CANADIAN HIGH COMMISSION

MARKET STUDY ON

COMPUTER HARDWARE AND SOFTWARE PRODUCTS AND SERVICES

IN MALAYSIA

March 1988

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CANADIAN HIGH COMMISSION

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FINAL REPORT

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DOMESTIC PRODUCTION AND GENERAL DEMAND

The proliferation of computers is one of the more conspicous recent developments in the country. For the year 1987, the computer market as a whole was valued by industry sources at approximately C$111 million, with a breakdown of C$75 million for hardware, C$20 million for software and C$16 million for services.

Almost all of these requirements for computer hardware are currently met through imports. In 1987, total imports of hardware amounted to C$73.9 million. The two main sources of imports were the United States of America and Japan while other significant sources included the United Kingdom and Singapore. Local production of hardware including peripherals is currently limited to four companies involved in the assembly of personal computers on a small scale. Several other licences have been issued, mainly for the assembly of personal computers and basic peripherals such as disk drives and keyboards. However the underlying dependence on imported hardware is expected to persist over the medium term at least.

Similarly, most of Malaysia's requirements for computer software are imported. The major suppliers of software are not known to conduct extensive research locally on software designs in view of the lack of qualified personnel and the development cost invovled. The majority of them instead ride 'piggy-back' on existing technology, mainly US-based, modifying and adapting them to the Malaysian context. Only in cases where a significant degree of customisation is required, do local suppliers invest in writing proprietary programs.

Local supply of computer services in Malaysia is extensive in the areas of training and education, consultancy and data processing. Local training institutions seek affiliation with overseas institutions mainly to enhance their credentials so that students wanting to pursue computer education abroad can then transfer credits. Local accounting firms dominate the market for computer consultancy in management information and financial systems design. These firms are known to have engaged expatriate staff from overseas offices to enhance their local capabilities. There are also computer companies which, having successfully implemented a number of systems, are now offering their expertise, either for consultancy or complete turnkey solutions. Consultants from their foreign principals are commissioned on a case-by-case basis to address highly technical issues.

The computer market as a whole is anticipated to grow by about 19 percent per year, from about C$111 million in 1987 to about C$190 million in 1990. This growth will be strongest in the end-user market among Government, the financial services industry, manufacturing, and the retail industry.

SUPPLIERS IN THE INDUSTRY

The computer industry in Malaysia has been described as a bazaar of competing suppliers and overlapping technologies. Many companies supply a whole range of products and services from hardware and software to complementary services such as education, consultancy and bureau services.

According to the Asian Computer Directory, the number of importers/distributors and manufacturers in each of the product markets is as follows:

Product/Service	Total Number of Suppliers	No. of Domestic Manufacturers Within the Total
Computer (PC, mini and mainframe)	354	4
Peripherals	82	Nil
Consultancy, software	71	-
Bureau (data processing)	21	-
Training	61	-

In the Malaysian computer market, the major players are the subsidiaries of international computer vendors or their locally appointed representatives. However, no single vendor can provide absolute market coverage, either in terms of market reach or in terms of applications software to meet all end-user requirements. Most of these vendors choose therefore to appoint and work closely with dealers and value-added-resellers. This accounts in part for the proliferation of computer retailers in the country.

The Canadian presence is well established in the small hut potentially important field of remote sensing. In other areas, Canadian firms such as Control Data, Gandalf and Cognos have developed a market presence. Areas of opportunity for these and other firms are expected to be promising over the medium term as the Government of Malaysia implements an ambitious program of computerisation of Government services and private sector corporations seek to improve their data communication network.

Although Canadian software and hardware manufacturers are not likely to be competitive on price with higher volume producers who dominate the mass market, a wide array of more specialised opportunities exist for which quality Canadian products are viable, such as computer peripherals, applications software or specialist training packages geared to improving productivity in the the Government and in the financial, manufacturing and retail sectors. Apart from a good product or solution, successful penetration will require a good local presence, both to ensure product support and to identify potential prospects. In this sector in Malaysia particularly, where potential buyers are themselves not aware of the range of products and solutions available to assist them, this marketing aspect can be particularly significant.

I. INTRODUCTION

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1.0 OBJECTIVES OF THE STUDY

The objectives of this industry study are:

- To provide an overview of the computer products and services industry and its structure in Malaysia.
- To identify the areas of growth that best offer specific opportunities for Canadian suppliers.
- To identify the market conditions and factors which will encourage Canadian computer products and services.
- To identify local manufacturers or distributors who may be interested in either distributing Canadian computer products or going into joint-ventures with Canadian computer product manufacturers.
- To discuss the business prospects of sales of computer products and services for the period of 1988 to 1990.

2.0 SCOPE OF WORK

Computer products and services cover a very wide range. For the purposes of this study, computer products and services have been classified under three main categories:

(i) Computer Hardware

This includes mainframes, minicomputers, personal computers and computer peripherals. Computer peripherals are further sub-classified into data storage devices, input-output devices and data communication devices.

(ii) Computer Software

Software is broadly separated into systems and applications software. Systems software would cover mainly operating systems and networking software. Applications software would include word processing, database and application generator software, spreadsheets, accounting packages and vertical software such as banking and finance systems, retail/point of sale systems, image processing systems, computer-aided-design and computer-aided-manufacturing and videotex systems.

(iii) Computer Services

The three major types of computer services are education and training, computer consultancy and data processing (bureau) services.

3.0 METHODOLOGY

This study relied heavily on information developed from field interviews with major sources and participants in the industry and with relevant government departments. Specifically selected interviews and discussions were held with major distributors/representatives and end-users, the Malaysian Industrial Development Authority (MIDA), the Malaysian Administrative, Modernisation and Manpower Planning Unit (MAMPU), The Association of the Computer Industry of Malaysia (PIKOM), The Malaysian Computer Society and the Malaysian Institute of Microelectronic Systems (MIMOS). In addition, information and statistics from published sources such as the Department of Statistics and the weekly Computimes insert in the New Straits Times were used.

4.0 LIMITATIONS

Available official statistics are not sufficiently detailed to permit an exact breakdown of market segments. Furthermore, since most data pertain to customs declaration, the influence of wholesale and retail margins on market size is not taken into account. Thus, this study has also relied on industry estimates. These should be taken only as approximate indications of the respective market sizes.

Except for the trade statistics where the exchange rates used are the annual averages as released by the Central Bank, all dollar figures quoted in this study are based on the exchange rate of M$2 for every C$1.

II. COMPUTER HARDWARE

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1.0 INTRODUCTION

Computer hardware includes mainframes, minicomputers, personal computers and peripherals. The annual market for 1987 is estimated to be in the region of C$65 million to C$75 million. The lower figure reflects official trade statistics, which exclude trade margins after import, while the higher figure is based on estimates by industry sources. Industry sources also estimate that mini-computers constitute C$40 million of this total, personal computers C$15 million, and mainframes and peripherals, C$10 million each.

Malaysia's computer hardware needs are met almost entirely by imports, although some indigenous manufacturing exists of which some 30 percent is exported.

2.0 DOMESTIC PRODUCTION

The Malaysian Industrial Development Authority (MIDA), the statutory body responsible for the promotion and coordination of industrial development in Malaysia, has issued 11 licences to-date for the manufacture of computers and related peripherals. The recipients are as follows:

TABLE 1
COMPANIES GRANTED LICENCES FOR THE
MANUFACTURE OF COMPUTERS AND PERIPHERALS

	Name of Company	Location	Date of Issue	Product
1)	Accent Technology Sdn. Bhd.	Kuala Lumpur	1985	PCs, peripherals and accessories
2)	Acculine Industries Sdn. Bhd.	Penang	1986	PCs and peripherals
3)	Astec Sdn. Bhd.	Kuantan	1983	PCs, keyboards and sub-assembly, switching power supply for computers
4)	Chew Choon Sdn. Bhd.	-	1983	PCs and peripherals
5)	Compex Sdn. Bhd.	Johor Bahru	1985	PCs, peripherals and accessories

	Name of Company	Location	Date of Issue	Product
6)	Fujitsu	Batu Pahat	1987	Keyboards
7)	Hi-Tech Peripheral Corp.	-	1986	Flexible disk drives
8)	Messex Sdn. Bhd.	Alor Star	1985	PCB assembly, power supply and systems
9)	Microcomputer Systems Sdn. Bhd.	Kuala Lumpur	1985	PCs, peripherals and accessories
10)	Mitsumi Technology	Pontian	1986	Disk drives, keyboards, mice, modems and scanners
11)	Software Technology Group	-	1986	PCs, peripherals and accessories

Source: Malaysian Industrial Development Authority

Of the 11 companies granted licences thus far, only Accent Technology Sdn. Bhd., Compex Sdn. Bhd., Astec Sdn. Bhd. and Microcomputer Systems Sdn. Bhd. are known to have commenced production. Their operations are confined mainly to the assembly of personal computers and basic peripherals such as disk drives, switching power supply for computers and keyboards.

Accent Technology Sdn. Bhd. was in 1986, the first to start operations. This followed the purchase by its parent company, the Melewar Corporation, of technology, manufacturing rights and component parts from Accent Technology Inc. of Colorado, U.S.A.. The production facility at Kampong Pandan, Kuala Lumpur has a production capacity of 900 personal computer sets per month. The company is currently producing only 300 units a month of which almost 30 percent is exported.

Both Compex and Microcomputer Systems started production of PCs on a smaller scale in 1987. Compex with a capital of C$500,000, is a partnership between Autocomp, Sanyo Computer's distributor in Malaysia and Powermatic, Seagate's distributor in Singapore. It started in Kuala Lumpur, with a production line with a capacity of about 200 units per month. Microcomputer Systems with a paid-up capital of C$125,000 has started operating a full production line, from the design of boards to full assembly. Production is currently geared at 400 sets a month.

Astec has concentrated thus far on the manufacture of switching power supply for computers. In fact it is already the largest manufacturer of these products in South-East Asia, and exports to U.S.A. and Europe.

Apart from Astec, these firms are basically assemblers rather than manufacturers. They are dependent to a large extent on component sourcing from the Far East, mainly Taiwan and Japan. This dependence, together with the limited domestic market that discourages more efficient higher volume production, are seen as major obstacles to the development of a strong local computer manufacturing base. Calls for the government to impose higher tariffs on the imports of PCs to raise the pricing differential between local PCs and imported PCs have so far been ignored. The existing differential is estimated at about 2.5 percent based on a sales tax of 10 percent and import duty of 5 percent.

3.0 IMPORTS

Statistical data on the imports of major hardware items are grouped under the following codes and descriptions.

SITC	CCCN	Description
752.200.00	84.53.200	Complete digital data processing machines, comprising in the same housing, the CPU and at least one input unit and one output unit
752.300.00	84.53.300	Complete digital central processing units, digital processors consisting of arithmetical, logical and control units
752.400.00	84.53.400	Separately consigned digital central (main) storage units
752.500.00	84.53.500	Peripheral units, including control and adapting units (connectable directly or indirectly to the central unit)

Peripheral units that are categorised under SITC 752.500.00 include adapters for connecting two computer systems, plotters, printers, magnetic core storages, magnetic disc or drum storages and computer terminals.

Trends of these imports for 1984 to 1987 are shown in Table 2 below:

TABLE 2
IMPORTS OF COMPUTER HARDWARE
1984 TO 1987

SITC	Description	1984 C$'000	1985 C$'000	1986 C$'000	1987 C$'000
752.200.00	Digital data processing machines	11,097	6,401	7,273	9,618
752.300.00	Digital central processing units	16,435	13,929	11,245	16,547
752.400.00	Digital central storage units	118	-	245	1,079
752.500.00	Peripherals units	26,122	43,061	42,254	46,699
		53,772	63,391	61,017	73,943

Source: Malaysian Trade Statistics, 1984 to 1987.

Total imports of computer hardware increased from C$53.7 million in 1984 to C$73.9 million in 1987, although suffering a decline in 1986 in line with the domestic recession. The significant increase in 1987 alone reflects the increase in demand for Automatic Teller Machines (ATM's). Industry sources estimate that in that year alone, about C$17 million worth of ATM's were installed.

The main sources of imports in 1987 were the U.S.A. and Japan while other significant sources include Singapore, France, the United Kingdom and Taiwan. In 1987 Canada sold a substantial mainframe computer system to the Malaysian Government. As this equipment was shipped from the US parent, however, it appears in the official statistics as an import from the United States. The Canadian share of hardware imports in other areas was negligible, although the previous year had also seen some orders for digital data processing machines supplied directly from Canada.

TABLE 3
PRINCIPAL COUNTRY SUPPLIERS
OF IMPORTED COMPUTER HARDWARE, 1987

SITC	Description	U.S.A %	Japan %	U.K %	S'pore %	Taiwan %	France %	Others %
752.200.00	Digital data processing machines	16	33	-	12	17	-	22
752.300.00	Digital central processing units	34	21	3	9	6	4	23
752.400.00	Digital central storage units	5	86	-	4	-	-	5
752.500.00	Peripheral units	33	31	3	7	4	2	20

Source: Malaysian Trade Statistics, 1987

4.0 EXPORTS

Exports of computer hardware hovered between C$2 million and C$3 million from 1984 to 1986 (see Table 4 below), increasing in 1987 to C$11.4 million. This is attributable mainly to the export of peripherals which amounted to C$7.7 million.

The large export surge in 1987 reflects an increase in level of operations of local manufacturer Accent Technology and the commencement of production by Computer and Microcomputer Systems. Astec also experienced an increase in export of its computer switching supply products.

TABLE 4
EXPORTS[1] OF COMPUTER HARDWARE
1984 TO 1987

SITC	Description	1984 C$'000	1985 C$'000	1986 C$'000	1987 C$'000
752.200.00	Digital data processing machines	577	317	690	1,716
752.300.00	Digital central processing units	477	999	511	1,961
752.400.00	Digital central storage units	-	7	-	23
752.500.00	Peripherals units	2,071	767	943	7,728
	Total	3,125	2,090	2,144	11,428

Note : (1) Includes re-exports.

Source: Malaysian Trade Statistics, 1984 to 1987.

The principal export destinations for computer hardware in 1987 were the U.S.A. and Singapore (see Table 5), accounting for C$5.7 million and C$4.4 million respectively. According to industry sources, U.S.A. was a major importer particularly of power supply products. Some computer products also are assembled in Malaysia under specific contract for shipment back to U.S.A. Singapore, on the other hand acts as a transhipment port for re-export to other final destinations.

TABLE 5
PRINCIPAL EXPORT DESTINATIONS FOR COMPUTER HARDWARE, 1987

SITC	Description	U.S.A. C$'000	%	Singapore C$'000	%	Others C$'000	%	Total C$'000
752.200.00	Digital data processing machines	345	20	1,111	65	260	15	1,716
752.300.00	Digital central processing units	103	5	1,594	81	264	14	1,961
752.400.00	Digital central storage units	2	9	15	65	6	26	23
752.500.00	Peripheral units	5,278	68	1,706	22	744	10	7,728
	Total	5,728	50	4,426	39	1,274	11	11,428

5.0 MARKET SIZE

Based on trade statistics and domestic production, the total apparent market for computer hardware is as follows:

TABLE 6
APPARENT MARKET FOR COMPUTER HARDWARE
1984 TO 1987

	1984 C$ million	1985 C$ million	1986 C$ million	1987 C$ million
Computer Hardware:				
Imports	53.8	63.4	61.0	73.9
Domestic Production*	-	-	-	2.0
Less Exports and Re-exports	3.1	2.0	2.1	11.4
Total Apparent Market	50.7	61.4	58.9	64.5

Note : * Industry estimates only.

Source: Malaysian Trade Statistics, 1984 to 1987.

Although a literal reading of the trade statistics implies a total apparent market of C$64.5 million for computer hardware in 1987, industry sources suggest the market was actually C$75 million in that year. Reasons which may account for the discrepancy include the following:

- o Trade statistics are based only on customs classification of items that have been identified as specifically belonging to the computer industry.

- o Trade statistics are based on the landed CIF value of items declared for custom purposes and do not take into account any subsequent value-added development or mark-up component.

For these reasons, C$75 million can be assumed to be more indicative of the market size.

6.0 INDUSTRY STRUCTURE AND PARTICIPANTS

The fast growing market has seen proliferation of computer vendors with numerous brands within the last 5 years. The industry structure is characterised by the presence of major international computer companies that provide a comprehensive range of hardware items and smaller vendors, mostly value-added-resellers that may have secured one or two exclusive distributorships for certain hardware items. New entrants to the market are deterred not so much by government regulations as by the keen rivalry and the numerous brands already in the market.

As an indication, the Malaysian Administrative, Modernisation and Manpower Planning Unit (MAMPU) which acts as consultant to all departments in the public sector with respect to computerisation projects has 12 mainframe vendors and 90 vendors for other computer products registered for public sector tenders.

The analysis of the industry structure and key participants in this section is carried out under four major product categories, namely mainframes, minicomputers, personal computers and peripherals.

6.1 Mainframe

The mainframe industry, estimated by industry sources at about C$10 million in 1987 is dominated by 8 major distributors as follows:

Distributor	Brand
1) Business Computers Sdn. Bhd.	NEC
2) CLL Information Systems Sdn. Bhd.	Hitachi
3) IBM World Trade Corporation	IBM
4) International Computers (M) Sdn. Bhd.	ICL
5) NCR Malaysia Sdn. Bhd.	NCR
6) Nixdorf Computer (M) Sdn. Bhd.	Nixdorf
7) Talasco Computers Sdn. Bhd.	Fujitsu
8) Unisys Malaysia Sdn. Bhd.	Unisys

These distributors are either subsidiaries of international computer companies or local representatives which have exclusive arrangements with foreign principals for the provision of products, spare parts and technical support.

The total number of mainframe installations in Malaysia is now estimated at 100. IBM is the undisputed market leader and commands about 60 percent of the total market. IBM's dominance is attributed to its long standing presence, worldwide reputation and excellent marketing service and support. ICL and Unisys (formerly Burroughs and Sperry) are also among the stronger and more established distributors in the field. NCR has established its own successful market niche as well in the banking industry.

Nixdorf which is relatively new has embarked on an aggressive marketing campaign in a bid to capture a bigger market share. A recent significant contract success by Nixdorf was to Syarikat Telekom Malaysia, Malaysia's Telephone Company, in 1987 in the latter's Computer Aided Subscriber Services (CASS) in which Bell Canada provided design and implementation support. Other companies that participated in the total CASS project included IBM, Perkom (Harris and Datasouth) and Dataprep (Telex).

The Japanese brands in general have not made significant inroads into the mainframe market. Fujitsu is reputed to be the strongest Japanese distributor, having won bids over IBM in several tenders. Hitachi has just started operations while NEC is in the process of setting up its own office after breaking ties with its previous sole distributor, Business Computers Sdn. Bhd.

Canadian brands have also generally, not fared well in the mainframe market. One significant exception, valued at C$5 million, is a contract for the Immigration Department. Control Data Canada Ltd., through its local partner, Prayitno Sdn. Bhd., has supplied one mainframe and will supply two more in 1988.

The major end-users of mainframes in Malaysia include:

- Government Departments such as the Prime Minister's Department, the Inland Revenue Department and the Accountant General's Office, Statutory bodies like the National Electricity Board and the Employees Provident Fund, and national transportation services companies such as the Malaysian Airlines Systems (MAS) Bhd., the Malayan Railway and the Klang Port Authority.

- Within Malaysia's private sector as well, data processing requirements can be substantial such that commercial banks such as the Malayan Banking Berhad and Bank Bumiputra Berhad, Petroleum companies such as Petronas (the national petroleum company), Esso Malaysia and Shell Malaysia, large industrial corporations such as Sime Darby Berhad, Dunlop Malaysia Industries Berhad, ICI Malaysia Berhad and Malaysian Oxygen Bhd., and major plantation companies such as Harrisons Malaysian Plantations Berhad, Kuala Lumpur Kepong Berhad and Consolidated Plantations Berhad all own mainframe systems.

6.2 Minicomputers

The market for minisystems in 1987 was estimated by industry sources at around C$40 million. There are about 16 major players in the Malaysian minicomputer market. As in the case of the mainframe industry, these key players are either subsidiaries of international computer companies or local representatives with exclusive arrangements for supplies and technical back-up.

With recent technological advancements and the creation of superminis, the distinction between minis and mainframes is disappearing and distributors of minicomputers are known to compete effectively with the suppliers of mainframe systems.

