Ⅳ. 合 意 文 書

MINUTES OF MEETING BETWEEN THE JAPANESE CONTACT MISSION AND SINGAPORE COUNTERPART ON THE PROGRESS AND UPDATES OF JAPAN-SINGAPORE AI CENTRE (JSAIC)

A Contact Mission from Japan (hereinafter referred to as "the Japanese Team") organised by the Japan International Cooperation Agency (JICA) and headed by Mr Takeo Kurosawa, General Manager , International Promotion Division, Center of the International Cooperation for Computerization, visited the Republic of Singapore from 22 June 1992 to 30 June 1992 for the purpose of reviewing the progress of the Japan-Singapore AI Centre (JSAIC) and discussing the coming year's plan with the Singaporean authorities concerned (hereinafter referred to as "the Singapore Team").

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

Singapore, 29 June 1992

Mr Takeo Kurosawa
Leader
Contact Mission
Japan International Cooperation Agency (JICA)

Mr Ko Kheng Hwa
Chief Executive
National Computer Board
Ministry of Finance
Republic of Singapore

PARTICIPANTS FROM THE SINGAPORE TEAM

Name	Designation
Mr Ko Kheng Hwa	Chief Executive National Computer Board (NCB)
Mr Saw Ken Wye	Deputy Director Japan-Singapore AI Centre (JSAIC)
Mr Chee Chean Wee	Manager, Application and Training Japan-Singapore AI Centre (JSAIC)
Mr Teo Thiam Chye	Manager, Administration & Marketing Japan-Singapore AI Centre (JSAIC)
Miss Tan Lay Eng	Knowledge Engineer Japan-Singapore AI Centre (JSAIC)
Miss Siew Yim Cheng	Knowledge Engineer Japan-Singapore AI Centre (JSAIC)

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PARTICIPANTS FROM THE JAPANESE TEAM

Name	Designation
Mr Takeo Kurosawa (Leader)	General Manager International Promotion Division Center of the International Cooperation for Computerization (CICC)
Mr Nobutoshi Matsumoto	Information Standards Division Agency of Industrial Science and Technology Ministry of International Trade and Industry (MITI)
Mr Toshio Suzuki	Assistant General Manager Planning and Coordination Division Center of the International Cooperation for Computerization (CICC)
Mr Yosuke Takashima	Consultant Planning & Coordination Division Center of the International Cooperation for Computerization (CICC)
Mr Seiji Mikuni	Technical Cooperation Division Mining and Industrial Development Cooperation Department Japan International Cooperation Agency (JICA)
Mr Teppei Kuroda	Chief Adviser Japan-Singapore AI Centre (JSAIC)
Miss Chieko Maruyama	Coordinator Japan-Singapore AI Centre (JSAIC)

1. Welcome and Introduction

1.1 The Singapore Team welcomed the Japanese Team to Singapore.

1.2 The agenda was confirmed as :

- Progress update by Singapore Team
- Manpower Plan
- Progress update by Chief Adviser
- Workplan for Financial Year 92/93
- Review of Achievement of Objectives of Cooperation
- Review of Programme A : Intelligent Systems for Managers
- Review of Programme B : Intelligent Systems for IT Professionals
- Review of Programme C : Intelligent Systems for Business Professionals
- Review of Programme D : Prototyping Intelligent Systems
- Ad-hoc courses
- Short-Term Experts
- Training in Japan
- Intellectual Property Rights
- MITI Accreditation
- Facilities - Hardware and Software
- General Discussion

Please see Annex 1 for more details.

2. Progress Update by Singapore Team

2.1 The Singapore Team briefed the meeting on the activities and events that were held from March 91 to June 92. During this period, six Programme A, one Programme B and one Programme C were conducted. Programme D started in May 1992 and was still on-going. To help spread awareness in Intelligent Systems, nine JSAIC seminars and six end-user seminars were also conducted. The end-user seminars, targeted at senior managers, were conducted for the Ministry of National Development (MND), Public Works Department (PWD), United Overseas Bank (UOB), Ministry of Home Affairs (MHA) and Neptune Orient Lines (NOL). Other key events included Official Opening, Open House, and the Natural Language Processing Pacific Rim Symposium (NLPRS).

2.2 The review of activities from March 91 to June 92 is included in Annex 2.

2.3 The end user seminars were an effective mechanism to attract participants to JSAIC's programmes. For example, following the seminar held for PWD, the organisation decided to send 2 participants for Programme C, one for Programme B and 2 for Programme D.

2.4 A list of JSAIC's Clients is attached in Annex 3. The list included organizations from both the public and private sectors. Types of organization ranged from government ministries, educational institution, banks, insurance and transportation companies.

3. Manpower Plan

3.1 As of 24 June 1992, JSAIC has a total staff strength of 17 which comprises the following people :-

Deputy Director
Manager, Administration & Marketing
Manager, Application & Training
8 Knowledge Engineers (Instructors)
1 Industry Liaison Officer
1 System Administrator/Technician
4 Administrative/Clerical Staff
(including Secretary to Chief Adviser & Deputy Director)

3.2 The updated manpower plan is shown in Annex 4.

4. Progress Update by Chief Adviser

4.1 Chief Adviser, JSAIC, reported that the long-term Japanese Experts had made good progress in transferring technology to the local instructors. They had contributed their expertise in the following tasks :

a) set up of hardware and software
b) development of course curriculum and teaching materials
c) revision of course curriculum

4.2 The long-term experts had mentioned that the local instructors were spending too much time in courseware preparation and not enough time on gaining practical experience. The Singapore Team explained that on the average, every

hour of course lecture would require around 15 hours of preparation time. The preparation works included literature searching and reading, preparation of exercises and case studies, discussion and documentation. As such, the courseware preparation workload turned out to be much more than expected. However, with the main bulk of courseware preparation work now completed, the instructors should be able to get more hands-on experience, in particular, from working on the Programme D projects.

5. Workplan for Financial Year 92/93

5.1 The Singapore Team briefed the meeting on the workplan for FY92/93. According to the plan, seven Programme A, two Programme B, two Programme C, two Programme D, four JSAIC Seminars and four end-user Seminars would be conducted.

5.2 JSAIC would also be organising the first Singapore International Conference on Intelligent Systems (SPICIS) around end-September 1992. It was hoped that through the conference, more people (both locally and internationally) would come to know about JSAIC.

5.3 The detailed workplan is attached in Annex 5.

6. Review of Achievement of Objectives of Cooperation

6.1 The Singapore Team felt that good progress had been made towards fulfilling the objectives of the cooperation. The Singapore counterpart personnel had benefitted from the technology transfer from Japan. They had also demonstrated that they could transfer this technology to the local IT community.

6.2 In the remaining period of cooperation, greater focus would be placed in transferring know-how and expertise in building 'real' intelligent systems.

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7. Review of Programme A : Intelligent Systems for Managers

7.1 The Singapore Team reviewed the progress of Programme A : Intelligent Systems for Managers. As of June 1992, 96 people had participated in the programme.

7.2 As a result of feedback received from participants, the programme curriculum was revised to give more time to the hands-on workshop and application dialogue.

7.3 The details of the progress and schedule for Programme A is given in Annex 6.

8. Review of Programme B : Intelligent Systems for IT Professionals

8.1 Programme B : Intelligent Systems for IT Professionals was reviewed. Eight students were admitted to the programme held from 20 January 1992 to 28 April 1992. To qualify for the JSAIC Diploma, the participants must pass all subjects. In the last programme, five participants had qualified for the Diploma. The remaining three would be awarded Certificates.

8.2 There were no major changes to the content of the next programme scheduled in September 1992.

8.3 The detailed course plan and schedule for the programme is shown in Annex 7.

9. Review of Programme C : Intelligent Systems for Business Professionals

9.1 Programme C : Intelligent Systems for Business Professionals was reviewed. The first programme, held from 4 November 91 to 15 November 91, attracted 7 participants. The Singapore Team highlighted that operationally, the 2-week programme was difficult to implement. Most of the participants had expressed that the duration of the programme was too long. In addition, business professionals were in high demand in their organisations and it was unlikely that companies would be willing to release them for 2 weeks training.

9.2 The main objective of Programme C would be to :

i) educate business professionals on the potential of intelligent systems (reassure them that the current technology will not replace them)

ii) illustrate how they can contribute effectively to the development of intelligent systems.

9.3 Based on the above guiding principles, the Singapore Team had explored various options, in consultation with the long term Japanese experts, to restructure the course. After much discussion, it was felt that a 3-day programme would be sufficient to satisfy the objective of the programme. The detailed programme outline is included in Annex 8.

9.4 The Singapore Team highlighted that the change was necessary because :

i) it would be difficult to attract participants to the programme.

ii) the two-week programme covered the topics in too much depth.

9.5 The Japanese Team agreed with the Singaporean Team's proposal to restructure the course from 2 weeks to 3 days.

10. Review of Programme D : Prototyping Intelligent Systems

10.1 The Singapore Team reviewed Programme D : Prototyping Intelligent Systems. Seven participants, from five companies, had registered for this programme. Another company had indicated that they would like to join the programme in August 1992.

10.2 The Singapore Team highlighted that the main operational issues involved in implementing this programme were :

a) The company had a project but was not ready to start on JSAIC's scheduled dates

b) The company was ready but was not prepared to wait until the start of the next course

Programme D was unique because it involved working with other organizations, each with its own priorities.

