CHAPTER 4

THE SYSTEM AS A STATIC POTENTIAL

(The nerve centre of the business community)

4.1   INTRODUCTION - TECHNOLOGY

Technology is looked at in this study, as the way machines are deployed in activities of action, of making, and doing. A social process approach is adopted in keeping with the general methodology of the study and therefore attention is paid mainly to technology as a system with its own self-contained grammar, language, communication network, and rules. The emphasis, in this chapter , is on the system to show how the communicative processes of the organisation are really instances of the system. The communicative processes or networks provide a record of the state of the system at a particular time in history in a particular discourse community.

The description of the system includes its organisation, the implementation, and the controls exercised by the system on the communications in the community. These are the controls determined by the parent company to ensure the continued existence and maintenance of the company. On the other hand, the social practices, the focus of the next chapter is to show the possibilities of

communication processes or social processes that are deemed possible by the system , through a virtual network. The social practices are enacted by members in actual interactions in time and history. In short, in this chapter, the technology system is looked at as the nerve centre, the spinal column of the organisation. Discourse is looked at within this broad concept of the study of the whole system of communications within this community. Following the argument of Scollon & Scollon:

> Such broad systems of discourse form a kind of self -contained system of communication with a shared language or jargon, with particular ways in which people learn what they need to know to become members, with a particular ideological position, and with quite specific forms of interpersonal relationships among members of these groups (Scollon & Scollon, 1995:95).

The technology system, adopted by Perdana has its own industrial brand name but is henceforth referred to as Logos (a pseudonym). Logos, (the system) in the Holding Company Perdana, is the centre from which and through which the organisation is kept alive and thriving in that it provides a way for (a) people and (b) information to not only relate to each other but also to (c) the world at large in various permutations and combinations between the three. The concern in this chapter is primarily with the social effects of technology and the social practices that are the result of this technology.

Technology is usually associated with knowledge and power . In fact it is quite difficult to separate knowledge, the technology and

the human interacting with both the technology and the knowledge because of the complex interaction and flow between all three. In the business world, technology is used primarily to serve the organisation's desire for power, wealth and control. It is basically used to dominate, as Foucault has shown that, with the will to know (knowledge), comes the will to power (dominate). He says:

> In fact, every point in the exercise of power is at the same time a site where knowledge is formed. And conversely every established piece of knowledge permits and assures the exercise of power (Foucault, 1979:62).

Knowledge is invariably involved with the question of power and technology. Technology as a form of empowerment is clearly the mind set of the business world of this epoch, the so called information age or age of technology. The question is, how does technology shape the social relational contexts within which these technologies are used, and secondly, whose interests are being served? The answers to these questions will be dealt with in this chapter.

4.2   LOGOS AS AN ACTIVITY SYSTEM

4.2.1   HISTORY, VALUES AND WORLD VIEW

The preliminary pilot studies carried out at the beginning of this research project have determined that Perdana has the attributes of a corporate discourse community as defined by Scollon and Scollon, 1995 and Swales, 1990 because Perdana is motivated by a goal-oriented discourse system , has been formed to achieve certain

purposes, which include , making profit for the owners and providing employment. The overriding purpose is, of course, to ensure the continued existence of the company.

The formation of the company Perdana was timely as it fitted well with the social and political changes that were going on in this country. The major change being that the economic boom has shifted to the Asia Pacific region. These changes in the social and economic environment have contributed one way or another to Perdana's success. Besides being timely in its business ventures, far -sighted in its economic strategies, it has also created history by producing the first national car that is now sold in various parts of the world including Great Britain , Australia and Singapore. The success of the national car proved economically, socially, and politically to Malaysians and the world at large that Malaysia is indeed an economic force given these success stories. Perdana can be viewed as being a very successful national business enterprise that commands respect not only within the country but also the world judging from the success stories as well as the number of industry awards that it has received. (Refer chapter one).

4.2.2 IDEOLOGY

The fundamental ideology of the company is a "utilitarian ideology" (Scollon & Scollon). Discourse in this community is organised around objective facts and logical processes. Employees in this enterprise imbibe the corporate ideology and it is constantly brought to their notice through mission statements, reminders through newsletters, and very importantly, the parent company's concept of success sharing, etc. All the employees in the Perdana business

community benefit in the form of monetary acknowledgment when ever the organisation achieves success in terms of beating its own market projections and profits for a particular year.

A goal oriented discourse system like this one has institutionalised learning as part of the way members become socialised. Once a person becomes an employee, both education and enculturation become major aspects of that person's learning. The person undergoes in house training, is given handbooks, newsletters, policy statements and mission statements as orientation to the ideology and daily workings of the company . Most of the time, the learning is through peer teaching, observation and imitation. Enculturation ensures membership. Enculturation, according to Scollon & Scollon:

> refers to the process by which a dominant culture comes to supplant the culture of people over which it has come to exercise power(Scollon & Scollon, 1995:179).

In Perdana, the ideology of Western utilitarian discourse, that of the free individual who functions as a rational entity who seeks first his/her advantage is present but not so marked. The Asian ideology of brotherhood and family (the owners of the company and seventy percent of the employees belong to the Malay race of Malaysia) and sharing of success with the group as a whole as is traditionally done in the kinship culture they come from is also carried on in this organisation. The notion that every success is shared and rejoiced collectively with benefits distributed all along the hierarchy continuum is largely practiced in this organisation. Besides that, members mingle with each other like family getting involved in interpersonal and cultural activities like births, weddings, deaths, and religious

ceremonies outside the company, thus fostering further the bond between employees.

What this organisation shows is that the hard nosed business person does have a soft side, and the win, win concept (where both parties in a negotiation benefit as opposed to one side coming out triumphant) currently propagated in western business cultures is innate in the Asian psyche. The corporate culture of Perdana has managed to blend well the strengths of both, the Western, and Eastern worlds in terms of business and culture.

The accepted and preferred forms of communication within this community are goal directed forms of discourse. For all official interactions, institutionally sanctioned forms of discourse are used. This does not mean that underground communication and antilanguage are not present. Such discourse, in the form of, E-mail gossip, off - colour jokes , personal comments stemming from petty rivalry, and so on are present and alive in this institution. However, these are considered non -legitimate or inappropriate in official or formal settings.