The major distributors of minisystems are as follows:

Distributors	Brand
1) Business Computers Sdn. Bhd.	NEC
2) Computer Systems Advisers (M) Sdn. Bhd.	Sun
3) Complete Computer Systems Sdn. Bhd.	Prime
4) Dataprep Malaysia Sdn. Bhd.	Data General
5) Digital Equipment (Malaysia) Sdn. Bhd.	DEC
6) Far East Computers (M) Sdn. Bhd.	Apollo
7) Formis Computer Services Sdn. Bhd.	Tandem
8) Global Sistemaju Sdn. Bhd.	Wang
9) Hewlett Packard Sales (M) Sdn. Bhd.	HP
10) IBM World Trade Corporation	IBM
11) International Computers (M) Sdn. Bhd.	ICL
12) NCR Malaysia Sdn. Bhd.	NCR
13) Nixdorf Computer (M) Sdn. Bhd.	Nixdorf
14) Olivetti Malaysia Sdn. Bhd.	Olivetti
15) Unidata Sdn. Bhd.	Concurrent
16) Unisys Malaysia Sdn. Bhd.	Unisys

About 1,000 minicomputer systems are estimated to be in operation. This installed base of minicomputers comprises a much wider cross section of buyers and includes, in addition to the mainframe user sectors mentioned earlier, finance companies, insurance companies, stockbroking companies and medium-sized manufacturing/ industrial concerns. Competition among vendors is particularly keen. Among the more established brands are IBM, DEC, HP, ICL, Prime, NCR and Nixdorf.

6.3 Personal Computers

Increasing mass awareness of computers has resulted in a proliferation of personal computer retailing establishments in recent years. Numerous brands are available in the local market. Competition is very keen here as well and is further complicated by the introduction of numerous "look alike" and "work alike" models as well as blatant imitations.

Competitors here include the three local PC manufacturers, Accent Technology, Microcomputer Systems and Compex. Of the distributors of imports, the more successful ones are those that have secured sole distributorships of popular brands. Many others are authorised dealers or value-added resellers that exist as a result of efforts by sole distributors to ensure a wider geographical reach of the personal computer market.

The sole distributors of popular personal computers are listed as follows:

Sole Distributors	Brand
1) Automation & Computer Engineering Sdn. Bhd.	Sanyo
2) Business Computers Sdn. Bhd.	NEC
3) CBA Office Systems Sdn. Bhd.	Fujitsu
4) Complete Computer Systems Sdn. Bhd.	Prime
5) Computer Base Sdn. Bhd.	Alpha Micro
6) Computer Systems Advisers (M) Sdn. Bhd.	ALR
7) Equatron (M) Sdn. Bhd.	Epson
8) Global Sistemaju Sdn. Bhd.	Wang
9) Hewlett-Packard (M) Sdn. Bhd.	HP
10) International Computer Malaysia Sdn. Bhd.	ICL
11) Mesiniaga Sdn. Bhd.	IBM
12) Microcomputer Centre (M) Sdn. Bhd.	Compaq
13) NCR Malaysia Sdn. Bhd.	NCR
14) Nixdorf Malaysia Sdn. Bhd.	Nixdorf
15) Olivetti (Malaysia) Sdn. Bhd.	Olivetti
16) P.J. Electronics Trading Sdn. Bhd.	Multitech
17) Pericomp-Sistech Sdn. Bhd.	AST
18) Uniphone Sdn. Bhd. (Apple Division)	Apple

According to industry sources, the market for personal computers in 1987 was estimated at 10,000 units, valued at about C$15 million. The exact market shares of the various brands is not known. However IBM is acknowledged to be the overall market leader. Other brands like Compaq, ALR and Multitech are also known to have established a strong presence. HP, Nixdorf, ICL, Wang, Olivetti, Prime and NCR are not marketed actively as stand alone units but as part of total and larger systems. A host of other IBM compatibles such as Sanyo, AST and Epson have managed to attract a strong following in this segment simply because of their price competitiveness and up-to-date features.

6.4 Peripherals

The peripherals market segment is perhaps the most dispersed and unstructured of the computer hardware industry. The distributors of computer peripherals can however generally be classified into two distinct groups.

The first group comprises the major computer vendors of IBM, Hewlett-Packard, Wang, Nixdorf and Prime that tend to offer comprehensive hardware packages, consisting of storage and output devices in addition to their computers. These companies do not actively market their peripherals as separate items but rather as part of total systems proposed to end-users. Some of their peripherals are known to be made under OEM arrangements with overseas manufacturers.

The second group comprises companies that concentrate on marketing peripherals to computer vendors that do not provide their clients a whole suit (hardware of particular brand together with the necessary peripherals). According to industry estimates, this "open" peripherals market segment accounts for about C$10 million per annum. The key participants in this market can be classified in turn into three groups, namely the distributors of storage, input-output and data communications devices.

(i) Storage Devices

The market for storage devices in 1987 was estimated at C$3 million. The main storage devices in use are disk and tape drives and the major brands in the market are Seagate and CDC distributed by Imagineering Sdn. Bhd. and Tallgrass by Pericomp-Sistech Sdn. Bhd.

Imagineering Sdn. Bhd. is a locally incorporated Australian-owned company, with a solid distribution network. Imagineering markets its software and peripherals not directly to end-users but through a dealership network, and currently represents leading U.S. software and peripherals such as Lotus, Intel, 3 Com, MicroPro, Microstuf, Sysgen, Persyst and Mountain.

Pericomp-Sistech specialises in Tallgrass disk drives, AST microcomputers, Star printers and Microsoft software such as MS-DOS, MS-Word and MD-Multiplan. The company however markets its products to both end-users and dealers.

(ii) Input-Output Devices

The market for input-output devices in 1987 was estimated at C$4 million. Demand for printers constituted the single largest input-output device market, it is met totally by imports. The major brands in the market are Epson distributed by Equatron (Malaysia) Sdn. Bhd., Panasonic, handled by Matsushita Sales and Services Sdn. Bhd., Star, by Pericomp-Sistech Sdn. Bhd., NEC, by Business Computers Sdn. Bhd., Brother, by Brother Industries (M) Sdn. Bhd. and Sekoisha, by IDS Sdn. Bhd.

Of the six distributors mentioned above, three are trading companies. Equatron, jointly owned by Timuran Bhd. and Inchcape Holdings Sdn. Bhd., distributes office, photographic, computer and electrical equipment. Matsushita distributes the National range of electrical equipment. Brother Industries supplies sewing machines.

The main types of printers currently in use are the dot-matrix printers. Laser-jet printers, however, are gaining in popularity and the major brands establishing themselves are Apple LaserWriter, Hewlett Packard LaserJet series and the Wang Laser Series.

(iii) Data Communication Devices

The total market for data communication equipment was estimated at around C$3 million in 1987. Modems were the biggest selling items, accounting for about C$2 million of these sales. The remaining C$1 million was made up of other devices including multiplexors, link boards, cables, sockets and test equipment.

The two leading suppliers of modems are Racal Electronics Sdn. Bhd. which distributes the Racal product range and Infocom (M) Sdn. Bhd. which supplies Codex. According to industry sources, these companies together control approximately 80 percent of the modem market.

The other major local suppliers of data communication devices are Technology Datacraft Sdn. Bhd. (Datacraft), Teamdata Sdn. Bhd. (Team) and Mecomb Malaysia Sdn. Bhd. (Case). Gandalf of Canada was formerly represented by Mecomb, and currently is affiliated with Rank O'Connors as is Newbridge Networks, also from Canada.

A noticeable feature of these suppliers is that they are communication-based companies rather than computer-based companies. Therefore, the complementary products they carry are PABX equipment, telephone sets and two-way radio systems, rather than computers, printers and disk drives.

7.0 GROWTH POTENTIAL AND MARKET PROSPECTS

Computer technology in Malaysia only began to make a significant impact in the eighties. Growth was especially healthy in the early eighties with the national boom in industrial production and investment. As it approached the mid-eighties, the growth rate fell with the on-set of the recession and in 1986, the computer market actually experienced a small contraction (see Table 2). However, in 1987, buoyed by better economic conditions associated with rises in commodity prices and specifically with the surge in computerisation in retail banking, the industry expanded again. Thus for all years since 1980, except for 1986, the market expanded at a rate in excess of 10 percent annually.

Industry officials interviewed are optimistic about the future and expect the industry to register continued growth of between 10 to 30 percent in the period running up to 1990, leading to estimated annual sales of C$130 million by that date. This growth is expected to originate from the government, the financial services industry and businesses in the manufacturing and retail industries.

The government alone is proposing to invest up to C$250 million over the next five years in computerisation in order to improve overall efficiency and productivity in the public sector. Priority will be given to: revenue-earning agencies; departments and agencies involved in research and development activities; highly structured organisations like those involved in inventory management; departments involved in training; local municipalities and hospitals. One significant government computerisation contract that is due to come on-stream in 1988 is for the Kuala Lumpur General Hospital. The government has approved a budget of C$1.8 million for this project and the tenders for the first stage, involving administrative and billing applications, will be called by the middle of the year.

Privatisation of some government organisations and departments is expected to continue and with privatisation, improved efficiency and productivity will be the key objectives. Automation, and in particular, computerisation, will therefore play a major role in this parastatal sector as well. In the case of Syarikat Telekom Malaysia (STM), Bell Canada International has been actively involved in implementing an automated system to improve a range of customer services. STM's management is considering the extension of automation to inventory control. The corporation is also expected to play a pivotal role in future development of information in Malaysia, both in terms of designing and maintaining data transmission lines and in providing related consulting services.

Banks and financial institutions which have embarked on aggressive computerisation projects will also continue to invest in information technology. Increased competitiveness in the banking and finance industry has spurred the industry to improve their services via automation amongst other things. 1987's surge in imports of ATM's is expected to be maintained in the next two years or so. Emphasis which has traditionally been on the retail banking end, is expected to gradually extend to the other departments as well.

Meanwhile, Electronic Funds Transfer at Point-of-Sale (EFTPOS), a mode of payment, and the use of bar codes which is becoming popular in some countries in the region are expected to catch on in the retail industry over the next 3 years. Similarly, the use of computers to assist in manufacturing which has been slow thus far is expected to increase following the lead taken by computer vendors in setting up partnership agreements with end-user companies to develop industry applications.

In keeping with the healthy growth expected, prospects for the supply of computer hardware by Canadian manufacturers are very good, but only on the basis of strong marketing to establish buyer awareness as the field is very competitive. Canadian manufacturers intending to distribute computer hardware must strive to provide local importers with innovative and advanced products. The most lucrative potential is likely to arise in the peripherals segment.

III. COMPUTER SOFTWARE

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1.0 INTRODUCTION

Specific official estimates are not available for the market size for computer software in Malaysia. Estimates by industry sources vary from C$15 million to C$25 million per year. Difficulties in quantifying the volume of trade can be attributed to a combination of factors, including the absense of a major software house in Malaysia on the scale of Microsoft or Lotus, the pricing of hardware and software together by hardware vendors and the existance of a flourishing trade in pirated software.

According to official statistics, imports of software totalled C$5.8 million in 1987. Exports were very low, amounting to only C$0.2 million, reflecting the lack of a local software development industry.

2.0 DOMESTIC PRODUCTION

The Malaysian suppliers of software are not known to conduct extensive research on advanced software designs in view of the lack of qualified personnel and the cost involved. The majority of them ride "piggy-back" on existing technology, mainly U.S-based, making modifications and adaptations to the Malaysian market. In circumstances where foreign software is not suitable, some local suppliers have the capability to develop software to meet user requirements. However, for the market as a whole, local value added is minimal.

2.1 Imports

Table 7 summarises the Imports into Malaysia of computer software over the period 1984 to 1987.

TABLE 7
IMPORTS OF COMPUTER SOFTWARE
1984 TO 1987

SITC	Description	1984 C$'000	1985 C$'000	1986 C$'000	1987 C$'000
898.319.10	Prepared media for recording, records for use in computers	1,863	2,197	2,096	2,564
898.321.11	Recorded media, records for use in computers	3,864	4,726	4,928	3,276
	Total	5,727	6,923	7,024	5,840

Source: Malaysian Trade Statistics, 1984 to 1987

It should be noted however that these import statistics understate the actual market size for software in Malaysia for a number of reasons. As mentioned earlier in the context of hardware, import statistics do not take into account dealer margins and whatever value added is performed locally. Furthermore, the value of pirated software is sizeable but not always quantifiable.

As will be noted from Table 8, the U.S.A. is the major supplier of software to Malaysia, accounting for 50.9 percent of total imports in 1987 while Japan and Australia accounted for 20 percent and 18 percent, respectively. As with statistics for hardware imports official figures show software imports from Canada to be negligible. In fact however, some Canadian firms, notably, Cognos have been active in this market for some time, selling through third countries.

TABLE 8
PRINCIPAL COUNTRY SUPPLIERS OF
COMPUTER SOFTWARE, 1987

SITC	Description	Country of Origin					
		U.S.A	Japan	Australia	S'pore	Others	Total
898.319.10	Prepared media for recording, records for use in computers	35%	33%	4%	2%	26%	100%
898.321.11	Recorded media, records for use in computers	35%	11%	-	8%	46%	100%

Source: Malaysian Trade Statistics, 1987

3.0 INDUSTRY STRUCTURE AND KEY PARTICIPANTS

As there is a vast array of software available in the Malaysian market, this study focuses only on the major types of software and those perceived to hold particular potential. These are separated into two categories: systems and applications software packages.

3.1 Systems Software

The market for systems software in 1987 was estimated by industry sources at C$5 million. Systems software covers programs like operating systems, utilities, compilers and interpreters and networking systems. These programs are crucial to the smooth running of the machines and essential for creating effective applications software.

Local development of systems software is almost negligible. The Malaysian Institute of Microelectronic Systems (MIMOS), a unit under the Prime Minister's Department, is the only body that is known to conduct some research on areas relating to systems software. The lack of emphasis on the local development of systems software at the Government level is a result of Malaysia's relative inexperience in applications of computer technology.

The major suppliers of systems software are usually the leading hardware vendors themselves such as IBM, NCR, Prime, Wang, Nixdorf, Olivetti and HP. Their software is often proprietary in that they are developed in-house by their overseas principals or licenced from foreign software houses. A typical example of the latter would be DOS, the standard operating system for a vast majority of PC's which is provided to vendors under licencing agreements from Microsoft of the U.S.A.. The local hardware vendors in turn provide systems software as part and parcel of their hardware package to end-users. In the case of mainframe and minicomputer systems software, these vendors usually encourage end-users to enter into licencing agreements, whereby support services and access to improvements in software are provided without additional costs, in lieu of monthly charges.

Similar licencing agreements are usually not available to the numerous PC retailing establishments that market IBM compatibles. Such agreements were never necessary prior to the implementation of the Copyright Act, 1987. The Act has changed this situation and Pericomp-Sistech Sdn. Bhd. is now the appointed distributor of the DOS operating system and all other Microsoft products in Malaysia.

One type of systems software attracting considerable attention is networking systems. The market potential is clearly recognised by major hardware vendors, who are promoting their own proprietary or licenced system. Examples are IBM (Token-Ring-Network), HP (HP AdvanceNet), Olivetti (Olinet), Wang (WangNet) and Prime (PrimeNet). These networking solutions provide connectivity between headquarters, regional and branch offices as well as between manufacturing, sales and administration departments located on the same site. Major Malaysian customers are currently the banks, the petroleum companies and the larger industrial concerns.

The PC-based Local-Area-Network (LAN) system is seen as a major growth product and the business sector is the major target market. Many competitors vie for market share however in this area in addition to the major hardware vendors, numerous PC-based computer establishments in Malaysian claim to have networking expertise. The more reputable ones however appear to be Mesiniaga Sdn. Bhd., (IBM's marketing agent); Microcomputer Centre Sdn. Bhd. (which specialise in Novell's Netware) and United Computer Sdn. Bhd. (which specialise in 3 Com products). The reputation of 3 Com and Novell, both U.S.-based PC LAN vendors, is well established locally. 3 Com is represented in Malaysia by Imagineering Sdn. Bhd. which distributes but does not install the products.

The key issue in networking is the matching of a myriad of computer products and technologies. A relative novelty to Malaysia, Computer Protocol (M) Sdn. Bhd., an Australian subsidiary, has achieved success with its vendor-independent networking philosophy. Its major selling point is its ability to provide facilities that permit the interconnection of any choice of data processing resources including host computers, terminal equipment and proprietary network architectures. Other companies with similar expertise could find their services in good demand.

3.2 Applications Software

Applications software represents software developed for specific tasks. The market as estimated by industry sources at C$15 million in 1987.

The industry structure is complex. Besides the computer hardware vendors who supply software together or as options with their computers, dealers and value-added resellers have emerged to compete in the supply of applications software. In addition, there are also training institutions, service bureaus and accounting firms who are obtaining a share of this market. Companies like Ashton Tate and Microsoft who market services from their regional headquarters based in Singapore are also players in this market and provide administration and related services in support of their local distributers.

In Malaysia the dominance of the major hardware vendors in the software applications market is understandable in view of their resources, marketing prowess and the fact that hardware selection has always taken precedence over software evaluation. While the major hardware vendors are invariably invited to tender for computerisation programs of significance in Malaysia, it is generally impossible for vendors to cater the entire range of applications. As with hardware sales, the leading hardware vendors have found it mutually beneficial to arrange for value-added-resellers with particular expertise or more compatible products to complement their own licensed or in-house range of applications software.

Applications software for purposes of this study is grouped under two main categories; horizontal type applications software that cut across industries and vertical type applications software that are more industry specific.

o Horizontal Applications Software

Horizontal applications software is currently most sought after because it is easy-to-use, can readily improve productivity and produces immediate results. The major types of horizontal applications software are word processing, data base/application generator software, spreadsheets and accounting packages.

(i) Word Processing

The popular word processing software packages in Malaysia at the PC level are WordPerfect, Multimate Advantage and Multimate Professional, Wordstar and Microsoft Word. With the bringing into force of the Copyright Act 1987, local companies are now finding it worthwhile to acquire distributorship rights for various software packages. Imagineering Sdn. Bhd. for instance was recently awarded the distributorship of Ashton Tate's Multimate packages and Micropro's Wordstar; Pericomp-Sistech Sdn. Bhd. holds the right to Microsoft Word while PDX Computers Sdn. Bhd. is authorised to distribute WordPerfect.

Word processing for the higher-end systems is mainly the domain of the major hardware vendors. Global-Sistemaju, the sole distributor of Wang products, is believed to be the leader in dedicated word processing systems. Other vendors offer integrated packages that have word processing, electronic mail and calendering (scheduling) functions. IBM is marketing its Professional Office-System, Digital Equipment its All-In-1 system and Hewlett Packard, the HP Office-Automation-System.

(ii) Database and Application Generator Software

Database management system (DBMS) relates to the storage, retrieval and management of information and typically forms the foundation of a computerised information system.

Ashton Tate's DBase has become the "standard" in the local PC database market and is distributed by Imagineering Sdn. Bhd. No similar standard, however, exists for DBMS in mainframe and minicomputer systems. Each major hardware vendor has either developed a DBMS in-house or licensed one from foreign software houses. IBM offers IMS and DB2; Hewlett Packard offers Image and AllBase; Wang offers PACE; Prime has Prime Oracle; Digital Equipment has Rally while Unidata provides Unify and Infomix.

The tendency is for end-users to acquire DBMS from their hardware supplier. Nevertheless there also exists some supplier independent companies that concentrate on providing alternative DBMS, especially to clients using IBM mainframes. These companies are usually the foreign mainframe software companies such as ADR, Pansophic, Henco, Ingres, Software AG and Cincom, all of which are locally represented.

Competition is keen and most companies with DBMS now offer increasingly sophisticated ways of customising their products to user needs. The most common approach is the faster so-called fourth-generation-languages (FGL).

A major problem however is the proliferation of FGLs and many that cannot work with databases other than those from their manufacturers. Thus, most FGLs today are accompanied by their own DBMS. Almost all the database systems mentioned above incorporate FGL as additional modules. Exceptions to this include Cognos of Canada's Powerhouse distributed by SCS Computer Systems Sdn. Bhd..

(iii) Spreadsheets

Spreadsheet usage is generally restricted to PCs. The dominant program in the market is Lotus 1-2-3, distributed also by Imagineering Sdn. Bhd.. Excel, the standard spreadsheet for Apple's Macintosh and Microsoft's Multiplan spreadsheet are distributed by Pericomp-Sistech Sdn. Bhd..

(iv) Accounting and Business Application Software

One of the first areas of its operation a local business looks to computerise is its accounting system and a wide array of such software packages are readily available in Malaysia today. Local accounting firms such as Arthur Andersen & Co., Ernst and Whinney Management Consultants Sdn. Bhd., Price Waterhouse Associates, Kassim Chan Management Consulants Sdn. Bhd. (Deloitte Haskins & Sells), Arthur Young, Coopers and Lybrand Associates Sdn. Bhd. and Peat Marwick and Co. all market specialised accounting and business applications packages to assist end-users with financial planning and control activities.