10.3 The recommendations were therefore to :

a) Start as many projects as possible on scheduled course dates

b) Be flexible enough to accept additional projects, if resources permit, on different dates

The Japanese Team concurred with this recommendation.

10.4 The details of programme and schedule is shown in Annex 9.

11. Ad-hoc Courses

11.1 The Singapore Team reported that as at June 1992, JSAIC had undertaken a total of 4 external and 3 internal projects. The main aim of ad hoc courses would be to give JSAIC instructors the opportunity to gain more expertise. All the projects except the National University of Singapore (NUS) Student Programme (refer to Annex 10) had been completed.

12. Short-Term Experts

12.1 For FY91/92, six short-term experts had spent about 5 days each in transferring the various AI technologies to the local instructors.

12.2 For FY92/93, another 8 experts had been planned for.

12.3 The detailed list of short-term experts for FY91/92 and FY92/93 is given in Annex 11.

13. Training in Japan

13.1 The Singapore Team requested that training for local instructors in Japan for the coming year should focus on learning advanced AI topics and gaining experience in building 'real' applications. The Japanese Team replied that they should be able to accommodate this request.

13.2 The Singapore Team also requested for a change in the training structure. In the past, 4 trainees were sent to Japan at the same time. This time, the Singapore Team would like to send the trainees in 2 batches of 2 each. Ideally, there should be minimum overlap between the two batches. This training structure

would enable JSAIC to retain more local instructors to assist in the day to day operations of the Centre. The Japanese Team replied that they might be able to accommodate this request. The tentative dates proposed were Jan 93 and Mar 93. A one week overlap between the two batches was also proposed for the observation study.

13.3 The Singapore Team also highlighted the importance of the observation study period of one week. Time constraints in the past had forced the observation study to be cut down from one week to 2 - 3 days.

13.4 The proposed training outline is shown in Annex 12.

14. Intellectual Property Rights

14.1 The Singapore Team brought up the subject of intellectual property rights. This would relate to both the ownership of, and the right to use, materials and software developed in JSAIC. The right to use would include :

a) 'as is' (hard copies/object)

b) amend or distribute (soft copies/source codes)

c) amend or distribute or sell (soft copies/source codes)

Currently, JSAIC had not entered into any formal agreement with its partners/clients on the issue of intellectual property rights.

14.2 The issue was clear if materials or software were developed by JSAIC (counterpart and Japanese expert). JSAIC would have 100% ownership and the right to use the materials.

14.3 With regard to the situation where the materials or software were developed jointly by JSAIC and its industry partners (as in Programme D and Ad Hoc courses), both parties would jointly own the material/software developed. However, if either party decided to subsequently market this material or software, a separate licencing agreement would need to be drawn up.

14.4 The Japanese Team said that they would review the proposed treatment of intellectual property rights, in more detail, in Japan.

14.5 The outline used to discuss intellectual property rights is included in Annex 13.

15. MITI Accreditation

15.1 The Japanese Team presented the proposal for MITI accreditation. MITI could accreditate only the examination for Programme B and D. MITI had asked CICC to set up a committee to evaluate the examination questions. This committee would report to MITI and if the standard of the examination questions were acceptable, MITI would grant accreditation for the examination.

15.2 The Singapore Team gave the Japanese Team a complete set of all the examination questions and assessments used in Programme B.

15.3 The Singapore Team highlighted that Programme D was a practical course with hands-on project work and no examinations. Hence another assessment method must therefore be explored for Programme D.

16. Facilities - Hardware and Software

16.1 The Singapore Team expressed its appreciation to JICA for its generous support to the centre.

16.2 The Singapore Team briefed the meeting on the hardware and software facilities at JSAIC. They highlighted the hardware and software purchased in FY 91/92.

16.3 The Singapore Team also alerted the Japanese Team to a potential problem in the hardware and software environments. The different versions of the operating systems in the UNIX workstations delivered from Japan might result in incompatibility issues. The Singapore Team reported that it was working closely with the vendor on this issue.

16.4 The list of hardware, available in the centre, is attached in Annex 14.

16.5 The list of the main software (expert system shells), available in the centre, is attached in Annex 15.

16.6 The list of hardware and software, purchased locally in 1991, is attached in Annex 16.

16.7 The Japanese Team requested for a copy of JSAIC's local budget. This is attached in Annex 17.

17. General Discussion

17.1 The Singapore Team presented a vision of JSAIC's progress over the next decade. Currently the emphasis was on training. Eventually, JSAIC would spend more time on Research and Development.

17.2 The profile of JSAIC's activities is attached in Annex 18.

17.3 Currently, there were many people from overseas, for example, Thailand, Sri Lanka and Philippines, who were interested in the courses held in JSAIC. However, the cost of such study would include the course fees, accommodation and airfare, which could be expensive. The Singapore Team therefore requested the Japanese Team to consider the feasibility of a third country training programme so that citizens of these countries could attend the courses in JSAIC.

17.4 The Japanese Team replied that they would review the matter, raised in paragraph 17.3, on their return to Japan.

18. Concluding Remarks

18.1 Mission Leader thanked the Singapore counterparts for the arrangement of the meetings and hoped that the project would continue in its present well organized way to achieve the challenging vision that it sets.

18.2 Deputy Director, JSAIC thanked the mission members for their strong support in this project.

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SUMMARY OF ANNEXES

Annex 1 :
Agenda for Contact Mission 22-30 June 1992

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Annex 1

AGENDA FOR CONTACT MISSION FROM 22-30 JUN 1992

Date	Day	Time	Activity	Venue
22-Jun	Mon	7.00pm	Contact Mission arrives in Singapore	Changi Airport
23-Jun	Tues	9.30am 10.30am 2.00pm 3.00pm 7.00pm	Visit to JICA Courtesy Call on Japan Embassy Courtesy Call on CE, NCB/Chairman, JSAIC, MC Tour of JSAIC & Introduction to Staff Dinner for Contact Mission Members Hosted by JICA	JICA Office Japan Embassy NCB JSAIC New Otani
24-Jun	Wed	9.30am 12.00 pm 1.00 pm	Briefing on • Progress Update by Singapore Team • Manpower • Progress Update by Chief Adviser • Workplan for Financial Year 92/93 • Review of Achievement of Objectives of Cooperation • Review of Prog A : IS for Manager • Review of Prog B : IS for IT Professionals Lunch • Review of Prog C : IS for Business Professionals • Review of Prog D : Prototyping IS • Ad Hoc Courses • Short Term Experts • Training in Japan	Sakura Room Sakura Room
25-Jun	Thurs	9.30am 12.00pm 1.00pm 7.00pm	• Intellectual Property Rights • MITI Accreditation • Facilities - Hardware & Software • General Discussion Lunch • Documentation Dinner for Contact Mission Members Hosted by CE, NCB/Chairman, JSAIC MC	JSAIC Sakura Room Sakura Room Sakura Room Ryu Yi, Hyatt Hotel
26-Jun	Fri	9.30am 7.00pm	• Review Documentation • Send to JICA and Japan for Review • Finalise Documentation Dinner for Contact Mission Members Hosted by CICC	Conference Rm Conference Rm
27-Jun	Sat	9.00am	Finalise Documentation	Conference Rm
28-Jun	Sun		Free	

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AGENDA FOR CONTACT MISSION FROM 22-30 JUN 1992

Date	Day	Time	Activity	Venue
29-Jun	Mon	9.00am 12.30pm	Finalise Documentation Sign Minutes & Graduation of Programme B participants followed by lunch (Hosted by Contact Mission)	Conference Rm Westin Stamford Bencoolen A + B
30-Jun	Tue	9.30am	Return to Japan	

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Annex 2 :
Review of Activities March 1991 - June 1992

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Review of Activities Mar 91 - Jun 92

- Mar 91 - Office renovation completed
- Apr 91 - 1st Contact Mission
- Jun 91 - Launch of JSAIC Seminar Series
  AI & Expert Systems for Business
  Management Council Formed
- Aug 91 - Conducted first course
  Prog A : Intelligent Systems for Managers (2 times)
- Sep 91 - JSAIC Seminar Series : Large Scale IT Projects
  Short Term Expert : Prof M. Ida
- Oct 91- Official Opening (4 Oct 91)
  Short Term Expert : Prof T Terano
  End User Seminar (PWD)
  First Management Council Meeting

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Review of Activities Mar 91 - Jun 92 (Con't)

- Nov 91 - Prog C : Intelligent Systems for Business Professionals
  JSAIC Seminar Series : Natural Language Processing
  Natural Language Processing Pacific Rim Symposium
  Short Term Expert : Prof T Makino

- Dec 91 - Short Term Expert : Mr M Sugai

- Jan 92- End User Seminar (MND, NOL, OUB)
  Prog A : Intelligent Systems for Managers
  Prog A : Intelligent Systems for Mangers (Public Administration)
  Prog B : Intelligent Systems for IT Professionals
  Short Term Expert : Mr S Fushimi

- Feb 92 - Prog A : Intelligent Systems for Managers (Public Administration)
  4 JSAIC local instructors leave for training in Japan
  Short Term Expert : Mr Y Koseki

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Review of Activities Mar 91 - Jun 92 (Con't)