The official discourse is always counter checked by the person higher up the hierarchy and not left to chance in keeping with its goal-directed ideology. Communicative events are carefully orchestrated, controlled, and mediated wherever possible, through technology. Regularity and conformity in relation to discourse for specific social activities is valued and as such many of the procedures have become machine generated or machine mediated for effective duplication and dissemination. While many genres exist in various forms in various

interactions, they have a common purpose in that they all share the same basic concern for maintaining the company objectives and goals. The primary exchange between members is economic exchange unless the relationship takes on another plane for example at the collegial plane. Since the primary exchange of communication between members is economic, the communication tends to emphasise information and negotiation. Generally the discourse is typical of most corporate cultures in that it is:

> goal directed, tends to emphasise
> information over relationships, negotiation
> over ratification, and places a high value
> for the negotiation of relative positions of
> power and status (Scollon & Scollon
> 1995:188).

Technology has evolved the patterns of communication that strengthen the group by encouraging co - dependence and team spirit.

4.3   LOGOS AS A MEANING SYSTEM

(Technology and its role/purpose - past and present.)

4.3.1   HISTORY

Perdana has from the beginning invested substantially in IT hardware, software and data communications. These applications were a mixture of in-house developed, and third party purchased packages. The technology that was available when most existing applications were developed, did not lend itself to integrated applications and data sharing. With time, there arose a problem of inconsistency and

redundancy. Data was stored on many different computers and this made it difficult to share between systems.

Then, Perdana had computer systems organised by function and not by process. What this means in lay terms is that the systems were not integrated and could not "talk to each other." For example, in the selling or ordering process one could not get a complete picture of the whole transaction because information was not readily available and could only be obtained by manually going to various parts of the organisation to collate the information. There was within the Perdana group of companies, separate functions for each portion of this information. Moreover systems were running on different types of computers in different formats. Programs were also written in different computer languages and maintenance was difficult and expensive. This of course meant a wastage of time and money. In reality, the organisation could not assist their staff as effectively as they could/should have.

With new demands and needs imposed by changes in business, expansion processes, as well as advances in technology, there arose a need to have a rethink of the technology available to Perdana. This became very apparent when ad hoc reporting was needed by management. When opportunities presented themselves both locally and abroad, management needed immediate facts and figures in order to make quick decisions. Information under the then existing system was slow and required programmer intervention. It is common knowledge that information is power and keeping up to date with information is an advantage for decision makers. Information will aid them in making accurate and timely management decisions.

There was, therefore, a realisation within the group that their IT was not in harmony with the growing business. Management saw the solution to this problem as two fold:

(a)   The need to develop a business strategy.

This meant a business strategy that will allow change in response to variables like, globalisation, opportunities, technological changes, reduction in costs, diversification and focus, to name a few.

(b) The need to develop a viable IT strategy.

With this need is the realisation that in developing an IT strategy one must ensure that it has the speed to accommodate changes not only in technology but also the business changes which the IT must support.

This outlook saw the business and the technology that supports it as a journey , constantly making changes along the way, and not as a destination. The purpose of the two strategies is to guide the business along this journey of success in terms of market share and profitability. It is common knowledge that all viable business must constantly change and adapt to the dynamic Supra System. Therefore, choosing an adaptive dynamic information architecture that has the flexibility to support both, the changes in the business environment, and the changes in technology, is the inevitable choice of all successful companies. To be effective, one cannot buy an off the peg application, because each organisation's need is different. While off the shelf solutions may work , they will not be strategic. For a technology system to be strategic , the implementation includes re-engineering the business, building bridges between internal devices and departments and bringing external branches into closer contact with the main

system. It also means taking different types of information , processing them , then presenting them in a form that is readily accessible to the people. These aspects were taken into consideration when planning the strategy because business strategies keep changing at a rate faster than ever before. In Perdana, IT has traditionally supported the tactile static backroom functions like billing, accounting, payroll, etc. and, while this suited the requirements then, it does not seem the solution now. Managers of Perdana felt the need to close the gap between business and IT. This perception led to the development of the Strategic Information System Plan. (SISP).

4.3.2   STRATEGIC INFORMATION SYSTEM PLAN (SISP)

The Strategic Information Plan focussed on the corporate data required to support Perdana's mission and objectives. Corporate data refers to the data that is shared between one or more of Perdana's business functions or subsidiaries. In this community, corporate data is managed as a resource by providing a stable base of computerised data to support the ever changing information needs of Perdana. Stated generally, the computer applications utilised and developed as a result of this planning will address the information needs at all levels within the organisation from the day to day operational requirements to the ad hoc needs of the senior management.

4.3.3   STEPS AND RATIONALE FOR NEW TECHNOLOGY

Initially, the important information needs of the various branches were identified and the computer applications required to support these needs were created. The computer applications were implemented in a manner that facilitated sharing of data between branches and allowed the data to be accessed from a central source

through Macintosh personal computers , located throughout the organisation. The objective was to ensure that the value received from the data assets was maximised so that investments in information technology provided an increased level of service at lower per unit cost. As stated in the Perdana Confidential Information Services Document, the benefits include:

i) use of computerised information that will directly support Perdana's business needs and company policies.

ii) greater return on the technology investment.

iii) reduction in time to implement company strategies because accurate information is more accessible through the new data bases developed based on business needs.

iv) bring about better understanding of Perdana's business functions through effective information distribution and reliable technical environment for managing it.

v) elimination of redundancies because of integrated solutions.

vi) lower costs (time and money) for system maintenance.

vii) corporate data will be identified and defined.

viii) improve direct access to information by end users.

ix) all new systems will be developed using compatible computer technology.

x) ad hoc reporting can be done by end users creating their own customised reports.

4.3.4   APPROACH TO BUILDING THE STRATEGIC INFORMATION SYSTEM

Under this proposed new system, or structure , senior management would have more effective control and co - ordination and clearer lines of responsibility. The structure allowed for the building of a information model that is based on general functions rather than individual department or company needs. Such a structure would be more viable in this age because regardless of what business the subsidiary companies are in, most of the business units share the same functions. This would allow the building of a central corporate data that will be shared organisation resource rather than a specific subsidiary company's need.