Companies like IBM, HP, Nixdorf and NCR also market their own accounting and business applications software. In most instances however these companies have arranged for value-added-resellers to provide and maintain software that run on their machines. Other companies like Pan Global Sistemaju (Wang), Complete Computer System (Prime) and Unidata (Concurrent) have chosen to offer both the hardware and the accounting software as a total package.

A complete accounting package typically comprises a general ledger system, an accounts receivable system, and an accounts payable system. The more popular accounting packages for PCs are Pegasus, IUS and Accpac and the major accounting packages for larger systems, minis and mainframes, are McCormack and Dodge and Management Science America. These products are all distributed locally.

o Vertical Applications Software

Vertical applications software relates to industry specific software and this is an area of rapidly increasing interest in Malaysia.

(i) Banking and Finance Systems

The banking and finance sector is one of the strongest supporters of computerisation in Malaysia, with the implementation of several major projects accounting for a good deal of the growth in the Malaysia computer industry recently. The rush to offer electronic banking facilities for instance, resulted in sales of over 400 automated-teller machines (ATM) worth about C$17 million. Other major computerisation projects include a C$4 million deal to computerise 60 branches of the MUI Bank Berhad and MUI Finance Berhad; the installation of network switches for two of the three shared ATM networks in the country and the installation of large mainframe computer systems, each costing about C$2 million, by the two largest commercial banks, Bank Bumiputra Malaysia Berhad and Malayan Banking Berhad.

There are currently three shared ATM networks in the country. They are the Malaysian Electronic Payment System (MEPS) network operated by MEPS Sdn. Bhd., a consortium of 6 local commercial banks; the Group Electronic Automated Teller (GREAT) network operated by EFT Systems (M) Sdn. Bhd., a consortium of 9 financial institutions; and the Automated Banking Consortium network headed by Malayan Banking Berhad and comprising 3 financial institutions.

With the operation of shared ATM networks, the local financial institutions are paving the way to set-up a nation-wide electronic funds transfer at point-of-sale (EFTPOS) system. It is anticipated that customers will eventually be able to pay for their consumer purchases with their ATM cards.

Malayan Banking Berhad is presently undertaking an EFTPOS pilot project with several petrol stations operated by Shell Malaysia and Esso Malaysia. Esso Malaysia has opted for stand-alone models for three trial stations while Shell Malaysia has opted for a more costly fully-integrated systems where EFTPOS terminals are linked to cash registers and the dispensing fuel pump. Other retail industries with high volume cash transactions such as supermarkets and department stores are expected to be the next candidates to introduce this technology.

The major suppliers of computer systems to the banking and finance sector in Malaysia are IBM, NCR, Olivetti, Nixdorf and Formis Computer Services (Tandem) and these are normally undertaken on a turnkey basis. IBM for example, recently introduced its IBM 4700 Finance Communication System with enhancements including new displays, printers, connectivity and extensions to its operating system while new financial intelligent workstations, based on its Personal System/2 can operate a branch automation system using IBM's Token-Ring Local Area Network. IBM is also marketing a series of banking software products for the 4700 IWS, that make it easier to use its advanced intelligent workstations for teller applications.

NCR's main strength is its ATMs and it is estimated that they supply the equipment to 80 percent of all local banks offering ATM services in Malaysia today. NCR's reputation in the banking sector and its NCR 9800 series of fault-tolerant machines initially won it the tender to install the shared ATM and EFTPOS switch for MEPS Sdn. Bhd. Subsequent failure however to provide a full fault-tolerance system as specified, resulted in the termination of this contract and its subsequent award to IBM.

Tandem Computers local distributor, Formis Computer Sdn. Bhd., has also been active in supplying shared ATM and EFTPOS switches to the local market while Olivetti and Nixdorf have brought in their own systems but have yet to land major contracts.

(ii) Point of Sale Systems

Point-of-sale computerised systems is an emerging technology. Although most end users still rely on stand alone cash registers, many are now evaluating proposals to install point-of-sale systems which not only provide faster check-out time and higher accuracy in receipts for customers, but also assist in better inventory and management control.

The forerunners in the installation of point-of-sale systems in Malaysia are the fast food chains, hotels and major departmental stores. Malaysia's Kentucky Fried Chicken and MacDonalds outlets have implemented advanced retailing systems incorporating inventory control, labour utilisation and management reporting modules. Hotels are also computerising their operation beginning with front office activities such as reservations, check-in and check-out, concierge services, and have also stationed point-of-sale terminals in the food and beverage outlets. Major department stores are introducing computer technology to their operations as well.

Natvest Sdn. Bhd. which owns and operates the Parkson department store and supermarket chain, has allocated C$20 million to equip cashier counters with bar code scanning facilities. At present, bar code scanners have been installed at its two largest outlets and plans are afoot to open at least 30 more stores equipped with similar scanning systems throughout the country.

Natvest's front-end system uses the Omron RS8500 series retail system terminals with both flat-top slot and hand scanners. These terminals are hooked up to 10 back-end Wang personal computers which are running on Australian Chapman Retail Management System software, downloaded from Natvest's Wang VS 7000 series superminicomputer.

The key players in this industry are NCR Malaysia, International Computer, Olivetti Malaysia, Perkom Sdn. Bhd. (the Omron range) and Datascan Malaysia Sdn. Bhd. (the Datachecker line). NCR and ICL are the best positioned in the market at present and provide complete turnkey solutions. Olivetti, Perkom, and Datascan are other firms trying to establish their presence.

(iii) Image Processing Systems

Image processing systems relate to the acquisition, processing, interpretation and presentation of earth resource data using radar and satellite technology and are aimed at upgrading resource management activities.

While the market in Malaysia is still in its infancy there is significant potential for application in the agricultural, forestry, fisheries, mining and hydrology, sectors amongst others. The Malaysian Department of Fisheries is currently using a Gould system to assist in aquaculture site selection. The Asean Institute of Forestry Management has installed a Canadian PC-based system (manufactured by PCI Ltd.) to assist in forestry management. There are also systems operational at the Institute of Technology Malaysia (PCI Easi Pace), the University of Technology Malaysia (Dipix Aries III) and the Malaysian Agricultural University (Microbrian of Australia), which are used basically for research and training purposes.

The Ministry of Science, Technology and Environment recently purchased an image analysis system for the newly-established National Remote Sensing Centre. The primary supplier will be MacDonald Dettwiler and Associates from British Columbia. The purchase is financed by the Canadian International Development Agency (CIDA).

For the immediate future, demand for remote sensing software and systems is likely to be limited to Government Departments, such as Foresty, Surveys and Mapping, Defence, and Agriculture, and to universities. The extention of this technology into the private sector, for mining and timber exploration, surveying, and plantation management is a longer term prospect.

Local suppliers interviewed indicated that image processing for the oil industry is a specialised field in itself. Companies like Esso and Shell, who source their products worldwide, already have the expertise to perform image processing in house at corporate headquarters overseas.

There are currently a limited number of companies involved in representing offshore suppliers. They include Terra-Control Technologies (representing Dipix, PCI, Array Computing Systems and Intera from Canada and Spot Image from France), Hisco (MacDonald Dettwiler and Associates and PAMAP), Mechmar Bestobell (Gould) and Far East Computers (currently on ad-hoc basis on its Apollo hardware, considering a few softwares for representation).

Terra-Control, with a paid-up capital of C$350,000 is a member of the Sapura Group, a prominent Malaysian company with interests in the telecommunication industry and related businesses. Terra-Control not only represents several companies in Malaysia but also provides in-house image processing using Dipix equipment. In this it is unique among Malaysian companies in this field.

Closely related to image processing is computer mapping. Although the image processing companies also offer computer mapping services, the one company which specialises and is the leader is Rimman International Sdn. Bhd., a subsidiary of Kumpulan AKZ Sdn. Bhd.. Its major area of concentration is the conversion of graphical manual records to digital format for further processing and analysis. The company also provides pure draughting services to telecommunications, surveying, engineering and architectual firms as an alternative resource for companies that need only pictorial information.

(iv) Computer-Assisted-Design (CAD) and Computer-Assisted-Manufacturing (CAM) Systems

CAD-CAM systems have been slow to catch on in Malaysia due essentially to the fact that there had been only a modest domestic manufacturing industry until recent years. With the government priority now being attached to developing a more comprehensive industrial manufacturing capability and acquiring new cutting edge technologies CAD-CAM application will become more common.

Companies planning to buy CAD systems in Malaysia rely on Hewlett Packard, Complete Computer Services (Prime), Far East Computers (Appolo), IBM, Digital Equipment, Talasco (Fujitsu), Computer Systems Advisers (Sun), Dataprep (Data General), Calma and Intergraph. All of these suppliers except for Calma and Intergraph have offices in Malaysia. Calma which was formerly represented by Radas Ikhbar Sistem Sdn. Bhd. and Intergraph operate out of offices in Singapore.

Leading computer vendors are also setting up strategic partnership agreements with leading user companies to jointly develop CAM industry applications. In this respect, in July 1986 IBM established a Southeast Asia Manufacturing Centre based in Malaysia. The principal activity of the centre is to coordinate the implementation of partnership programs with key customers. A joint pilot project with the Matsushita Electric Company (M) Sdn. Bhd. to develop applications based on Copics, IBM's manufacturing information systems control package for the S/370 mainframe environment, is underway. A similar project with ICI Paints Malaysia (ICIPM), the leading paint manufacturer in Malaysia, based on a manufacturing package for the system 36 and 38 (Mapics II) has also been launched. The project is aimed at modifying ICIPM's current capability in areas such as materials requirements planning, production scheduling, costing and inventory control to meet its expanding business needs.

Other computer suppliers have instituted similar though more modest programs. Complete Computer Systems (Prime) is working with Carrier International Sdn. Bhd., an established manufacturer of air-conditioners, in implementing an MRP II system which will facilitate master scheduling, inventory management, engineering, product costing and others key activities.

Some private companies have also embarked on their own computerisation plans with the aid of consultants. Colgate-Palmolive (M) Sdn. Bhd. has instituted a manufacturing resources planning project called CP-MARS which is based on the Pansophic Manufacturing/ 38 package. Rothmans of Pall Mall (M) Bhd., the leading producer of cigarettes in Malaysia is developing a similar manufacturing system based on a package from Professional Computer Resources of Chicago.

Another potential group of users for CAD/CAM is the multi-national corporations (MNC's) manufacturing electronic components in Malaysia's Free Trade Zones. According to industry sources however, MNC's tend to source their CAD/CAM systems via their parent companies. Texas Instruments (TI system), Motorola (HP) and National Semiconductor (Apollo Calma) are examples of MNC's which have acquired such systems through their U.S. headquarters.

(v) Videotext System

There are currently three companies providing videotext services in Malaysia: New Straits Time Press Berhad (NST), the leading newspaper publisher in the country; Syarikat Telekom Malaysia (STM), (the privatised telephone company); and Bernama, the national news agency which was appointed in 1984 as the sole distributor of news from all foreign agencies.

NST has established "Beriteks" an information database containing both local and world news and business and financial information. Beriteks is accessible through television sets and it is estimated that some 18,000 such television sets have been sold in Malaysia. The Beriteks informational service is provided free to users. The only cost is the purchase of a television set capable of receiving Beriteks.

STM's videotext service, "Telita" was introduced to the public in 1987. Telita is modelled after Prestal, operated by British Telecoms. It is designed to provide a wide range of information on shopping, travel, games, mail, etc.. STM is now creating the system database and have identified some 30 information providers (IPs) (although to date only 5 are active).

STM currently bills Telita users for telephone calls and access charges. Information can be accessed using a television set together with an adaptor, a rented Telita terminal or a microcomputer with a modem and some software.

The Telita service is still very new and acceptance has been slow. The problem lies as much in the lack of understanding of videotext by consumers as by the limited interest which commercial companies have demonstrated in the service.

On line information databases are offered by Bernama through a variety of services aimed at different segments of the market. Its major services are:

- the MASA service on local stock prices and corporate news, provided jointly by Bernama and the Kuala Lumpur Stock Exchange (KLSE). This information is restricted to stockbrokers;

- the Bernama Livecom service on local stock prices, corporate information and financial statements, provided jointly by Bernama, KLSE and Formis Computers to subscribers; and

- the Telerate service on the international money market, provided jointly by Bernama and U.S. based Telerate Systems Inc., mainly to corporate subscribers.

Fees comprise a basic monthly subscription (the package comes together with one computer terminal, one modem and one 12-inch screen), telephone line cost levied by STM, installation and dismantling charges, and deposits and charges for add ons (additional screens, terminals and printers). Maintenance is provided free of charge except for the replacement of parts.

Apart from the MASA service, which all stockbroking offices have already installed, acceptance of Bernama's systems has been slow. Livecom is believed to only 70 subscribers which are principally financial institutions and big corporations with investment funds. Telerate is too new in the market to appropriately assess.

4.0 GROWTH POTENTIAL AND MARKET PROSPECTS

The software market in general is expected to register healthy growth in line with the priority which both the government of Malaysia and private industry has placed on computerising activities. As detailed elsewhere there will be substantial investment over the next three years in the acquisition of hardware and this of course will have a direct impact on the demand for software. The recent introduction of

the Copyright Act, 1987 will also significantly reduce problems of software piracy and will give the software market a boost. In the past, computer retailers usually provided PC software free of charge or at nominal charges, as an incentive to prospective buyers and this practice will not be as prevalent now. Protection under the Act is automatically provided to all software written after December 1 1987 and to software sold before that date if it was made available for sale in Malaysia within 30 days of original issue.

Industry leaders are expecting an annual growth rate in this sector of about 25 percent from C$20 million in 1987 to C$39 million by 1990. This growth is expected to come mainly from applications software of the following types:

- Horizontal software focusing on office productivity packages;

- Vertical software focusing on banking and finance, point-of-sale and manufacturing applications. The banking and finance industries will be looking at acquiring integrated software that can cover both front-end and back-room banking, and full ledger systems to cut down batch transferring of data. The expansion of domestic manufacturing capability will provide opportunities for CAD/CAM system in architectural and engineering firms; and

- Multi-user software for PC's. Many firms are now using single-user work-stations. However in the next two to three years, multi-user software will be in demand.

IV. COMPUTER SERVICES INDUSTRY

IV. COMPUTER SERVICES INDUSTRY

1.0 INTRODUCTION

The computer services industry in Malaysia comprises mainly training and education, computer consultancy and data processing services. Estimates according to industry sources placed training and education requirements at roughly C$5 million, computer consultancy at C$8 million and data processing services at C$3 million in 1987.

2.0 TRAINING AND EDUCATION

This industry segment comprises mainly the private schools, colleges and training institutions which provide professional EDP training to technical employees and offer courses as well to school leavers and executives who wish to gain an appreciation of computer languages and the use of standard application packages.

The market for computer training and education services is highly competitive and there are well over 50 such Malaysian institutions offering these services. Many of these facilities were established during the last 5 years in response to the awakening of computer awareness in the community.

A variety of courses ranging from simple computer appreciation packages to job-oriented software packages and computer science courses are readily available.

Shorter courses typically of one to two months duration, cater to those who seek to gain a quick users appreciation of job-oriented software packages (Wordstar, Lotus 1-2-3, DBase, etc.). Longer courses on the other hand are meant to prepare students for employment as programmers, system analysts or computer application personnel and these too are readily available in Malaysia.

Since many institutions offer the popular basic courses, competition is mainly centred on providing more equipment and better qualified instructors. The other more established schools are actively seeking affiliations with overseas institutions, and developing schemes that enable students to transfer credits should they pursue their computer education abroad.

Some of the more reputable, well established private institutions in Malaysia include:

1) Federal Institute of Technology
2) Goon Management and Computer Studies Centre
3) Informatics Institute of System Science
4) Kolej Damansara Utama
5) Stamford College Group
6) Sunway College
7) Systematic Computer College
8) Tunku Abdul Rahman College

While the focus of much of these programs to date has been on the high school-leaver segment, this market is expected to shrink in line with the emphasis placed by the Ministry of Education on school educational computing programs and with the proliferation of school computer clubs.

The corporate training sector represents a far more lucrative market over the longer term. Many basic EDP courses are now offered on a regular basis by independent training institutes. With the recent introduction of the Copyright Act, education and software computer companies are now looking actively for specialist training packages to market. Educational institutions and industrial institutes may also turn to computer-aided education, although market interest remains weak at this point.

One educational tool that has attracted some following in the corporate sector is the Interactive Video Training (IVS) system, comprising a personal computer linked to video player which provides audio-visual effects and responses. The IVS is marketed as a supplementary system in training and development to the corporate sector. The two computer companies which are known to market the IVS systems locally are Computer Processing Services (M) Sdn. Bhd. and Asian Computer Services Sdn. Bhd.. Standard Chartered Bank in Malaysia has bought a system from CPS while Shell Malaysia purchased its system overseas through its London headquarters.

3.0 COMPUTER CONSULTANCY

There is a growing demand for computer consultancy services as more organisations move to automate their operations. The principal type of assistance required by users relates to information planning, project definition and survey, feasibility studies, vendor selection and systems design.

The market for computer consultancy in 1987 was approximately C$8 million. Much of this consultancy is provided by the prominent accounting firms listed below each of which offers a comprehensive range of services.

- Arthur Andersen Associates Pte.
- Arthur Young & Co. /Lim Ali & Co.
- Coopers & Lybrand Associates Sdn. Bhd.
- Ernst and Whinney Management Consultants Sdn. Bhd.
- Kassim Chan Management Consultants (Deloitte Haskins & Sells),
- Peat Marwick & Co.
- Price Waterhouse Associates

A survey of the industry revealed that many computer hardware and software vendors also offer consultancy services and the more active players in the local industry are listed below:

Company	Area of Expertise
1) Alphasoft Sdn. Bhd.	Local and State Government Administration
2) ASAS Swift Data Services Sdn. Bhd.	Membership, cooperatives and finance
3) Asian Computer Services Sdn. Bhd.	Online systems for commercial applications, accounting and structural engineering
4) Automatic Identification Technology Sdn. Bhd.	Stockbroking, plant maintenance and data entry systems
5) Berita Information Systems Sdn. Bhd.	Systems design and development, hardware and software selection
6) Computer Systems Advisers (M) Sdn. Bhd.	Plantation Management
7) DyatronMacs Systems Sdn. Bhd.	Local town councils and merchant banking
8) Jardine Logica Sdn. Bhd.	Finance and banking
9) Komputer Usaha Sdn. Bhd.	Legal and Health

Company	Area of Expertise
10) Melewar Conserv Sdn. Bhd.	Finance, hotels and government
11) Reliance Computer Centre Sdn. Bhd.	Travel and finance
12) Rimman Interntional Sdn. Bhd.	Facilities management
13) Sepakat Computer Consultant Sdn. Bhd.	Local and State Government Administration
14) SL Information Sdn. Bhd.	Property management and distribution systems
15) Sungei Way Computer Services Sdn. Bhd.	Manufacturing, leasing and direct selling

Major Canadian successes in computer consulting include Bell Canada International's work for STM. It has just completed a 2 year pilot project and has commenced another 2-year project to improve STM's customer services nationwide. Bell's work has greatly improved the efficiency of STM in replying to customer inquiries and providing itemised billing and telephone installations in a timely manner. Canada's Bureau of Management Consultancy has also carried out a contract to establish accounting systems for the Accountant General's Office. An EDP consultant from Canada under the sponsorship of UNDP has just commenced a one year contract with the Auditor General's office to develop audit and training packages.

4.0 DATA PROCESSING (BUREAU) SERVICES

The market for data processing services was estimated at C$3 million in 1987. Demand was at its peak some 5 years ago when end-user companies, unfamiliar with computers, were reluctant to invest in their own computer departments and resources. This aversion has been largely overcome and the trend these days is for companies to purchase their own computer systems instead. The Government which used to be a major end-user in the past as well is now building up its own computer resources such that these services have a limited future.

The sector currently supports four major participants: Asian Computer Services Sdn. Bhd., Computer Processing Services (M) Sdn. Bhd.; DyatronMacs Systems Sdn. Bhd.; and Komputer-Usaha Sdn. Bhd.. The major application areas of bureau services are share registration and general accounting.

DyatronMacs which pioneered bureau services in 1970 has lost its prominence. Asian Computer Services is now the market leader and is the only bureau to support its clientele base with two IBM 4300 mainframes. This company's system enable it to offer on-line time sharing services as well as to its client. The other companies provide batch-processing services for the most part.

