strategic knowledge-based technology. OPP2 also focus on the importance of human resource development in science, technology and research and development.

"The Sixth Malaysia Plan 1991-1995" and "The Seventh Malaysia Plan 1996-2000" were launched to accomplish goals of the long-term plan. The plans emphasize the importance of human development, research and development and structural change in Malaysian economy/industry using information technology (IT). The plans also highlight economic growth with productivity and international competency in industries. IT is recognized as one of the most important strategic areas for enhancement of efficiency and productivity in the Malaysian economy.

In 1996, the "Multimedia Super Corridor Plan (MSC)" was launched by the Malaysian government to increase the efficiency of industrial structure and to bring about an advanced information society. MSC promotes the development of IT infrastructure, investment on IT and R&D in IT.

In line with the above, the Malaysian government requested technical cooperation from Japanese government in 1993 to launch "AI System Development Laboratory Project." The Project was designed to establish AISDEL to develop and promote Expert System using AI (artificial intelligence) technology that was a core of IT. The objectives of the Project were; 1) to upgrade the technical competency of Malaysian counterparts through OJT on system development, 2) to develop AI prototypes, and 3) to promote AI technology in Malaysia.

#### 2. Chronological Review of the Project

The chronological review of the Project is as shown in Annex 2.

*Am*

*IN*

### 3. Objectives and Outputs of the Project.

The original objectives and outputs of the Project stated in the R/D were reviewed by the Malaysian and Japanese teams using the PCM approach, and restated as follows:

Overall Goal: AI technology is promoted in Malaysia.

Project purpose: AISDEL is able to develop AI system and promote AI technology.

Outputs:

- 0) Operational system of AISDEL is established.
- 1) Necessary machinery and equipment are settled and appropriately utilized and managed.
- 2) Technical capability of C/P is developed.
- 3) AI system prototypes are developed.
- 4) AI training courses and other promotional activities are implemented.

The restated objectives, outputs and activities of the Project are describes in Detail Contents of Narrative Summary of PDM for Evaluation shown in Annex 1-1. The Achievement of the Project based on the restated PDM is shown in Annex 1-2.

### 4. Tentative Schedule of Implementation

The Tentative Schedule of Implementation (TSI) is as shown in Annex 3.

### 5. Technical Cooperation Program

The Technical Cooperation Program (TCP) is as shown in Annex 4-1~4-4.

### 6. The Achievement of the Project based on PDM

The Achievement of the Project based on PDM is as shown in Annex 1-2.

*M*

*INL*

## IV. RESULTS OF EVALUATION

### 1. Summary

Effectiveness	With regard to technical transfer, the Malaysian staff has upgraded technical competency in the field of AI technology, although there are some items of AI technology which have not been fully transferred yet. Twenty-two (22) AI prototype systems have been developed in the Project, and these prototype systems have received good response from clients in their trial use. Therefore, it can be said that AI technology has been transferred on the whole. In addition, the dissemination activities, such as AI training courses and seminars, have been actively implemented with good response from participants, and the Malaysian staff has acquired the capability to continue these activities on their own right. As to the shortfall in items not transferred, Malaysian staff has acquired sufficient knowledge and skills to enhance their capability through continuing AI system development using technical documents and textbooks developed under the Project. With this, the project purpose can be considered to be almost achieved.
Impact	Under a situation where foreign companies appear to lead in information technology in Malaysia, AISDEL has demonstrated the competency of Malaysian engineers to develop AI systems, to the communities inside and outside of the country. AISDEL has shown great potential to become a national focal point for AI system development to stimulate Malaysian IT industries towards "Vision 2020."
Efficiency	The scale and timing of Japanese inputs such as experts, machinery and equipment, and counterpart personnel (C/P) training in Japan has been appropriate. Malaysian inputs of facilities, machinery and equipment, and budget have been also appropriate. Although allocation of Malaysian staff was not filled as initially planned, great efforts have been taken to mitigate the impact of staff shortage through information sharing and compiling technical documents and textbooks.
Relevance	The Multimedia Super Corridor (MSC) initiated during the Project period reinforces the importance of developing highly qualified IT engineers in Malaysia and in view of this, the timing and objective of the Project have been indeed appropriate.
Sustainability	SIRIM had enhanced the function and operation of AISDEL by upgrading AISDEL to become the AI Centre effective from April 1999. SIRIM will apply the transferred AI technology to new income generating activities such as the development of smart card applications, while continuing original strategic activities of AI R&D to upgrade the technology transferred and to foster promotion of AI technology in Malaysia. AISDEL is expected to grow using the revenue from IT projects in addition to the financial support from Malaysian government for AI system development.
Future Prospects	On the whole, the Project is expected to achieve its project purpose during the five-year term of cooperation. After completion of the Project, SIRIM needs to secure its financial resources through the expansion of IT application using transferred AI technology as a means to get market niche. It is essential for AISDEL to sustain highly qualified staff and sufficient budget for AI system development. It is also critical to keep abreast of latest trends in AI as inputs for R&D planning and system development, in their efforts to promote AI technology in Malaysia. Developing the technical excellence of AISDEL by balancing R&D in AI and IT application will benefit Malaysian industries through application of AI technology. AISDEL will play a significant role as a prime mover in the development and sustainability of SIRIM's IT activities.

*Am*

*INL*

## 2. Evaluation by Five Criteria

### 2.1. Effectiveness

Evaluation Items	Results	References
<p>Achievement Level of Outputs</p>	<p>The achievement levels of outputs defined in "Detailed Contents of Narrative Summary" in the Project Design Matrix (PDM) are as follows.</p> <p>(1) Output 0 "Operational system of AISDEL is established."</p> <p>AISDEL's operational system was established through leadership of Japanese experts and has been handed over to Malaysian counterpart personnel (C/P). It can be said that the output 0 was achieved.</p> <ul style="list-style-type: none"> <li>- Necessary budget was provided by SIRIM. It was managed appropriately by AISDEL. <span style="float: right;">Annex 8</span></li> <li>- Joint Coordinating Committee (JCC) meetings were held 3 times with dispatches of study missions between 1995 and 1998 and once in 1999. The committee confirmed the progress of the Project and implementation plan. <span style="float: right;">Annex 7</span></li> <li>- The vertical coordination meetings (Japanese Expert Meeting and AISDEL Internal Meeting) and horizontal committee meetings (AISDEL Management Meeting, Technical Meeting and Taskforce Meeting) have been regularly held; thus management mechanism was implemented adequately. <span style="float: right;">Annex 7</span></li> <li>- Taskforce Meeting: Each group head or sub-head of C/P chaired the meeting under the Japanese expert's guidance, and technical staff members in each group discussed the problems and progress regarding system development and actions to be taken, if necessary, based on the report from staff members. <span style="float: right;">Annex 7</span></li> <li>- ATM (AISDEL Technical Meeting): At ATM, Malaysian C/P and Japanese experts reported the results of taskforce meetings to the whole group. Agenda of meetings covered technical matters including schedules of system development, problems and solutions on system development and follow-ups for maintenance. The Project Manager was originally assigned to chair the meeting, but due to his absence, a Japanese expert took over the chairmanship. Since 1999, the General Manager (GM) has been chairing the meeting. <span style="float: right;">Annex 7</span></li> <li>- AMM (AISDEL Management Meeting): Under the chairmanship of GM, stakeholders at AISDEL have conducted AMM discussing managerial issues, including policies and directions of the Project. <span style="float: right;">Annex 7</span></li> <li>- AIM (AISDEL Internal Meeting): At AIM, researchers and assistant researchers discussed technical problems, solutions and progress of their tasks. <span style="float: right;">Annex 7</span></li> </ul>	

*m*

*INL*

	<ul style="list-style-type: none"> <li>- Japanese experts took leadership in management during the early stage of the Project to cope with the shortage of Malaysian C/P (see "Efficiency" for allocation of C/P).</li> <li>- Malaysian C/P in general improved their independence and sense of responsibility through working and discussing the management of the project with Japanese experts.</li> </ul> <p>(2) Output 1 "Necessary machinery and equipment are settled and appropriately utilized and managed."</p> <p>Necessary machinery for system development and training were adequately provided and efficiently maintained and utilized.</p> <ul style="list-style-type: none"> <li>- New equipment and software contributed by the Japanese side were installed properly by Japanese short-term experts.</li> <li>- Procedures for machine maintenance have been developed.</li> <li>- Vendors have been doing routine servicing and maintenance according to a system maintenance contract. Concerning machinery that is not the subject to the contract, they have also been properly maintained.</li> <li>- Equipment for trial testing at prototype pilot sites was installed and used appropriately.</li> <li>- Workstations, PCs and large projectors for training are located at a training room and utilized appropriately.</li> </ul> <p>(3) Output 2 "Technical capability of C/P is upgraded."</p> <p>Technical capability in AI system development and project management of Malaysian C/P in general was upgraded through local training conducted by Japanese experts as well as through counterpart training in Japan. The self-help efforts of Malaysian C/P were also a key element of technical achievement.</p> <ul style="list-style-type: none"> <li>- Five (5) out of seven (7) Malaysian C/P who have been working at AISDEL for more than two (2) years exhibited their improved ability, and some of the C/P who have been involved in the Project for less than two (2) years also showed relatively high potential to be excellent engineers.</li> <li>- Four (4) technical items of AI system development have been transferred through prototype development and hands-on exercises by eight (8) long-term Japanese experts.</li> </ul> <p>A total of thirty-five (35) short-term Japanese experts were dispatched to transfer system development technologies in a wide range of software engineering. System development know-how in three (3) areas of system environment development, fourteen (14) in ES building technology, nine (9) in advanced technology, one (1) in training course development were transferred by the experts.</p>	<p>Annex 9-1~ 9-5</p> <p>Annex 10</p> <p>Annex 4-1~ 4-4, 16</p> <p>Annex 17</p>
--	---	---

*M*

*MC*



	<p>academics and students participated. AISDEL introduced its activities, and twenty-two (22) case studies on domestic and international research and application on AI system were published. As a result, AISDEL's leadership in AI development has been widely recognized.</p> <ul style="list-style-type: none"> <li>- Thirty-five (35) technical materials for AI short courses and forty-six (46) references for seminar were developed.</li> <li>- Promotional activities including exhibitions, publications, advertisements and materials (brochures, flyers and posters) have been carried out as planned.</li> <li>- AISDEL has accepted sixteen (16) student interns from four universities and trained them for five (5) months in the topics on information process system development, neural network, genetic algorithm, Well Person's Program Support, and Holiday Advisor development. It has contributed to the development of young Malaysian engineers for the future.</li> </ul>	<p>Annex 12</p> <p>Annex 13</p> <p>Annex 13, 14</p>
<p>Achievement level of Project Purpose</p>	<p>The achievement level of project purpose "AISDEL is able to develop AI systems and promote AI technology" defined in "Detailed Contents of Narrative Summary" in the Project Design Matrix (PDM) are as follows.</p> <p>With regard to technical transfer, the Malaysian staff has upgraded technical competency in the field of AI technology, although there are some items of AI technology which have not been fully transferred yet. Twenty-two (22) AI prototype systems have been developed in the Project, and these prototype systems have received good response from clients in their trial use. Therefore, it can be said that AI technology has been transferred on the whole. In addition, the dissemination activities, such as AI short courses and seminars, have been actively implemented with good response from participants, and the Malaysian staff has acquired the capability to continue these activities. With this, the technical transfer can be considered to be almost completed by the end of the Project.</p>	
<p>Inhibiting factors in achieving Project Purpose</p>	<p>The following factors inhibited to achieve some of its technology transfer goals, especially in the upper stream of AI system development.</p> <ul style="list-style-type: none"> <li>- Fifteen (15) Malaysian C/P out of forty-one (41) allocated left the Project during and after the technology transfer done by Japanese experts particularly at the early stage of the Project.</li> <li>- Allocation of Malaysian C/P was delayed. Furthermore, technology transfer was postponed due to the fact that unexpected changes in pilot sites for prototype development after negotiations with the original clients obliged Japanese experts to give priority to the progress of system development and took initiatives in system development activities. As a result, technology transfer in upper stream of system development will be left incomplete by the end of the Project.</li> </ul>	<p>Annex 6-1~6-2</p>