- Mar 92 - JSAIC Seminar Series :
  - Present & Future of Expert Systems
  - Intelligent Systems in Manufacturing
  - Intelligent Systems in Finance
  - Intelligent Systems in Medicine

  Dr Ishizaki returns to Japan
  Arrival of Mr Teppei Kuroda

- Apr 92- Counterpart training in Japan completed
  Mission to Japan

- May 92 - Prog D : Prototyping Intelligent Systems
  End User Seminar (UOB)

- Jun 92 - Prog A : Intelligent Systems for Managers (Public Administration)
  JSAIC Seminar Series : Fuzzy Logic & Its Application

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COURSES

	Date	No. of Participants	Duration	Trg Days
Intelligent Systems for Managers	6 - 8 Aug 91	11	3	33
	28 - 30 Aug 91	13	3	39
	15 - 17 Jan 92	10	3	30
Intelligent Systems for Managers (Public Admin)	27 - 29 Jan 92	25	3	75
	19 - 21 Feb 92	20	3	60
	8 - 10 Jun 92	17	3	51
Intelligent Systems for Business Professionals	4 - 15 Nov 92	7	9	63
Intelligent Systems for IT Professionals	20 Jan - 28 Apr 92	8	70	560
Prototyping Intelligent Systems	19 May- 20 Nov 92	8	132	1056
Total		119		1967

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JSAIC Seminars

	Date	No. of Participants	Duration	Trg Days
AI & Expert Systems for Business	10 Jun 91	157	0.5	78.5
Large Scale IT Projects	19 Sept 91	102	0.5	51
Natural Language & AI	22 Nov 91	86	0.5	43
NLPRS	23 - 24 Nov 91	100	2	200
Intelligent Systems for Manufacturing	6 Mar 92	110	0.5	55
Present & Future of Expert Systems	6 Mar 92	75	0.5	37.5
Intelligent Systems for Finance	7 Mar 92	85	0.5	42.5
Intelligent Systems for Medicine	8 Mar 92	50	0.5	25
Fuzzy Logic & Its Applications	12 Jun 92	117	0.5	58.5
Total		882		591

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JSAIC End User Seminars

	Date	No. of Participants	Duration	Trg Days
Seminar for PWD	22 Oct 91	55	1	55
Seminar for NOL	7 Jan 92	70	0.5	35
Seminar for MND	9 Jan 92	76	0.75	57
Seminar for UOB	30 Jan 92	48	0.5	24
Seminar for MHA	8 Apr 92	12	0.5	6
Seminar for UOB	12 May 92	51	0.5	25.5
Total		312		202.5

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Visitors

	Date	No. of Persons
Official Opening	4 Oct 91	110
Open House	4 Oct 91	170
DPMA	16 Oct 91	28
SFCI	30 Oct 91	8
Overseas Visitors		235
Total		551

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Review of Activities Mar 91 - Jun 92

Summary

- Courseware Programme A-D completed
- Programme A x 6
- Programme B x 1
- Programme C x 1
- Programme D x 1
- JSAIC Seminar Series x 7
- JSAIC End User Seminars x 5
- Training in Japan - 4 staff

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Annex 3 :
JSAIC's Clients

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JSAIC's Clients

Public Sector

- Accountant General's Department
- Board of Commission of Currency
- CISCO
- Civil Service Institute
- Housing and Development Board
- Jurong Town Corporation
- Ministry of Communications
- Ministry of Education
- Ministry of the Environment
- Ministry of Health
- Ministry of Home Affairs
- Ministry of Foreign Affairs
- Ministry of Information and the Arts
- Ministry of National Development
- National Parks Board
- Public Service Commission
- Singapore Trade Development Board
- Singapore Broadcasting Corporation
- Singapore Polytechnic
- SISIR

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JSAIC's Clients

Private Sector

- Canon Marketing Service
- DBS Bank
- Hewlett-Packard Singapore Pte Ltd
- Human Interface Engineering
- IJM Corporation Berhad Malaysia
- Kvaerner Singapore
- MN Enterprise Pte Ltd
- NEC Singapore Pte Ltd
- NTUC Income Corporation Ltd
- SATS Cargo Services Pte Ltd
- Sembawang Shipyard Ltd
- Singapore Airlines
- SPS Information & Communication
- Technology Parks Pte Ltd
- Tithes Marketing Pte Ltd

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Annex 4 :
Manpower Plan

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Manpower

	FY 90		FY 91		FY 92		FY 93		FY 94	
	ROD	Act	ROD	Act	ROD	Plan	ROD	Plan	ROD	Plan
Director	1	1	1	1	1	1	1	1	1	1
Head (Admin)	1	1	1	1	1	1	1	1	1	1
Head (Technical)	1	1	1	1	1	1	1	1	1	1
Instructors	3	4	7	8	9	9	9	10	9	10
Industry Liaison Officer	1	-	1	1	1	1	1	1	1	1
Systems Administrator/ Technician	3	1	3	1	3	2	3	2	3	2
Administrative/Clerical Officer	3	2	4	4	5	4	5	4	5	4
Total	13	10	18	17	21	19	21	20	21	20

Personnel 1]
]
HR 1] Paying NCB for service
]
Finance 1]

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Annex 5 :
Workplan for FY92/93

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Workplan for 1992/93

- Programme A x 7
- Programme B x 2
- Programme C x 2
- Programme D. x 2
- JSAIC Seminar Series x 4
- JSAIC End User Seminar x 4
- Training in Japan - 4 staff
- SPICIS

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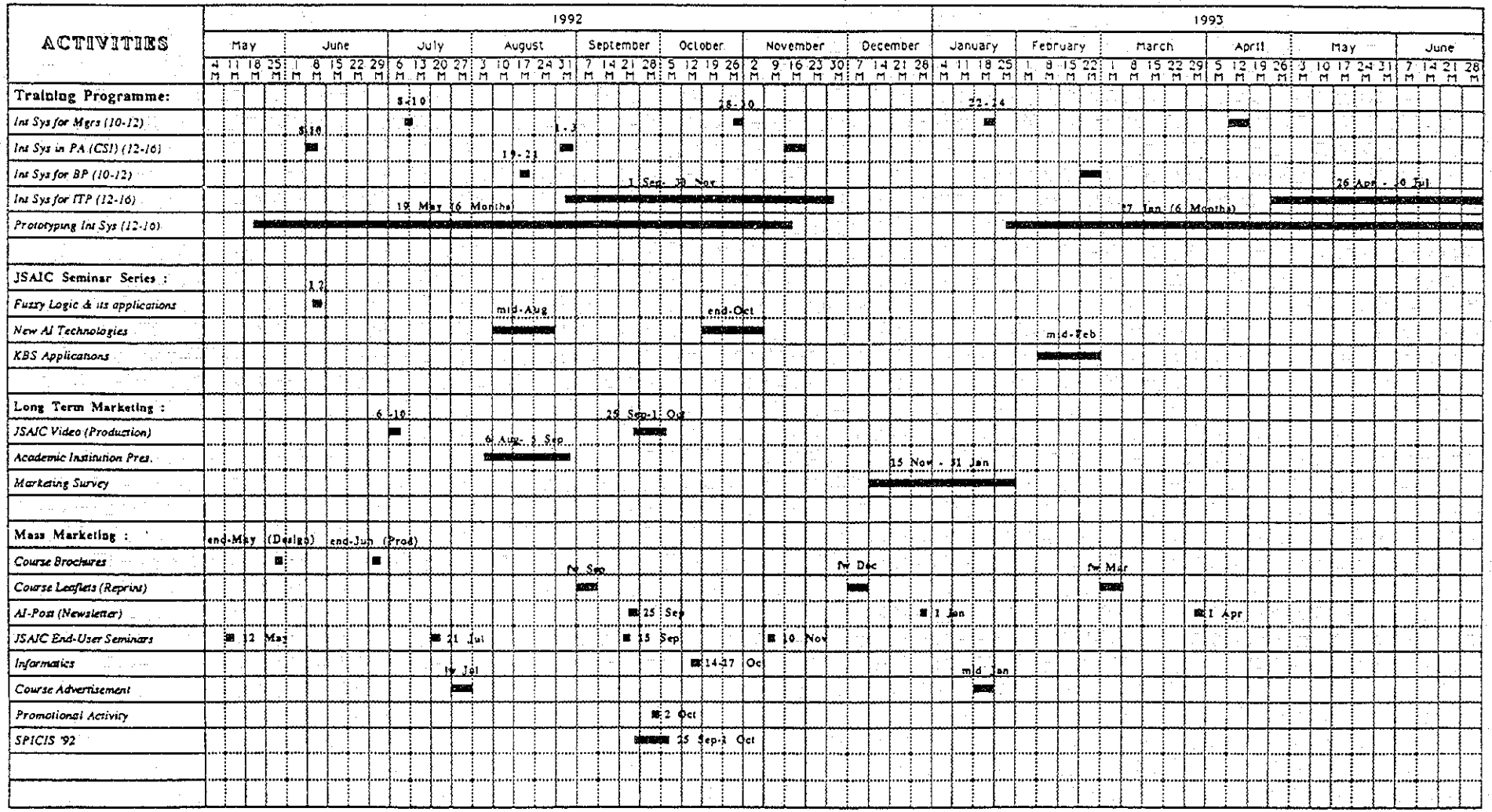
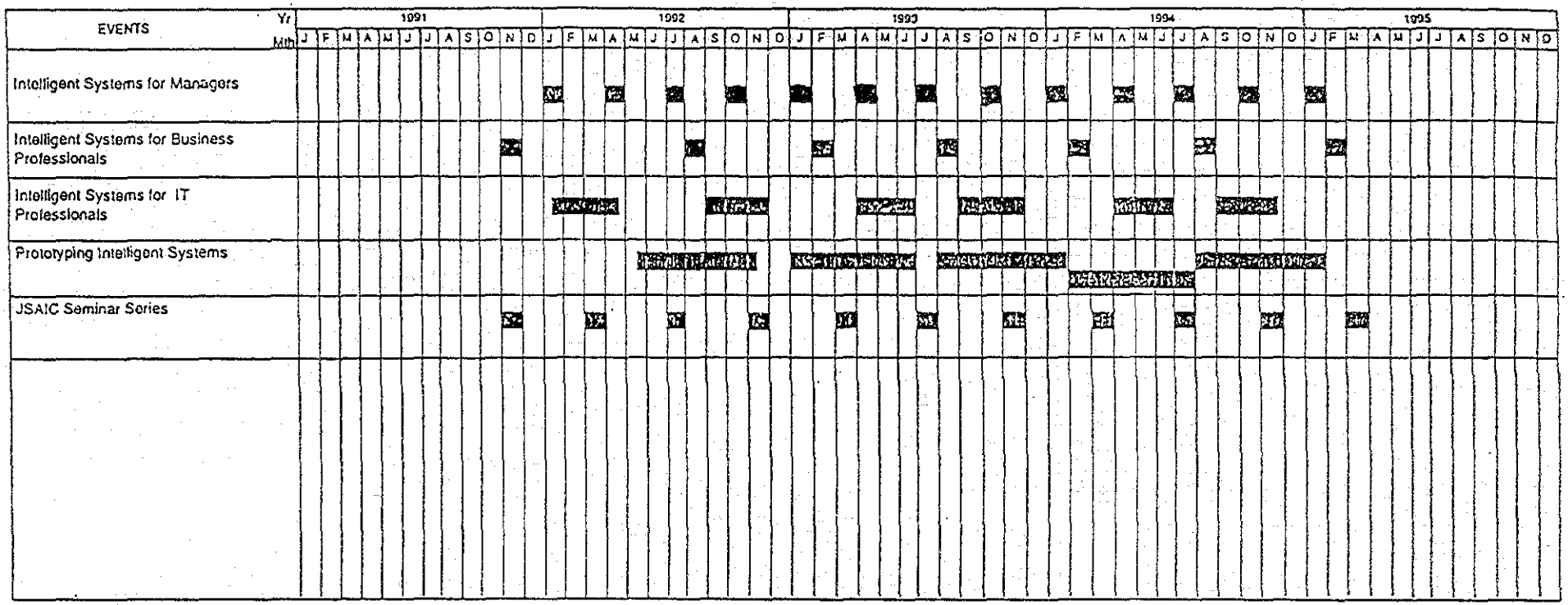
JSAIC EVENTS FOR MARKETING, 1992/93