Although the core of these companies' businesses are data processing, all of them have now diversified into other areas. Asian Computer Services for example as an IBM value-added-reseller, provides systems development consultancy and markets the McCormack and Dodge accounting package. DyatronMacs similarly is an IBM value-added-reseller and engages in consultancy work. Computer Processing Services acts as a value-added-reseller for DEC and HP equipment and provides systems and application software.

5.0 GROWTH POTENTIAL AND MARKET PROSPECTS

The computer services industry is considered relatively undeveloped. Industry sources are confident that there is scope for further development, especially in consultancy, training and education services for the corporate sector.

The country's ambitious industrialisation program, the need to promote greater efficiency in office productivity both in the public and private sector, and the current lack of qualified computer personnel all point to a prosperous future for this sector. In this market, the major challenges for the suppliers involve the need for them to upgrade their technical skills in the face of rapid technological change and to improve their marketing skills to promote concepts and services whose benefits are often intangible. The total market was estimated at about C$16 million in 1987, and is projected to grow by about 10 percent annually to C$21.3 million by 1990.

Before discussing conclusions of this study and tabling an entry strategy for the market, a review of the salient government policies and regulations affecting sales in this sector is appropriate. The following chapter presents this review. For additional information on the various agencies involved in setting policy and fixing regulations for the industry, consult Appendices A to F.

V. GOVERNMENT POLICIES AND REGULATIONS

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1.0 THE COPYRIGHT ACT, 1987

Legal issues pertaining to copyright were formerly governed by the 1969 Copyright Act. Computer utilisation during that period was minimal and the general provisions contained in the Act proved ineffective in terms of protection afforded to copyright owners in their fight against pirate suppliers.

The introduction of the amended Copyright Act effective December 1, 1987 has now changed the scenario. Confusion still prevails but several clear implications have arisen, a summary which is provided as follows:

- Protection of computer software written after December 1, 1987 is now given on creation. Unlike the procedures in many other countries, creators of computer programs are not required to register their creations. However, the creator must deposit a copy of the work with a registered computer society of which he is a member. Such societies in Malaysia would include the Malaysian Computer Society, the Association of the Computer Industry of Malaysia, the Malaysian Council for Computers-in-Education and the Kuala Lumpur Microcomputer Club. In addition the creator should get a lawyer to notarise the work.

- Previous releases of computer software (i.e. before December 1, 1987) are not protected unless they were published in Malaysia within 30 days of its first publication in its country of origin. Section 4 of the new Act defines publication as follows - "a literary, musical or artistic work, or an edition of such a work, shall be deemed to have been published only if a copy or copies of the work have been made available with the consent of the author or of any person lawfully claiming under the author in a manner sufficient to satisfy the reasonable requirements of the public, whether by sale or otherwise".

- The current 30 day requirement to establish copyright protection is in force until Malaysia enters into bilateral or multilateral agreement with other countries to cover existing products. No such agreements exists at present.

- Parallel imports of computer software is illegal under the Act. The same rule however does not apply to computer hardware. This is because there are presently no clauses in the laws enforced by either the Trade and Industry Ministry or Customs Department that prohibit parallel imports of hardware. Parallel imports of hardware is the process whereby a dealer imports a certain brand of computer product say from Singapore, to be sold when there is already an authorised local distributor for that particular product.

- It is an infringement of the Copyright Act 1987 to use unauthorised copies of development tools such as programming languages to develop commercial applications. In the same light, it is within the law to use computer languages to develop commercial programs as long as the resulting program is not similar to an existing authorised one.

- Under Section 40 of the Act, a person is allowed to make one back-up copy of a program and users are bound by conditions laid down by licence agreement as well as the Copyright Act 1987. Under Section 41, anyone who is found in possession of infringed copies apart from those for his private and domestic use, is committing an offence. This must be seen in light of Sec 41(2) in which it is stated that when anyone is found with three copies or more of any infringed work, the law presumes he is selling them and that the infringed copies are not for private use.

- Private schools, colleges and training institutions which comply with the curriculum laid down by the Education Ministry are exempted from prosecution for the use of unauthorised copies of computer software. Under the Act, they enjoy the same exemption given to government-funded educational institutions. The provision is that no profit is derived from the use of software and that no admission fee is charged. The clause effectively rules out exemption for institutions such as computer schools and private colleges which offer computer science courses.

- Under sub-section 1(i) of Section 41, it is stated that offenders may be subject to a fine not exeeding C$5,000 for each infringing copy of a copyright item or an imprisonment for a term not exceeding five years or both. Subsequent offenders may be fined up to C$10,000 for each infringing copy or jailed up to 10 years or both.

Enforcement of the Copyright Act is the responsibility of the Controller of Copyright at the Ministry of Trade and Industry. The unit has in total 338 officers. A basic inadequacy of the Act is that there are no formal provisions to inform users as to what is and what is not protected. A leading newspaper agency is attempting now to compile a list of copyrighted software programs.

2.0 TENDERING PROCEDURES IN THE PUBLIC SECTOR

In line with the government's New Economic Policy to promote Bumiputra (indigenous people) enterprises in the country, suppliers of computer products and services to the public sector are encouraged to submit tenders through Malaysian-owned tendering agents, preferably Bumiputra companies. All other factors remaining constant, Bumiputra companies may be awarded tenders even though their prices are higher than non-Bumiputra companies. According to industry sources, the criteria for selection of public sector tenders are:

- Bumiputra content (51 percent ownership) of tendering agent
- Malaysian content of tendering agent
- Price over quality
- Track record of tendering agent
- Reputation for providing efficient services and support

According to computer suppliers, the government generally does not follow firm guidelines on the application of these criteria on the selection process but rather takes a wider perspective.

A computer company which intends to tender for the supply of computer products and services to the public sector must first register with the Treasury Division of the Ministry of Finance. The Ministry subsequently issues an approval certificate, authorising the company to subscribe for specific tender documents from each department upon payment of a tender fee.

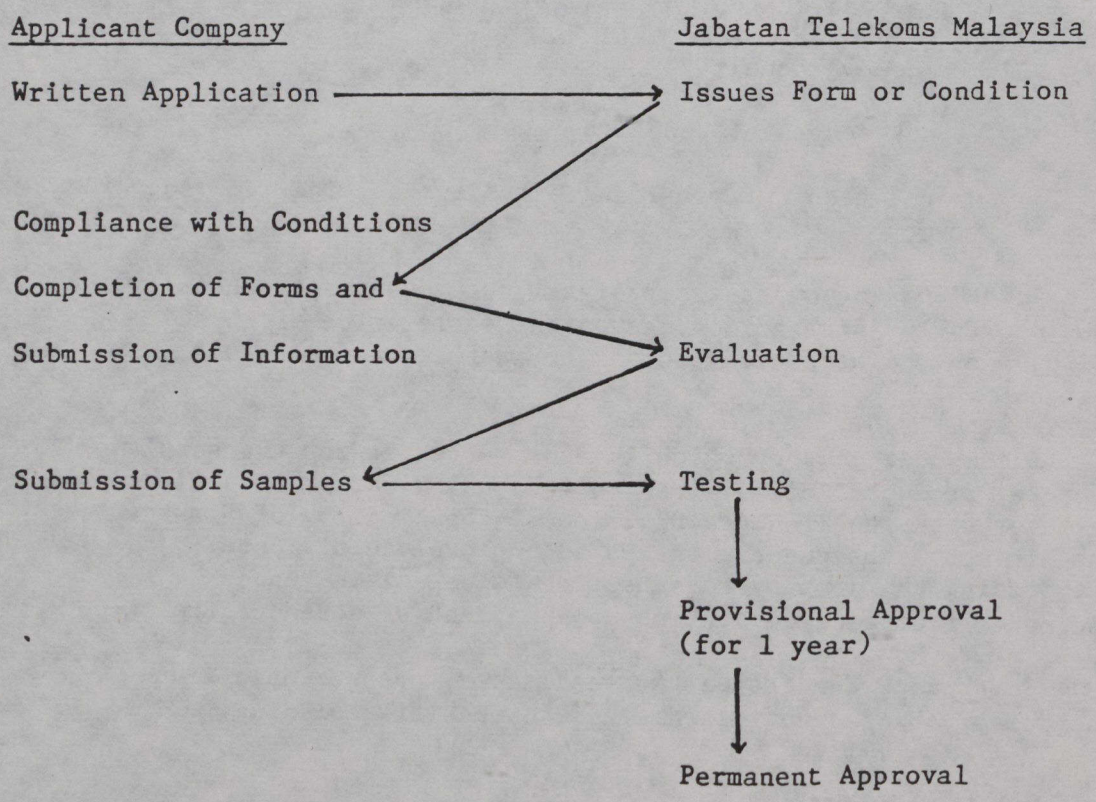
Government Tenders can be restricted, open to Malaysian companies, or open to international competitive bidding.

An open tender typically is published in the local newspapers and is open to all local companies. International tenders on the other hand are circulated to all foreign embassies and High Commissions as well as being published in the local newspapers; and are open to both local and foreign companies. Restricted or closed tenders are open only to companies invited to bid.

3.0 PROCEDURES FOR TYPE APPROVAL

All subscribers' terminal equipment connected to telephone lines and radio type equipment (and would include card authorisation terminals, walkie talkie, scramblers, etc.) require type approval from the Jabatan Telekoms Malaysia (JTM) before they can be imported or supplied to end-users. An exception to this is made in the case of all defence communication equipment, unless the equipment is to be connected to telephone lines. The procedure is summarised in the chart below:

PROCEDURE FOR TYPE APPROVAL



Companies which wish to apply for type approval are required to submit a request in writing to JTM. For radio equipment, standard forms are issued to applicants for completion. For other equipment, a set of written "conditions" will be issued (pertaining to appointment of distributors, installation and maintenance, etc.) with which applicants are required to comply. Information on the supplier and manufacturer as well as relevant technical literature will also have to be submitted to JTM. The information supplied will be reviewed to assess the capabilities of the supplier and manufacturer as well as the suitability of the equipment vis-a-vis the existing network system.

If the equipment is found to be suitable, JTM will request samples for testing. Upon completion of testing, a temporary approval will be given. A permanent approval will be issued usually after 6 months to one year upon satisfactory performance of the equipment and conformance to conditions laid down by JTM. JTM also rules that a local agent must be appointed as sole distributor.

Type approval usually requires 2 months although this will depend on the type of equipment. The processing fee for the paper evaluation is C$50 per application and the testing fees range from C$200 to C$1,250 per evaluation. The annual registration fee is C$25 per model. Applications for type approval may be addressed to:

The Director-General of Telecommunication
(Ministry of Energy, Telecommunication and Posts)
Standard Sections
Telecom Headquarters
Wisma Damansara
Jalan Semantan
50668 Kuala Lumpur

4.0 TARIFF DUTIES

The tariff duties and sales tax imposed on computer products imported into Malaysia are shown in Table 9 below.

TABLE 9
TARIFF DUTIES AND SALES TAX FOR COMPUTER PRODUCTS IMPORTED INTO MALAYSIA, 1987

COMPUTER HARDWARE

SITC	Descriptions	Rate of Duty			
		Unit of Quantity	Import	Sales Tax	Export
752.200.00	Digital data processing machines	No.	5%	10%	Nil
752.300.00	Digital central processing units	No.	5%	10%	Nil
752.400.00	Digital central storage units	No.	5%	10%	Nil
752.500.00	Peripheral units	No.	5%	10%	Nil

COMPUTER SOFTWARE

898.319.10	Prepared media for recording: records for use in computers	No.	5%	10%	Nil
898.321.11	Recorded media: records for use in computers		5%	10%	Nil

VI. CONCLUSIONS AND RECOMMENDATIONS

VI. CONCLUSIONS AND RECOMMENDATIONS

1.0 PROSPECTS AND OPPORTUNITIES

The projected demand derived by the authors for computer products and services is presented in Table 10.

TABLE 10
ESTIMATED AND PROJECTED DEMAND FOR
COMPUTER PRODUCTS AND SERVICES
1987 TO 1990

	Est. Demand	Projected Demand		
	1987 C$ million	1988 C$ million	1989 C$ million	1990 C$ million
Computer Hardware	75	90.0	108.0	129.6
Computer Software	20	25.0	31.2	39.1
Computer Services	16	17.6	19.4	21.3
	111	132.6	158.6	190.0
Average Growth Rate %		19.5%	19.6%	19.8%

Source: Industry estimates

The following provides a brief assessment of each major market segment, and the specific growth areas Canadian suppliers may be interested in pursuing:

The computer hardware market is expected to grow by about 20 percent per annum with demand mainly from the government, banking and finance, retailing and the manufacturing industries. Competition is believed to be toughest here with most major U.S. and Japanese brands already represented and established domestically. Computer peripherals especially in data communication and networking devices may offer the best prospects to new entrants.

The software market is expected to grow by 25 percent per annum over the next three years. The enforcement of the Copyright Act, 1987 has resulted in a scramble by local computer vendors to secure authorised distributorships of popular PC software. Most distributors are therefore very receptive to joint-venture suggestions. The major types of applications software in demand are business productivity packages, banking and financial, point-of-sale and manufacturing applications software. Demand for image processing systems is expected to be gradual.

The computer services industry is expected to register an annual growth of 10 percent over the next three years with a major push coming from demand for corporate training and consultancy services. Potential in the corporate training sector lies in specialist training packages in the areas of finance and engineering. Major areas for consultancy are not so readily apparent but would be closely associated with the office productivity, banking and finance, retailing and manufacturing sectors.

To date, however Canada has been a relatively modest source of computer products and services to Malaysia outside specialised areas such as image analysis and computer consulting. This is reflected in Canada's limited share of the total imports of hardware and software; and the general lack of awareness in the market of Canadian products.

Although a detailed breakdown of product information is not available from the Department of Statistics, past sales of Canadian hardware have been primarily data communication and other hardware peripherals along with the one significant sale of mainframes, while the software consisted of development tools, image processing and networking technology.

The lack of familiarity with Canadian products is attributed to the small local presence of Canadian computer companies. The few local companies associated with Canadian computer technology are listed in the following Table 11.

TABLE 11
LIST OF CANADIAN COMPANIES WITH A LOCAL PRESENCE

Canadian Company	Type of Product	Local Partner
1) Cognos Inc.	Powerhouse FGL	SCS Computer Services Sdn. Bhd.
2) Dipix Systems Ltd.	Image Processing	
3) PCI Inc.	Image Processing	
4) Gregory Geoscience Ltd.	Optical Transfer System	Terra Control
5) Intera Technologies Ltd.	Synthetic Aperture Radar-Airborne data	Technologies Sdn. Bhd.
6) Array Technologies Co.	Meteorological Reception & Analysis Systems	
7) Newbridge Networks	Data Control and Hardware Peripherals	Rank O'Connors Sdn. Bhd.
8) Gandalf Data Ltd.	Network Modems and Multiplexers	Rank O'Connors Sdn. Bhd.
9) Pamap Graphics Ltd.	Image Processing	
10) McDonald Dettwiler and Associates Ltd.	Image Processing	Hisco Malaysia Sdn. Bhd.
11) Bercha Associates	Radar Image Inter-penetration	
12) Arrakis	Education Software	Sepakat Computer
13) Utlas	Library Automation	Formis Computer
14) Tydac Technologies	Image Processing	Seres Sdn. Bhd.

Sources: Canadian High Commission, Malaysia
KCMC Survey

Industry sources interviewed which have been exposed to some Canadian products have made favourable comments regarding Canadian technology and feel that there may be potential to increase market share provided:

- o The market is educated about the availability and range of Canadian computer hardware and software;
- o That Canadian products to be marketed locally are at least comparable to competing products from other countries especially the U.S.A. in terms of level of technology;
- o Canadian products are price competitive relative to competing foreign products on the market; and
- o Suppliers are fully committed to the market so that the Canadian products are provided with reliable and efficient maintenance and after-sales service and solid marketing support.

2.0 ENTRY STRATEGY

Given the competitive environment and relative absence of Canadian computer products in the Malaysian market, Canadian companies intending to enter the Malaysian market would have to consider an aggressive marketing strategy, that could involve the following elements:

- o Educate the main importers/distributors about the range of products and technological features available. This may be achieved through a program of frequent visits to the region, in the context of independent travel, participation in Canada trade mission, and representation at local and regional computer trade exhibitions. Agency or distributor arrangements with sound local companies is indispensable for ongoing product marketing and support. To participate in Government tenders, Canadian companies will need to consider joint-venture with local Bumiputra (Indigenous) companies or individuals. The Canadian Trade Commission maintains regular contact with Malaysian companies active in this sector and can assist in arranging good local representation. It should also be noted that Appendix G to this study is a listing of all distributors and manufacturers contacted by the authors during the course of their research. Many of them indicated an interest in learning more about Canadian products. Accordingly, their particular interests are noted in the Appendix.

- Be price and technologically competitive with competing products from the established sources of U.S.A. and Japan. Pricing is a major of consideration, particularly for Government contracts.

- After establishing arrangements with local distributors, provide appropriate training and support to ensure they are able to deliver reliable and efficient maintenance and after-sales service to end-users.

- Maintain an active mailing list of potential end-user segments, importers/distributors and keep them informed of new products and applications. This will create contacts and open up new channels of communication for inquiries and consultation.

- Consider a program of seminars, either in conjunction with local agents or other manufacturers of complementary products to potential users on the technical features and usage of Canadian computer products. Technological advantages and sophisticated product features must be contrasted with those already in the market and promoted actively.

EXHIBITS

Exhibit 1

MALAYSIA: IMPORTS OF MERCHANDISE - ITEM BY COUNTRY

SITC	CCCN	DESCRIPTION	COUNTRY	1984 C$	1985 C$	1986 C$	1987 C$
752.200.00	84.53.200	Complete digital data processing machines, comprising in the same housing the CPU and at least one input unit and one output unit	France	109,698	263,345	1,011,875	-
			Germany	160,733	22,130	73,630	426,825
			Japan	2,478,577	629,934	743,796	1,884,083
			Mexico	1,988,011	1,775,795	105,331	566,268
			Singapore	218,689	57,697	114,829	955,215
			Spain	338,200	758,029	617,477	95,085
			Taiwan	55,454	56,330	190,457	1,418,571
			United Kingdom	1,329,963	101,209	29,710	50,694
			U.S.A.	3,280,401	2,495,099	3,218,274	1,348,014
			Canada	-	10,193	389,548	-
			Others	1,137,135	231,697	777,687	820,920
				11,096,861	6,401,458	7,272,614	7,565,675
752.300.00	84.53.300	Complete digital central processing units, digital processors consisting of arithmetical, logical and control units	Brazil	1,217,474	1,133,528	1,331,516	-
			Canada	59,157	9,878	24,720	431
			France	23,999	157,016	344,762	945,054
			Germany	126,596	317,183	11,142	882,018
			Italy	1,769,189	429,792	-	774,242
			Japan	1,132,655	1,494,316	4,634,104	3,882,384
			Singapore	872,992	1,053,027	270,896	1,550,287
			Switzerland	395,257	199,419	352,586	375,571
			Taiwan	312,396	777,101	26,833	1,005,286
			United Kingdom	2,324,359	441,799	906,184	595,587
			U.S.A.	6,202,957	6,176,441	3,075,611	4,429,099
			Others	1,998,385	1,739,292	266,956	645,671
				16,435,416	13,928,792	11,245,310	15,085,630

Exhibit 1-1

MALAYSIA: IMPORTS OF MERCHANDISE - ITEM BY COUNTRY

SITC	CCCN	DESCRIPTION	COUNTRY	1984 C$	1985 C$	1986 C$	1987 C$
752.400.00	84.53.400	Separately consigned digital central (main) storage units	Japan	3,416	-	10,346	330,449
			Singapore	41,444	-	8,102	20,640
			U.S.A.	73,427	-	48,416	84,342
			Belgium	-	-	133,420	-
			Denmark	-	-	41,792	-
			Taiwan	-	-	2,874	11,638
			Germany	-	-	-	13,644
				118,287	-	244,950	460,713
752.500.00	84.53.500	Peripheral units, including control and adapting units (connectable directly or indirectly to the central unit)	Australia	456,826	812,708	325,798	1,114,633
			Brazil	814,211	7,538	241,600	592,895
			Canada	331,165	47,758	235,855	124,063
			France	10,973	347,071	342,720	1,492,573
			Germany	396,003	454,647	427,157	2,259,123
			Italy	3,189,355	2,398,370	1,160,268	1,629,317
			Japan	5,715,007	7,336,508	11,726,777	10,149,924
			Singapore	1,393,827	3,877,017	2,551,317	2,581,085
			Sweden	69,704	143,518	356,850	480,733
			Taiwan	1,574,178	3,120,171	1,015,731	1,695,386
			United Kingdom	2,060,459	1,119,815	1,068,296	1,617,282
			U.S.A.	9,114,498	22,068,261	19,585,104	14,302,375
			Others	996,208	1,327,225	3,216,088	2,046,186
				26,122,414	43,060,607	42,253,561	40,085,575