*Mu*

*Mu*



## 2.2 Impact

Evaluation items	Results	References
Direct impact (Project Purpose level)	<p>Concerning both intended and unintended impacts, there was no negative impact induced by the Project.</p> <p>&lt;Intended impact&gt;</p> <ul style="list-style-type: none"> <li>- SIRIM has become a well-known organization not only in the field of standardization and industrial development but also within the IT community.</li> <li>- AISDEL established a network with the molding community.</li> <li>- A network was established with universities, research institutions and other educational organizations through conducting student training, open seminar and ALAI '99.</li> </ul> <p>&lt;Unintended impact&gt;</p> <ul style="list-style-type: none"> <li>- Former AISDEL staff members who left the Project became engineers of software houses and an instructor at a university. In the end, it would contribute to the promotion of AI technology in Malaysia.</li> <li>- Through the Project, AISDEL's staff improved technical skills and knowledge in AI system development, which contributed to the establishment of the AI Centre at SIRIM. Through the AI Centre, SIRIM will penetrate not only AI system development but also develop IT programs including the "smart card project." It is important for SIRIM to balance the provision of financial/human resources between AI system development and other IT programs.</li> <li>- From a scenario where foreign companies appear to lead in information technology in Malaysia, AISDEL has demonstrated the competency of Malaysian engineers to develop AI systems to the IT communities inside and outside the country. AISDEL has shown great potential for advanced AI development by Malaysian and given confidence to Malaysian IT engineers.</li> </ul>	
Indirect impact (Overall Goal level)	<ul style="list-style-type: none"> <li>- Through ALAI '99, the AI research themes on prototype development in Malaysia and comprehensive application of practical AI systems developed in Singapore were introduced.</li> </ul> <p>&lt;Health care section&gt;</p> <ul style="list-style-type: none"> <li>- With the application of Well Person's Clinic System in the Ipoh Hospital entering the trial stage, similar application in other health centers can be expected. The System has the potential to contribute to the MSC since the system is one of the final candidates for "Asia-Pacific MSC-IT&amp;T award."</li> </ul>	

*Am*

*MLC*

	<p>&lt;Industrial section&gt;</p> <ul style="list-style-type: none"><li>- The application development of the mold cost estimation system has been carried out with support from the governmental grant mechanism, i.e., IRPA.</li></ul> <p>&lt;Physical distribution industry (logistics area)&gt;</p> <ul style="list-style-type: none"><li>- As AISDEL developed a mockup system for berth scheduling, logistics companies have expressed their desire and demand for practical AI systems for container stacking.</li></ul>	
--	--	--

*Am*

*ML*

2.3 Efficiency

Evaluation items	Results	References
<p>Appropriateness of the quality, quantity and timing of inputs</p>	<p><u>&lt;Japanese side&gt;</u></p> <p>The quality, quantity and timing of Japanese inputs such as experts, machinery and equipment and counterpart personnel training in Japan was mostly appropriate.</p> <p>(1) Dispatch of experts (Total twelve (12) long-term, thirty-five (35) short-term experts)</p> <ul style="list-style-type: none"> <li>- Number: Both long-term and short-term experts were dispatched as planned.</li> <li>- Field of expertise: The expertise of long-term experts corresponded to the initial plan, and short-term experts covered a wide variety of key technologies in software engineering that were needed for AI system development. Knowledge and skills transferred to Malaysian C/P are utilized in their activities.</li> <li>- Timing of dispatch: It was appropriate for short-term experts. The first batch of long-term experts would have been better delayed since the AI prototype themes had been changed after the negotiations with pilot sites, and it took a while to start actual prototype development.</li> <li>- Term: It was appropriate.</li> </ul> <p>(2) Machinery and equipment</p> <ul style="list-style-type: none"> <li>- Machinery and equipment for system development and training was appropriately provided.</li> <li>- Location and timing of installation were appropriate.</li> <li>- Additional PCs that were purchased locally to meet the mechanical and software upgrading during the Project had frequent hardware failures. The problem was solved by procuring another brand of computers; thus there were no significantly negative impacts on project implementation.</li> </ul> <p>(3) Counterpart personnel training in Japan (twenty-one (21) C/P in six (6) courses)</p> <ul style="list-style-type: none"> <li>- The training contents were relevant to their project activities and have been used for producing outputs during the Project. However, a significant number of trainees left AISDEL after the training. It reduced the efficiency of inputs from the Japanese side.</li> <li>- "Project Management of AI Laboratory": Four (4) C/P were trained and three (3) of them were transferred to other sections of SIRIM after the training.</li> </ul>	<p>Annex 20</p> <p>Annex 16, 17</p> <p>Annex 9-1~9-3</p> <p>Annex 18</p>

*m*

*M/L*

	<ul style="list-style-type: none"> <li>- "AI Training Course Development: 2 C/P were trained. They acquired the management skills and teaching methods needed for training courses, and have been conducting AI short courses after the training.</li> <li>- "System Analysis": 5 Malaysian C/P were trained. They mastered project management skills in database design building and prototype development. They have been playing major roles in system development after the training.</li> <li>- "Latest Technology on AI": 10 C/P were trained and 7 of them left AISDEL. Those who stayed became leaders/sub-leaders of system development teams.</li> </ul> <p>(4) Local cost support (Total by projection: 20.7 million yen)</p> <ul style="list-style-type: none"> <li>- The amount and management of the Local Cost Support under the JICA scheme were appropriate.</li> <li>- Technical exchange programs with Kent Ridge Digital Labs Singapore were undertaken using the Local Cost Support.</li> <li>- The Local Cost Support was utilized effectively for open seminars through which AI technology and advance IT-related technologies were promoted.</li> <li>- A guest speaker from local company was invited for staff training on the subject of "object oriented analysis" using the Local Cost Support. Learning from lecture was applied to system development, and Malaysian C/P have been using textbooks for their research.</li> <li>- The Local Cost Support was used for the establishment of AISDEL library. The collection range from books on basic software engineering to AI related literature. The library contributed to the establishment of an environment where C/P could pursue their research.</li> </ul> <p>&lt;Malaysian side&gt;</p> <p>In summary, the quality, quantity and timing of Malaysian inputs such as facilities, machinery and equipment and budget were appropriate. However, allocation of staff members was not filled as planned.</p> <p>(1) Machinery of equipment</p> <p style="padding-left: 40px;">Machinery and equipment were appropriately provided and installed despite delay in the provision of some PCs and software.</p> <p>(2) Allocation of budget (Total by projection: RM 7.8 million)</p> <ul style="list-style-type: none"> <li>- Necessary budget for project implementation was provided by SIRIM as planned in most cases.</li> </ul>	<p>Annex 15</p> <p>Annex 9-4</p> <p>Annex 8</p>
--	--	---

*Mu*

*M/L*

	<p>(3) Allocation of counterpart (26 C/P have been allocated as of November, 1999)</p> <ul style="list-style-type: none"> <li>- During the first three and a half years, the number of Malaysian C/P was about half of its target due mainly to high demand for IT engineers in the Malaysian labor market.</li> <li>- A total of fifteen (15) Malaysian C/P resigned among forty-one (41) allocated. It created a situation where technology transfer was repeated and the accumulated technology depleted. This lowered the efficiency of technology transfer and delayed the formation of core engineer groups.</li> <li>- Recently, the enthusiasm of Malaysian C/P toward system development has accelerated, and fewer C/P have left AISDEL.</li> </ul> <p>(4) Provision of space, building and other necessary facilities</p> <ul style="list-style-type: none"> <li>- Malaysian side provided facilities including laboratory, training rooms and server rooms as planned, but the space was shared with another section of SIRIM during the initial one and a half years of the Project.</li> </ul>	<p>Annex 6-1, 6-2</p> <p>Annex 6-1, 6-2</p>
<p>Appropriate-ness of quality and timing of inputs in achieving outputs</p>	<p>It can be concluded that the quality, quantity and timing of inputs provided by both the Japanese and Malaysian sides were almost appropriate except allocation of C/P. In view of the scale of operation and outputs, inputs were appropriate.</p>	
<p>Support system for the Project</p>	<p>The support system for the Project functioned well and contributed to the efficient implementation of the Project.</p> <p>(1) Steering Committee</p> <ul style="list-style-type: none"> <li>- The Steering Committee meetings were held annually (total 4 times) and discussed the support system and coordination with related agencies.</li> </ul> <p>(2) Japan Supporting Board</p> <ul style="list-style-type: none"> <li>- The board meetings of which CICC was the secretariat, were held before the dispatch of Japanese study teams and upon the return of long-term Japanese experts. The committee discussed support system at the Japanese side, dispatch of Japanese experts, provision of equipment, and C/P training in Japan. It contributed to the efficient execution of the Project.</li> <li>- The members of the Japan Support Board and their organizations gave technical support to the Japanese experts.</li> </ul>	