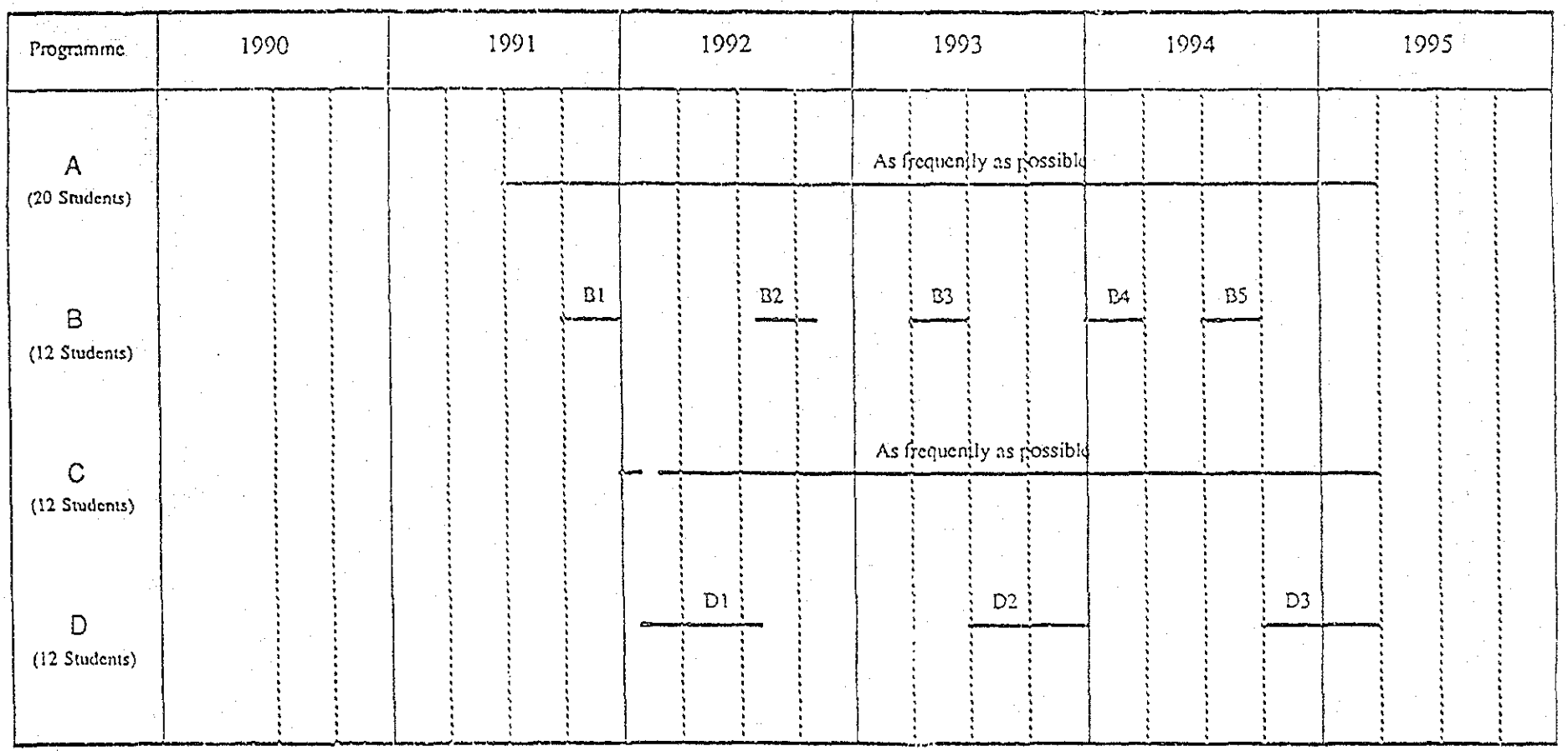


Annex

JSAIC CALENDAR OF TRAINING PROGRAMMES FROM FY1991/92 TO FY1994/95



AI Centre Training Programme Schedule



Annex 6 :
Review of Programme A : Intelligent Systems for Managers

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REVIEW OF PROGRAMME A : INTELLIGENT SYSTEMS FOR MANAGERS

IS For Managers

- Commence on 3 August 1991
- To date 6 courses conducted
- 96 people trained
- 8 courses planned

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IS For Managers

Course Contents (Version 1) :

- Overview of AI & IS 1.0 day
- IS Project Management 1.0 day
- ES Tools & Hands-on 0.5 day
- Case Studies & Demo 0.5 day

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INTELLIGENT SYSTEMS FOR MANAGERS

15 Jan - 17 Jan 92

Date/Time	15 Jan 92 (Wed)	16 Jan 92 (Thur)	17 Jan 92 (Fri)
0900	Introduction	Step-by-step Approach to Building Int Sys	Tools Supporting Int Sys
0930	Trends in the development of Int Sys.	Planning for Int Sys	Product Demonstrations
1000	Activity 1	Activity 5A	
1030	Morning Tea Break		
1100	Is There a Business Perspective for Int Sys	Organising the Project Team	Using an Int Sys Tool (Demonstrations)
1130		Activity 5B	Using an Int Sys Tool (Hands-on)
1200	Activity 2	Activity 4 (Cont.)	
1230	Lunch		
1330	Risk Assessment for New Technology	Development of Int Sys (Part I)	Using an Int Sys Tool (Hands-on)
1400		Activity 6	
1430	Activity 3	Development of Int Sys (Part II)	
1500	Afternoon Tea Break		
1530	Identifying Business Opportunities	Auditing Int Sys	Looking at the Horizon of Int Sys
1600	Activity 4	Activity 7	Activity 8
1630			Conclusion

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IS For Managers
FEEDBACK

- Good course
- Have good understanding of IS
- But too much lectures
- Prefer longer hands-on session
- Need help to identify possible areas for IS applications

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IS For Managers

Course Contents	No. of Days	
	Ver. 1	Ver.2
Overview of AI & IS	1.0	0.75
IS Project Management	1.0	0.5
ES Tools & Hands-on	0.5	1.0
Case Studies & Demo	0.5	0.5
Problem Identification	0	0.25