Exhibit 1-2

MALAYSIA: IMPORTS OF MERCHANDISE - ITEM BY COUNTRY

SITC	CCCN	DESCRIPTION	COUNTRY	1984 C$	1985 C$	1986 C$	1987 C$
898.319.10	92.12.191	Prepared media for recording: Records for use in computers	Australia	165,165	70,577	4,024	3,447
			Canada	118	163	21	2,295
			Germany	36,844	291,042	110,219	333,512
			Hong Kong	25,063	73,691	52,473	94,655
			Italy	19,159	9,663	33,105	207,594
			Japan	457,948	829,975	572,410	624,745
			Korea	58,786	115,113	40,148	110,953
			Singapore	56,621	77,880	44,152	67,091
			United Kingdom	12,015	55,558	4,063	19,071
			U.S.A.	1,013,710	655,693	1,152,096	842,829
			Others	17,474	17,328	83,385	44,122
				1,862,903	2,196,683	2,096,096	2,350,314
898.321.11	92.12.211	Recorded media: Records for use in computers	Australia	105,123	148,917	359,246	-
			Canada	4,867	59,727	7,493	14,074
			France	9,492	12,894	2,707	616
			Germany	26,985	33,558	30,901	115,889
			Hong Kong	72,074	115,053	80,193	83,024
			Japan	307,276	461,557	359,337	349,469
			Korea	59,276	75,532	41,097	35,212
			Netherlands	3,665	13,059	813,589	16,030
			Singapore	268,430	243,778	679,613	252,702
			United Kingdom	199,394	143,087	53,825	50,964
			U.S.A.	2,747,015	3,072,710	2,420,748	1,088,078
			Others	60,749	345,722	79,589	1,099,488
				3,864,346	4,725,594	4,928,338	3,105,546

Exhibit 1-3

MALAYSIA: EXPORT AND RE-EXPORTS OF MERCHANDISE - ITEM BY COUNTRY

SITC	CCCN	DESCRIPTION	COUNTRY	1984 C$	1985 C$	1986 C$	1987 C$
752.200.00	84.53.200	Complete digital data processing machines, comprising in the same housing the CPU and at least one input unit and one output unit	Australia	6,786	9,761	9,289	-
			Belgium	1,223	-	1,093	-
			Brunei	8,043	12,440	50,000	7,308
			Canada	65,000	-	-	-
			France	10,665	-	-	1,401
			Japan	196,242	-	3,730	22,695
			Singapore	240,481	203,353	542,748	1,549,761
			Sri Lanka	33,307	-	-	-
			United Kingdom	10,231	20,435	27,128	1,527
			U.S.A.	5,502	62,707	8,601	482,775
			Indonesia	-	-	22,504	18,686
			Others	-	8,398	24,863	1,272
				577,480	317,094	689,956	2,085,425
752.300.00	84.53.300	Complete digital CPU, digital processors consisting of arithmetical, logical and control units	Brunei	18,251	-	24,531	22,231
			Hong Kong	50,078	4,573	23,738	11,845
			India	8,130	-	-	-
			Japan	1,087	5,992	16,735	11,953
			Nigeria	1,255	-	-	-
			Philippines	41,178	-	22,866	171,872
			Singapore	196,080	316,571	335,214	1,885,341
			Switzerland	34,908	-	-	3,962
			United Kingdom	30,678	29,618	9,469	-
			U.S.A.	95,789	28,174	67,326	136,463
			Australia	-	102,843	-	2,766
			Kuwait	-	382,546	-	-
			New Zealand	-	98,089	-	-
			Others	-	30,769	11,559	144,084
				477,434	999,175	511,438	2,390,517

MALAYSIA: EXPORT AND RE-EXPORTS OF MERCHANDISE - ITEM BY COUNTRY

SITC	CCCN	DESCRIPTION	COUNTRY	1984 C$	1985 C$	1986 C$	1987 C$
752.400.00	84.53.400	Separately consigned digital central (main) storage units	Kampuchea, Rep. of	-	7,207	-	-
			Singapore	-	-	-	22,923
			United Kingdom	-	-	-	770
			U.S.A.	-	-	-	3,321
				-	7,207	-	27,014
752.500.00	84.53.500	Peripheral units, including control and adapting units (connectable directly or indirectly to the central unit)	Australia	23,243	16,242	13,502	43,395
			Germany	5,140	27,879	36,992	15,948
			Hong Kong	59,468	12,918	134,455	63,365
			Japan	2,446	5,932	39,471	145,284
			New Zealand	40,586	2,608	-	-
			Singapore	493,451	566,785	417,824	780,912
			United Kingdom	1,203,097	-	18,130	38,723
			U.S.A.	238,718	109,711	108,264	7,863,494
			Italy	-	10,385	51,093	-
			Indonesia	-	-	46,415	585
			Sri Lanka	-	-	44,804	-
			Colombia	-	-	-	374,788
			Others	12,413	14,352	32,019	77,630
				2,078,562	766,812	942,969	9,304,124

Exhibit 1-5

MALAYSIA: EXPORT AND RE-EXPORTS OF MERCHANDISE - ITEM BY COUNTRY

SITC	CCCN	DESCRIPTION	COUNTRY	1984 C$	1985 C$	1986 C$	1987 C$
898.319.10	92.12.191	Prepared media for recording: Records for use in computers	Australia	8,457	22	542	998
			Hong Kong	572	296	4,563	1,378
			Japan	130	22	712	804
			Singapore	84,283	113,799	18,204	33,984
			Thailand	124	3,804	307	14,044
			United Kingdom	205	426	707	215
			U.S.A.	4,021	1,003	9,256	8,697
			Others	2,220	630	552	1,538
				100,012	120,002	34,843	61,658
898.321.11	92.12.211	Recorded media: Records for use in computer	Australia	2,503	867	79	197
			Germany	170	1,063	12,322	22
			Hong Kong	1,999	63	155	6,515
			Japan	1,043	13,753	132	3,186
			Singapore	79,401	74,734	159,335	130,163
			United Kingdom	-	722	107	8
			U.S.A.	12,211,709	5,929,627	12,899	6,438
			Canada	-	-	-	-
			Others	8,222	5,788	1,707	2,669
				12,302,544	6,026,658	186,736	149,198

Exhibit 2

SAMPLE OF SURVEY QUESTIONNAIRE

SURVEY QUESTIONNAIRE ON THE COMPUTER EQUIPMENT AND SERVICES INDUSTRY IN MALAYSIA

A. GENERAL

Name of Company : _____

Address : _____

_____

_____

_____

Business Contact Person : _____

Telephone/Telex : _____

Nature of Business : _____

Paid-up Capital : _____

Ownership :

Name	Nationality	%

Agencies Held : _____

Interview Date : _____

B. PRODUCT RANGE/SPECIALIZATION

Computer Hardware — Brand/Type

1) Mainframes _____

2) Minicomputers _____

3) Microcomputers _____

4) Computer Peripherals

- Storage Devices _____
- Input/Output Devices _____
- Data Communications Devices _____

Computer Software

1) System Software

- Operating Systems _____
- Networking Systems _____
- Data Base Management Systems _____
- Compilers _____

2) Application Software

- Large System and Mainframe Application Software _____
- Mid Range System Application Software _____
- Microcomputer-Based Application Packages _____

3) Turnkey Systems

- CAD/CAM _____
- Image Processing _____
- Others _____

Computer Services

1) Software House _____

2) Data Bank and Time Sharing _____

3) ADP Support Services _____

4) Computer Application Consulting _____

5) Computer Education and Training _____

Exhibit 2-3

C. SOURCES

Product Type	Retailer/Distributor/Manufacturer	Country of Origin

Exhibit 2-4

D. SALES AND MARKET SHARE

Product Type	Total Estimated Market Size ($ and Units)	Market Share	Major Competitors

Exhibit 2-5

E. END-USER SEGMENTS

Product Type	Major End-Users	Estimated Rate of Growth	Factors Affecting Growth

F. MARKET CHARACTERISTICS AND PRACTICES

1) Could you describe the distribution channel?

2) Please specify your major customers by percentage of business and type of products/services targetted towards them.

3) What are the major promotional methods being used in this industry?

4) What would you consider as the main barriers to entry in this industry?

Government Restrictions : _____

Lack of Technical Know-How : _____

Brand Loyalty : _____

Keen Rivalry : _____

Others (please specify) : _____

_____

_____

5) What are the major opportunities you see in your industry over the next 5 years (trends, products, specialized products for specific industries, etc.).

_____

_____

_____

_____

6) Are you familiar with any Canadian companies or products?

_____

_____

_____

_____

7) What is your opinion of Canadian products and services?

_____

_____

_____

_____

8) Are you interested in joint-venture opportunities with Canadian suppliers?

Dealership : _____

Manufacture/Assembly : _____

Others (please specify) : _____

_____

_____

Exhibit 3

CURRENCY EXCHANGE RATES

The following exchange rates were used for currency conversions:

Year	C$	M$
1984	1	1.84
1985	1	1.84
1986	1	1.83
1987	1	1.95

Source: Bank Negara Malaysia.

APPENDICES

MALAYSIAN ADMINISTRATIVE, MODERNISATION AND MANPOWER PLANNING UNIT (MAMPU)

MAMPU was established in May 1977 to pursue the following objectives in the public sector:

- To strengthen administrative and manpower planning structures;
- To improve and modernise administrative systems and procedures;
- To introduce new management techniques and innovations; and
- To introduce and coordinate systems for manpower planning and administration.

MAMPU which is in the Prime Minister's Department also functions as secretariat to the following bodies:

- the Manpower Development Board
- the National Data-Processing Committee
- the National Development Administration Committee
- the Guiding Committee for Planning Manpower Needs
- the Public Services Ethics Panel, and
- the Appointment of Private Enterprise Management Consultants Committee

The Information Technology Division within MAMPU acts as the in-house consultant in respect of all computerisation projects in the public sector. Any department whether local, state or federal would need to obtain clearance from MAMPU on the technical specifications of its planned computerisation project. This is to ensure the coordination of information resource planning with a view towards reducing redundancy in the public sector. MAMPU's role is to reduce not only the incompatibility of hardware but also the incompatibility of data elements and databases.

Proposals and feasibility studies on computerisation are the responsibilities of each end-user department. MAMPU intervenes only if the department lacks the necessary expertise. Private consultants are used as a last resort when MAMPU does not have the manpower or the expertise. Similarly the tender process is the responsibility of each end-user department. MAMPU's input covers the approval of technical specifications and assistance in tender evaluation only when necessary.

At present, computerisation in the public sector is at varying levels of sophisticated. It is estimated that there are 200 mainframes and minicomputers systems and well over 5,000 personal computers in use in the public sector.

The Director General and address of MAMPU is as follows:

Dr. Othman bin Yeop Abdullah
Director General
Malaysian Administration, Modernisation and Manpower
Planning Unit
Prime Minister's Department
4th Floor Wisma PKNS
Jalan Raja Laut
50527 KUALA LUMPUR

Tel: 03-298-2066

THE MALAYSIAN INSTITUTE OF MICROELECTRONIC SYSTEMS (MIMOS)

The Malaysian Institute of Microelectronic Systems (MIMOS), is established to integrate the forces of government, universities, and industry in the single-minded pursuit of making Malaysia a producer of high-quality goods based on modern microelectronics.

MIMOS main objectives are:

- to undertake and conduct research and development activities in the field of mocroelectronic systems and related areas;
- to provide product research and development services to industry;
- to contribute towards the creation of an indigeneous pool of experts in microelectronic systems by organising courses, seminars and other relevant activities;
- to encourage and support the creation of new industries based on high technology and modern microelectronics;
- to disseminate information and research findings in the field of microelectronics to interested parties; and
- to provide a forum for individuals, experts and intellectuals in the various areas of microelectronics and related fields to exchange views and research findings in an atmosphere conducive to promoting microelectronics as a rewarding research and business activity.

In order to acquire the critical technologies of modern microelectronics, MIMOS has signed four Memoranda of Understanding with the following companies:

- Easams Ltd. (part of the GEC-Marconic Group of United Kingdom)
- L.M. Ericsson, Sweden
- Marconi Italiana
- NEC Corporation, Japan

As part of the memoranda these companies have contributed financial assistance to further the objectives of MIMOS.

The are currently four R & D Divisions created to cater for areas of microelectronics that are considered most significant at this time. They are Computer Systems, Computer Aided Design, Industrial Projects and Information Technology. Other divisions will be created as and when necessary in line with developments in microelectronics and the needs of the local industry.

The Director General and address of MIMOS is as follows:

Tengku Dr. Azzman Shariffadeen
Director General
Malaysian Institute of Micro-electronic Systems
Lot 7.2 & 7.3, 7th Floor
Kompleks Bukit Naga
Off Jalan Semantan
Damansara Heights
50490 KUALA LUMPUR

Tel: 03-255-2700

THE MALAYSIAN COMPUTER SOCIETY

The Malaysian Computer Society was registered with the Registrar of Societies in the 1960's and to date it has more than 850 members. Its objectives are:

1. To extend amongst members the knowledge and appreciation of computers, automatic data processing systems and computer based automatic control systems and of theory related thereto.

2. To establish and maintain the professional standing of members by developing a code of ethics and defining standards of knowledge in the fields referred to above.

3. To foster an informed public opinion regarding computerisation and computing machinery and technics related thereto.

The Society's principal activities are:

1. To serve as a national organisation for persons concerned with and interested in the application and practice of Information Technology, Computer Science, Information Processing and related disciplines.

2. To promote and develop the science of Information Technology.

3. To hold Conferences, Exhibitions, Seminars, Workshops, Evening Talks, etc. for disseminating information.

4. To maintain standards of knowledge and code of ethics for computing professionals.

5. To provide career guidance to members.

6. To conduct examinations.

7. To establish regional centres.

Membership of the Society consists of six categories namely Fellow, Member, Associate, Provisional Associate, Affiliate and Student. A fellowship may be awarded at the discretion of the Executive Council of the Society to any Member for outstanding work in the Data Processing field. Membership for other categories is based on qualifications and relevant experience.

The address of the Malaysian Computer Society is as follows:

Malaysian Computer Society
P.O. Box 1128
Jalan Pantai Bahru
59700 KUALA LUMPUR
Tel: 03-7751576

THE ASSOCIATION OF THE COMPUTER INDUSTRY OF MALAYSIA (PIKOM)

PIKOM was established only recently to serve as a collective voice for computer companies in the industry and to ensure that a high standard of professionalism is maintained by members in their business activities.

There are currently three membership categories in PIKOM. The categories are manufacturers or their locally appointed principal representatives; distributors, dealers or value-added resellers; and software houses and consultants.

Since its formation in 1987, the association has recruited 20 organisations as members. A listing of their members is provided below:

Company	Nominated Representative	Category
Dataputra (M) Sdn. Bhd.	Jimmy C. M. Foong	M
Dataprep (M) Sdn. Bhd.	Robert Teo Ee Teck	D
Mesiniaga Sdn. Bhd.	Wan Fusil	D
Olivetti (M) Sdn. Bhd.	Ung Hock Poh	M
Business Computers Sdn. Bhd.	Salleh Lamsah	M
Electronics Systems (M) Sdn. Bhd.	Francis B. H. Tan	M
IBM World Trade Corporation	Wong Fook Hon	M
Unidata Sdn. Bhd.	K. C. Toh	M
International Computers (M) Sdn. Bhd.	Mahan Gill	M
Konsortium Jaya Sdn. Bhd.	Michael Ong	M
Arthur Andersen & Co.	Larry Gan Nyap Liou	S
Imagineering Sdn. Bhd.	Ben Shue	S
Talasco Computers Sdn. Bhd.	Mohd. Nasir Abdul Majid	M
Far East Computers (M) Sdn. Bhd.	Raj Kumar Mahajan	M
Uniphone Sdn. Bhd.	Shukor Karim	M
Sime Darby Systems	Wee Kee Heng	S
Pernas Trading Sdn. Bhd.	Azhar Aziz	M
NCR (M) Sdn. Bhd.	Jimmy Goh	M
Hewlett-Packard Sales (M) Sdn. Bhd.	Ridzwan Abdullah	M
Complete Computer System Sdn. Bhd.	David Chew	M

Notes: M - Manufacturer or locally appointed principal representative
D - Distributor, dealer or value-added-reseller
S - Software house or consultant

The address of PIKOM is as follows:

The Protem Secretariat
Association of Computer Industry of Malaysia (PIKOM)
9th Floor Chung Khiaw Bank Building
Jalan Raja Laut
50350 KUALA LUMPUR

Tel: 03-755-4066

SYARIKAT TELEKOM MALAYSIA BERHAD

Syarikat Telekom Malaysia Berhad (STM) is a registered company licenced by the Ministry of Energy, Telecommunication and Posts to carry out all the telecommunications services previously handled by Jabatan Telekoms Malaysia (JTM) effective from 1st January 1987. It is the sole telecommunications carrier in Malaysia responsible for both domestic and international telecommunication services.

The STM organisation is still in a transitory stage in changing from a government department to a private company. Its procedures, operating philosopy and business plans are in the process of being adapted to a form suitable for its new status. STM's scope of functions in certain areas is also unclear at this stage. For example, it is possible that STM extends its role from being a customer to also a supplier of telecommunications equipment in competition with other local companies.

Summarised below are the services provided by STM:

(i) Voice Communication

- Domestic Telephone Services

  STM provides and maintains all telephone lines and exchanges in the country. STM also installs and maintains telephone instruments for consumers. The domestic telephone service is the most important service provided by STM.

- Subscribers' Trunk Dialling (STD)

  This service enables subscribers to make trunk calls to all parts of the country, without the assistance of the telephonist.

- International Subscriber Dialling (ISD)

  ISD was introduced in 1979 to enable subscribers to make direct international calls. Todate, the ISD service is available to 71 countries, including the United States, Canada, Australia, Japan, Italy, Switzerland, West Germany, France and the United Kingdom.

- Public Telephones

  STM also provides public telephones in the urban and rural areas. It has recently introduced public telephones using ATUR system to rural areas.

(ii) Radio Communication

- Karfon

  Karfon is a mobile radio car phone service which provides subscribers with automatic dialling facility so that calls need not be made through a telephonist. At present, this service is available to subscribers in Kuala Lumpur, Petaling Jaya, Shah Alam and Klang.

- Leased Channel Radio Telephone Service

  This service enables a subscriber to communicate with another subscriber by using 2-way radios. The service is available only in Selangor, Perak, Penang, Kuala Lumpur and Kedah.

- Automatic Telephone Using Radio (ATUR)

  This system provides telephone communication in rural areas using cellular radio technology. Due to its popularity, additional radio channels for the Central Region are being installed which will increase channel capacity from 136 channels to 369 channels.

- Maritime Radio Service

  Maritime Radio service in the HF, MF and VHF frequency ranges are available from coast stations in Malaysia. Services available include radiotelephone, radiotelex, radiotelegram, metrological bulletin, navigational notices, coordinated air-sea rescue services and weather reports.

- Telex Service

  Subscribers have automatic access to 104 destinations while 83 other destination are via operator assistance, within Malaysia as well as in foreign countries.

- Telegram Service

  The telegram service is available to all areas within Malaysia as well as all foreign countries. Telegram services via the telephone (phonogram) is also available.

- o TELEFAX Service

  TELEFAX is an international facsimile service which connects a subscriber's facsimile equipment to another of compatible type via the public switched telephone network for the transmission of exact copies of charts, photographs, documents, etc.

- o BUREAUFAX

  BUREAUFAX is a domestic service whereby customers can despatch or receive copies of print, images and graphics over the public switched telephone network. This public TELEFAX service was introduced in late 1986 and is available at 33 outlets.

(iii) Data Communication

- o DATEL

  DATEL is a data transmission service over the public switched telephone network available to any telephone subscriber in Malaysia who has suitable terminal equipment and modem. Direct access in available to 16 countries.

- o MAYPAC

  Malaysia Packet Switched Public Data Network or MAYPAC was introduced to the public in 1985 to improve the speed, quality and reliability of data transmission.

(iv) Services

- o TV and Services

  STM is also responsible for the planning and implementation of TV and FM transmission projects for the Broadcasting Department of Malaysia.

- o Technical and Engineering Support

  STM provides technical advice and engineering support to the Police Department, the Civil Aviation Department and other Government Departments in the planning and implementation of civil aviation, radio and radar communications programs.