*Am*

*ML*

<p>Linkage with other organizations</p>	<p>Throughout the Project, the linkages and interactions with other organizations were encouraged, which in turn effectively helped the achievement to the project purpose.</p> <p>(1) Prototype pilot sites</p> <ul style="list-style-type: none"> <li>- Due to the nature of the Project, it was critical to work closely with prototype pilot sites for system development. AISDEL established linkages with organizations such as Ipoh Hospital, Kontena National, and ITEM Industrial Engineering.</li> </ul> <p>(2) Ministry of Health (MOH)</p> <ul style="list-style-type: none"> <li>- MOH collaborated with AISDEL in health care prototype system development and helped establish a network with Ipoh Hospital. MOH supported AISDEL to conduct a joint seminar.</li> </ul> <p>(3) SIRIM Tooling Group</p> <ul style="list-style-type: none"> <li>- Three (3) researchers from the group collaborated with AISDEL in research and development (R&amp;D) on system development for mold cost estimation using IRPA (Intensification of Research in Priority Areas), a governmental grant mechanism.</li> </ul> <p>(4) Kent Ridge Digital Labs Singapore (KRDLs)</p> <ul style="list-style-type: none"> <li>- Four (4) times of visits to KRDLs through technical exchange programs provided Malaysian C/P with exposure to the advanced development institute and their views. It provided them with incentives for the Project. AISDEL invited a keynote speaker from KRDLs for AIAI'99.</li> </ul> <p>(5) The Electrotechnology Laboratory of Japan</p> <ul style="list-style-type: none"> <li>- As an advanced technology promoting organization, the Electrotechnology Laboratory of the Ministry of International Trade and Industry of Japan conducted training sessions for Malaysian C/P. The laboratory dispatched keynote speakers for AIAI '99, and they discussed with Malaysian C/P the future development of AISDEL.</li> </ul> <p>(6) University Technology of Malaysia (UTM)</p> <ul style="list-style-type: none"> <li>- AISDEL shared the findings from its R&amp;D programs with the Centre for Artificial Intelligence &amp; Robots (CAIRO) at University Technology of Malaysia (UTM) and discussed new AI technologies.</li> </ul> <p>(7) University Technology Malaysia (UTM), University Utara Malaysia (UUM), University of Technology MARA (UiTM) and University Malaya (UM)</p> <ul style="list-style-type: none"> <li>- AISDEL accommodated 16 interns from 4 universities for 5 months. Established networks with the universities is expected to benefit joint research efforts in the future, and the development of young experts will contribute to the establishment of an advanced IT society in Malaysia.</li> </ul>	<p>Annex 15</p> <p>Annex 14</p>
---	---	---------------------------------

*mu*

*ML*

Reflection of results of discussions with study teams	The results of discussion with the Japanese study teams were reflected in the increase in counterpart allocation and the introduction of Technology Transfer Goal (TTG) as a monitoring format for technology transfer.	
---	---	--

*M*

*ML*

2.4 Relevance

Evaluation Items	Results	References
<p>Relevance of Overall Goal</p>	<p>(1) Coherence with the Malaysian national policy</p> <p>In summary, the coherence of national priority and the overall goal of the Project was highly consistent as it had been at the planning stage of the Project five (5) years ago.</p> <ul style="list-style-type: none"> <li>- The coherence between the Malaysian national policies and the Project is evident given the fact that the importance of science &amp; technology and IT human resource development, particularly with regards to strategic knowledge-based technology, as articulated in "Vision 2020" and "The Second Outline Perspective Plan 1991-2000." The Malaysian government declared in these plans her intention to become an industrialized nation by the year 2020. Sustainable economic growth and balanced social development are also highlighted in the plan.</li> <li>- "The Seventh Malaysia Plan 1996-2000," which was launched to accomplish goals of the two long-term plans mentioned above, recognizes the importance and contribution of IT to the economic and industrial development, productivity improvement, international competition and national development. The Malaysia Plan includes the human resource development in the IT industry as one of the most important items.</li> </ul> <p>(2) Coherence with the needs of industries</p> <ul style="list-style-type: none"> <li>- Given the fact that the mechanization and computerization of industries in Malaysia have advanced with economy growth, the needs and demand of IT are expected to increase. Therefore, the development of IT and IT professionals intended by the Project were consistent with the trend.</li> </ul>	
<p>Relevance of Project Purpose</p>	<p>(1) Coherence with the Malaysian national policy</p> <ul style="list-style-type: none"> <li>- In 1996, the "Multimedia Super Corridor Plan (MSC)" was launched by the Malaysian government to increase the efficiency of industrial structure and to bring about an advanced information society. MSC promotes the development of IT infrastructure, investment on IT and R&amp;D in IT. In view of this, the project purpose was coherent with the national policy.</li> </ul> <p>(2) Coherence with overall goal</p> <ul style="list-style-type: none"> <li>- It was necessary to establish a focal point for manpower development and R&amp;D in order to promote AI advanced technology in Malaysia. Therefore, the project purpose was coherent with the overall goal.</li> </ul> <p>(3) Relevance with the need of implementing organization</p> <ul style="list-style-type: none"> <li>- To become a leading organization in advanced IT fields fulfills one of the SIRIM's aspirations.</li> </ul>	

*M*

*M/L*



<p>Appropriate- ness of the project design</p>	<ul style="list-style-type: none"> <li>- The mode of technology transfer based on the prototyping method of AI system development and hands-on training/lectures was appropriate for Malaysian C/P to learn advance AI system development step by step.</li>   <li>- The Project was designed based on the open system (Unix base), and this contributed to minimizing outdated systems in spite of rapid IT progress.</li>   <li>- At the planning stage of the Project, there were no institutions that implemented AI system development. Under such a situation, SIRIM was an appropriate organization to undertake the Project since SIRIM had been conducting industrial R&amp;D. However, SIRIM faced difficulties in securing the necessary number of highly qualified staff as the demand for computer engineers in the private sector was high.</li> </ul>	
--	--	--

*m*

*W.L.*

## 2.5 Sustainability

Evaluation items	Results	References
<p>Institutional sustainability</p>	<ul style="list-style-type: none"> <li>- SIRIM established the AI Centre in April, 1999 and is planning to implement a wide variety of all IT-related applications under the Centre by employing the technical outputs of the Project.</li> <li>- The AI Centre consists of 4 laboratories (IT security, smart card application, multimedia and AISDEL). Staff members include 26 AISDEL staff and 7 additional engineers to be working as a team.</li> <li>- SIRIM Training Services (STS) will take over the promotional activities of AISDEL such as AI short courses and seminars whereby all competent AISDEL staff will register as lecturers.</li> </ul> <p>(1) The role of the implementing agency (SIRIM) in government policy</p> <ul style="list-style-type: none"> <li>- It is expected that the support from the Malaysian government for R&amp;D activities for AI technology will continue after the completion of the Japanese technical cooperation. Ministry of Science Technology and Environment (MOSTE) considers SIRIM responsible for the promotion of technology advancement as a public corporation, even after its corporatization.</li> <li>- SIRIM will promote IT in collaboration with organizations in IT program such as MIMOS (Malaysian Institute of Microelectronics System). SIRIM is planning to embark into new areas including smart card application system, where SIRIM can utilize transferred AI technology and existing expertise pertaining to standardization.</li> </ul> <p>(2) Prospects on cooperation with external organizations</p> <ul style="list-style-type: none"> <li>- AISDEL has established relationships with industrial corporations and hospitals through the joint AI prototype development programs. The cooperation is expected to be maintained and expand through continuing system development in the future.</li> <li>- AISDEL has established a network through organizing training courses and seminars with universities such as CAIRO/UTM, UUM, UiTM, UM, UPM (University Putra Malaysia), UKM (University Kebangsaan Malaysia), and MMU (Multimedia University). The network is expected to be strengthened in the future through collaboration in high-level prototype development.</li> </ul> <p>(3) Operation system of implementing agency</p> <ul style="list-style-type: none"> <li>- A management mechanism consisting of Taskforce Meeting, ATM and AIM has been established and is expected to be maintained.</li> </ul>	<p>Annex 5-1~5-2</p> <p>Annex 5-1~5-2</p> <p>Annex 7</p>

*mu*

*INC*

<p>Financial sustainability</p>	<p>(1) Prospects on budget</p> <ul style="list-style-type: none"> <li>- Malaysian authorities provided budget to the Project at AISDEL in recognition of the Record of Discussions in 1994. After the completion of the Project, SIRIM will submit a proposal to the Malaysian Government to seek financial commitment for the AI activities in the "Eighth Malaysia Plan 2001-2005".</li> <li>- After its corporatization, SIRIM aims to be financially viable; thus the AI Centre is required to generate its own revenue. With this, the AI Centre has identified 9 potential commercial AI projects with a total value of RM 3.03 million. In addition, AI Center will request 3 projects under Government Grant (IRPA) amounting to RM460 thousand.</li> <li>- AI Centre will bid a total of RM 3 million of the remaining budget allocated to SIRIM under the Seventh Malaysia Plan for purchasing new or upgrading AI equipment for R&amp;D activities.</li> <li>- The appropriate balance between R&amp;D in AI and IT application development is crucial for future progress of AISDEL.</li> </ul> <p>(2) Prospects on sustainability in maintaining machinery and equipment</p> <ul style="list-style-type: none"> <li>- The Malaysian government will provide necessary financial resources for renewal of system maintenance contract with vendors after expiration of the initial contract.</li> <li>- The budget allocation for maintenance is expected to continue appropriately. There should be no problems in maintenance since the IT Section has been providing adequate services for installation of software and hardware, as well as the management of mechanical failures.</li> </ul>	
<p>Technical sustainability</p>	<p>Technical perspectives in development, implementation and maintenance of the Project</p> <ul style="list-style-type: none"> <li>- Malaysian C/P have improved their understanding of prototype development processes. The development of group heads/sub-heads for system development has progressed.</li> <li>- With adequate policy support by the SIRIM executives, it is expected that some Malaysian C/P who have upgraded technical capability will become highly qualified IT engineers.</li> <li>- Transferred technology is expected to remain at AISDEL due to the good system of documentation and generation of manuals.</li> <li>- Since 1999, AISDEL has been preparing the application of ISO 9001 for the development of quality managers and quality control systems. It is expected that system development in line with the appropriate quality management will be implemented.</li> </ul>	<p>Annex 12</p>

*mu*

*M/L*

	<p>- It is essential for SIRIM to upgrade further the technical levels of transferred technologies in order to cope with the expansion of the AI Centre and IT application development. Malaysian C/P need to master additional IT-related technologies (see "Recommendation" for more detail).</p>	
--	---	--

*M*

*ML*

## V. CONCLUSION

AISDEL has been accumulating know-how for AI system development through on-the-job training during the Project. Although technical transfer of some items will not be completed by the end of the Project, the technical capability of AISDEL in these items can be enhanced through continuous system development on their own using manuals and technical documents produced through the Project. AISDEL has acquired enough capabilities to design, plan, and implement AI short courses, seminar and promotional activities. Therefore, it can be concluded that the project purpose on the whole will be achieved by the end of the Project.

SIRIM has expressed the organization's intention to undertake system development not only the specific field of AI, but also comprehensive IT development related with the "Multimedia Super Corridor Plan (MSC)." It is expected that SIRIM will continue to enhance a wider scope of IT projects through its own efforts.

## VI. RECOMMENDATION

It is recommended that SIRIM continue improving its technical expertise in IT through accumulating experiences in system development, encouraging self-education of C/P, and sharing knowledge among them in order to become a focal point for promotion and development of comprehensive IT systems including AI technologies in Malaysia.

### 1. Short-term perspectives

- Malaysian C/P need to further improve their technical levels of upper stream of system development (planning and designing new projects, proposing prototype development for clients, analyzing and prioritizing clients' needs) and tuning process.
- Recommendations for future development of each AI prototype and project implementation based on the results of technology transfer are prioritized as shown below. It should be noted that SIRIM needs to maintain collaboration with the pilot sites.
  - a) The Diagnosis Model (Well Persons' Program Support System) developed through the Project has high potential for the application not only in health care fields but also in industrial fields. SIRIM needs to continue working on the Diagnosis Models and strengthen its marketing abilities. In line with the MSC plan, it is particularly important to make an effort to realize the Well Persons' Program Support System as a practical system.