The approach adopted in building this strategy can be looked at from four perspectives;

    (i)   the holding company's business strategies and organisation;

    (ii)   the building of an information model which will identify the information needed for the corporate central data base;

    (iii)   the applications strategy which will be drawn from the information needs relating to corporate data and fourthly;

    (iv)   the technical strategy which will look at the ways of integrating software, hardware and data communication architecture to provide the technical means to support the application strategy.

The four perspectives and their contribution to the building of an information system and strategy is visualised diagrammatically in figure 4 (A). As illustrated in the figure, the importance of identifying the organisation, its functions, what constitutes corporate data, what applications are required for the various needs of the company, all contribute to customising the system to cater for the individualised needs of the Holding company and its subsidiaries. In other words the whole Perdana discourse community. Each of the four perspectives will be discussed individually in greater detail.

Figure 4 A

APPROACH TO BUILDING THE IS STRATEGY

ORGANISATION — FUNCTIONS — CORPORATE DATA — APPLICATIONS

BUSINESS STRATEGY

INFORMATION MODEL

APPLICATIONS STRATEGY
TECHNICAL STRATEGY

HARDWARE ARCHITECTURE

DATACOMMS. ARCHITECTURE

SOFTWARE ARCHITECTURE

STANDARDS

Comprise

Serve
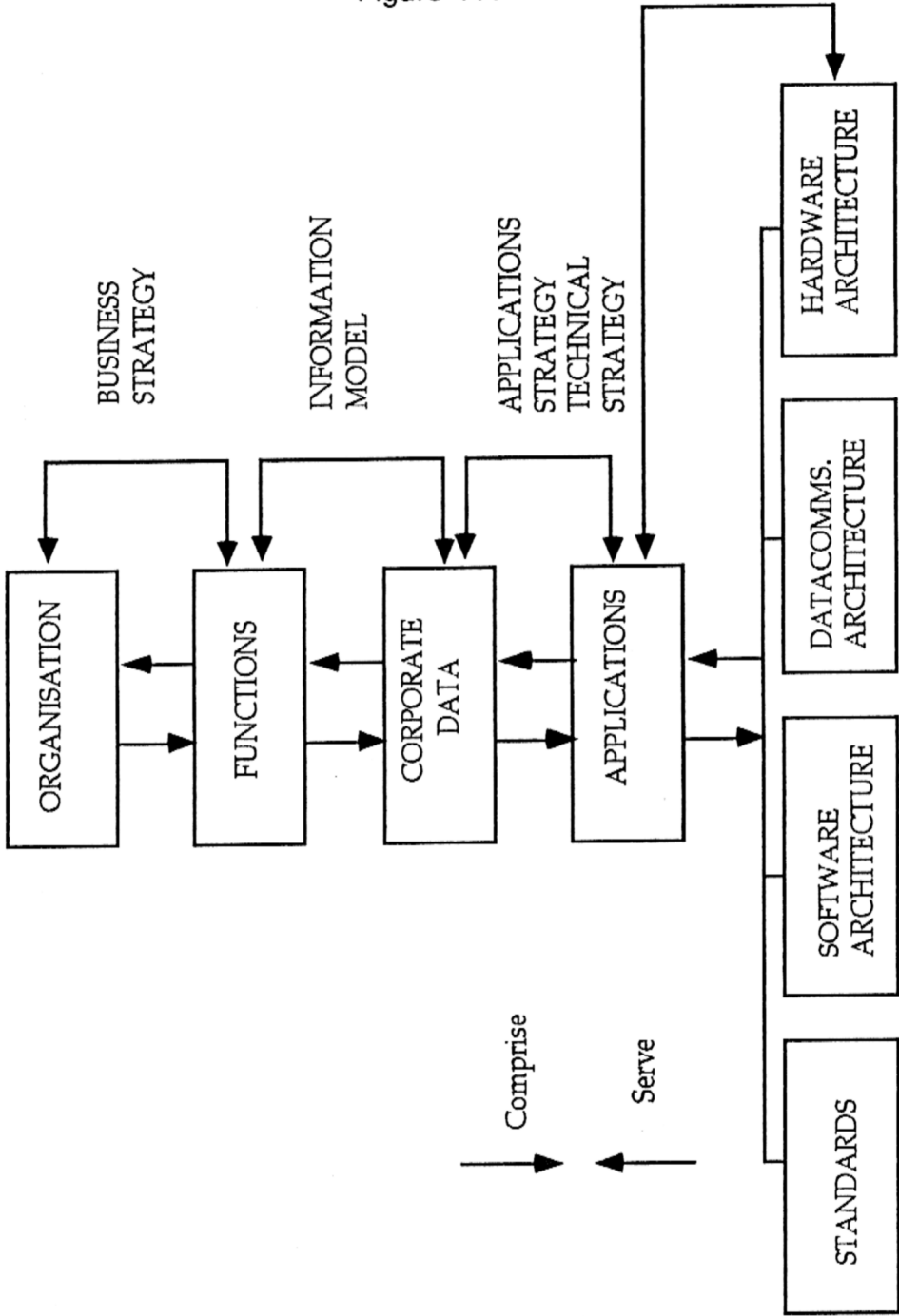
Source: Adapted from Perdana Confidential Information Services.

4.3. 4.1 BUSINESS AND ORGANISATION - THE FIRST CONCERN

The first task was to identify the participating industries and all the subsidiaries under Perdana. Basically the business interests fall under these divisions.

1.   Telecommunications

2.   Metal Based Industries

3.   Information technology

4.   Others

4.3. 4.2 THE CREATION OF AN INFORMATION MODEL - THE SECOND CONCERN

The information model is an important aspect of the planning, because information has a structure of its own irregardless of where it is gathered from or how it is used. Therefore, understanding the information structure within the Perdana group of companies will lead to a more efficient design of the databases and computer applications for the company as a whole. This will, in turn , allow sharing of data between applications, users, help maintain data consistency, integrity as well as reduce data duplication.