OTHER GOVERNMENT ORGANISATIONS AND ASSOCIATIONS

A. THE MINISTRY OF TRADE AND INDUSTRY

The functions of the Ministry of Trade and Industry are carried out by the following Divisions and Registries:

1. Administration and Finance Division
2. Bumiputra Participation Division
3. Consumer Affairs Division
4. Data Processing Division
5. Domestic Trade Division
6. Enforcement Division
7. Industries Division
8. International Trade Division
9. Metric Division
10. Small Enterprises Division
11. Registry of Business
12. Registry of Companies
13. Registry of Trade Marks and Patents

The following four statutory bodies are also associated with the Ministry:

- Malaysian Industrial Development Authority (MIDA)
- National Film Development Corporation (FINAS)
- National Productivity Centre (NPC)
- Tourist Development Corporation (TDC)

The activities of the main division of the Ministry are as follows:

- Bumiputra Participation Division

  This division was established to accelerate and achieve 30 percent bumiputra (indigenous people) participation in all fields of trade and industry. To achieve this, the Division formulates strategies to attain the aims of the New Economic Policy and studies and identifies sectors of trade and industry which bumiputra entrepreneurs can venture into.

Relations have been established with the Malaysian Export Trade Centre, the Malaysian Industrial Commission Overseas and the Malaysia's Trade Commissioners abroad to assist and to secure export and import opportunities for bumiputra traders.

The division also assist bumiputra companies to secure franchise from companies within and outside Malaysia, train bumiputra entreprenuer, study the structure of bumiputra companies and investigate complaints.

o Domestic Trade and Consumer Division

The Domestic Trade and Consumer Division formulates policies and implements measures aimed at creating a healthy commercial climate in the country and at providing adequate protection to local industries whilst ensuring that the interests of consumers are protected.

The Division is responsible for the administration of policies regarding foreign trading corporation operating within the country, and to ensure that nationals are also afforded opportunities in various aspects of the internal commercial network.

In protecting local industries, the Division administers control to regulate imports to meet domestic demand not catered for by these industries. Import control is also aimed at ensuring public and national security (for instance the control on the import of arms and ammunition), protection of public health and prevention of infection of plant and animal diseases.

The Division is also responsible for conducting price reviews and price supervision of essential commodities and for ensuring sufficient supplies of such commodities in the country.

As regard supplies, the Division works with various manufacturers and importers to ensure that they maintain sufficient stocks of essential commodities to meet demands. In times of shortages of supplies in the domestic market, the Division administers export controls and, where necessary, relaxes import controls to ensure that the domestic market is given priority of supplies.

The Division has, since 1st October 1978 taken over the function of licensing downstream operations in the petroleum industry, as provided under the Petroleum Development Act, 1974.

The Division also provides secretarial services to the National Advisory Council for Consumer Protection, and works to promote consumer awareness in the country. The National Advisory Council in Consumer Protection advises the Minister of Trade and Industry on prices, labelling, stockpiling of goods and other matters referred to it by the Minister.

Industries Division

The Industries Division is responsible for the orderly development of the industrial sector in line with the socio-economic objectives of the New Economic Policy. In achieving these objectives, the Division is responsible for the implementation of the following Acts:

- Industrial Coordination Act, 1975 (as amended);
- Investment Incentives Act, 1968 (as amended); and
- Petroleum Development Act, 1974.

The Division is involved in the formulation of policies to promote investments in Malaysia by both local and foreign investors.

The Division is also responsible for negotiating Investment Guarantee Agreements, which protect foreign investments against expropriation. Malaysia has hitherto signed such Agreements with 12 countries including Canada.

International Trade Division

The principal role of the International Trade Division is to promote the export of Malaysian products, particularly semi-manufactured and manufactured goods, and to evolve and implement appropriate measures to secure the most advantageous terms and conditions for the access of Malaysian products into overseas markets.

The Division has the following sections to carry out its functions and responsibilities, viz:

- Export Development Section
- International Trade Relations Section
- Asean-EEC Regional Economic Groupings Section
- Shipping and Freight Study Section
- Trade Fair and Missions Section
- Textiles Section
- Malaysian Export Trade Centre
- Special Countertrade Unit

Malaysian Export Trade Centre

The Malaysian Export Trade Centre or MEXPO of the International Trade Division, Ministry of Trade and Industry was established in 1980 to boost export of Malaysia manufactured products. In line with this function, MEXPO extends its services to Malaysian businessmen and exporters who wish to know more about market conditions overseas and foreign buyers who are interested in exploring the Malaysian market for supplies.

The Centre's activities are carried out by four units:

- Trade Information Unit
- Exporters Register Unit
- Exhibition Unit
- Seminars, Workshops and Conferences Unit

Services provided by MEXPO

As part of the over all export promotional activities of the Ministry, MEXPO's functions are to:

- Provide trade information on overseas markets such as commercial and economic data, statictics and trends, pertinent legislation in the commercial fields, Market Studies on products, country information, etc.

- Service market enquiries on Malaysian made products received directly from importers or through the Malaysian Trade Commissioners' offices located in major cities overseas.

- Maintain an importers register listing names and addresses of useful contacts overseas.

- Provide space both at MEXPO and in some Trade Commissioners' Office whose space is available for display of Malaysian made products for viewing by potential buyers.

- Organise seminars for the benefit of Malaysian exporters on trade opportunities and other facets of trade in the overseas markets.

- Publish booklets, pamphlets and brochures on country surveys, market and product surveys, businessman guides and other trade literature on a regular basis for distribution to Malaysian exporters.

Services Offered to Foreign Importers at MEXPO

- An exporters register comprising complete and continually updated company and product information on Malaysian Suppliers/Exporters is maintained at the Centre to meet the needs of foreign buyers, both visitors in person and trade enquiries received through correspondence.

- MEXPO can aid foreign importers in locating Malaysian suppliers of goods and services. Appointments can be arranged with appropriate Malaysian supplies of goods and services.

- Importers who visit Malaysia can see for themselves the wide range of products exported from Malaysia at the permanent display maintained at MEXPO's premises.

- Enquiries made by foreign importers either through the Trade Commission officers or direct would be circulated to Malaysian exporters and arrangements are also made to have the enquiries published in "Peluang Dagang".

Registry of Businesses

The head office of Business Registration Department is situated in Kuala Lumpur and its main functions are as follows:

1. To register all sole-proprietorship and partnership businesses, as required under the Business Registration Act, 1956 (Amendment 1978) and Business Registration Rules, 1957.

2. To register all the changes of particulars in businesses.

3. To issue Business Registration Certificates.

4. To register all termination of businesses.

5. To supply information and particulars of registered businesses to Government departments and agencies wherever necessary.

Registry of Companies

The main function of the Registry of Companies is to enforce the Companies Act, 1965 (Act 125) and the Securities Industry Act, 1983 (Act 280).

In enforcing the Companies Act, 1965 the Registry's main functions are as follows:

1. To approve (or refuse) names to be used by intended companies so as to avoid the use of undesirable or misleading names.

2. To issue Certificates of Incorporation to locally incorporated companies and to register foreign corporations carrying on business in Malaysia.

3. To issue other certificates such as those regarding change of name, conversion, commencement of business, and change of agent by a foreign company.

4. To procure compliance with the statutory obligations imposed with regard to the proper keeping of books, tabling of accounts, lodging statutory returns, etc.

5. To examine annual accounts and auditors reports in order to ensure that companies comply with the requirements of the Companies Act.

6. To register prospectuses of companies inviting the public to subsribe to their shares.

7. To register documents in respect of takeovers and mergers.

8. To inspect books of companies and to investigate any offence committed by the companies or their officers.

9. To prosecute offenders or compound offences.

10. To provide facilities for search of documents, which by law must be available for public inspection, so that there would be investors and creditors may personally examine a company's records to determine its creditability.

11. To de-register companies which have ceased operation.

12. To formulate appropriate proposals for the revision of relevant statutes in line with modern business practices.

Registry of Trade Marks and Patents

The Registry of Trade Marks & Patents is responsible for the registration of trade marks and patents in Malaysia.

The registration of trade marks is carried out under the Trade Marks Act, 1976.

The registration of patents consists of revalidating patents that have been registered in the United Kingdom. The registration of patents is carried out under the Patents Act, 1983 which has been passed by Parliament and was enforced at the end of 1984 throughout Malaysia.

B. THE MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT

The objectives of the Ministry of Science, Technology and the Environment are:

1. To promote and encourage the development of Science and Technology and to raise the quality of life of the people.

2. To undertake research, planning and formulation of policies and to ensure that the widespread use of Science and Technology for the well-being of the people does not result in negative effects.

3. To ensure that material progress through Science and Technology does not result in pollution which may lower the quality of life of the people or destroy flora and fauna.

4. To ensure that there is a balance between development and material progress through Science and Technology and the spiritual development of each individual.

The Ministry is responsible for the formulation of policies, planning, coordination and implementation of programmes and activities in Science and Technology; to create an integrated approach between the various functions of the Ministry so as to ensure that the expansion and development of Science is in line with the needs of the country; and to provide more effective development programmes so as to achieve the aims of the New Economic Policy.

In order to achieve its objectives, the Ministry carries out the following activities:

1. To promote, coordinate and carry out scientific and industrial technology research.

2. To advise the government on policies pertaining to research and development of Science and Technology.

3. To advise the government on matters pertaining to nuclear science.

4. To foster cooperation and promote coordination with foreign countries and institutions in the field of Science and Technology.

5. To promote, establish and encourage standards for industrial products with a view to ensure that local and imported products are of high quality.

6. To improve and provide scientific analysis, investigation and advise to all ministries, government departments and agencies, statutory bodies and other institutions which require their services.

7. To control and monitor pollution, and to conserve and maintain the environment.

8. To conserve wild life and to coordinate the management of National Parks.

The Ministry is divided into 5 Divisions namely, Administration and Coordination, Environment and Conservation, Energy and Nuclear Power, International and Science and Technology. Other government bodies and agencies responsible to the Ministry are:

- Chemistry Department
- Department of Meteorological Services
- Standards and Industrial Research Institute of Malaysia (SIRIM)
- Tun Ismail Atomatic Research Centre (PUSPATI)
- Wild Life and National Parks Department

C. MALAYSIAN INDUSTRIAL DEVELOPMENT FINANCE BERHAD (MIDF)

The Malaysian Industrial Development Finance Bhd. was originally established as a private institution in 1960 and reorganised in 1963 as a public enterprise, with the participation of the Malaysian Government and the World Bank.

The objective of MIDF is to promote the progress and development of industries in Malaysia by providing capital, industrial sites and advisory services.

MIDF is divided into the following divisions:

1. Project Division - evaluates and appraises applications for loans and disbursement of approved loans.

2. Loans Supervision, Research and Advisory Services Division - carries out research and planning relating to the company's business in general, researches projects and provides advisory services to the management and clients, and supervises loans.

3. Securities Marketing Division - supervises the share business of the company and provides related services to clients in the sale, underwriting and issuing of shares and acts as registrar to client companies.

4. Bumiputra Development Division - endeavours to increase the company's assistance to bumiputra through loans, equity participation and advisory services.

5. Branch Division - coordinates the activities of the company's branches.

6. Business Development Division - endeavours to develop the business of the company.

The principal activities of MIDF are,

- to assist in organising, expanding or modernising the activities and new industries;

- to promote and develop the investment industries in the private sector; and

- to promote and develop investment in the private sector.

MIDF provides the following services:

(a) medium and long-term loans;
(b) loans for the purchase of plants;
(c) loans for the purchase of machinery and equipment;
(d) facilities in the issuing of shares; and
(e) equity participation and underwriting of shares.

D. STANDARDS AND INDUSTRIAL RESEARCH INSTITUTE OF MALAYSIA

Standards and Industrial Research Institute of Malaysia (SIRIM) was instituted under the Standards and Industrial Research Institute of Malaysia Act (Act 157), 1975 and its functions are as follows:

1. Promoting and undertaking industrial research.

2. Providing industries with assistance towards industrial efficiency and development.

3. Assisting to uplift the nation's level of technology by encouraging the improvement of production, manufacturing and technology processes.

4. Encouraging and undertaking educational work and training of research and industrial personnel to uplift the status of Malaysian industries.

5. Establishing and promoting of Malaysian Standards and quality of products and processes.

6. Providing technical and scientific backup services for testing, investigation and research.

7. Providing scientific and technological advice to industry, the public and government, and generally to promote and encourage public and industrial welfare, health, safety and consumer protection.

8. Providing information and industrial liaison services.

9. Collaborating in the preparation and dissemination of useful technical information for industry, government and the public in general.

A 24-member Council carries out the functions, directs and manages the affairs of the Institute. To assist the Council in implementing its policies, the following three committees have been set up namely the Standards Committee, the Executive Committee and the Research Committee.

SIRIM's activities are being developed towards needs of local industries by developing and supplying technological knowledge and providing technical support.

The Institute's activities, covering 12 technical activity areas, are as follows:

1. Industrial Research

   (a) Research and Development
   (b) Engineering Testing
   (c) Scientific Testing
   (d) Industrial Design and Fabrication

2. Standards and Standardisation

   (a) Standards Development
   (b) Standards Promotion and Implementation
   (c) Quality Assurance and Certification
   (d) Metrology

3. Industrial Consultancy Services

   (a) Industrial Extension
   (b) Industrial Liaison
   (c) Technical Information
   (d) Technical Publications

SIRIM provides specialised assistance in the development of technology in the metal working industries in Malaysia through the Metal Industry Technology Centre (MITEC) and Metal Industry Research and Development Centre (MIRDC).

Of particular significance is the Patent and Information Documentation Centre (PIDC) which was set up in May 1984 to acquire the "state-of-the art" (acquiring information concerning certain technology) and novelties, to identify copyright of devices that have not been patented in Malaysia and make copies of patents.

Reference available at PIDC include 1.6 million patent documents obtained from all over the world.

E. FEDERATION OF MALAYSIAN MANUFACTURERS

The Federation of Malaysian Manufacturers (FMM) equivalent to the Canadian Manufacturers Association (CMA), is an independent organisation incorporated as a company limited by guarantee. It was formed in July 1968 as a result of the merger of the National Chamber of Malayan Manufacturers and the Malayan Manufacturer's Association. Its aim is to protect and to promote the interests of manufacturers and to assist the government in carrying out its policy of industrial development. The FMM is a non-profit making body and is financed entirely from members' subscriptions, entrance fees and surpluses arising from specific activities. Membership is drawn from all categories of manufacturing companies - both large and small, be they local, foreign or joint-venture organisations. Up to 1986, the FMM has 723 members.

The address of the FMM is:

Federation of Malaysian Manufacturers
17th Floor, W ma Sime Darby
P.O. Box 1219
50770 Kuala L pur
Telephone: 03-2931244

F. TRADE ASSOCIATIONS

Several trade and manufacturing associations exist in Malaysia. They range from ethnic-based associations to those which are more international in scope. Canadian manufacturers intending to move into joint-venture arrangements with Malaysian companies may contact these associations for assistance and more information.

These associations primarily serve the same broad function in that they

- promote, preserve and protect the interests of companies in the industry and to assist in industrial and trade development.
- to act as a spokesman for a particular group/sector in its dealings with the government/private sector bodies.
- to provide a focal point for companies to meet, discuss and solve problems.
- to obtain disseminate relevant information to its members.
- to organize trade fairs at home and abroad and to undertake other activities beneficial to members.

The major associations are:

National Chamber of Commerce & Industry of Malaysia

The National Chamber of Commerce & Industry of Malaysia (NCCIM) is an apex organisation comprising the five principal private sector bodies concerned with commerce and industry, which in turn represent the business interests of the Malay, Chinese an Indian communities, the international investors and the Malaysian manufacturers. The NCCIM presently consists of the following constituent members:

(1) The Malay Chamber of Commerce and Industry of Malaysia (MCCIM)

(2) The Associated Chinese Chambers of Commerce & Industry of Malaysia (ACCCIM)

(3) The Associated Indian Chambers of Commerce & Industry of Malaysia (AICCIM)

(4) Malaysian International Chamber of Commerce & Industry (MICCI)

(5) Federation of Malaysian Manufacturers (FMM)

The general objective of the NCCIM is to promote, foster and protect the interests of all corporations and persons carrying on commerce and industry in Malaysia.

In discharging its responsibilities, the Chamber considers close rapport and liaison with government and its agencies of paramount importance and seeks to maintain a continuous consultation on a wide range of subjects covering every aspect of business and economic development. It is especially conscious of the need to secure achievement of the New Economic Policy and to be attuned to other policies such as those concerned with Malaysia Incorporated, Look East, Privatisation and the like.

Within these concepts it endeavours to promote trade and investment, and assist members to respond to current issues.

It also seeks to collaborate internationally and in ASEAN Affairs with other similar organisations. It is associated with the Paris based International Chamber of Commerce and is a member of the ASEAN-CCI. Its members participate in trade and investment missions sent abroad and also in the reception of visiting missions.

The address of NCCIM:

National Chamber of Commerce & Industry of Malaysia
17th Floor Plaza Pekeliling
Tower Block
Jalan Tun Razak
50400 Kuala Lumpur
Tel: 03-4429873

Malaysian International Chamber of Commerce and Industry

The Malaysian International Chamber of Commerce and Industry (MICCI) is a voluntary non-profit association mainly representing transnational corporations participating in joint-ventures or other forms of business in Malaysia, and a number of Malaysian companies with substantial overseas interests or which provide services in international business.

The Chamber's membership consists of a wide spectrum of businesses. Its 400 members from 24 different countries and numerous subsidiaries and associates are estimated to represent about 80 percent of total foreign investment in Malaysia, excluding primary industries.

All corporations are free to consult or correspond with the Chamber whether or not they are members. Potential investors from overseas are particularly welcome and the Chamber arranges briefing sessions for them in the interests of promotion of investment and development of international trade.

For further information contact:

Executive Director
Malaysian International Chamber of Commerce and Industry
8th Floor, Wisma Damansara
Jalan Semantan
P.O. Box 192
50490 Kuala Lumpur
Telephone: 03-2542117

ASEAN Chamber of Commerce and Industry

The ASEAN (Association of South East Asian Nation) Chamber of Commerce and Industry (ASEAN-CCI) is an association comprising the national chambers of commerce from each ASEAN member country. It was formed primarily to accelerate and facilitate trade and industrial development among and between member countries; promote cooperation and coordination in private business sectors and to foster closer relations and cooperation among member countries.