*Am*

*W/C*

- b) AISDEL and SIRIM Tooling group have been collaborating in system development based on the Design Model using a government grant mechanism (IRPA). SIRIM needs to continue supporting the completion of a practical system of mold cost estimation as a package product, and promote marketing in the Malaysian manufacturing industries.
- c) The technical range of the Scheduling Model is wide, and high skills are needed for system development. Thus it is important to continue providing sufficient financial and human resources for prototype development. It is important to complete the on-going development of container stacking system which is a type of Scheduling Model with long term perspectives because the system is a logistics system and has a significant potential market to apply in view of the overall physical distribution area.
- d) The job shop scheduling system which is a type of Scheduling Model can be applied to a variety of production management areas. SIRIM needs to tap IRPA to initiate system development in this model in addition to mold cost estimation system.

Other recommendations for SIRIM are as follows;

- To minimize resignation of staff members and recruit more staff by identifying attractive R&D and AI commercial projects. In addition, to cultivate a stimulating working environment where an AI engineer as a knowledge worker can enhance his/her creativity.
- To continue self-help efforts in developing internal mechanism for information sharing and technological improvement in order to maintain and develop transferred technology.
- In order to penetrate efficiently to IT application field, it is important to focus on the upper stream of system development by competent C/P. It is recommended to establish an efficient development management scheme in which the lower stream of system development can be outsourced to software houses if necessary.
- To make best use of expertise of Japanese experts for the rest of the project period.
- For the continuation of on going AI system development, it is important to balance between R&D in AI and IT application development with fair allocation of staff members and budgetary to the two.



## 2. Mid-term and long-term perspectives

Mid-term and long-term recommendations for SIRIM are as follows;

- To keep abreast of latest international trends in AI technology and to expand the network within and outside Malaysia to identify attractive areas of R&D that are up to date.
- To continue R&D on application of AI technology for a wide range of industries, and to expand its dissemination activities.
- To acquire IT application skills in order to penetrate IT sectors in addition to specific AI sector. It is recommended to foster advanced engineers for comprehensive IT regarding practical system development through the collaboration with other organizations.
- To continue improving the quality control systems of software development in SIRIM.
- To diversify financial resources of AISDEL by seeking R&D contracts as well as other public grants.

## VII. LESSONS LEARNED

### 1. General Issues

- When a project requires cooperation from organizations for its activities as pilot sites for prototype development, cooperation agreement with the organizations should be confirmed in a written form by the time of R/D signing. Also, it is recommended that detail contents of project implementation be specified.
- The PCM method should be confirmed by both the Japanese and recipient sides at the early stage of a project to ensure the mutual understanding of the scope and content of project, as well as the methods of progress measurement.

### 2. Specific Issues for IT Projects

- It is important for a system development project to confirm the allocation of C/P as an important assumption before commencement of the project.

*M*

*W/C*

- In many IT-related projects, it is difficult to allocate sufficient number of qualified C/P due to the high demand of IT engineers in the labor market. For a project that requires extensive group work such as system development activities, it is necessary to design the technology transfer schedule to level technical capability of each group member by giving initial C/P training period according to the technical levels and number of allocated C/P.

*mu*

*MIC*



## LIST OF ANNEX

ANNEX 1-1	Project Design Matrix (PDM) for Evaluation
ANNEX 1-2	Achivement of the Project based on PDM
ANNEX 2	Chronological Review of the Project
ANNEX 3	Tentative Schedule of Implementation (TSI)
ANNEX 4-1	Technical Cooperation Program (TCP) - Industry
ANNEX 4-2	Technical Cooperation Program (TCP) - Healthcare
ANNEX 4-3	Technical Cooperation Program (TCP) - AI Short Course
ANNEX 4-4	Technical Cooperation Program (TCP) - Others
ANNEX 5-1	Organization Chart of SIRIM
ANNEX 5-2	Organization Chart of AISDEL
ANNEX 5-3	Proposed Organization Chart of AI Centre to be Effective from March 2000
ANNEX 6-1	Record of C/P Allocation for the Project (1)
ANNEX 6-2	Record of C/P Allocation for the Project (2)
ANNEX 7	Record of Regular Meetings
ANNEX 8	Budget Allocation for the Project by the Malaysian Side
ANNEX 9-1	Record of Machinery and Equipment Provided by the Japanese Side
ANNEX 9-2	Record of Management of Machinery and Equipment Provided by the Japanese Side
ANNEX 9-3	System Configuration Provided by the Japanese Side
ANNEX 9-4	List of Machinery and Equipment Provided by the Malaysian Side
ANNEX 9-5	Record of Maintenance
ANNEX 10	Technology Transfer Goal
ANNEX 11-1	Record of Prototype Development - Industry
ANNEX 11-2	Record of Prototype Development - Healthcare
ANNEX 11-3	Record of Prototype Development - AI Short Course
ANNEX 11-4	Record of Prototype Development - Others
ANNEX 12	List of Developed Materials
ANNEX 13	Record of AI Short Courses and Promotional Activities
ANNEX 14	Record of Training for Students
ANNEX 15	Record of Technical Exchange Programs
ANNEX 16	List of Long-Term Experts Dispatched by JICA
ANNEX 17	List of Short-Term Experts Dispatched by JICA
ANNEX 18	Record of C/P Training in Japan
ANNEX 19	List of Selected Papers in "AIAI'99 Conference"
ANNEX 20	Expenses by the Japanese Side

*Am*

*MLC*

### ANNEX 1-1 Project Design Matrix (PDM) for Evaluation

Narrative Summary	Detailed Contents of Narrative Summary	Verifiable Indicators	Means of Verifications	Important Assumptions
<p>&lt;OVERALL GOAL&gt; Contribute to the realization of an information rich society in Malaysia as an industrialized nation, through promotion of the understanding, utilization and advancement in AI technology.</p>	<p>&lt;OVERALL GOAL&gt; AI technology is promoted in Malaysia.</p>	<p>1 Progress of utilization of AI technology in Malaysia</p> <p>2 Progress of development of practical AI systems</p>	<p>1-1 Report and statistics on IT by both Government and private sectors.</p> <p>1-2 Interview with and questionnaire to personnel concerned</p> <p>2-1 Interview with and questionnaire to personnel concerned</p>	<p>a The priority of government on IT does not change.</p> <p>b. There is no drastic change in political and economic situation in Malaysia.</p>
<p>&lt;PROJECT PURPOSE&gt; AISDEL acquires the ability to develop and promote AI technology.</p>	<p>&lt;PROJECT PURPOSE&gt; AISDEL is able to develop AI system and promote AI technology.</p>	<p>1 Evaluation and utilization of prototypes developed by AISDEL</p> <p>2 Level of satisfaction of participants in AI training courses and other promotional activities</p>	<p>1 Interview with and questionnaire to the customers for which AISDEL has developed AI system prototypes</p> <p>2 Interview with and questionnaire to the participants in AI training courses and other promotional activities</p>	<p>a AISDEL is recognized as national AI center.</p> <p>b Industry and other sectors in Malaysia continue to utilize the services provided by AISDEL.</p>
<p>&lt;OUTPUTS&gt; 1 AISDEL personnel are trained in AI system development.</p> <p>2 AI system prototype is developed.</p> <p>3 AI technology is promoted in Malaysia Industry.</p>	<p>&lt;OUTPUTS&gt; 0 Operational system of AISDEL is established.</p> <p>1 Necessary machinery and equipment are settled and appropriately utilized and managed.</p> <p>2 Technical capability of C/P is upgraded.</p> <p>3 AI system prototypes are developed.</p> <p>4 AI training courses and other promotional activities are implemented.</p>	<p>0-1 Staff allocation</p> <p>0-2 Budget allocations</p> <p>0-3 Capability of managerial C/P</p> <p>0-4 Number of regular meetings</p> <p>0-5 Number of publicity</p> <p>1-1 Contents and maintenance conditions of machinery and equipment</p> <p>1-2 Number of staff training on use and maintenance of machinery and equipment</p> <p>2-1 Technical level of C/P</p> <p>2-2 Number of text books and manuals developed</p> <p>3-1 Number of AI system prototypes developed at AISDEL</p> <p>3-2 Number of proposals and design documents</p> <p>4-1 Number of AI training courses</p> <p>4-2 Number of participants in AI training</p> <p>4-3 Number of curriculum and materials developed for AI training courses</p> <p>4-4 Number of other promotional activities</p> <p>4-5 Number of participants of other promotional activities</p>	<p>0-1 Organization chart of AISDEL</p> <p>0-2 Accounting record</p> <p>0-3 Interview with C/P directors</p> <p>0-4 Record of regular meetings</p> <p>0-5 Record of promotional activities of AISDEL</p> <p>1-1 List of machinery and equipment, maintenance record of machinery and equipment</p> <p>1-2 Record of staff training</p> <p>2-1 Achievement of Technology Transfer Goal</p> <p>2-2 List of text books and manuals</p> <p>3-1 Record of development of AI system prototypes</p> <p>3-2 List of proposals and design documents</p> <p>4-1 Record of AI training courses</p> <p>4-2 Record of AI training courses</p> <p>4-3 List of curriculum and materials</p> <p>4-4 Record of other promotional activities</p> <p>4-5 Record of other promotional activities</p>	<p>a Trained C/P remain at AISDEL.</p> <p>b There is no drastic shift in the placement of AI within IT technology in Malaysia.</p>

*M.*

*MC*

Narrative Summary	Detailed Contents of Narrative Summary	Inputs	Important Assumptions
<p>&lt;ACTIVITIES&gt;            1-1 Develop training plan for AISDEL personnel.            1-2 Train AISDEL personnel to be able to develop AI system by means of on-the-job training and lectures.            2-1 Draw up development plan of prototype of AI system.            2-2 Undertake AI system prototype development.            3-1 Prepare for materials for training, workshops and seminars.            3-2 Conduct training courses, workshop and seminars for AI developers and users.</p>	<p>&lt;ACTIVITIES&gt;            0-1 Allocate C/P as planned.            0-2 Formulate plans of activities.            0-3 Formulate budget plan and execute properly.            0-4 Establish and operate management system.            1-1 Formulate installation plans of machinery and equipment.            1-2 Procure the machinery and the equipment.            1-3 Train C/P on use and maintenance of the machinery and the equipment.            1-4 Maintain/upgrade the machinery and the equipment.            2-1 Formulate Technical Cooperation Program to train C/P.            2-2 Implement technology transfer to C/P.            2-3 Monitor and evaluate the technology transfer to C/P.            3-1 Draw up development plan of prototypes of AI system.            3-2 Undertake AI system prototype development as planned.            3-3 Monitor and evaluate development of AI system prototypes.            4-1 Make implementation plans of training courses and other promotional activities.            4-2 Prepare materials for AI training courses and other promotional activities.            4-3 Implement, monitor and evaluate AI training courses and other promotional activities.</p>	<p>Term of Cooperation : 5 years : 1st March 1995 - 29th February, 2000</p> <p><u>The Malaysian Side</u></p> <p>1. Allocation of Counterpart Personnel : (as of November, 1999)            2. Provision of building and facilities : Facilities of AISDEL costing to (total by projection)            3. Provision of machinery and equipment and maintenance : ringgit (total by projection)            4. Operating expenses : ringgit (total by projection)</p> <p><u>The Japanese Side</u></p> <p>1. Dispatch of Japanese experts :            (a) Long-term : 12            (b) Short-term : 35            2. Counterpart Personnel training in Japan :            3. Provision of machinery and equipment : 387 thousand Yen for Server, Pcs, Printers, etc.            4. Total budget : 880 million Yen (total by projection)</p>	<p>a C/P remain at AISDEL.</p> <p>&lt;Preconditions&gt;            The Project is implemented in the collaboration with MOSTE, MOH, MITI, UM, UTM, MIMOS, AI society and so on.</p>