4.3. 4.3 THE IDENTIFICATION OF BUSINESS FUNCTIONS - THE THIRD CONCERN

The next task was to identify Perdana's fundamental business activities or social processes regardless of which subsidiary company or who actually performed them. The focus was on the process and not the person. It is a view of Perdana's businesses processes and not an organisational structure nor is it a set of departmental responsibilities.

Perdana's business community's fundamental business activities involve one or a combination of and/or all three main activities below.

    i)   Trading

    ii)   Manufacturing

    iii)   Servicing

The main social processes generic to the activities of the Perdana discourse community are listed in point form below:

1. Marketing

Defining strategies for selling products and services

2. Purchasing

Buying products and materials for use in manufacturing and/or resale

3. Production

Fabrication of finished products. This may mean different things to different units example it may mean manufacturing of pay phones for the Pay phone group and software design and development for the group involved in software development.

4. Warehousing

Receipt, store and disbursement of materials and products.

5. Sales and Distribution

Selling of products and services to customers.

6. Customer Support and Services

Providing after sales services.

The supporting functions crucial for the carrying out of the

social processes mentioned above but are inherent

throughout each business unit are those pertaining to:

7. Financial and Accounting

8. Human resource management

9. Information management

10. Asset management

11. Quality Assurance

All the above functions can be broken down into further sub-functions

but it will not be done here as the purpose is only to show the general

functions of the Perdana discourse community. All the above are

diagrammatically depicted in the figure 4 (B).

PERDANA BUSINESS FUNCTIONS

Management

Financial & Accounting

Cust. Sup & Service

Sales & Distribution

Human Resource management

Warehousing

Asset Management

Purchasing

Production

Marketing

Quality Assurances

Information Management
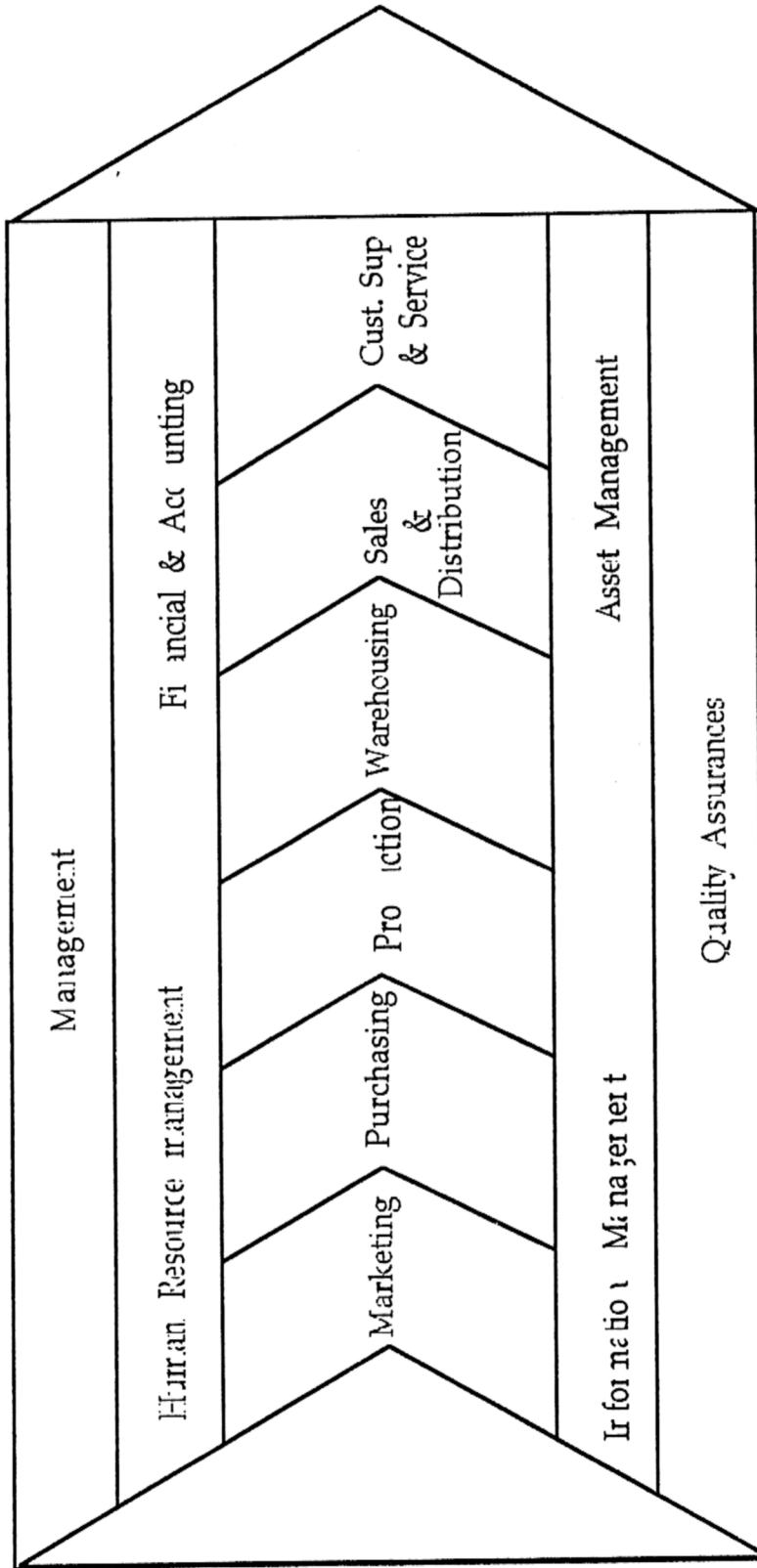
Source: Adapted from Perdana Confidential Information Services.