The address of the ACC is:

ASEAN Chamber of Commerce
17th Floor Plaza Pekeliling
Tower Block
Jalan Tun Razak
50400 Kuala Lumpur
Telephone: 03-4429871/4429873

In addition to the above organisations there are three ethnic-based chambers of commerce:

The Malay Chamber of Commerce and Industry of Malaysia
17th Floor Plaza Pekeliling
Tower Block
Jalan Tun Razak
50400 Kuala Lumpur
Telephone: 03-2928522

The Associated Chinese Chambers of Commerce and Industry of Malaysia
Ground Floor, Chinese Assembly Hall
1 Jalan Maharajalela
50150 Kuala Lumpur
Telephone: 03-2380278/2380473

The Associated Indian Chamber of Commerce and Industry of Malaysia
c/o United Oriental Assurance Sdn. Bhd.
36 Jalan Ampang
50450 Kuala Lumpur
Telephone: 03-2302844/2387917

PROFILES OF COMPANIES INTERVIEWED

NAME OF COMPANY	:	APPLIED SOFTWARE (M) SDN. BHD.
ADDRESS	:	Rm 43, Bangunan Cho Tek 135, Jalan Tuanku Abdul Rahman 50100 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. Bernard McSweeney, Director
TELEPHONE	:	03-2926084
TELEX	:	MA 31755
NATURE OF BUSINESS	:	IBM Mainframe Systems Software (for productivity)
PAID-UP CAPITAL	:	C$100,000
OWNERSHIP	:	100 percent Malaysian-owned
AGENCIES HELD	:	APPLIED DATA RESEARCH - Software Products DECISION SUPPORT TECHNOLOGY - Software Products SOUTHERN COMPUTER SYSTEM - Software Products
EXPRESSED INTEREST	:	Specialist Training Systems

NAME OF COMPANY	:	ASIAN COMPUTER SERVICES SDN. BHD.
ADDRESS	:	Lot 17, Jalan 51A/227 46100 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. Eddie S. W. Leong, General Manager
TELEPHONE	:	03-7579533
TELEX	:	MA 37538 ACSPJ
NATURE OF BUSINESS	:	Bureau Services and Software Consultancy
PAID-UP CAPITAL	:	C$500,000
OWNERSHIP	:	100 percent owned by Setron (M) Bhd.
AGENCIES HELD	:	MCCORMACK & DODGE - Accounting Packages INTELLIGENT TRANSPORT CORP. - Fleet Management Packages
EXPRESSED INTEREST	:	Computer-Integrated-Manufacturing Software Packages

NAME OF COMPANY	:	COMPLETE COMPUTER SYSTEMS SDN. BHD.
ADDRESS	:	Level 5, Block B (South) Pusat Bandar Damansara Damansara Heights 50490 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. David Chew, Managing Director
TELEPHONE	:	03-2554988
TELEX	:	MA 28005 CCSB
NATURE OF BUSINESS	:	Sole Distributor for Prime Computer Products and Services
PAID-UP CAPITAL	:	Not Available
OWNERSHIP	:	100 percent Malaysian-owned
AGENCIES HELD	:	PRIME - Computer Products and Services PRINTRONIX - Printers TELEVIDEO - Terminals
EXPRESSED INTEREST	:	General interest indicated

NAME OF COMPANY	:	COMPUTER PROCESSING SERVICES (M) SDN. BHD.
ADDRESS	:	4th floor, MUI Plaza Jalan P. Ramlee 50250 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. David Goh, General Manager
TELEPHONE	:	03-2488266
TELEX	:	MA 30049
NATURE OF BUSINESS	:	Information Processing Solutions
PAID-UP CAPITAL	:	Not Available
OWNERSHIP	:	100 percent owned by Straits Steamship Ltd. based in Singapore
AGENCIES HELD	:	OMIGUARD, M204 DATABASE and MEDUSA - Manufacturing Utility Software LAWSON - Accounting Packages
EXPRESSED INTEREST	:	General interest indicated

NAME OF COMPANY	:	COMPUTER SYSTEMS ADVISERS (M) SDN. BHD.
ADDRESS	:	Wisma CSA, Jalan SS22/25 Damansara Jaya 47400 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. T. E. Chuah, General Manager
TELEPHONE	:	03-7195721
TELEX	:	MA 37537 CSAMKL
NATURE OF BUSINESS	:	Turnkey Systems House
PAID-UP CAPITAL	:	C$250,000
OWNERSHIP	:	100 percent owned by CSA Group based in Hong Kong
AGENCIES HELD	:	SUN MICROSYSTEMS - Minicomputers ALR - Microcomputers
EXPRESSED INTEREST	:	Remote Sensing Technology Point-of-Sale Technology

NAME OF COMPANY	:	DATAPREP MALAYSIA SDN. BHD.
ADDRESS	:	2nd Floor Plaza Resource 4 Persiaran Barat P.O. Box 518 46760 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. Robert E. T. Teo, Executive Director
TELEPHONE	:	03-7554066
TELEX	:	MA 37561
NATURE OF BUSINESS	:	Sole Distributor for Data General Products
PAID-UP CAPITAL	:	C$1 million
OWNERSHIP	:	Malaysian Interests - 70 percent Foreign Interests - 30 percent
AGENCIES HELD	:	DATA GENERAL - Products TELEX - IBM Compatible Peripherals DATA PRODUCTS - Printers
EXPRESSED INTEREST	:	General interest indicated

NAME OF COMPANY	:	DATASCAN (MALAYSIA) SDN. BHD.
ADDRESS	:	Room 304, 3rd Floor Wisma Singapore Airlines 2-4 Jalan Dang Wangi 50100 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. T. H. Koay, Executive Director
TELEPHONE	:	03-2924077
TELEX	:	MA 33062 DTSMAL
NATURE OF BUSINESS	:	Retailing/Point-of-Sale
PAID-UP CAPITAL	:	C$50,000
OWNERSHIP	:	100 percent Malaysian owned
AGENCIES HELD	:	QANTEL - Computer Products and Services DATACHECKER - Point-of-Sale Systems
EXPRESSED INTEREST	:	The company has expressed a very keen interest in acquiring point-of-sale software technology and is currently exploring the possibility of assembling point-of-sale terminals in Malaysia

NAME OF COMPANY	:	DYATRONMACS SYSTEMS SDN. BHD.
ADDRESS	:	75 & 77 Jalan SS22/19 Damansara Jaya 47400 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. Mustapha S. Ibrahim, Managing Director
TELEPHONE	:	03-7195300
TELEX	:	MA 36032
NATURE OF BUSINESS	:	Computer Bureau Services and Software Development
PAID-UP CAPITAL	:	C$187,500
OWNERSHIP	:	100 percent Malaysian-owned
AGENCIES HELD	:	TRIGEM - Personal Computer
EXPRESSED INTEREST	:	PC peripherals Vertical Application Programs

NAME OF COMPANY	:	EQUATRON (M) SDN. BHD.
ADDRESS	:	Lot 19, Jalan 13/2 P. O. Box 260 46730 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. Tan Lip Heng, Group Division Manager
TELEPHONE	:	03-7558322
TELEX	:	MA 39840
NATURE OF BUSINESS	:	Trading in consumer products, office equipment, computer, photographics and electrical products
PAID-UP CAPITAL	:	C$7.5 million
OWNERSHIP	:	Timoran Bhd. - 40 percent Inchcape Holdings Sdn. Bhd. - 60 percent
AGENCIES HELD	:	EPSON - Personal Computers and Printers THOMSON - Monitors
EXPRESSED INTEREST	:	Horizontal Application Programs for PCs

NAME OF COMPANY	:	FORMIS COMPUTER SERVICES SDN. BHD.
ADDRESS	:	8th Floor, Menara SMI 6 Lorong P. Ramlee 50250 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. Wong Kok Heong, General Manager
TELEPHONE	:	03-2384488
TELEX	:	MA 32946
NATURE OF BUSINESS	:	Information Technology Services
PAID-UP CAPITAL	:	C$1 million
OWNERSHIP	:	100 percent Malaysian-owned
AGENCIES HELD	:	TANDEM - Computer Products and Services GENERAL ELECTRIC - Information Services UTLAS - Library Automation Software
EXPRESSED INTEREST	:	Banking Systems Library Systems

NAME OF COMPANY	:	IMAGINEERING SDN. BHD.
ADDRESS	:	18th Floor, Suite 18-02 Plaza See Hoy Chan Jalan Raja Chulan 50200 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. Ben Shue, Country Manager
TELEPHONE	:	03-2383894
TELEX	:	-
NATURE OF BUSINESS	:	Distributor of Microcomputer Software and Peripherals
PAID-UP CAPITAL	:	Not Available
OWNERSHIP	:	100 percent owned by Imagineering Technology Limited, Australia
AGENCIES HELD	:	Distributor for LOTUS, MICROPRO, 3 COM, INTEL, BORLAND and ASHTON-TATE products
EXPRESSED INTEREST	:	Quality microcomputer software and peripherals

NAME OF COMPANY	:	PAN-GLOBAL SISTEMAJU SDN. BHD.
ADDRESS	:	1st-2nd Floors, Wisma Selangor Dredging Jalan Ampang 50450 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. Lim Kok Beng, Executive Director
TELEPHONE	:	03-2617033
TELEX	:	MA 30538 SISMA
NATURE OF BUSINESS	:	Sole Distributor for Wang Computer Products
PAID-UP CAPITAL	:	C$1.5 million
OWNERSHIP	:	100 percent owned by Pan-Global Holdings Sdn. Bhd.
AGENCIES HELD	:	WANG - Computer Products
EXPRESSED INTEREST	:	Related products and services that run on Wang machines

NAME OF COMPANY	:	PERICOMP. SISTECH SDN. BHD.
ADDRESS	:	22, JALAN SS21/39 Damansara Utama 47400 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. Foo Sen Chin, Managing Director
TELEPHONE	:	03-7199339
TELEX	:	MA 37304
NATURE OF BUSINESS	:	Personal Computers and Peripherals
PAID-UP CAPITAL	:	C$100,000
OWNERSHIP	:	Malaysian Interests - 80 percent Singaporean Interests - 20 percent
AGENCIES HELD	:	AST - Microcomputers Star - Printers Microsoft - PC packages
EXPRESSED INTEREST	:	PC peripherals

NAME OF COMPANY	:	RADAS IKHBAR SISTEM SDN. BHD.
ADDRESS	:	3rd Floor Bangunan Lam Soon Lot 5, Jalan 205 (P.O. Box 489 Jalan Sultan) 46760 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. Hanif Rose, Managing Director
TELEPHONE	:	03-7925596
TELEX	:	MA 37143 RIS
NATURE OF BUSINESS	:	Computer Dealer
PAID-UP CAPITAL	:	C$125,000
OWNERSHIP	:	Malaysian Interests - 51 percent Singaporean Interests - 49 percent
AGENCIES HELD	:	SEIKO INSTRUMENTS - Graphic Devices, Digitizers and Copiers GOLDSTAR - Diskettes SUPERCOM - Personal Computers
EXPRESSED INTEREST	:	PC related products

NAME OF COMPANY	:	SIME DARBY SYSTEMS DIVISION OF SIME DARBY TECHNICAL SERVICES BHD.
ADDRESS	:	17th Floor, East Wing Wisma Sime Darby Jalan Raja Laut 50350 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. Wee Kee Heng, General Manager
TELEPHONE	:	03-2939322
TELEX	:	MA 32807 SDCOMP
NATURE OF BUSINESS	:	Microsystems, computer systems, data communications/ network and engineering and professional services
PAID-UP CAPITAL	:	C$500,000
OWNERSHIP	:	100 percent owned by Pernas-Sime Darby Sdn. Bhd.
AGENCIES HELD	:	MCDONELL DOUGLAS - Computer Products and Services DAEWOO - Microcomputers TEKTRONIX - Graphics Terminals and Workstations VERSATEC - Plotters SUMMA GRAPHICS - Digitizers RECOGNITION EQUIPMENT - Scanning and Data Entry Equipment
EXPRESSED INTEREST	:	Data Communications Devices Personal Computer Peripherals

NAME OF COMPANY	:	SEPAKAT COMPUTER CONSULTANT SDN. BHD.
ADDRESS	:	54A, Lorong Rahim Kajai 14 Taman Tun Dr. Ismail 60000 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. Hong Ka-Hin, Marketing Manager
TELEPHONE	:	03-7180820
TELEX	:	SCC MA 36819
NATURE OF BUSINESS	:	Software Development and Consultancy House
PAID-UP CAPITAL	:	C$100,000
OWNERSHIP	:	100 percent Malaysian-owned
AGENCIES HELD	:	HENCO - 4th Generation Language DBMS RGL - Control Systems and Hardware TODAY - 4th Generation Language Development Tool ARRAKIS - Educational Software
EXPRESSED INTEREST	:	General interest indicated.

NAME OF COMPANY	:	TERRA-CONTROL TECHNOLOGIES SDN. BHD.
ADDRESS	:	Godown No. 3, Bangunan Nupro Jalan Tun Sambanthan 50470 Kuala Lumpur
BUSINESS CONTACT PERSON	:	Mr. Sulaiman B. Mokhtar, Executive Director
TELEPHONE	:	03-2740748
TELEX	:	MA 30189 KTMWHS
NATURE OF BUSINESS	:	Image Processing and Interpretation Industry
PAID-UP CAPITAL	:	C$350,000
OWNERSHIP	:	100 percent Malaysian-owned
AGENCIES HELD	:	DIPIX TECHNOLOGIES - Image Processing Systems PCI: EASI/PACE - Image Processing Systems GREGORY GEOSCIENCE - Optical Transfer Systems SPOT IMAGE - Satellite Data INTERA - Airborne Data ARRAY COMPUTING SYSTEMS - Meteorological Reception and Analysis Systems
EXPRESSED INTEREST	:	Image Processing Technology

NAME OF COMPANY	:	UNIDATA SDN. BHD.
ADDRESS	:	20th Floor, Menara MPPJ P.O. Box 482 46760 Petaling Jaya
BUSINESS CONTACT PERSON	:	Mr. K. C. Toh, Managing Director
TELEPHONE	:	03-7564477
TELEX	:	MA 39843
NATURE OF BUSINESS	:	Turnkey Systems House
PAID-UP CAPITAL	:	C$625,000
OWNERSHIP	:	100 percent Malaysian-owned
AGENCIES HELD	:	CONCURRENT - Superminis CONVERGENT - Minicomputers TANDON - Microcomputers BRUNNING - Plotters PARADYNE - Data Communications Devices
EXPRESSED INTEREST	:	Remote Sensing Technology Image Processing Technology Vertical Applications Software (Unix-based)

Appendix H1

LIST OF IMPORTERS/DISTRIBUTORS

MAINFRAMES

1) BUSINESS COMPUTERS SDN. BHD.
1st Floor Bangunan Sateras
152 Jalan Ampang
50450 Kuala Lumpur

Distributor: NEC
Telephone : 03-2433477

2) CLL INFORMATION SYSTEM SDN. BHD.
3rd Floor, Lot 5, Lam Soon Building
Jalan 205
46760 Petaling Jaya

Distributor: Hitachi
Telephone : 03-7910524

3) IBM WORLD TRADE CORPORATION
13th Floor Plaza IBM
1 Jalan Tun Mohd. Fuad
Taman Tun Dr. Ismail
60000 Kuala Lumpur

Distributor: IBM
Telephone : 03-7177788

4) INTERNATIONAL COMPUTERS (M) SDN. BHD.
7th Floor Wisma Damansara
Jalan Semantan
50490 Kuala Lumpur

Distributor: ICL
Telephone : 03-2543644

5) LITYAN SYSTEMS (M) SDN. BHD.
29th Floor Menara Promet
Jalan Sultan Ismail
50250 Kuala Lumpur

Distributor: Burroughs
Telephone : 03-2439633

6) NCR MALAYSIA SDN. BHD.
18th Floor Bangunan Amoda
22 Jalan Imbi
55100 Kuala Lumpur

Distributor: NCR
Telephone : 03-2439111

7) NIXDORF COMPUTER MALAYSIA SDN. BHD.
2 Jalan Murai Satu, Batu Complex
Off Jalan Ipoh
51100 Kuala Lumpur

Distributor: Nixdorf
Telephone : 03-6277166

8) PERNAS TRADING SDN. BHD.
Computer Division
Annex Block, 3rd Floor, Pernas Building
Jalan Raja Laut
50350 Kuala Lumpur

Distributor: Sperry
Telephone : 03-2932122

9) TALASCO COMPUTER SDN. BHD.
2nd Floor, 4 Lorong 19/1A
46300 Petaling Jaya

Distributor: Fujitsu
Telephone : 03-7550844

10) UNISYS MALAYSIA SDN. BHD.
Letter Box 63, 35th Floor UBN Tower
Jalan Sultan Ismail
50250 Kuala Lumpur

Distributor: Unisys
Telephone : 03-2322988

MINI COMPUTERS

1) BUSINESS COMPUTERS SDN. BHD.
1st Floor Bangunan Sateras
152 Jalan Ampang
50450 Kuala Lumpur

Distributor: NEC
Telephone : 03-2433477

2) COMPLETE COMPUTER SYSTEMS SDN. BHD.
5th Floor, Block B (South)
Pusat Bandar Damansara
50490 Kuala Lumpur

Distributor: Prime
Telephone : 03-2554988

3) COMPUTER SYSTEMS ADVISERS (M) SDN. BHD.
Wisma CSA, Jalan SS 22/25
Damansara Jaya
47400 Petaling Jaya

Distributor: Sun
Telephone : 03-7195721

4) DATAPREP MALAYSIA SDN. BHD.
2nd Floor Plaza Resource
4 Persiaran Barat
P. O. Box 518
46760 Petaling Jaya

Distributor: Data General
Telephone : 03-7554066

5) DIGITAL EQUIPMENT (MALAYSIA) SDN. BHD.
17.2 Wisma Sime Darby
Jalan Raja Laut
50350 Kuala Lumpur

Distributor: DEC
Telephone : 03-2931155

6) FAR EAST COMPUTERS (MALAYSIA) SDN. BHD.
25th Floor Bangunan MAS
Jalan Sultan Ismail
50250 Kuala Lumpur

Distributor: Apollo
Telephone : 03-2615611

7) FORMIS COMPUTER SERVICES SDN. BHD.
8th Floor Menara SMI
6 Lorong P. Ramlee
50250 Kuala Lumpur

Distributor: Tandem
Telephone : 03-2384488

8) HEWLETT-PACKARD SALES (M) SDN. BHD.
9th Floor Bangunan Chung Khiaw Bank
Jalan Raja Laut
50350 Kuala Lumpur

Distributor: HP
Telephone : 03-2986555

9) IBM WORLD TRADE CORPORATION
13th Floor Plaza IBM
1 Jalan Tun Mohd. Fuad
Taman Tun Dr. Ismail
60000 Kuala Lumpur

Distributor: IBM
Telephone : 03-7177788

10) INTERNATIONAL COMPUTERS (M) SDN. BHD.
7th Floor Wisma Damansara
Jalan Semantan
50490 Kuala Lumpur

Distributor: ICL
Telephone : 03-2543644

11) NCR MALAYSIA SDN. BHD.
18th Floor Bangunan Amoda
22 Jalan Imbi
55100 Kuala Lumpur

Distributor: NCR
Telephone : 03-2439111

12) NIXDORF COMPUTER MALAYSIA SDN. BHD.
2 Jalan Murai Satu, Batu Complex
Off Jalan Ipoh
51100 Kuala Lumpur

Distributor: Nixdorf
Telephone : 03-6277166

13) OLIVETTI MALAYSIA SDN. BHD.
13th Floor Bangunan Pernas International
Jalan Sultan Ismail
50250 Kuala Lumpur

Distributor: Olivetti
Telephone : 03-2612277

14) PAN-GLOBAL SISTEMAJU SDN. BHD.
1st - 2nd Floors, Wisma Selangor Dredging
Jalan Ampang
50450 Kuala Lumpur

Distributor: Wang
Telephone : 03-2617033

15) UNIDATA SDN. BHD.
20th Floor Menara MPPJ
P. O. Box 482
46760 Petaling Jaya

Distributor: Concurrent and Convergent
Telephone : 03-7564477

16) UNISYS MALAYSIA SDN. BHD.
Letter Box 63, 35th Floor UBN Tower
Jalan Sultan Ismail
50250 Kuala Lumpur

Distributor: Unisys
Telephone : 03-2322988

PERSONAL COMPUTERS

1) ACCENT TECHNOLOGY SDN. BHD.
The Annex, Plaza MBF
Jalan Ampang
50450 Kuala Lumpur

Manufacturer: Accent 2001 PC
Telephone : 03-2615296

2) AUTOMATION & COMPUTER ENGINEERING SDN. BHD.
7th Floor, Suite 7.03 - 7.04
KL Tower, KL Plaza
Jalan Bukit Bintang
55100 Kuala Lumpur

Distributor: Sanyo PC
Telephone : 03-2435744

3) BUSINESS COMPUTERS SDN. BHD.
1st Floor Bangunan Sateras
152 Jalan Ampang
50450 Kuala Lumpur

Distributor: NEC
Telephone : 03-2433477

4) CBA OFFICE SYSTEMS (M) SDN. BHD.
5 Jalan 51A/241
46100 Petaling Jaya

Distributor: Xerox PC, Logitec PC and Fujitsu PC
Telephone : 03-7764488

5) CLL INFORMATION SYSTEM SDN. BHD.
3rd Floor, Lot 5, Lam Soon Building
Jalan 205
46760 Petaling Jaya

Distributor: Hitachi
Telephone : 03-7910524

6) COMPLETE COMPUTER SYSTEMS SDN. BHD.
5th Floor, Block B (South)
Pusat Bandar Damansara
50490 Kuala Lumpur

Distributor: Prime
Telephone : 03-2554988

7) COMPUTER BASE SDN. BHD.
279 Jalan Perkasa Satu
Taman Maluri
55100 Kuala Lumpur

Distributor: Alpha Micro
Telephone : 03-9856606

8) COMPEX SDN. BHD.
No. 1 Jalan Sarawak
Off Jalan Pudu
50200 Kuala Lumpur

Manufacturer: Compex PC
Telephone : 03-2436827

9) COMPUTER SYSTEMS ADVISERS (M) SDN. BHD.
Wisma CSA, Jalan SS 22/25
Damansara Jaya
47400 Petaling Jaya

Distributor: ALR
Telephone : 03-7195721

10) DATAMINI COMPUTER (M) SDN. BHD.
113 Kwang Tung Building
44 Jalan Pudu
55100 Kuala Lumpur

Distributor: Datamini
Telephone : 03-2324588

11) DATAPREP (MALAYSIA) SDN. BHD.
2nd Floor Plaza Resource
4 Persiaran Barat
P. O. Box 518
46760 Petaling Jaya

Distributor: Data General
Telephone : 03-7554066

12) DATAWARE SDN. BHD.
126 Jalan Kelang Lama
58000 Kuala Lumpur

Distributor: Victor and Apricot PC, Zebra business computers
Telephone : 03-7814000