*mu.*

*W/L*

ANNEX 1-2 Achievement of the Project based on PDM

Malaysia AI System Development Laboratory Project

Narrative Summary	Detailed Contents of Narrative Summary	Objectively Verifiable Indicators	Actual Performance of Objectively Verifiable Indicators
<p>&lt;OVERALL GOAL&gt; Contribute to the realization of an information rich society in Malaysia as an industrialized nation, through promotion of the understanding, utilization and advancement in AI technology.</p>	<p>&lt;OVERALL GOAL&gt; AI technology is promoted in Malaysia.</p>	<p>1. Progress of utilization of AI technology in Malaysia</p> <p>2. Progress of research and development of practical AI system</p>	<p>1-1. According to various reports presented at a national AI conference (AIA199), the extension of AI utilization in Malaysia in the future is anticipated. Through the Project, the development of AI engineers, enhancement of research and development and promotional activities were implemented. The Project created a corner tone for the improvement of AI utilization in Malaysia.</p> <p>1-2. Based on interviews with a professor at UTM and Japanese experts, the utilization of AI is still in progress in Malaysia. However, as the case of Singapore, increase in AI utilization is expected in the future.</p> <p>1. AI R&amp;D organizations, such as CAIRO, have been growing in Malaysia.</p>
<p>&lt;PROJECT PURPOSE&gt; AISDEL acquires the ability to develop and promote AI technology.</p>	<p>&lt;PROJECT PURPOSE&gt; AISDEL is able to develop AI system and promote AI technology.</p>	<p>1. Evaluation and utilization of prototypes developed by AISDEL</p> <p>2. Level of satisfaction of participants in AI training courses and other promotional activities</p>	<p>1. Questionnaires and interviews show that the evaluation and utilization of prototype users by AISDEL were high on the whole.</p> <p>2. Questionnaires and evaluation reports show that the level of satisfaction of participants in AI training courses and other promotional activities was high on the whole.</p>
<p>&lt;OUTPUTS&gt;</p> <p>0. Operational system of AISDEL is established.</p> <p>1. AISDEL personnel are trained in AI system development.</p> <p>2. AI system prototype is developed.</p> <p>3. AI technology is promoted in Malaysia Industry.</p>	<p>&lt;OUTPUTS&gt;</p> <p>0. Operational system of AISDEL is established.</p> <p>1. Necessary machinery and equipment are settled and appropriately utilized and maintained.</p> <p>2. Technical capability of C/P is upgraded.</p> <p>3. AI system prototypes are developed.</p> <p>4. AI training courses and other promotional activities are implemented.</p>	<p>0-1. Staff allocation</p> <p>0-2. Budget allocations</p> <p>0-3. Capability of managerial C/P</p> <p>0-4. Number of regular meetings</p> <p>0-5. Number of publications</p> <p>1-1. Maintenance conditions and frequency of machinery utilization</p> <p>1-2. Number of staff training on use and maintenance of machinery and equipment</p> <p>2-1. Technical level of C/P</p> <p>2-2. Number and quality of textbooks and manuals developed</p> <p>3-1. Number of AI system prototypes developed at AISDEL</p> <p>3-2. Number of proposals and design documents</p> <p>4-1. Number of AI training courses</p> <p>4-2. Number and satisfaction of participants in AI training</p> <p>4-3. Number of curriculum and materials developed for AI training courses</p> <p>4-4. Number of other promotional activities</p> <p>4-5. Number of participants of promotional activities</p>	<p>0-1. The number of Malaysian counterparts allocated was about a half of its original plan during the most of project period.</p> <p>0-2. The total of 7.8 million RM (10.2 million RM in original plan) was provided between 1995 and 1999.</p> <p>0-3. Malaysian counterparts have been managing the Project autonomously since 1999.</p> <p>0-4. AISDEL Management Meeting (AMM): 85 AISDEL Technical Meeting (ATM): 119 AISDEL Internal Meeting (AIT): Occasionally Taskforce Meeting: Once a week</p> <p>0-5. Research papers published: 2 papers in 1998 and 2 in 1999.</p> <p>1-1. Based on the maintenance report and observation, maintenance conditions and frequency of machinery utilization are appropriate.</p> <p>1-2. Staff training on use and maintenance of machinery was implemented adequately.</p> <p>2-1. The indicators at Technology Transfer Goal (TTG, see ANNEX 10) improved dramatically since the mid-term evaluation.</p> <p>2-2. 145 technical documents including manuals and textbooks were developed.</p> <p>3-1. Total 22 AI system prototypes (8 for health care group, 8 in industrial group, 5 for training courses, 1 for other)</p> <p>3-2. 13 proposals, 68 prototype design documents</p> <p>4-1. 11 AI short courses, 17 open seminars</p> <p>4-2. 318 participants for AI short courses, 1,117 for open seminar</p> <p>4-3. Technical documents: 35 for AI short courses, 46 for open seminar</p> <p>4-4. Organized AI National Conference AIA199 Exhibition: 4 times in 1998, twice in 1999 Contest: Applied once in 1998, once in 1999 Essays: Twice for a newspaper, once for a computer publication Others: 4 brochures, 7 posters, 3 flyers</p> <p>4-5. Many</p>

*M.*

*W/C*

ANNEX 1-2 Achievement of the Project based on PDM

Narrative Summary	Detailed Contents of Narrative Summary	Objectively Verifiable Indicators	Actual Performance of Objectively Verifiable Indicators
<p>&lt;OVERALL GOAL&gt; Contribute to the realization of an information rich society in Malaysia as an industrialized nation, through promotion of the understanding, utilization and advancement in AI technology.</p>	<p>&lt;OVERALL GOAL&gt; AI technology is promoted in Malaysia.</p>	<p>1. Progress of utilization of AI technology in Malaysia</p> <p>2. Progress of research and development of practical AI system</p>	<p>1-1. According to various reports presented at a national AI conference (AIAI99), the extension of AI utilization in Malaysia in the future is anticipated. Through the Project, the development of AI engineers, enhancement of research and development and promotional activities were implemented. The Project created a corner lone for the improvement of AI utilization in Malaysia.</p> <p>1-2. Based on interviews with a professor at UTM and Japanese experts, the utilization of AI is still in progress in Malaysia. However, as the case of Singapore, increase in AI utilization is expected in the future.</p> <p>1. AI R&amp;D organizations, such as CAIRO, have been growing in Malaysia.</p>
<p>&lt;PROJECT PURPOSE&gt; AISDEL acquires the ability to develop and promote AI technology.</p>	<p>&lt;PROJECT PURPOSE&gt; AISDEL is able to develop AI system and promote AI technology.</p>	<p>1. Evaluation and utilization of prototypes developed by AISDEL</p> <p>2. Level of satisfaction of participants in AI training courses and other promotional activities</p>	<p>1. Questionnaires and interviews show that the evaluation and utilization of prototype users by AISDEL were high on the whole.</p> <p>2. Questionnaires and evaluation reports show that the level of satisfaction of participants in AI training courses and other promotional activities was high on the whole.</p>
<p>&lt;OUTPUTS&gt;</p> <p>1. AISDEL personnel are trained in AI system development.</p> <p>2. AI system prototype is developed.</p> <p>3. AI technology is promoted in Malaysia Industry.</p>	<p>&lt;OUTPUTS&gt;</p> <p>0. Operational system of AISDEL is established.</p> <p>1. Necessary machinery and equipment are settled and appropriately utilized and maintained.</p> <p>2. Technical capability of C/P is upgraded.</p> <p>3. AI system prototypes are developed.</p> <p>4. AI training courses and other promotional activities are implemented.</p>	<p>0-1. Staff allocation</p> <p>0-2. Budget allocations</p> <p>0-3. Capability of managerial C/P</p> <p>0-4. Number of regular meetings</p> <p>0-5. Number of publications</p> <p>1-1. Maintenance conditions and frequency of machinery utilization</p> <p>1-2. Number of staff training on use and maintenance of machinery and equipment</p> <p>2-1. Technical level of C/P</p> <p>2-2. Number and quality of textbooks and manuals developed</p> <p>3-1. Number of AI system prototypes developed at AISDEL</p> <p>3-2. Number of proposals and design documents</p> <p>4-1. Number of AI training courses</p> <p>4-2. Number and satisfaction of participants in AI training</p> <p>4-3. Number of curriculum and materials developed for AI training courses</p> <p>4-4. Number of other promotional activities</p> <p>4-5. Number of participants of promotional activities</p>	<p>0-1. The number of Malaysian counterparts allocated was about a half of its original plan during the most of project period.</p> <p>0-2. The total of 7.8 million RM (10.2 million RM in original plan) was provided between 1995 and 1999.</p> <p>0-3. Malaysian counterparts have been managing the Project autonomously since 1999.</p> <p>0-4. AISDEL Management Meeting (AMM): 85 AISDEL Technical Meeting (ATM): 119 AISDEL Internal Meeting (AIT): Occasionally Taskforce Meeting: Once a week</p> <p>0-5. Research papers published: 2 papers in 1998 and 2 in 1999.</p> <p>1-1. Based on the maintenance report and observation, maintenance conditions and frequency of machinery utilization are appropriate.</p> <p>1-2. Staff training on use and maintenance of machinery was implemented adequately.</p> <p>2-1. The indicators at Technology Transfer Goal (TTG, see ANNEX 10) improved dramatically since the mid-term evaluation.</p> <p>2-2. 145 technical documents including manuals and textbooks were developed.</p> <p>3-1. Total 22 AI system prototypes (8 for health care group, 8 in industrial group, 5 for training courses, 1 for other)</p> <p>3-2. 13 proposals, 68 prototype design documents</p> <p>4-1. 11 AI short courses, 17 open seminars</p> <p>4-2. 318 participants for AI short courses, 1,117 for open seminar</p> <p>4-3. Technical documents: 35 for AI short courses, 46 for open seminar</p> <p>4-4. Organized AI National Conference AIAI99 Exhibition: 4 times in 1998, twice in 1999 Contest: Applied once in 1998, once in 1999 Essays: Twice for a newspaper, once for a computer publication Others: 4 brochures, 7 posters, 3 flyers</p> <p>4-5. Many</p>