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AN INTRODUCTION TO INTELLIGENT SYSTEMS FOR MANAGERS

Programme Outline

Date/ Time-Slot	Day I	Day II	Day III
Morning I 90 mins	*Course Introduction* • Video • DD's Greeting • Course Logistics • Programme Overview *What's AI Anyway?*	*Planning And Starting An Intelligent Systems Project* *Managing The Intelligent Systems Project*	*Workshop*
30 mins	**********	Morning Tea Break	**********
Morning II 90 mins	*What Can AI Do For Me?*	*Evaluating The Success Of Intelligent Systems* *Tools Supporting Intelligent Systems*	*Workshop* *Conclusion & Demonstration*
60 mins	**********	Lunch Break	**********
Afternoon I 90 mins	*Is There Business Perspective For Intelligent Systems?*	*Using an Intelligent Systems Tool* *Workshop*	*Product Demonstration* *Application Dialogue II*
30 mins	**********	Afternoon Tea Break	**********
Afternoon II 90 mins	*Application Dialogue I : How to Identify Business Opportunities In My Organisation?*	*Workshop*	*New Potential Of Intelligent Systems* *Programme Conclusion*

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Annex 7 :
Review of Programme B : Intelligent Systems for IT Professionals

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REVIEW OF PROGRAMME B :
INTELLIGENT SYSTEM FOR IT PROFESSIONALS

IS For IT Professionals

- Commence on 20 January 1992 & ends on 28 April 1992
- 8 participants
- 5 awarded with Diploma
- 3 awarded with Certificate
- Next course starts 1st Sept 1992

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IS For IT Professionals

• Introduction to AI	3 days
• Introduction to Expert Systems	2 days
• Introduction to Unix	1 day
• Object-Oriented Analysis & Design (OOAD)	2 days
• Lisp Programming	9 days
• Prolog Programming	5 days
• C++ Programming	8 days
• Knowledge Engineering	8 days
• Excore	7 days
• Nexpert & Rocky (PC Tools)	8 days
• Project	15 days
• AI Paper Assessment	0.5 day

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IS For IT Professionals

Subject	Assessment	
	Workshop	Exam
General AI Paper	0%	100%
OOAD & C++	40%	60%
Lisp Programming	40%	60%
Prolog Programming	40%	60%
Knowledge Engineering	30%	70%
Project	100%	0%

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IS FOR IT PROFESSIONALS

Teaching Modules

Course Code	Course Description
IN01	Introduction to AI
IN02	Introduction to ES
TC01	Introduction to OS
TC02	Object Oriented Analysis and Design
TC03	C++
TC04	LISP
TC05	Prolog
KE01	KBS Life Cycle
KE02	Knowledge Acquisition
KE03	Knowledge Conceptualisation
KE04	Knowledge Representation
SH01	Rocky (ES Shell)
SH02	Nexpert (ES Shell)
SH03	EXCORE
MP	Mini-Project

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January 1992

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			New Year's Day 1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	IN01 : AI (1) (AA/TLE) TC01 : OS (1) (SYC) 20	IN01 : AI (2) (AA) TC01 : OS (2) (SYC) 21	IN01 : AI (3) (AA) TC02 : OOAD (1) (CCW) 22	IN01 : AI (4) (AA) TC02 : OOAD (2) (CCW) 23	IN01 : AI (5) (AA) TC02 : OOAD (3) (CCW) 24	25
26	IN01: AI (6) (AA) TC02 : OOAD (4) (CCW) 27	IN02 : ES (1) (AA) TC03 : OOP (1) (TL) 28	IN02 : ES (2) (AA) TC03 : OOP (2) (TL) 29	IN02 : ES (3) (AA) TC03 : OOP (3) (TL) 30	IN02 : ES (4) (AA) TC03 : OOP (4) (TL) 31	

Programme B Timetable (Updated on 4 Dec 1991)

February 1992

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	TC03 : OOP (5) (TL) (*** NEW YEAR EVER ***) 3	Chinese New Year 4	Chinese New Year 5	TC03 : OOP (6) (TL) TC03 : OOP (7) (TL) 6	TC03 : OOP (8) (TL) TC03 : OOP (9) (TL) 7	8
9	KE01 : KBLC (1) (TLE) TC03 : OOP (10) (TL) 10	TC03 : OOP (11) (TL) TC03 : OOP (12) (TL) 11	KE01 : KBLC (2) (TLE) TC03 : OOP (13) (TL) 12	TC03 : OOP (14) (TL) TC03 : OOP (15) (TL) 13	KE02 : KA (1) (TLE) TC04 : FP (1) (JC) 14	15
16	KE02 : KA (2) (TLE) TC04 : FP (2) (JC) 17	TC03 : OOP (16) (*** ASSESSMENT ***) (??) TC04 : FP (3) (JC) 18	KE02 : KA (3) (TLE) TC04 : FP (4) (JC) 19	TC04 : FP (5) (JC) TC04 : FP (6) (JC) 20	KE02 : KA (4) (TLE) TC04 : FP (7) (JC) 21	22
23	KE02 : KA (5) (TLE) TC04 : FP (8) (JC) 24	TC04 : FP (9) (JC) TC04 : FP (10) (JC) 25	KE03 : KS/KC (1) (WSP) TC04 : FP (11) (JC) 26	TC04 : FP (12) (JC) TC04 : FP (13) (JC) 27	KE03 : KS/KC (2) (WSP) TC04 : FP (14) (JC) 28	29

Programme B Timetable (Updated on 4 Dec 1991)

March 1992

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	KE03 : KS/KC (3) (WSP) ========== TC04 : FP (15) (JC) 2	TC04 : FP (16) (JC) ========== TC04 : FP (17) (JC) 3	KE03 : KS/KC (4) (WSP) ========== TC05 : LP (1) (TLE) 4	TC05 : LP (2) (TLE) ========== TC05 : LP (3) (TLE) 5	TC05 : LP (4) (TLE) ========== TC05 : LP (5) (TLE) 6	7
8	TC02 : FP (*** ASSESSMENT ***) (JC) ========== TC05 : LP (6) (TLE) 9	TC05 : LP (7) (TLE) ========== TC05 : LP (8) (TLE) 10	KE04 : KR (1) (SYC) ========== TC05 : LP (9) (TLE) 11	SH01 : ROCKY (1) (SYC, WSP) ========== SH01 : ROCKY (2) (SYC, WSP) 12	KE04 : KR (2) (SYC) ========== SH01 : ROCKY (3) (SYC, WSP) 13	14
15	KE04 : KR (3) (SYC) ========== SH01 : ROCKY (4) (SYC, WSP) 16	SH01 : ROCKY (5) (SYC, WSP) ========== SH01 : ROCKY (6) (SYC, WSP) 17	KE04 : KR (4) (SYC) ========== SH02 : NexPert (1) (WSP, SYC) 18	SH02 : NexPert (2) (WSP, SYC) ========== SH02 : NexPert (3) (WSP, SYC) 19	SH02 : NexPert (4) (WSP, SYC) ========== SH02 : NexPert (5) (WSP, SYC) 20	21
22	TC05 : LP (*** ASSESSMENT ***) (TLE) ========== SH02 : NexPert (6) (WSP, SYC) 23	SH02 : NexPert (7) (WSP, SYC) ========== SH02 : NexPert (8) (WSP, SYC) 24	SH03 :Excore (1) (JC, TLE) ========== SH02 : Excore (2) (JC, TLE) 25	SH03 :Excore (3) (JC, TLE) ========== SH02 : Excore (4) (JC, TLE) 26	SH03 :Excore (5) (JC, TLE) ========== SH02 : Excore (6) (JC, TLE) 27	28
29	KE : KNOW. ENG. (*** ASSESSMENT ***) ========== SH02 : Excore (7) (JC, TLE) 30	SH03 :Excore (8) (JC, TLE) ========== SH02 : Excore (9) (JC, TLE) 31				

Programme B Timetable (Updated on 4 Dec 1991)

April 1992

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			SH03 :Excore (10) (JC, TLE) SH02 : Excore (11) (JC, TLE) 1	SH03 :Excore (12) (JC, TLE) SH02 : Excore (13) (JC, TLE) 2	SH02 : Excore (14) (JC, TLE) (*** FREE ***). 3	4
Hari Raya Puasa 5	Hari Raya Puasa 6	MP : MINI-PROJ (1) (JC, TLE, SYC, WSP) MP : MINI-PROJ (2) (JC, TLE, SYC, WSP) 7	MP : MINI-PROJ (3) (JC, TLE, SYC, WSP) MP : MINI-PROJ (4) (JC, TLE, SYC, WSP) 8	MP : MINI-PROJ (5) (JC, TLE, SYC, WSP) MP : MINI-PROJ (6) (JC, TLE, SYC, WSP) 9	MP : MINI-PROJ (7) (JC, TLE, SYC, WSP) MP : MINI-PROJ (8) (JC, TLE, SYC, WSP) 10	11
12	MP : MINI-PROJ (9) (JC, TLE, SYC, WSP) MP : MINI-PROJ (10) (JC, TLE, SYC, WSP) 13	MP : MINI-PROJ (11) (JC, TLE, SYC, WSP) MP : MINI-PROJ (12) (JC, TLE, SYC, WSP) 14	MP : MINI-PROJ (13) (JC, TLE, SYC, WSP) MP : MINI-PROJ (14) (JC, TLE, SYC, WSP) 15	MP : MINI-PROJ (15) (JC, TLE, SYC, WSP) MP : MINI-PROJ (16) (JC, TLE, SYC, WSP) 16	Good Friday 17	18
19	MP : MINI-PROJ (17) (JC, TLE, SYC, WSP) MP : MINI-PROJ (18) (JC, TLE, SYC, WSP) 20	MP : MINI-PROJ (19) (JC, TLE, SYC, WSP) MP : MINI-PROJ (20) (JC, TLE, SYC, WSP) 21	MP : MINI-PROJ (21) (JC, TLE, SYC, WSP) MP : MINI-PROJ (22) (JC, TLE, SYC, WSP) 22	MP : MINI-PROJ (23) (JC, TLE, SYC, WSP) MP : MINI-PROJ (24) (JC, TLE, SYC, WSP) 23	MP : MINI-PROJ (25) (JC, TLE, SYC, WSP) MP : MINI-PROJ (26) (JC, TLE, SYC, WSP) 24	25
26	MP : MINI-PROJ (27) (JC, TLE, SYC, WSP) MP : MINI-PROJ (28) (JC, TLE, SYC, WSP) 27	MP : MINI-PROJ (29) (JC, TLE, SYC, WSP) MP : MINI-PROJ (30) (JC, TLE, SYC, WSP) 28	29	Certificate Presentation 30		