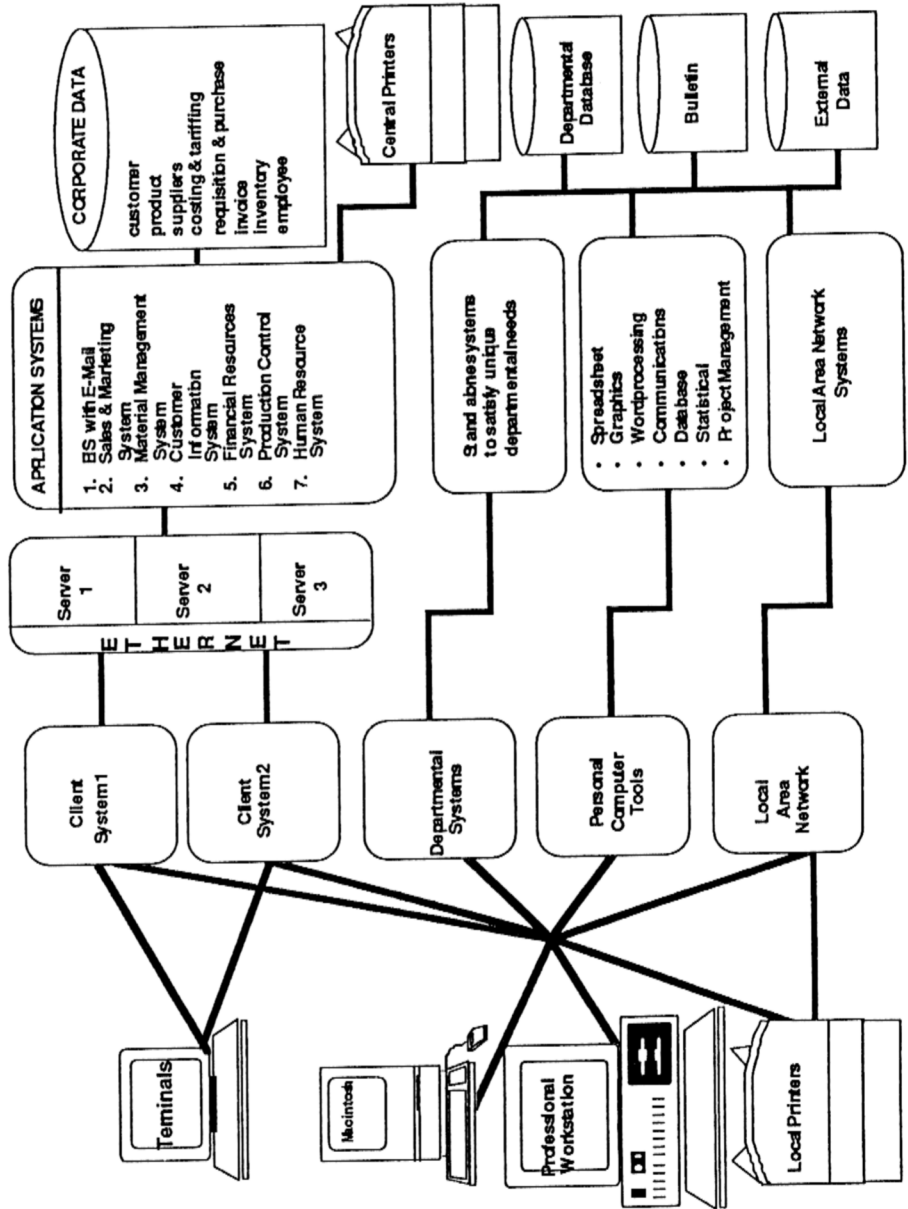- Main functions are embodied within the arrow.
- Supporting functions are represented as horzontals serving all main functions.

4.3.6   TECHNICAL STRATEGY

This refers to the strategy involved in integrating software, hardware and data communications architecture to provide the technical means of supporting the application strategy. The purpose behind this strategy was to encourage more decentralised access to information for users with appropriate security measures to ensure that there was no abuse. It was also with the aim of eliminating duplication in data and storage. Moreover, there will be ready access to information regarding the whole group of companies. It would keep costs down and yet be efficient and productive. Not all information is required to be stored on the central system. What goes on in the central system is what has been identified as 'corporate data'. Corporate data is that which is shared between and among many applications and users within the Perdana discourse community. The technical environment for corporate data call for a centralised database with distributed applications running on smaller machines all linked via EtherNet. This implies a Client/Server relationship with mainframes/minis acting as file servers. I/O 's and back- end processing for databases. Front end processors (example Micro Vax, Macintosh, IBM PCs) are to run the application. Both the technical strategy and the technical environment is conceptualised in the figures 4 (G) and 4(H) respectively.

Figure 4 G

CONCEPTUAL VIEW OF APPLICATION AND TECHNICAL STRATEGY

CORPORATE DATA

- customer
- product
- suppliers
- costing & tariffing
- requisition & purchase
- invoice
- inventory
- employee

APPLICATION SYSTEMS

1. ES with E-Mail
2. Sales & Marketing System
3. Material Management System
4. Customer Information System
5. Financial Resources System
6. Production Control System
7. Human Resource System

Server 1
Server 2
Server 3

ETHERNET

Client System1
Client System2
Departmental Systems
Personal Computer Tools
Local Area Network

Central Printers
Departmental Database
Bulletin
External Data

Stand alone systems to satisfy unique departmental needs

- Spreadsheet
- Graphics
- Wordprocessing
- Communications
- Database
- Statistical
- Project Management