Narrative Summary	Detailed Contents of Narrative Summary	Planned Inputs	Actual Inputs																																																				
<p>&lt;ACTIVITIES&gt;</p> <p>1-1. Develop training plan for AISDEL personnel.</p> <p>1-2. Train AISDEL personnel to be able to develop AI system by means of on-the-job training and lectures.</p> <p>2-1. Draw up development plan of prototype of AI system.</p> <p>2-2. Undertake AI system prototype development.</p> <p>3-1. Prepare for materials for training, workshops and seminars.</p> <p>3-2. Conduct training courses, workshop and seminars for AI developers and users.</p>	<p>&lt;ACTIVITIES&gt;</p> <p>0-1. Allocate C/P as planned.</p> <p>0-2. Formulate plans of activities.</p> <p>0-3. Formulate budget plan and execute properly.</p> <p>0-4. Establish and operate management system.</p> <p>1-1. Formulate installation plans of machinery and equipment.</p> <p>1-2. Procure the machinery and the equipment.</p> <p>1-3. Train C/P on use and maintenance of the machinery and the equipment.</p> <p>1-4. Maintain/upgrade the machinery and the equipment.</p> <p>2-1. Formulate Technical Cooperation Plan to train C/P.</p> <p>2-2. Implement technology transfer to C/P.</p> <p>2-3. Monitor and evaluate the technology transfer to C/P.</p> <p>3-1. Draw up development plan of prototypes of AI system.</p> <p>3-2. Undertake AI system prototype development as planned.</p> <p>4-1. Make implementation plans of training courses, workshops and seminars.</p> <p>4-2. Prepare materials for AI training courses, workshops and seminars.</p> <p>4-3. Implement, monitor and evaluate AI training courses, workshops and seminars.</p> <p>Inputs</p> <p>Term of Cooperation : 5 years : 1st March 1995 - 29th February, 2000</p>	<p><u>Malaysian Side</u></p> <p>1. Allocation of Counterpart Personnel:</p> <table border="1"> <tr><td>1994</td><td>18</td></tr> <tr><td>1995</td><td>34</td></tr> <tr><td>1996</td><td>34</td></tr> <tr><td>1997</td><td>34</td></tr> <tr><td>1998</td><td>30</td></tr> <tr><td>1999</td><td>30</td></tr> </table> <p>2. Provision of building and facilities : The first floor of Block 24</p> <p>3. Equipment and maintenance</p> <p>4. Operating budget : Total 10.2 million RM (total by projection)</p> <table border="1"> <tr><td></td><td>(thousand RM)</td></tr> <tr><td>1994</td><td>1,057</td></tr> <tr><td>1995</td><td>1,241</td></tr> <tr><td>1996</td><td>1,493</td></tr> <tr><td>1997</td><td>2,144</td></tr> <tr><td>1998</td><td>2,144</td></tr> <tr><td>1999</td><td>2,144</td></tr> </table> <p><u>Japanese Side</u></p> <p>1. Dispatch of Japanese experts :</p> <p>(a)Long-term : Total 12</p> <ul style="list-style-type: none"> <li>2 Chief Advisors</li> <li>2 Project Coordinators</li> <li>2 Project Management and Design of ES</li> <li>2 ES Building Techniques (Industry)</li> <li>2 ES Building Techniques (Health Care)</li> <li>2 ES Development Tool</li> </ul> <p>(b)Short-term :</p> <p>2. Counterpart Personnel training in Japan</p> <p>3. Provision of machinery and equipment:</p> <ul style="list-style-type: none"> <li>3 Servers, 29 Workstations, 4 PCs, Projector, Software, Printers, others</li> </ul> <p>4. Total local expense :</p>	1994	18	1995	34	1996	34	1997	34	1998	30	1999	30		(thousand RM)	1994	1,057	1995	1,241	1996	1,493	1997	2,144	1998	2,144	1999	2,144	<p><u>Malaysian Side</u></p> <p>1. Allocation of Counterpart Personnel:</p> <table border="1"> <tr><td>1994</td><td>7</td></tr> <tr><td>1995</td><td>13</td></tr> <tr><td>1996</td><td>14</td></tr> <tr><td>1997</td><td>18</td></tr> <tr><td>1998</td><td>17</td></tr> <tr><td>1999</td><td>26</td></tr> </table> <p>2. Provision of building and facilities : The second floor of Block 24</p> <p>3. Equipment: 1 million RM and technical support for maintenance.</p> <p>4. Operating budget : Total 3.6 million RM (total by projection)</p> <table border="1"> <tr><td></td><td>(thousand RM)</td></tr> <tr><td>1994</td><td>--</td></tr> <tr><td>1995</td><td>290</td></tr> <tr><td>1996</td><td>660</td></tr> <tr><td>1997</td><td>730</td></tr> <tr><td>1998</td><td>786</td></tr> <tr><td>1999</td><td>1,150</td></tr> </table> <p><u>Japanese Side</u></p> <p>1. Dispatch of Japanese experts :</p> <p>(a)Long-term : 12</p> <ul style="list-style-type: none"> <li>2 Chief Advisors</li> <li>2 Project Coordinators</li> <li>2 Project Management and Design of ES</li> <li>2 ES Building Techniques (Industry)</li> <li>2 ES Building Techniques (Health Care)</li> <li>2 ES Development Tool</li> </ul> <p>(b)Short-term : 35</p> <ul style="list-style-type: none"> <li>Installation Plan Guidance: Intallation and Adjustment of Equipment: Neural network: Fuzzy Control: Genetic Algorism: System standardization. JAVA: Large scale constraint problem. Natural language processing. Healthcare system: Agent: Job-shop scheduling: Statistical analysis: Block scheduling: Network technology: Testing method and inspection: Function point analysis: Port management: and Real world intelligence</li> </ul> <p>2. Counterpart Personnel training in Japan : 21</p> <p>3. Provision of machinery and equipment:</p> <ul style="list-style-type: none"> <li>3 Servers, 29 workstations, 30 PCs, Projector, Software, Printers, others</li> </ul> <p>4. Total local expense : 20.7 million yen (total by projection)</p>	1994	7	1995	13	1996	14	1997	18	1998	17	1999	26		(thousand RM)	1994	--	1995	290	1996	660	1997	730	1998	786	1999	1,150
1994	18																																																						
1995	34																																																						
1996	34																																																						
1997	34																																																						
1998	30																																																						
1999	30																																																						
	(thousand RM)																																																						
1994	1,057																																																						
1995	1,241																																																						
1996	1,493																																																						
1997	2,144																																																						
1998	2,144																																																						
1999	2,144																																																						
1994	7																																																						
1995	13																																																						
1996	14																																																						
1997	18																																																						
1998	17																																																						
1999	26																																																						
	(thousand RM)																																																						
1994	--																																																						
1995	290																																																						
1996	660																																																						
1997	730																																																						
1998	786																																																						
1999	1,150																																																						

*mu*

*M/C*

Year	Month	Items
1998	Jan.	Dispatch of Japanese Consultation Team
	Feb.	Arrival of software for version up
		Dispatch of long term expert (ES building technique - Industry)
		Dispatch of short term expert (Installation and adjustment of equipment-software version up)
		Dispatch of long term expert (Expert system development tools)
		Dispatch of long term expert (Expert system development tools)
	Mar.	Dispatch of long term expert (Coordinator)
		Dispatch of short term expert (System standardization technique)
		Return of long term expert (Coordinator)
	Apr.	Dispatch of short term expert (Supervising the installation of Machinery - Large screen projector)
	Jun.	Dispatch of long term expert (Chief Advisor )
		Training of two (2) counterpart personnel in Japan (Advanced project management of AI laboratory)
		Return of long term expert (Chief Advisor)
	Jul.	Dispatch of short term expert (ES building technique - Health-care system)
	Oct.	Dispatch of short term expert (Latest technology - Information searching agent)
Nov.	Technical exchange with Singapore institutes	
	Dispatch of short term expert (ES building technique - Job shop scheduling)	
Dec.	Dispatch of short term expert (Latest technology in AI - Statistical analysis)	
1999	Feb.	Dispatch of short term expert (ES building technique - Block scheduling)
	Mar.	Joint Coordinating Committee Meeting (JCC)
		Training of five (5) counterpart personnel in Japan (System analysis)
	Jun.	Dispatch of short term expert (ES building technique - Testing methods and inspections)
	Jul.	Dispatch of short term expert (ES building technique - PC-WS Network technique)
	Aug.	Dispatch of short term expert (ES building technique - Function point method)
	Sep.	Dispatch of short term expert (ES building technique - Port management system)
		Dispatch of Japanese Management and Guidance Team
	Oct.	Dispatch of short term expert (Latest technology in AI - Real world intelligence technology)
		1 <sup>st</sup> National Conference on Artificial Intelligence Applications in Industry
	Nov.	Dispatch of Japanese Final Evaluation Team
(Dispatch of short term expert : ES building technique - Agent development method)		

*cm*

*W/L*

**ANNEX 3 Tentative Schedule of Implementation (TSI)**

Calendar	1994	1995	1996	1997	1998	1999	2000
<b>1. Term of technical cooperation</b> Japanese Fiscal Year	[Timeline bars from 1994 to 2000]						
<b>2. Project</b>	- March 1995; Project Start -						
2.1 Health-Care	[Timeline bars]						
a) Staff training	[Timeline bars]						
b) Prototype development	[Timeline bars]						
2.2 Industry field (Costing system)	[Timeline bars]						
a) Staff training	[Timeline bars]						
b) Prototype development	[Timeline bars]						
2.3 Other Industry Fields	[Timeline bars]						
Prototype development	[Timeline bars]						
2.3 Promotion of AI Technology	[Timeline bars]						
a) AI short course	[Timeline bars]						
Preparation	[Timeline bars]						
Course	[Timeline bars]						
b) Seminar, etc.	[Timeline bars]						
2.4 Joint Coordination Committee	[Timeline bars]						
<b>3. Japanese side</b>	[Timeline bars]						
3.1 Long term experts	[Timeline bars]						
a) Chief advisor (1)	[Timeline bars]						
b) Coordinator (1)	[Timeline bars]						
c) Project management and design of expert system (1)	[Timeline bars]						
d) Expert system building techniques (2)	[Timeline bars]						
e) Expert system development tools (1)	[Timeline bars]						
3.2 Short term experts *	[Timeline bars]						
3.3 Provision of equipment	[Timeline bars]						
3.4 C/P training in Japan	[Timeline bars]						
3.5 Japanese Survey Team	[Timeline bars]						
<b>4. Malaysian side</b>	[Timeline bars]						
4.1 Establishment of the Laboratory	[Timeline bars]						
a) Interior and furnish	[Timeline bars]						
b) Official opening of AISDEL	[Timeline bars]						
4.2 Arrangement of the facilities	[Timeline bars]						
a) Project rooms	[Timeline bars]						
b) Office facilities, accommodations and other necessary facilities for the Japanese experts	[Timeline bars]						
c) Other facilities for operating the Laboratory	[Timeline bars]						
4.3 Provision of counterparts and administrative staff	[Timeline bars]						
a) General Manager	[Timeline bars]						
b) Consultant	[Timeline bars]						
c) Special Project Manager	[Timeline bars]						
d) Head (Health-Care and Industry)	[Timeline bars]						
e) Researcher (Health-Care and Industry)	[Timeline bars]						
f) Assistant researcher (Health-Care and Industry)	[Timeline bars]						
g) Secretary	[Timeline bars]						