Programme B Timetable (Updated on 4 Dec 1991)

Annex 8 :
Rewiew of Programme C : Intelligent Systems for Business Professionals

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REVIEW OF PROGRAMME C :
INTELLIGENT SYSTEMS FOR BUSINESS PROFESSIONALS

IS For Business Professionals

- Conducted from 4 to 15 November 1991
- 7 Participants
- Next Course starts 19th August 1992

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IS For Business Professionals

• Introduction to AI & ES, Pitfalls & Future Directions in ES Dev.	2.0 days
• KBS Development Life Cycle	1.25 days
• Feasibility Study & KE Process	2.5 days
• Case Studies	0.75 day
• Hands-on Prototyping, Presentation & Conclusion	2.5 days

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IS for Business Professionals Timetable

- 30 Oct 91

Key :
- Activity - 0.5 hr
- Lunch - 1hr
- Tea break - 0.5 hr

Day	0900-1030		1100-1230	1330-1500	1530-1700
1 Mon 4/11	Introduction YC	Trends in the Development of IS OT	Is there a Business Perspective for IS OT	Harnessing this technology for new solutions OT	IS : The Singapore Scene CW
2 Wed 6/11	Outline of AI Technology AA		Understanding Human Knowledge and Problem Solving VA	Developing ES YC	Acquiring Knowledge YC
3 Thur 7/11	Interviewing YC		Basic Communication YC	Communicating Knowledge OT	Attending KA Meetings YC
4 Fri 8/11	Conceptualising Business Knowledge VA		Structuring Business Knowledge VA	Representing Business Knowledge VA	Drawing Inference VA
5 Mon 11/11	Project Life Cycle I SP		Project Life Cycle II SP	Auditing ES OT	Maintaining Knowledge Reasoning OT
6 Tue 12/11	Categories of ES AA		Application areas for ES AA	Emerging Technologies of IS AA	Tools and Systems Demonstrations D/R
7 Wed 13/11	Tools Supporting ES SP	Introducing Rocky VA/YC	Rocky VA/YC	Tools and Systems Demonstrations JK/TL/TO	Tools and Systems Demonstrations TL/EF/AA
8 Thur 14/11	Introducing Excore SP/OT/KT/EF		Excore SP/OT/KT/EF	Work	shop VA/YC/SP/OT/KT/EF
9 Fri 15/11	Work		shop VA/YC/SP/OT/KT/EF	Workshop VA/YC/SP/OT/KT/EF	Conclusion

IS For Business Professionals

FEEDBACK

From Participants :

- ✓ Good Course
- ☛ 10 days course too long

From Marketing :

- ☛ Difficulty in getting participants

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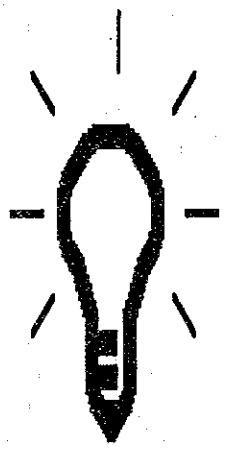
IS For Business Professionals

RECOMMENDATION



3-Days Duration

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IS For Business Professionals

Course Contents	No. Of Days	
	Ver. 1	Ver. 2
• Introduction to AI & ES, Pitfalls & Future Directions in ES Dev.	2.0	0.5
• KBS Development Life Cycle	1.25	0.25
• Feasibility Study & KE Process	2.5	1.0
• Case Studies	0.75	0.25
• Hands-on Prototyping, Presentation & Conclusion	2.5	1.0

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IS for Business Professionals
3-Day Timetable - *22 June 92*

Key :
- Activity - 0.5 hr
- Lunch - 1hr
- Tea break - 0.5 hr

Day	0900-1230			1330-1700			
1	Introduction AA	Introducing AI & ES Technology AA (CIN)		Participating in an ES project LN (CPR)	Communicating Business Knowledge LN(CCN)	Demonstrations of ES implementations	
2	Organising Business Knowledge VA (COR)	Structuring Business Knowledge VA (CST)		Representing Business Knowledge VA (CRP)	Reasoning from Business Knowledge VA (CRS)	A Survey of Practical ES Building Tools AA(CSV)	Tools Demos ALL
3	Working with an ES Building tool TL (CWK)	Hands on workshop with Tool TL (CWK)		Hands on workshop with Tool TL (CWK)		Discussion and Feedback ALL	Conclusion AA

Annex 9 :
Review of Programme D : Prototyping Intelligent Systems

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REVIEW OF PROGRAMME D :
PROTOTYPING INTELLIGENT SYSTEMS

Prototyping IS

- Commemce on 19 May 1992 & ends 20 November 1992
- 7 Participants
- 5 Projects
- One project to start on 1 August 1992

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Prototyping IS

• Introduction to JSAIC Resources	1.0 day
• Project Management	3.0 days
• Practical KE Techniques	1.0 days
• Feasibility Study & Problem Analysis	2.0 Weeks
• Protoyping	5+ months
• Evaluation of Prototype	2.0 days
• Open Seminars	1.0 day

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Prototyping IS (1st Week Schedule)

Day	0900 - 1230				1330 - 1630		
Tue 19/5	Introduction SYC	What is IS TLE	Introduction to IS/ES TLE	Architecture of ES TLE	Different Categories of ES TLE	Issues in ES Development	Applications in ES TLE
Wed 20/5	Introduction to PM LN		Planning IS Projects LN		Organising IS Project Teams LN		
Thur 21/5	Leading IS Projects LN				Risk Management LN		
Fri 22/5	Controlling IS Projects LN				Concluding PM LN		Tools Demonstration JK
Mon 25/5	Knowledge Acquisition WSP		Knowledge Conceptualisation WSP		Knowledge Structuring WSP		Knowledge Representation SYC

Prototyping IS
OPERATION ISSUES

- Company has project but not ready to start on JSAIC's scheduled dates
- Company ready but waiting time to next course too long

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Prototyping IS
RECOMMENDATION

- ✓ Start as many projects as possible on scheduled course dates
- ✓ Flexible to accept certain projects on different dates
- ✓ Accept projects only if resources are available

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Annex 10 :
Ad-Hoc Courses

AD-HOC Courses (EXTERNAL)

1. Times Publishing	Feasibility Study
2. Human Interface Engineering	Fuzzy Logic ES to Monitor Trimming Of Crystal
3. National University Hospital (NUH)	Intelligent Tutor for Urology
4. ECS Computers & NUH	Operation Theatre Prioritisation System

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AD-HOC Courses (INTERNAL)

5. JSAIC	Bin-packing Algorithm
6. National University of Singapore (NUS)	Natural Language Workshop
7. NUS Student Programme (3 Projects)	• Warehouse Space Planning, • Gantt-Chart Library, • Time-table Scheduling

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Annex 11 :
Short-Term Experts

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SHORT-TERM EXPERTS FOR 91/92

1.	LISP	10-14	Sept	91	M. Ida (U. Aoyama)
2.	Knowledge Acquisition	22-25	Oct	91	T. Terano (Tsukub
3.	Very Large KBS	19-26	Nov	91	T. Makino (Toho U)
4.	Human-Computer Interface	3-6	Dec	91	M.Sugai (NEC)
5.	Virtual Reality	15-19	Jan	92	S. Fushimi (IMS Lab)
6.	KBS Dev. Methodology	24 Feb-1 Mar		92	Y. Koseki (NEC)

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SHORT-TERM EXPERTS FOR 92/93

1. Graphical Mapping Techniques	22-27	Jun	92
2. Neural Network in Financial Applications	27-31	Jul	92
3. Computer-Aided Design Techiques	16-23	Aug	92
4. Intelligent Information Retrieval		Aug	92
5. Common Lisp Object System	13-20	Sept	92
6. X-Window Programming Techniques		Oct	92
7. Fuzzy Logic Application Techniques		Jan	93
8. Neural Network Application Techniques		Feb	93

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Annex 12 :
Training Programme in Japan