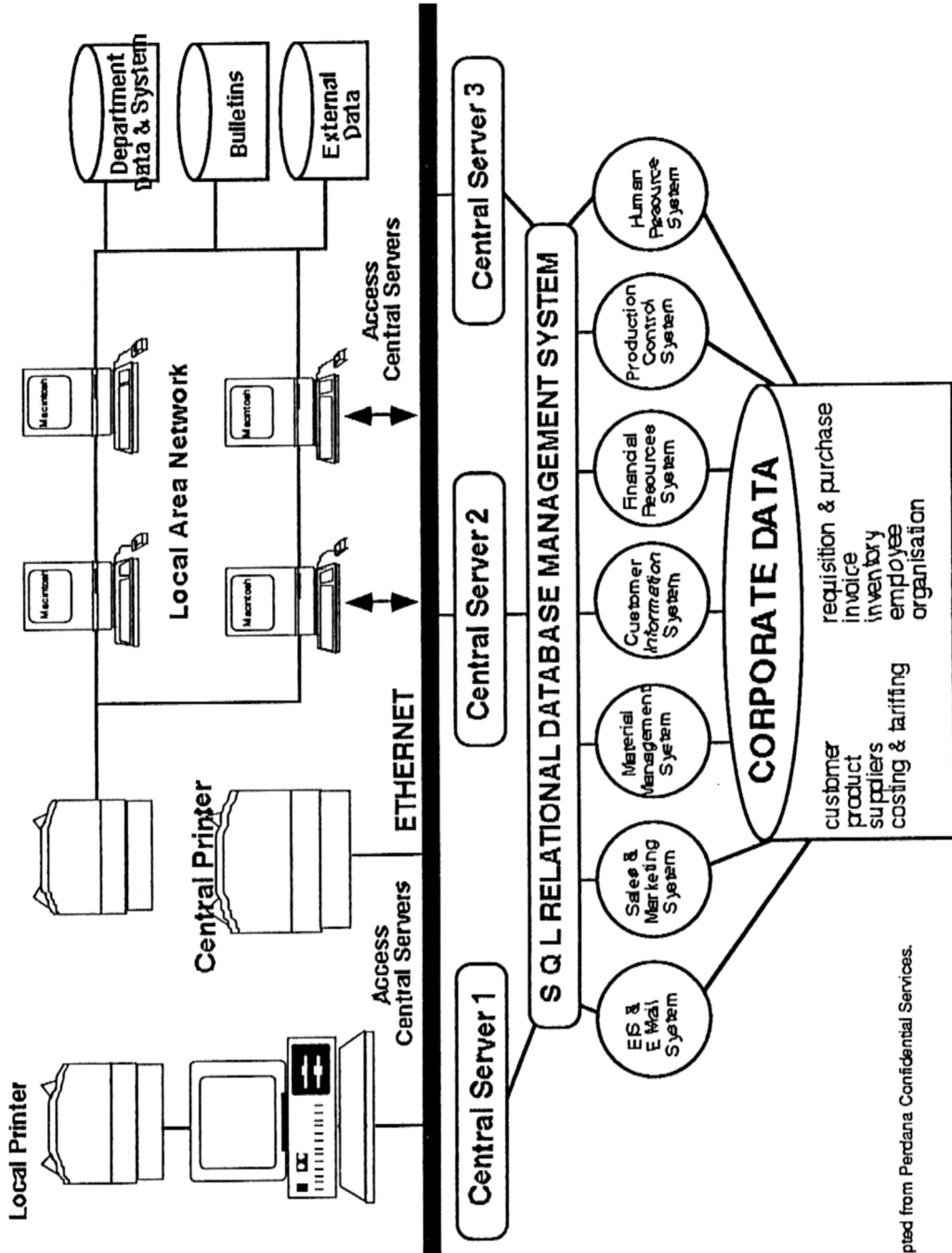Local Area Network Systems

Terminals
Macintosh
Professional Workstation
Local Printers

Source: Adapted from Perdana Confidential Services.

Figure 4H

CONCEPTUAL VIEW OF THE TECHNICAL ENVIRONMENT

Local Printer

Central Printer

Local Area Network

Department Data & System

Bulletins

External Data

Macintosh

Macintosh

Macintosh

Macintosh

Access Central Servers

ETHERNET

Access Central Servers

Central Server 1

Central Server 2

Central Server 3

S Q L RELATIONAL DATABASE MANAGEMENT SYSTEM

ES & E Mail System

Sales & Marketing System

Material Management System

Customer Information System

Financial Resources System

Production Control System

Human Resource System

CORPORATE DATA

customer
product
suppliers
costing & tariffing

requisition & purchase
invoice
inventory
employee
organisation

4.4   IMPLEMENTATION OF LOGOS

4.4.1   ORDER AND CRITERIA

The order of implementation was based on the following criteria:

i)   applications that create data should be implemented before those that use data

ii) critical systems that support corporate objectives and business needs to be set up first

iii) high impact systems affecting majority of users deserve priority

iv) high and early pay back systems which help save or generate money because it makes good economic sense to do so

The corporate application systems priority were evaluated on each criterion. (Smaller number denoting higher priority). The results of this evaluation are tabulated in the table 4 (I) below. Based on the rating, the implementation of the system and its related modules took on the following order:

1.   Financial Resource System

2.   Material Management system

3.   Sales and Marketing System

4.   Customer Information System

5.   Product and Control System

6.   Human Resource System

Table 4 I

Corporate application System Priority

CRITERIA	(I)	(II)	(III)	(IV)	OVERALL RATING
Application System	create data	critical to many	high impact	high/ early payback	
1. Financial Resource	1	1	1	5	8
2. Sales & Marketing	2	4	3	4	13
3. Material Management	3	2	2	1	8
4. Customer information	4	3	4	3	14
5. Human resource	5	6	6	6	23
6. Production control	6	5	5	2	18
7. EIS with Email	parallel	parallel	parallel	parallel	