\* Dispatched when necessity arises

*Lu*

*ML*



ANNEX 4-1 Technical Cooperation Program - Industry

Legend:  : Plan  : Implementation

# : Correspondence with the number in Record of Prototype Development

Technical Categories	Japanese Fiscal Year 95				1996				1997				1998				1999			
	96/1	4	7	10	97/1	4	7	10	98/1	4	7	10	99/1	4	7	10	00/1			
<b>Global Plan Index</b>																				
1 Intelligent Component Cost Estimation System (ICCES) prototype development (Design type)	Initial Model [Experimental]				1st Model [Basic facilities]				2nd Model [Prototype for the model user]				Practical Model [Practical system]							
<b>Industry (Prototype Development : Synthesis Type Design)</b>																				
1 Intelligent Component Cost Estimation System (ICCES)	Initial Model Experimental development (scaling down the scope of the				1st Model Development of basic facilities of system of mould cost estimation for the plastic components.				2nd Model Development of ICCES prototype system based on the analysis of model user. 1st step is creating the templates, 2nd step is filling up data.				Practical Model Development of ICCES practical system (scaling up the scope of the system) by SIRIM.							
1) Initial model Plastic parts cost estimation	[Plan]																			
2) 1st model Mould Cost Estimation System MCES					[Plan]															
3) 2nd model Intelligent Mould Costing System MOLDcost									[Plan]											
4) Practical system Intelligent Mould Costing System MOLDcost													[Plan]							
ES Building technique																				
• System planning									[Plan]											
• System analysis	[Plan]				[Plan]				[Plan]				[Plan]				[Plan]			
• System design, program design, coding, and test	[Plan]				[Plan]				[Plan]				[Plan]				[Plan]			
• Tuning and verification	[Plan]				[Plan]				[Plan]				[Plan]				[Plan]			
• Presentation technique and skill	[Plan]				[Plan]				[Plan]				[Plan]				[Plan]			

*M*

*W*

Legend:  : Plan  : Implementation

# : Correspondence with the number in Record of Prototype Development

Technical Categories	Japanese Fiscal Year 95				1996				1997				1998				1999			
	96/1	4	7	10	97/1	4	7	10	98/1	4	7	10	99/1	4	7	10	00/1			
<b>Global Plan Index</b>																				
2 Others (Planning and Scheduling type)	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Other Prototype Developments [ Planning and Scheduling type Expert System ]</div>																			
<b>Industry (Prototype Development : Synthesis Type Sceduling)</b>																				
1 Port Management Support System																				
1) Initial Model Berth Scheduling System																				
2) Initial Model Container Stacking and Retrieval System																				
ES Building technique																				
• System planning																				
• System analysis																				
• System design, program design, coding, and test																				
• Tuning and verification																				
• Presentation technique and skill																				
2 Job Shop Scheduling System																				
1) Initial Model Workshop																				
Product Scheduler																				
ES Building technique																				
• System planning																				
• System analysis																				
• System design, program design, coding, and test																				
• Tuning and verification																				
• Presentation technique and skill																				

*M.*

*Wc*

Legend:  : Plan  : Implementation

# : Correspondence with the number in Record of Prototype Development

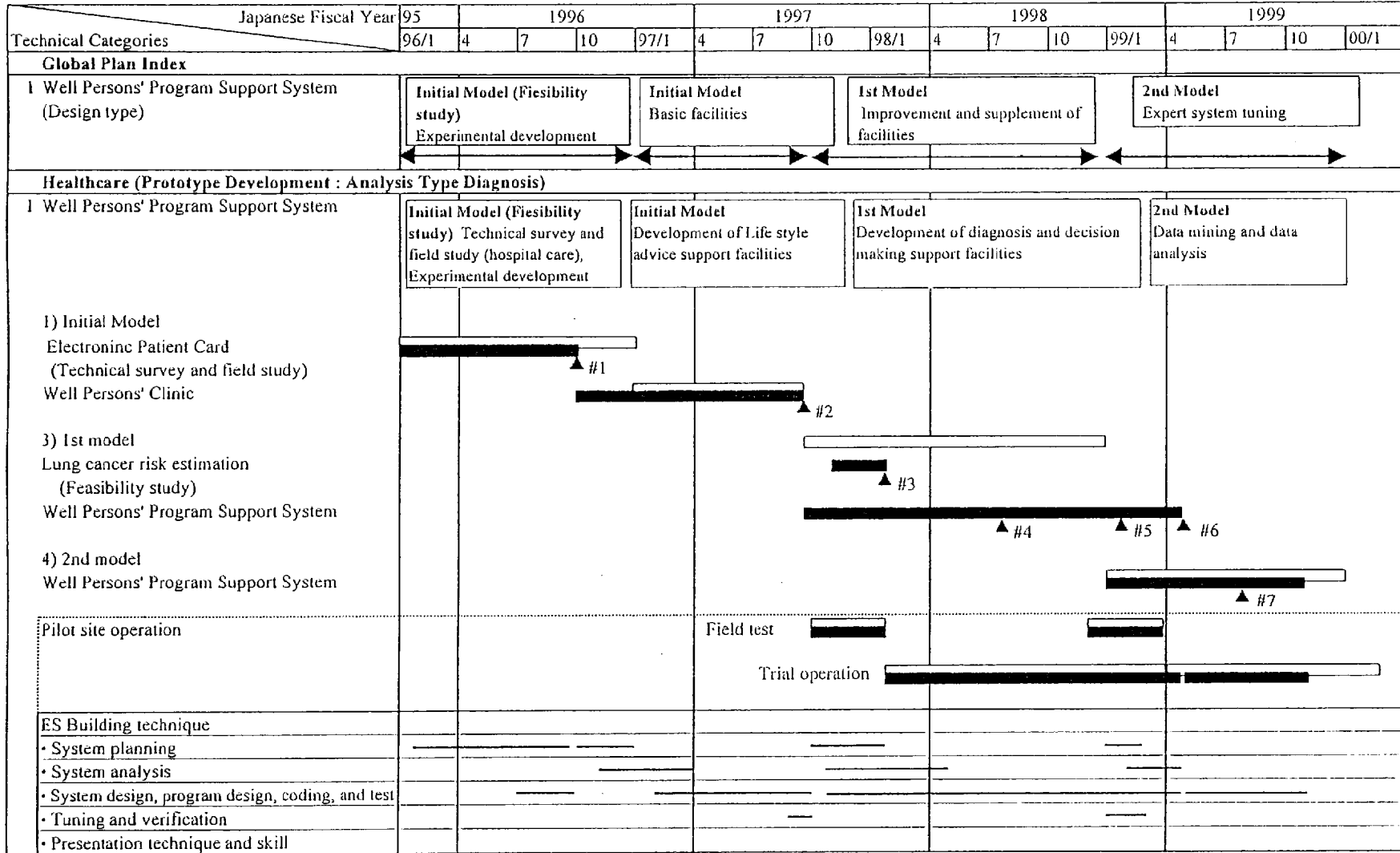
Technical Categories	Japanese Fiscal Year 95		1996			1997				1998				1999				
	96/1	4	7	10	97/1	4	7	10	98/1	4	7	10	99/1	4	7	10	00/1	
<b>Global Plan Index</b>																		
1 Intelligent Component Cost Estimation System (ICCES) prototype development (Design type)		Initial Model [Experimental]			1st Model [Basic facilities]			2nd Model [Prototype for the model user]				Practical Model [Practical system]						
2 Others (Planning and Scheduling type)								Other Prototype Developments [ Planning and Scheduling type Expert System ]										
<b>Industry (Prototype Development : Synthesis Type Planning)</b>																		
3 Time Table Planning System						Initial Model (Workshop) Study basic concept of time table planning system												
1) Initial Model Time Table Planning System (Workshop)						<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <span style="display: inline-block; width: 50px; height: 10px; background-color: black;"></span> #1         </div>												
ES Building technique																		
• System planning																		
• System analysis																		
• System design, program design, coding, and test																		
• Tuning and verification																		
• Presentation technique and skill																		

*M*

*MC*

ANNEX 4-2 Technical Cooperation Program (TCP) - Healthcare

Legend:  : Plan  : Implementation  
 # : Correspondence with the number in Record of Prototype Development



*Handwritten mark*

*Handwritten mark*

Legend:  : Plan  : Implementation

# : Correspondence with the number in Record of Prototype Development

Technical Categories	Japanese Fiscal Year 95		1996			1997			1998			1999						
	96/1	4	7	10	97/1	4	7	10	98/1	4	7	10	99/1	4	7	10	00/1	
<b>Global Plan Index</b>																		
1 Total Health Check Support System																		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>Other Prototype Developments</b>            [ Diagnosis type Expert System ]         </div>
<b>Healthcare (Prototype Development : Analysis Type Diagnosis)</b>																		
1 Exec-Health																		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>Initial Model</b>            Development of basic facilities of system         </div>
1) Initial Model																		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <span style="background-color: black; color: black;">██████████</span>            ▲ #1         </div>
System proposal																		
ES Building technique																		
• System planning																		
• System analysis																		
• System design, program design, coding, and test																		
• Tuning and verification																		
• Presentation technique and skill																		