TRAINING PROGRAMME IN JAPAN FOR SINGAPORE INSTRUCTORS

No.	Theme	90/91 Year 1	91/92 Year 2	92/93 From Year 3
1.	Outline of AI and ES	1 week	Nil	Nil
2.	Basic Lisp & exercises	1 week	Nil	Nil
	Advanced Lisp & exercises	1 week	1 week	Nil
3.	Basic Prolog & Exercises	1week	Nil	Nil
	Advanced Prolog & exercises	1 week	1 week	Nil
4.	ES Development Workshop			
	- EXCORE	2 weeks	Nil	Nil
	- Classroom Projects	3 weeks	Nil	Nil
	- Advanced EXCORE	Nil	2 weeks	Nil
	- Advanced EXCORE Projects (Prototype Development)	Nil	7 weeks	Nil
5.	Advanced AI Topics (Eg. Machine Learning, Neural Network, etc.)	Nil	Nil	4 weeks
6.	Attachment To Real Projects (Prototype/Practical System)	Nil	Nil	7 weeks
7.	Observation study	2 days	1 week	1 week
	TOTAL	12 weeks	12 weeks	12 weeks

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Annex 13 :
Intellectual Property Rights

Intellectual Property Rights

- Ownership
- Right to use

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Intellectual Property Rights

- Materials/Software developed by JSAIC
  (Counterpart & Japanese Expert)

- Materials/Software developed jointly by JSAIC and its partners
  (Prog D Participants, Ad hoc courses)

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Intellectual Property Rights (Con't)

The right to use

i) 'as is' (hard copies/object code)

ii) amend/distribute (soft copies/source codes)

iii) amend/distribute/sell (soft copies/source codes)

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Intellectual Property Rights (con't)

Item	Ownership
1) Materials/Software developed by JSAIC	100% JSAIC
2) Materials/Software developed by JSAIC & its partners	
- Generic Modules - Knowledgebase	Joint ownership JSAIC's partner (may give JSAIC right to use)

Note : If 3rd party shells, tools are used, then a separate lisencing agreement must be negotiated with the 3rd party vendor

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Intellectual Property Rights (Con't)

	Not for profit		Commercial
	JSAIC	JICA	Others
'as is'	✓	✓	$
amend / distribute	✓	✓	$$
amend / distribute / sell	✓		$$$

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Annex 14 :
List of Hardware in JSAIC

Hardware (Computers)

	QTY
• NEC EWS 4800/20 (CISC)	21
• NEC EWS 4800/60 (CISC)	6
• NEC EWS 4800/220	1
• NEC EWS 4800/260	2
• NEC EWS 4800/230	6
• SONY NEWS 3860	1
• SONY NEWS 3410	1
• HP APOLLO 9000 S400	1
• HP 750	1
• HP 720	1

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Contact Mission 22-29 Jun 92

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Hardware (Computer) (con't)

	QTY
• SUN Sparcstation	2
• SUN IPX	1
• NeXT	1
• NEC Powermate PC-386	20
• NEC PC 9801	5
• PC Notebook	7
• Macintosh Quadra	2
• Macintosh II	6
• Macintosh Classic	8
• Macintosh LC	4
• Macintosh Powerbook	2
• PC -486	2

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Contact Mission 22-29 Jun 92

Hardware (Peripherals)

	QTY
• NEC Silentwriter LC890	8
• NEC Pinwriter P6300	10
• Tektronix Phaser II Printer	1
• Tektronix Colour Scanner	1
• Apple Laserwriter IINTX	1
• Fujitsu Scanner	1
• NEC 21" Monitor	1
• TI Microlaser	1

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Contact Mission 22-29 Jun 92

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Annex 15 :
List of Software in JSAIC

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Software (Expert Systems Shells & Languages)

	QTY
• NEC LISP (EWS 4800/60,20)	27
• NEC Prolog (EWS 4800/60,20)	27
• NEC Excore (EWS 4800/60,20)	27
• NEC C++ (EWS 4800/60,20)	27
• NEC C++ (EWS 4800/260,220)	6
• NEC Excore & KWB (EWS 4800/260,220)	6
• NEC PlanBox	1
• NEC DiagBox	1
• NEC PIVOT	1

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Contact Mission 22-29 Jun 92

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Software (Expert Systems Shells & Languages) (con't)

	QTY
• KEE	1
• Pro Kappa	1
• Ilog (Aida, Masai, Asquel, Pecos)	Site licence
• GURU	5
• Kappa	1
• Rocky	10
• Nexpert	5
• Level 5	1
• Borland C++	10
• Goldwork III	1
• OIT	4
• Smalltalk	2

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Contact Mission 22-29 Jun 92

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Annex 16 :
List of Hardware and Software Purchased Locally in 1991

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List of Hardware and Software Purchased Locally in 1991

Automated Systems (Pte) Ltd ✓
203 Henderson Road
#12-07/14 Henderson Industrial Park
Singapore 0315
Tel: 2789566 Fax: 2722029
Attn: Ong Wei Chung

	Qty	Unit Price	Total Price
SUN SPARCstation 2GX 32MB RAM/424 Mb Harddisk/64Kb cache 3.5" Floppy Disk Drive Keyboard and mouse 19" Color Monitor 1152 X 900 pixels color graphics board File Server Option Pack 1.3 Gb DEsktop storage module Sun OS and utilities	1	$65,000	$65,000
SUN SPARCstation IPX 16MB RAM/207 Mb Harddisk/64Kb cache 3.5" Floppy Disk Drive Keyboard and mouse 19" Color Monitor Sun OS & Utilities	1	$30,000	$30,000
SUN NetManager for Network Management purposes	1	$6,000	$6,000
Total			*$101,000*

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Bell Software PteLtd
80C Boat Quay
Singapore 0104
Tel: 5339223 Fax: 5339903
Attn: Jessica Kung

	Qty	Unit Price	Total Price
Open Interface Toolbox for HP GUI for multiple platform expert system dev	1	$26,000	$26,000
Open Interface Toolbox for SUN GUI for multiple platform expert system dev	1	$26,000	$26,000
Open Interface Toolbox for PC GUI for multiple platform expert system dev	1	$14,828	$14,828
Open Interface Toolbox for MAC GUI for multiple platform expert system dev	1	$14,828	$14,828
NexPert on PC DOS	5	$6,000	$30,000
Total			*$111,656*

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Borland Singapore Pte Ltd
250 North Bridge Road
#30-04 Raffles City tower
Singapore 0617
Tel: 3398122 Fax: 3392742
Attn: Grace Ho

	Qty	Unit	Total Price
TURBO BORLAND C++ FOR WINDOWS Turbo C++ includes Visual ObjectBrowser, Speedbar, ObjectWindows appln framework, Resource Workshop for creating user VI and Turbo Debugger. Supports Microsoft Windows 3.0 environment.	10	$360	$3,600
Total			*$3,600*

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Cannon Marketing Services Pte Ltd
2 Alexandra Road
#04-1A Delta house
Sinapore 0315
Tel : 2735311 Fax: 2733317
Attn: Kevin Wong

	Qty	Unit Price	Total Price
NeXT Cube 64Mb RAM/660MB Harddisk 17" Megapixel Colour Display 1120x832 res	1	46000	46000
Total			*$46,000* −500 $45,500.

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Challenger Microcomputer Products
62 Burn Road
Challenger Building
Singapore 1336
Tel: 2888233 Fax: 2832828
Attn: Robert Tan

	Qty	Unit	Total Price
SMALLTALK V For Windows Object oriented programming language	1	$990	$990
Total			*$990*

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Computer Power (S) Pte Ltd
105 Cecil Street #19-03/04
The Octagon
Singapore 0106
Tel: 2252922 Fax: 2250386
Attn: Cheo Meng Soon

	Qty	Unit	Total Price
Level 5 Object 2.2 - ES Dev tool	1	$1,500	$1,500
Total			*$1,500*

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ESCO Audio Visual Pte Ltd ✓
45 Genting Lane
#06-02 Genting Complex
Singapore 1334
Tel: 7443100 Fax: 7452898
Attn: Victor Koh

	Qty	Unit	Total Price
nVIEW ViewFrame Spectra 32,000 Colour Palette LCD Projection Panel Connect to IBM PCs, Macintosh Computers For use with Overhead Projectors for training	1	$8,900	$8,900
Total			*$8,900*

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HCL Software Products SEA Pte Ltd ✓
73 Science Park Drive
#01-12 CINTECH Building
Singapore 0511
Tel: 7773677 Fax: 7779677
Attn: Raj Mahajan

	Qty	Unit Price	Total Price
Database software for SUN	1	$16,500	$16,500
Total			***$16,500*** −250
			$16,250

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Hewlett-Packard Singapore (Sales) Pte Ltd
150 Beach Road #29-00
Gateway West
Singapore 0718
Tel: 2919088 Fax: 2927089
Attn: Serena Chang

	Qty	Unit Price	Total Price
HP 9000/750 CRX 64MB RAM 1.3GB Hard Disk PA-RISC Architecture 19" Color Monitor 1280 X 1024 8 place color graphics driver 4mm Digital Audio Tape Storage Backup Unit HP-UX Operating System C++ Language Compiler Common Lisp Keyboard and mouse Systems Software & Documentation	1	$96,000	$96,000
HP 720CRX 16Mb RAM/420Mb Harddisk 19" Colour Monitor Keyboard & Mouse Systems Software & Documentation	1	$30,000	$30,000
Total			***$126,000*** − 8.463