13) DIGITAL SYSTEMS (M) SDN. BHD.
33 Jalan SS 15/4B
Subang Jaya
47500 Selangor

Distributor: Wicot PC
Telephone : 03-7332324

14) DATASCAN MALAYSIA SDN. BHD.
Room 304, 3rd Floor
Wisma Singapore Airlines
2 - 4 Jalan Dang Wangi
50100 Kuala Lumpur

Distributor: Altos PC
Telephone : 03-2924077

15) EQUATRON (M) SDN. BHD.
Lot 19, Jalan 13/2
P. O. Box 260
46730 Petaling Jaya

Distributor: Epson PC
Telephone : 03-7558322

16) HEWLETT PACKARD (M) SDN. BHD.
9th Floor Bangunan Chung Khiaw Bank
Jalan Raja Laut
50350 Kuala Lumpur

Distributor: HP
Telephone : 03-2986555

17) INTERNATIONAL COMPUTERS (M) SDN. BHD.
7th Floor Wisma Damansara
Jalan Semantan
50490 Kuala Lumpur

Distributor: ICL
Telephone : 03-2543644

18) MESINIAGA SDN. BHD.
25th Floor Plaza See Hoy Chan
Jalan Raja Chulan
50200 Kuala Lumpur

Distributor: IBM
Telephone : 03-2322011

19) MICROCOMPUTER CENTRE (M) SDN. BHD.
70 Jalan SS 21/39
Damansara Utama
47400 Petaling Jaya

Distributor: Compaq
Telephone : 03-7188332

20) MICROCOMPUTER SYSTEMS SDN. BHD.
23 - 25A Jalan Jejaka 7
Taman Maluri
55100 Kuala Lumpur

Manufacturer: Optima PC
Telephone : 03-9840119

21) NCR MALAYSIA SDN. BHD.
18th Floor Bangunan Amoda
22 Jalan Imbi
55100 Kuala Lumpur

Distributor: NCR
Telephone : 03-2439111

22) NIXDORF COMPUTER MALAYSIA SDN. BHD.
2 Jalan Murai Satu, Batu Complex
Off Jalan Ipoh
51100 Kuala Lumpur

Distributor: Nixdorf
Telephone : 03-6277166

23) OLIVETTI (MALAYSIA) SDN. BHD.
13th Floor Bangunan Pernas International
Jalan Sultan Ismail
50250 Kuala Lumpur

Distributor: Olivetti
Telephone : 03-2612277

24) PAN-GLOBAL SISTEMAJU SDN. BHD.
1st - 2nd Floors, Wisma Selangor Dredging
Jalan Ampang
50450 Kuala Lumpur

Distributor: Wang
Telephone : 03-2617033

25) PJ ELECTRONICS TRADING SDN. BHD.
12 Jalan SS 2/63
47300 Petaling Jaya

Distributor: Multitech
Telephone : 03-7745154

26) PERICOMP-SISTECH SDN. BHD.
22 Jalan SS 21/39
Damansara Utama
47400 Petaling Jaya

Distributor: AST PC
Telephone : 03-7199339

27) UNIPHONE SDN. BHD. (APPLE DIVISION)
Bangunan Sapura, Jalan Enggang
Ulu Kelang
54200 KUALA LUMPUR

Distributor: Apple
Telephone : 03-4572033

COMPUTER PERIPHERALS

1) IMAGINEERING SDN. BHD.
18th Floor, Suite 18-02
Plaza See Hoy Chan
Jalan Raja Chulan
50200 Kuala Lumpur

Distributor: Seagate & CDC storage devices
Telephone : 03-2383894

2) PERICOMP SISTECH SDN. BHD.
22 Jalan SS 21/39
Damansara Utama
47400 Petaling Jaya

Distributor: Tallgrass storage devices, Star Printers
Telephone : 03-7199339

3) BUSINESS COMPUTERS SDN. BHD.
1st Floor Bangunan Sateras
152 Jalan Ampang
50450 Kuala Lumpur

Distributor: NEC printers
Telephone : 03-2433477

4) EQUATRON (M) SDN. BHD.
Lot 19 Jalan 13/2
P. O. Box 260
46730 Petaling Jaya

Distributor: Epson printers
Telephone : 03-7550322

5) MATSUSHITA SALES AND SERVICES SDN. BHD.
10 Jalan 13/2
46000 Petaling Jaya

Distributor: Panasonic printers
Telephone : 03-7576622

6) BROTHER INDUSTRIES
123 Jalan SS 21/37
Damansara Utama
47400 Petaling Jaya

Distributor: Brother printers
Telephone : 03-7184639

7) INTEGRATED DATA SERVICES SDN. BHD.
77 Jalan SS 21/1A
Damansara Utama
47400 Petaling Jaya

Distributor: Sekoisha printers
Telephone : 03-7170198

8) RACAL ELECTRONICS (M) SDN. BHD.
906 Wisma Lim Foo Yong
Jalan Raja Chulan
50200 Kuala Lumpur

Distributor: Racal modem

9) INFOCOM (M) SDN. BHD.
92 Jalan SS 15/4
Subang Jaya
47500 Petaling Jaya

Distributor: Codex modem
Telephone : 03-7334788

10) RANK O'CONNOR'S (M) SDN. BHD.
1 Jalan 219
46710 Petaling Jaya

Distributor: New bridge networks data controllers
Telephone : 03-7566599

11) TECHNOLOGY DATACRAFT SDN. BHD.
Box 12, Wisma Socfin
Jalan Semantan
50490 Kuala Lumpur

Distributor: Datacraft data communication devices
Telephone : 03-2555100

12) TEAMDATA SDN. BHD.
18A Jalan 19/36
46300 Petaling Jaya

Distributor: Team data communication devices
Telephone : 03-7553548

13) MECOMB MALAYSIA SDN. BHD.
20 Jalan 225
46100 Petaling Jaya

Distributor: Case data communication devices
Telephone : 03-7743422

NETWORKING SOFTWARE

1) MESINIAGA SDN. BHD.
25th Floor Plaza See Hoy Chan
Jalan Raja Chulan
50200 Kuala Lumpur

Telephone: 03-2322011

2) COMPUTER SYSTEMS ADVISERS (M) SDN. BHD.
Wisma CSA Jalan SS 22/25
Damansara Jaya
47400 Petaling Jaya

Telephone: 03-7195721

3) MICROCOMPUTER CENTRE (M) SDN. BHD.
70 Jalan SS 21/39
Damansara Utama
47400 Petaling Jaya

Telephone: 7188322

4) UNITED COMPUTER SDN. BHD.
120 Jalan Tun Sambanthan
Brickfields
50470 Kuala Lumpur

Telephone: 03-2741222

5) COMPUTER PROTOCOL (M) SDN. BHD.
Room 1201, 12th Floor
Wisma HLA
Jalan Raja Chulan
50200 Kuala Lumpur

Telephone: 03-2415232

HORIZONTAL APPLICATIONS SOFTWARE

1) PDX COMPUTERS SDN. BHD.
Lot 1009, 10th Floor
Wisma HLA
Jalan Raja Chulan
50200 Kuala Lumpur

Telephone: 03-2431011

2) APPLIED SOFTWARE SDN. BHD.
Room 43, Bangunan Cho Tek
135 Jalan Tuanku Abdul Rahman
50100 Kuala Lumpur

Telephone: 03-2926084

3) SEPAKAT COMPUTER CONSULTANTS SDN. BHD.
54A Lorong Rahim Kajai 14
Taman Tun Dr. Ismail
60000 Kuala Lumpur

Telephone: 03-7180820

4) SCS COMPUTER SYSTEMS SDN. BHD.
Wisma IJM, Ground Floor
Jalan Yong Shook Lin
46200 Petaling Jaya

Telephone: 03-7565058

5) IMIKAWAN ENTERPRISE SDN. BHD.
32, 1st Floor, Jalan SS 2/67
47300 Petaling Jaya

Telephone: 03-7767520

6) ASIAN COMPUTER SERVICES SDN. BHD.
Lot 17, Jalan 51A/227
46100 Petaling Jaya

Telephone: 03-7579533

7) INNOVEST SYSTEMS AND SERVICES SDN. BHD.
Lot 5.3, Kompleks Bukit Naga
Off Jalan Semantan
Bukit Damansara
50490 Kuala Lumpur

Telephone: 03-2558877

8) ARTHUR ANDERSEN ASSOCIATES PTE.
24th Floor Menara Tun Razak
Jalan Raja Laut
50350 Kuala Lumpur

Telephone: 03-2935133

9) ERNST & WHINNEY MANAGEMENT CONSULTANTS SDN. BHD.
Kompleks Antarabangsa
Jalan Sultan Ismail
50250 Kuala Lumpur

Telephone: 2422633

10) PRICE WATERHOUSE ASSOCIATES
11th Floor Wisma Sime Darby
Jalan Raja Laut
50350 Kuala Lumpur

Telephone: 03-2931077

11) KASSIM CHAN MANAGEMENT CONSULTANTS SDN. BHD.
20th Floor Bangunan Arab-Malaysian
Jalan Raja Chulan
50200 Kuala Lumpur

Telephone: 03-2380133

12) LIM ALI & CO./ARTHUR YOUNG AND CO.
3 Jalan Kampong Attap
50460 Kuala Lumpur

Telephone: 03-2743722

13) COOPERS AND LYBRAND ASSOCIATES
The Tower, Plaza Pekeliling
Jalan Tun Razak
50400 Kuala Lumpur

Telephone: 03-2926522

14) PEAT MARWICK AND CO.
4th Floor Wisma Perdana
Jalan Dungun
Damansara Heights
50490 Kuala Lumpur

Telephone: 03-2543833

VERTICAL APPLICATIONS SOFTWARE

Banking and Finance Systems

1) IBM WORLD TRADE CORPORATION
13th Floor Plaza IBM
1 Jalan Tun Mohd. Fuad
Taman Tun Dr. Ismail
60000 Kuala Lumpur

Telephone : 03-7177788

2) OLIVETTI (MALAYSIA) SDN. BHD.
13th Floor Bangunan Pernas International
Jalan Sultan Ismail
50250 Kuala Lumpur

Telephone : 03-2612277

3) NCR MALAYSIA SDN. BHD.
18th Floor Bangunan Amoda
22 Jalan Imbi
55100 Kuala Lumpur

Telephone : 03-2439111

4) NIXDORF COMPUTER MALAYSIA SDN. BHD.
2 Jalan Murai Satu, Batu Complex
Off Jalan Ipoh
51100 Kuala Lumpur

Telephone : 03-6277166

5) FORMIS COMPUTER SERVICES SDN. BHD.
8th Floor Menara SMI
6 Lorong P. Ramlee
50250 Kuala Lumpur

Telephone : 03-2384488

Point-of Sale Systems

1) NCR MALAYSIA SDN. BHD.
18th Floor Bangunan Amoda
22 Jalan Imbi
55100 Kuala Lumpur

Telephone : 03-2439111

2) INTERNATIONAL COMPUTERS (M) SDN. BHD.
7th Floor Wisma Damansara
Jalan Semantan
50490 Kuala Lumpur

Telephone : 03-2543644

3) OLIVETTI (MALAYSIA) SDN. BHD.
13th Floor Bangunan Pernas International
Jalan Sultan Ismail
50250 Kuala Lumpur

Telephone : 03-2612277

4) PERKOM SDN. BHD.
6 Jalan Travers
Brickfields
50470 Kuala Lumpur

Telephone: 03-2746655

5) DATASCAN MALAYSIA SDN. BHD.
Room 304, 3rd Floor
Wisma Singapore Airlines
2 - 4 Jalan Dang Wangi
50100 Kuala Lumpur

Telephone : 03-2924077

Image Processing Systems

1) TERRA CONTROL TECHNOLOGIES SDN. BHD.
Godown No. 3 Bangunan Nupro
Jalan Tun Sambathan
50470 Kuala Lumpur

Telephone: 03-2740748

2) HISCO MALAYSIA SDN. BHD.
1 Lorong SS 13/6A
Subang Jaya
47500 Petaling Jaya

Telephone: 03-7334236

3) MECHMAR-BESTOBELL BERHAD
50 Jalan Burhanuddin Helmi
60000 Kuala Lumpur

Telephone: 03-7189399

4) FAR EAST COMPUTERS (MALAYSIA) SDN. BHD.
25th Floor Bangunan MAS
Jalan Sultan Ismail
50250 Kuala Lumpur

Telephone : 03-2615611

5) RIMMAN INTERNATIONAL SDN. BHD.
12 Lorong 51A/227C
46100 Petaling Jaya

Telephone: 03-7557007

CAD-CAM Systems

1) HEWLETT-PACKARD SALES (M) SDN. BHD.
9th Floor Bangunan Chung Khiaw Bank
Jalan Raja Laut
50350 Kuala Lumpur

Telephone : 03-2986555

2) COMPLETE COMPUTER SYSTEMS SDN. BHD.
5th Floor, Block B (South)
Pusat Bandar Damansara
50490 Kuala Lumpur

Telephone : 03-2554988

3) FAR EAST COMPUTERS (MALAYSIA) SDN. BHD.
25th Floor Bangunan MAS
Jalan Sultan Ismail
50250 Kuala Lumpur

Telephone : 03-2615611

4) IBM WORLD TRADE CORPORATION
13th Floor Plaza IBM
1 Jalan Tun Mohd. Fuad
Taman Tun Dr. Ismail
60000 Kuala Lumpur

Telephone : 03-7177788

5) DIGITAL EQUIPMENT (MALAYSIA) SDN. BHD.
17.2 Wisma Sime Darby
Jalan Raja Laut
50350 Kuala Lumpur

Telephone : 03-2931155

6) TALASCO COMPUTER SDN. BHD.
2nd Floor, 4 Lorong 19/1A
46300 Petaling Jaya

Telephone : 03-7550844

7) COMPUTER SYSTEMS ADVISERS (M) SDN. BHD.
Wisma CSA, Jalan SS 22/25
Damansara Jaya
47400 Petaling Jaya

Telephone : 03-7195721

8) DATAPREP MALAYSIA SDN. BHD.
2nd Floor Plaza Resource
4 Persiaran Barat
P. O. Box 518
46760 Petaling Jaya

Telephone : 03-7554066

Videotex Systems

1) NEW STRAITS TIME PRESS (M'SIA) BHD.
31 Jalan Riong
59100 Kuala Lumpur

Telephone: 03-2745444

2) BERNAMA NEWS AGENCY
28 Jalan 1/65A
Jalan Tun Razak
50400 Kuala Lumpur

Telephone: 03-2939933

3) SYARIKAT TELEKOM MALAYSIA BERHAD
Ibu Pejabat
Jalan Raja Laut
50200 Kuala Lumpur

Telephone: 03-2329494

COMPUTER SERVICES

Training and Education

1) FEDERAL INSTITUTE OF TECHNOLGOY
26 & 26A Jalan Vivekananda
50470 Kuala Lumpur

Telephone: 03-2741034

2) GOON MANAGEMENT AND COMPUTER STUDIES CENTRE
19 Jalan Belia
50350 Kuala Lumpur

Telephone: 03-2980526

3) INFORMATICS INSTITUTE OF SYSTEM SCIENCE
121 - 123C Jalan Petaling
50000 Kuala Lumpur

Telephone: 03-2301310

4) KOLEJ DAMANSARA UTAMA
Kampus Utama
Jalan SS 22/41
Damansara Jaya
47400 Petaling Jaya

Telephone: 03-7190624

5) STAMFORD COLLEGE GROUP
Wisma MCIS, Annexe
Jalan Barat
46200 Petaling Jaya

Telephone: 03-7566023

6) SUNWAY COLLEGE
21 Jalan Selangor
46200 Petaling Jaya

Telephone: 03-7555122

7) SYSTEMATIC COMPUTER COLLEGE
14 - 20 Jalan Hang Lekir
50000 Kuala Lumpur

Telephone: 03-2307505

8) TUNKU ABDUL RAHMAN COLLEGE
P. O. Box 10979 Kuala Lumpur

Telephone: 03-4233122

9) ASIAN COMPUTER SERVICES
Lot 17, Jalan 51A/227
46100 Petaling Jaya

Telephone: 03-7579533

10) COMPUTER PROCESSING SERVICES (M) SDN. BHD.
4th Floor MUI Plaza
Jalan P. Ramlee
50250 Kuala Lumpur

Telephone: 03-2488266

COMPUTER CONSULTANCY

1). ARTHUR ANDERSEN ASSOCIATES PTE.
24th Floor Menara Tun Razak
Jalan Raja Laut
50350 Kuala Lumpur

Telephone: 03-2935133

2) LIM ALI & CO./ARTHUR YOUNG AND CO.
3 Jalan Kampong Attap
50460 Kuala Lumpur

Telephone: 03-2743722

3) COOPERS AND LYBRAND ASSOCIATES
The Tower, Plaza Pekeliling
Jalan Tun Razak
50400 Kuala Lumpur

Telephone: 03-2926522

4) ERNST & WHINNEY MANAGEMENT CONSULTANTS
Kompleks Antarabangsa
Jalan Sultan Ismail
50250 Kuala Lumpur

Telephone: 2422633

5) KASSIM CHAN MANAGEMENT CONSULTANTS SDN. BHD.
20th Floor Bangunan Arab-Malaysian
Jalan Raja Chulan
50200 Kuala Lumpur

Telephone: 03-2380133

6) PEAT MARWICK AND CO.
4th Floor Wisma Perdana
Jalan Dungun
Damansara Heights
50490 Kuala Lumpur

Telephone: 03-2543833

7) PRICE WATERHOUSE ASSOCIATES
11th Floor Wisma Sime Darby
Jalan Raja Laut
50350 Kuala Lumpur

Telephone: 03-2931077

8) ASAS SWIFT DATA SERVICES SDN. BHD.
7-B Jalan Barat
46200 Petaling Jaya

Telephone: 03-7553218

9) BERITA INFORMATION SYSTEMS SDN. BHD.
31 Jalan Riong
59100 Kuala Lumpur

Telephone: 03-2745444

10) ASIAN COMPUTER SERVICES SDN. BHD.
Lot 17, Jalan 51A/227
46100 Petaling Jaya

Telephone: 03-7579533

11) COMPUTER SYSTEMS ADVISERS (M) SDN. BHD.
Wisma CSA, Jalan SS 22/25
Damansara Jaya
47400 Petaling Jaya

Telephone : 03-7195721

12) DYATRONMACS SYSTEMS SDN. BHD.
75 & 77 Jalan SS 22/19
Damansara Jaya
47400 Petaling Jaya

Telephone: 03-7195300

13) JARDINE LOGICA SDN. BHD.
Menara Kewangan
Jalan Raja Chulan
50200 Kuala Lumpur

Telephone: 03-2380011

14) KOMPUTER USAHA SDN. BHD.
61 Jalan SS 21/37
Damansara Utama
47400 Kuala Lumpur

Telephone: 03-7186151

15) MELEWAR CONSERV. SDN. BHD.
19th Floor Wisma MBF
Jalan Ampang
50450 Kuala Lumpur

Telephone: 03-2614177

16) RELIANCE COMPUTER CENTRE SDN. BHD.
3rd Floor, T085 Sungei Wang Plaza
Jalan Sultan Ismail
50200 Kuala Lumpur

Telephone: 03-2480184

17) RIMMAN INTERNATIONAL SDN. BHD.
12 Lorong 51A/227C
46100 Petaling Jaya

Telephone: 03-7557007

18) SEPAKAT COMPUTER CONSULTANT SDN. BHD.
54A Lorong Rahim Kajai 14
Taman Tun Dr. Ismail
60000 Kuala Lumpur

Telephone: 03-7180820

19) SL INFORMATION SDN. BHD.
57 Jalan Tun Sambathan
50470 Kuala Lumpur

Telephone: 03-2747344

20) SUNGEI WAY COMPUTER SERVICES SDN. BHD.
68 Jalan 52/4
46200 Petaling Jaya

Telephone: 03-7578899

DATA PROCESSING (BUREAU) SERVICES

1) ASIAN COMPUTER SERVICES SDN. BHD.
Lot 17, Jalan 51A/227
46100 Petaling Jaya

Telephone: 03-7579533

2) COMPUTER PROCESSING SERVICES (M) SDN. BHD.
4th Floor MUI Plaza
Jalan P. Ramlee
50250 Kuala Lumpur

Telephone: 03-2488266

3) DYATRONMACS SYSTEMS SDN. BHD.
75 & 77 Jalan SS 22/19
Damansara Jaya
47400 Petaling Jaya

Telephone: 03-7195300

4) KOMPUTER USAHA SDN. BHD.
61 Jalan SS 21/37
Damansara Utama
47400 Kuala Lumpur

Telephone: 03-7186151