*M*

*M*



ANNEX 4-4 Technical Cooperation Program (TCP) - Others

Legend:  : Plan  : Implementation

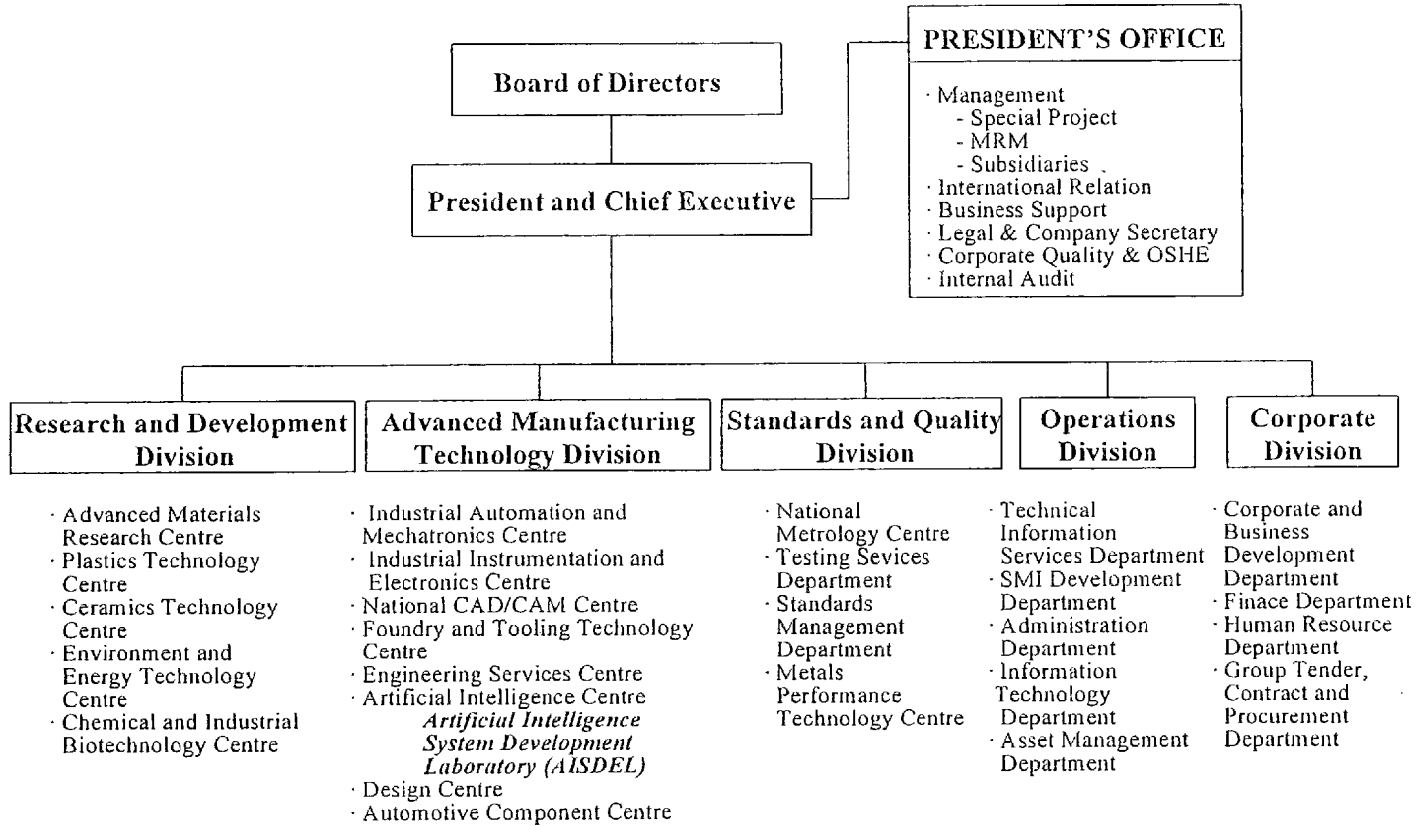
# : Correspondence with the number in Record of Prototype Development

Technical Categories	Japanese Fiscal Year 95		1996			1997				1998				1999			
	96/1	4	7	10	97/1	4	7	10	98/1	4	7	10	99/1	4	7	10	00/1
<b>Global Plan Index</b>																	
1 Prototype Development	<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     Other Prototype Development Neural Network System                 </div>																
2 Promotion	<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     Promotion Opening ceremony, seminar, conference, and exhibition                 </div>																
<b>Industry (Prototype Development : Neural Network)</b>																	
1 Character Recognition	<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     1) Initial model Character Recognition                 </div>																
<b>Promotion</b>																	
1) Opening ceremony																	
2) Seminar																	
3) Conference																	
4) Exhibition																	
<b>ES Building technique</b>																	
• System planning																	
• System analysis																	
• System design, program design, coding, and test																	
• Tuning and verification																	
• Presentation technique and skill																	
<b>Promotion technique</b>																	
• Planning and evaluation																	

*M*

*M/C*

ANNEX 5-1 Organization Chart of SIRIM

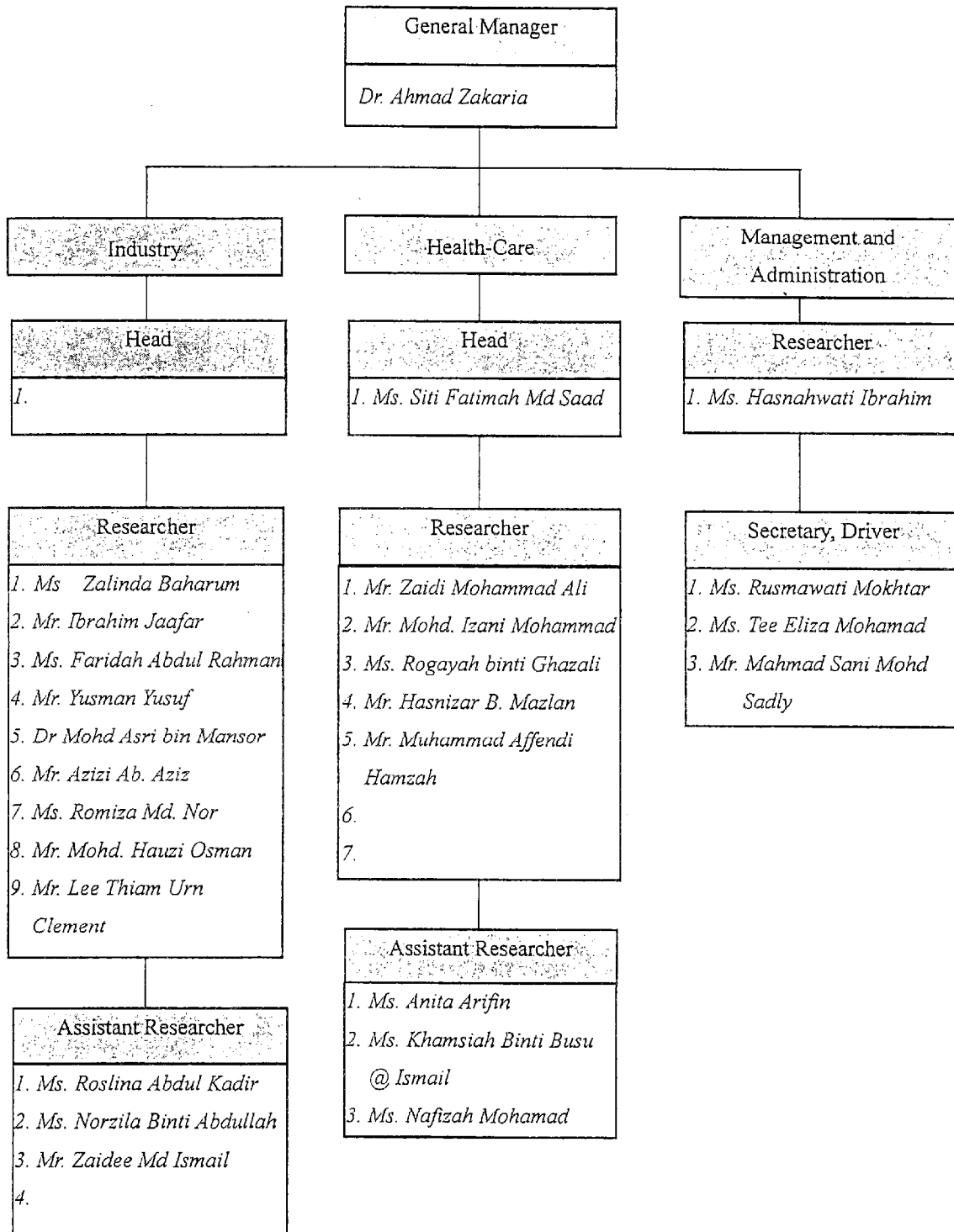


*m.*

*W/C*



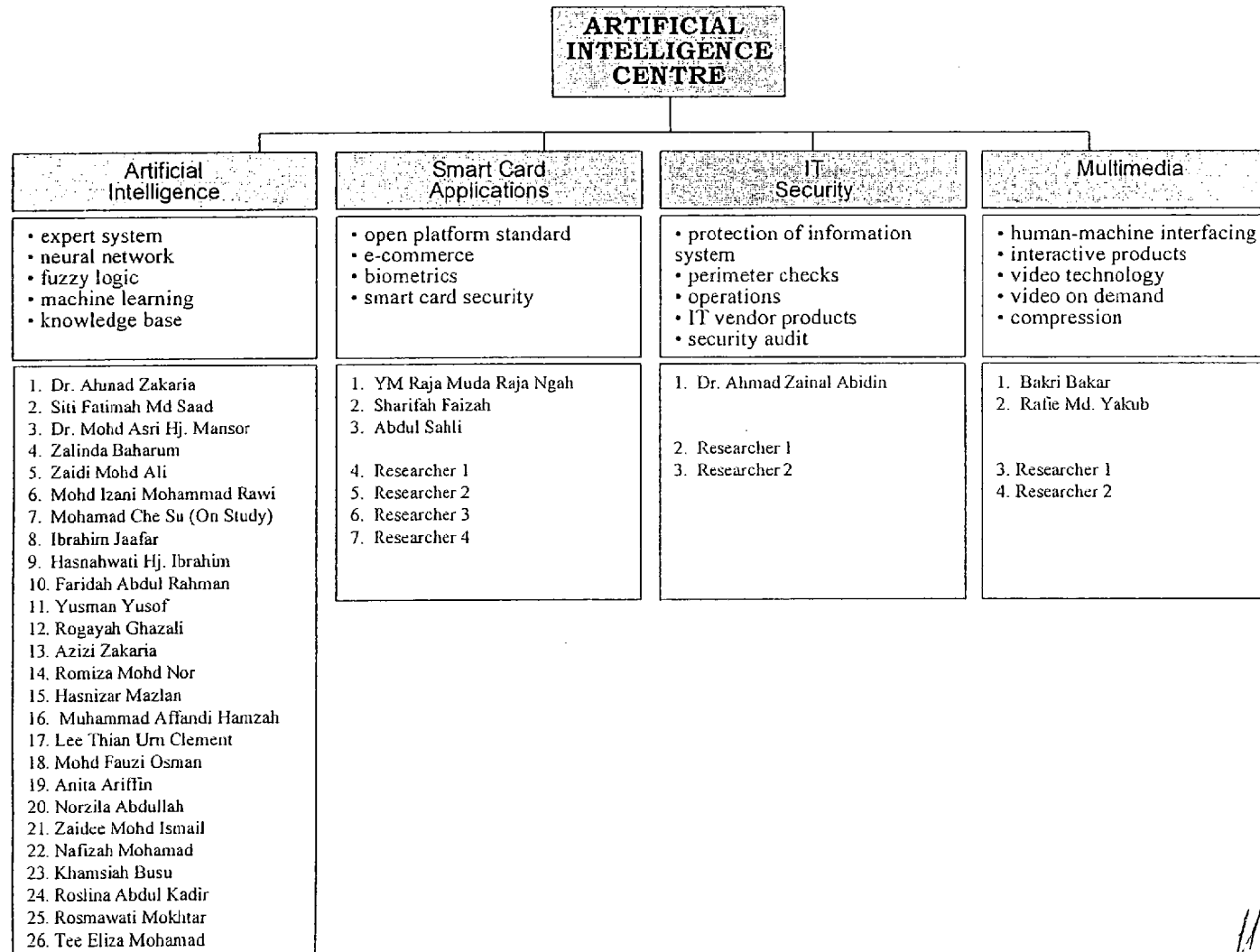
ANNEX 5-2 Organization Chart of AISDEL



*ai.*

*MC*

ANNEX 5-3 Proposed Organization Chart of AI Centre to be Effective from March 2000



*CM*

*MA*