Perdana Holdings began rolling out its Strategic Information System Plan (SISP), explained above, in early 1992 by designing and implementing the necessary infrastructure required to transform the Organisation. These included:
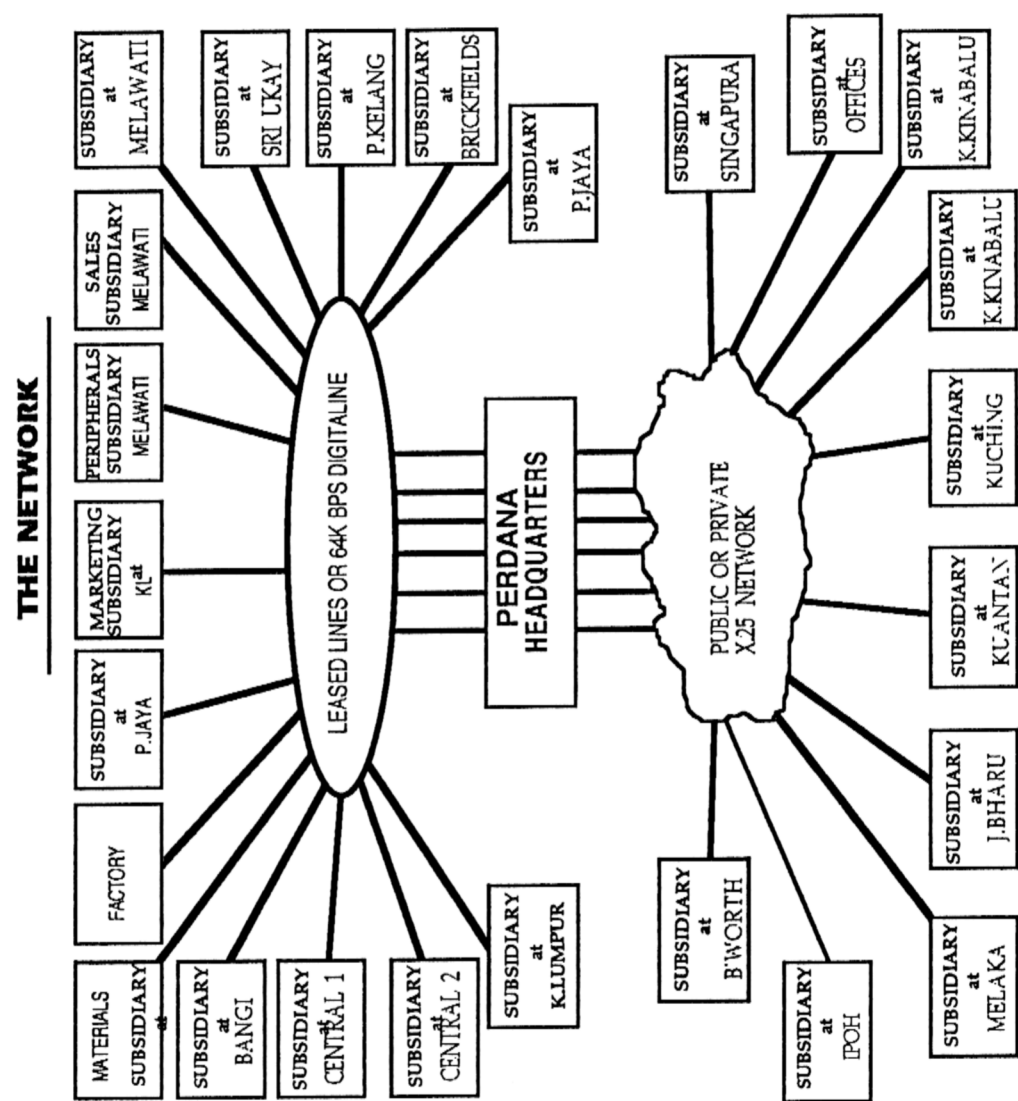
- Establishing LAN within each subsidiary, networking all personal work stations and peripheral devices at the location.

- Establishing a network of leased circuits linking all subsidiary companies and divisions at 25 different locations in the Klang Valley to any one of the 3 communication hubs/centres.

- Setting up bridges, routers and servers at appropriate locations in the network to maintain performance.

- Setting up dial-up ports at each hub for users on the move and also for business partners who are allowed controlled access to the databases. (This has proven to be extremely useful especially for top management on business trips overseas but needing to touch base with various offices).

- Increasing the ratio of work station to employees. Current ratio is almost 1:1 for managerial level and 1:3 for executives.

Depending on the number of users at each location, the LAN provided was a mixture of thick EtherNet (for backbone), 10 BASE-T, 10 BASE-2 and phonenet. User nodes were either on BUS or STAR topologies, or both in the case of management users. As Perdana Holdings user platform is mostly Macintosh computers, the network protocols were thus EtherNet and AppleTalk. Various servers were hooked up to the network providing print, file, E - mail and database services. Inter connectivity was via TCP/IP. In short, the intra and inter subsidiary LAN/WAN infrastructure transformed Perdana Holdings into a seamless organisation transcending geographical,

organisational, functional and reporting boundaries. This network and inter connectivity between the parentcompany Perdana and its subsidiaries is shown in figure 4(J).

Figure 4 J

THE NETWORK

SUBSIDIARY at MELAWATI
SUBSIDIARY at SRI UKAY
SUBSIDIARY at P.KELANG
SUBSIDIARY at BRICKFIELDS
SUBSIDIARY at P.JAYA
SUBSIDIARY at SINGAPURA
SUBSIDIARY OFFICES
SUBSIDIARY at K.KINABALU

SALES SUBSIDIARY MELAWATI
PERIPHERALS SUBSIDIARY MELAWATI
MARKETING SUBSIDIARY KL at
SUBSIDIARY at P.JAYA
FACTORY
MATERIALS SUBSIDIARY at
SUBSIDIARY at BANGI
SUBSIDIARY CENTRAL 1 at
SUBSIDIARY CENTRAL 2 at
SUBSIDIARY at K.LUMPUR

LEASED LINES OR 64K BPS DIGITALINE

PERDANA HEADQUARTERS

PUBLIC OR PRIVATE X25 NETWORK

SUBSIDIARY at K.KINABALU
SUBSIDIARY at KUCHING
SUBSIDIARY at KUANTAN
SUBSIDIARY at J.BHARU
SUBSIDIARY at MELAKA
SUBSIDIARY at B'WORTH
SUBSIDIARY at IPOH

Source: Adapted from Perdana Confidential Information Services

The first application to run on this Groupwide infrastructure was the Electronic Mail system. Perdana Holdings information system strategy was to deliver a 'quick win high impact' program which provided some business benefit in a very short time. The benefit may be quite small but was invaluable in meeting short term targets for gaining confidence with members, understanding, plus support from management users for the more extensive work to follow.

This strategy had proven to be a highly successful. Demand for E - mail addresses exploded and at the time of the research, Perdana Holdings had more than 650 E - mail users on its Klang Valley network alone. the numbers were expected to increase tremendously.The application was used ubiquitously throughout the Group and has snowballed information sharing and exchange within the organisation in an informal, efficient, and effective way. Most importantly, it won over and converted the management to become active users of IT. Perdana Holdings jocularlytermed this as as 'human systems engineering'.