$117,537.00

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Human Interface Engneering Pte Ltd ✓
2 Marsling Lane
Woodlands New Town
Singapore 2573
Tel: 3682242 Fax: 3682241
Attn: Goh Teck Huat

	Qty	Unit	Total Price
GoldWorks III/ PC Version	1	$3,000	$3,000
Total			*$3,000*

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ILOG
#02-05
CINTECH Building
73 Science Park Drive
Singapore 0511
Tel: 7730626
Attn: Albert Antoine

	Qty	Unit Price	Total Price
PECOS - a knowledge acquisition software used for expert system development	1	$22,000	$22,000
Total			*$22,000*

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KESTRONICS (S) Pte Ltd
1090 Lower Delta Road #07-01/07
Singapore 0316
Tel: 2779212 Fax: 2741896
Attn: Victor Tan

	Qty	Unit Price	Total Price
Vampire Tap Transceiver with 5-metre AUI branch cables	4	$450	$1,800
5-metre AUI branch cables	4	$100	$400
4-port multiport transceivers	1	$1,000	$1,000
Total			*$3,200* −320
			$2,880.00

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NATIONAL UNIVERSITY OF SINGAPORE
Technet Unit
Computer Centre
10 Kent Ridge Crescent
Singapore 0511
Tel: 7726522 Fax: 7780198
Attn: Dr Tommy Chen

	Qty	Unit	Total Price
Router - CNX 500 Router & base Unit Dual port sync serial interface/ dual port ethernet int, V.35 level converter & serial cable	1	$30,005	$30,005
Total			*$30,005*

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NEC Singapore Pte Ltd
1 Maritime Square #12-10
World Trade Centre
Singapore 0409
Tel: 2781818 Fax: 2717188
Attn: Kenny Chew

	Qty	Unit	Total Price
IBM-COMPATIBLE 486 80486 CPU Architecture 8MB RAM/200Mb Harddisk 1 X 5.25" Floppy Disk Drive 1 X 3.5" Floppy Disk Drive Super VGA graphics board & 1MB RAM 14" Color Monitor (Multisynchronous) Keyboard & OS	1	$7,000	$7,000
IBM HARD DISK UPGRADE IBM Compatible 300MB Hard Disk Drive ESDI-based Drive Novell Certified	1	$3,000	$3,000
COLOR MONITOR (VGA) NEC 6FG Multisync 21" Color Monitor To be used for teaching and demonstration purposes.	1	$4,000	$4,000
SUPER VGA CARDS Trident 1MB Super VGA Video Graphics Board for High Resolution Display for lecture and training	10	$250	$2,500
Total			*$16,500*

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Tricom Pacific Pte Ltd ✓
152 Beach Road
#01-00 Gateway East
Singapore 0718
Tel: 2980123 Fax: 2922678
Attn: Joe Lim

	Qty	Unit	Total Price
Macintosh Quadra 8MB RAM 160MB Hard Disk Apple SuperDrive Keyboard and mouse 13" Color Display Local Talk Locking Connector	2	$14,800	$29,600
Macintosh Powerbook 4MB RAM & 40 MB Harddisk Apple SuperDrive Fax/Data Modem and software Battery and AC Adapter	1	$7,500	$7,500
330MB External Disk Drive SCSI-based Drive Hard Disk Management Software Hard Disk Backup Software	1	$3,700	$3,700
PLI CD ROM External Drive SCSI System Cable Built-in Terminator	1	$1,520	$1,520
GatorBox - Connection of Apple Network to Ethernet Network	1	$4,500	$4,500
MPW C & OBJECT PASCAL BUNDLE V3.2 Includes MPW Development Env, MWP Assembler, MPW C, MPW Object Pascal, SADE, ResEdit and MacsBug on CD-ROM	1	$1,416	$1,416

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Annex 17 :
JSAIC's Local Budget

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Tricom Pacific Pte Ltd (contd)

	Qty	Unit	Total Price
KANJI TALK V6.07 Japanese Operating System for the Macintosh computer.	1	$895	$895
SMALLTALK FOR MACINTOSH *Smalltalk V Programming Language* for prototyping purposes.	1	$515	$515
MICROSOFT OFFICE V2.0 A packaged software containing Microsoft Word, Powerpoint, Excel and Mail software.	2	$1,096	$2,192
CLARIS MACDRAW MacDraw II drawing software for Macintosh computers.	1	$582	$582
MACROMIND DIRECTOR *Multimedia software for presentation* purposes	1	$1,372	$1,372
PERSUASION Presentation software	1	$723	$723
PAGEMAKER Desktop Publishing software	1	$1,162	$1,162
PHOTOSHOP *Image touch-up for* scanned images prior to importing to publication	1	$1,308	$1,308
FILEMAKER PRO Database Management software for the Macintosh environment	1	$436	$436
Total			***$57,421***

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JSAIC's Local Budget

Vote	Budget	Total
Expenditure on Manpower (EOM) includes : Staff salaries, bonus, CPF contributions		**$930,000.00**
Other Operating Expenditure (OOE) includes:-		**$1,500,000.00**
Rental of Office	$654,000.00	
Maintenance of computer equipment	$330,000.00	
Publicity, Stationery & other office administration support services	$516,000.00	
Development Expenditure (DE) Computer purchases Office renovation & furniture		**$150,000.00**
Total		**$2,580,000.00**

Annex 18 :
Profile of JSAIC's Activities

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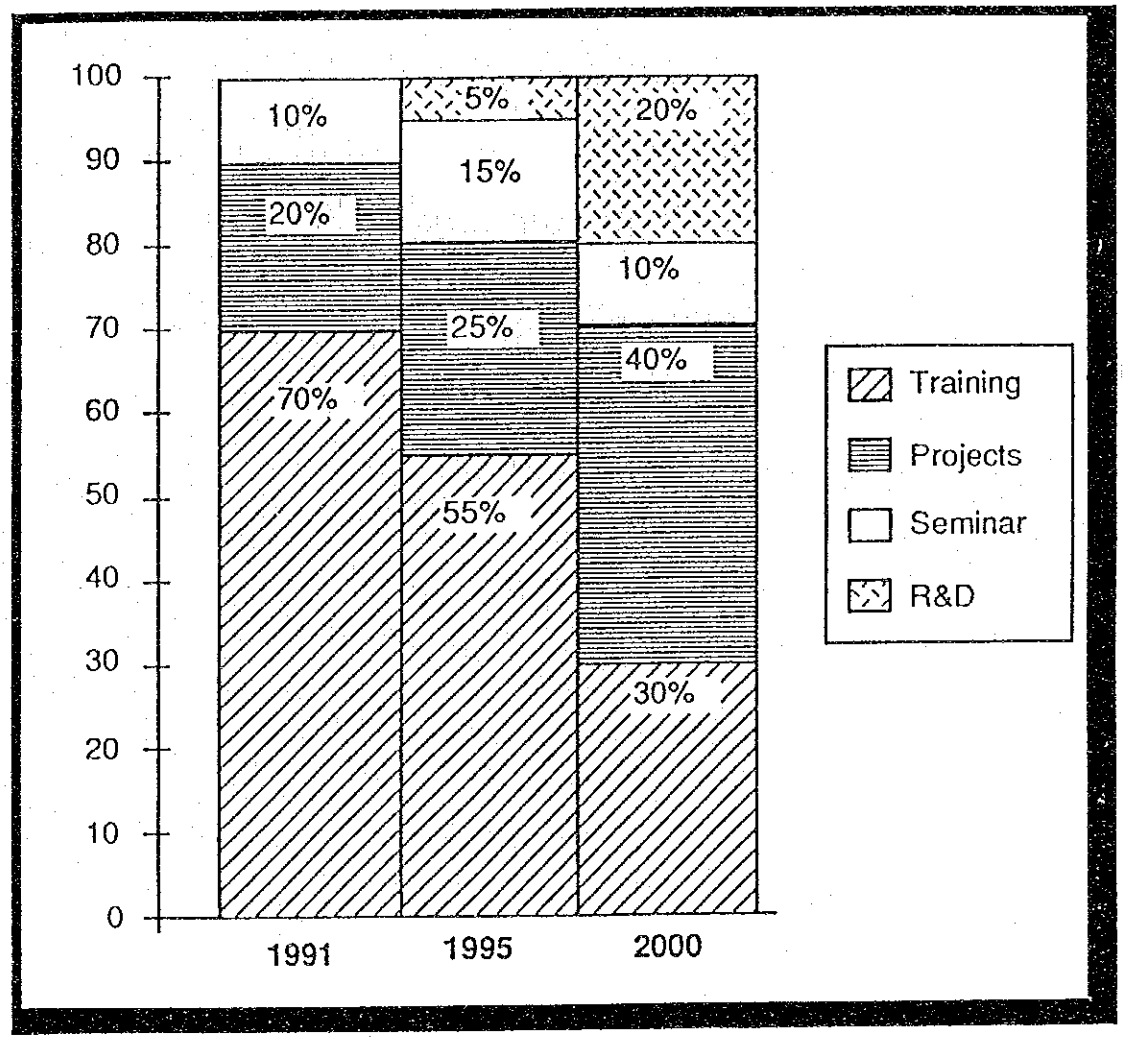
PROFILE OF JSAIC's ACTVITIES



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4/15/92

JSAIC Standard Presn

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