To further enhance information sharing, all office application systems such as word processing, spreadsheet, schedule, project management and presentation software were standardised throughout the Group. The network also allowed Perdana Holdings to share peripheral devices such as laser printers, external disc drives, colour printers etc. thus further optimising their usage. Most importantly, it facilitated formation of 'virtual' project work groups. Resources were pooled from various entities/locations within the Group based on knowledge, skills and experience required for a particular project. The ease with which information could be shared and exchanged enabled

work group/s to be set up and managed without team members needing to be displaced and physically assembled in one location. For example, if one of the subsidiary company needed the approval signature from someone at headquarters, the document was initiated at the level of the subsidiary company but printed out at the office of the person concerned at headquarters. The person concerned then puts his signature on the document and dispatches it out. This will prevent time waste and labour costs as the document is immediately sent to headquarters and a person need not be physically displaced to send the document to headquarters.

Perdana Holdings extended this network to all its offices at more than 40 locations throughout the country. At the time of the investigation one subsidiary company had WAN connections linking its 8 regional offices to the main database in HQ via X.25 packet switching networks. In line with business requirements, this will be expanded to include all its 40 branch offices.

The legacy piece-meal systems which were developed in the early 80s using the then prevailing technology were phased out to make way for an integrated office system which was implemented Groupwide. For this purpose, Perdana Holdings licensed <u>Logos</u> from a German company in mid 1993. Perdana is the first company in the whole of Malaysia to embark on this system and is one of the first in South East Asia. The system caters for all core and supporting activities of the Group.

4.4.2   LOGOS   THE 3- TIERED CLIENT /SERVER

As already mentioned this three tiered client server application adopted by Perdana is The System or Logos as referred to in this study. A client server can be generally defined as:

> A client server is the division of application
> processing - online presentation, application
> logic, and data management - in a network
> environment among front-end or client
> work stations, and back-end or database
> server machines (Peoplesoft. Client/server
> solutions: Beyond the Hype).

By separating into three tiers (presentation, functionality servers, and data) the organisation gains the following:

* Freedom to select any database management system

* Dynamic Backup

* Freedom to select any graphical user interface

* Flexibility to add new technologies as needed

* On-line access to any data sources

* Lower cost of hardware

* Freedom to select the hardware of the appropriate size

* Openness for continue added value

* Support for migration strategy from old systems

* Preservation of your current hardware and software investment

* Parallel development of applications

* Different user views of data

* Security

* High transaction, two -phase commit

* Robustness and fault tolerance

(Donovan, 1994:51)

Logos adopted by Perdana is a client-server based application running on UNIX platform with full graphical user interface on the client work stations. Perdana Holdings utilises HP-9000 series 800 as its main database servers while client work stations are existing Macintosh computers which are already networked. The servers are connected to the thick EtherNet backbone at HQ. All access, local and remote is via the LAN/WAN infrastructure already established.

With top management sponsorship, Perdana Holding's streamlining team comprising of business users and IS &T personnel documented the target processes as performed currently. This included the variants which were practised in some business units. They were then assessed and reworked to eliminate as much bureaucracy, complexity, duplication, inconsistency, non value adding activity, wasted cycle and process time plus other inefficiencies possible. The result was a set of streamlined and normalised processes throughout the Group which were then implemented or appropriately mapped into the Logos System suite of applications. This involved 'change' in one form or another and training in executing the streamlined processes was provided and seen as crucial to the acceptance and success of Logos.

While the SISP outlined the strategic use and management of Information Technology to support business needs and objectives, its implementation provided Perdana Holdings with an opportunity to streamline some of its major business processes. In the past, Perdana Holdings granted a high degree of management and operations autonomy to its subsidiary companies and divisions. While this heightened creativity and innovations in their wide ranging activities,

over time, their diversity had led to disparate processes and workflows throughout the Group. There was thus a need to consolidate resources throughout the group.

Managing Information Technology in Perdana Holdings no longer just meant data centre operations, EDP functions, software development & maintenance and systems & network administration. These traditional concerns have evolved to encompass broader perspectives and more general issues of information systems management and business integration. This redefined role required an understanding of business needs and included management of change. It demanded a combination of skills from IT managers in areas of technology, strategy, operations and people management.

4.4.3   ADVANTAGES OF LOGOS

From Perdana Holdings perspective, attaching information technology capabilities to merely automate existing business practices did not increase the organisation's core competencies. More importantly, Information Technology was valued and managed as an enabler for transforming the organisation.

The main objectives of this approach towards the evolution of an integrated computer environment was to ensure that the value received form the data asset was maximised so that investments in information technology provided an increased trait of return to the business and/or increased level of service at lower per unit cost. This means:

1.   Rich Functionality

It would provide the functionality needed to address key business requirements.

2.   Ease of Use and productivity

A well designed user interface that anticipates the flow of the business processes as well as the features needed to perform specific functions. Graphic user interfaces that adhere to common user access industry standards make data entry and routine tasks easier, faster and more fun. It would help reduce the learning curve for users familiar with other business software tools such as word processors and spreadsheets.

3.   Information Access

There will be sophisticated information retrieval, executive information, decision support, and reporting tools as well as an efficient database design. Ordinary users can easily create queries, extract and manipulate data and design reports that facilitate data analysis. Information can be imported and exported from one department to the enterprise -wide databases into the desktop tools of choice for word processing and spreadsheets.

4.   Flexibility and Adaptability

This would empower project team to speed customisation, implementation, upgrades and

maintenance. Tools would be available for manipulating information, projecting trends and working smarter. There is also the ability to adapt and extend applications or functional modules to reflect the organisation's unique structures and operating policies.

5. Security

Security functions could be built to protect sensitive accounting, payroll and personnel information. Information can be restricted as well as access granted. The business applications should extend the security delivered with the databases and network to enable system administrators and managers to dictate who can use what portions of the online system when as well as who can perform batch processes and queries against databases.

6. Integration

The client server software will provide a seamless addition or enhancement to the total system solution and augment the core business systems as well as the standard suite of desktop tools. and fit the into long-term systems integration plan.

7. Open Systems

Open systems should provide freedom of choice in enabling one to choose how one wants to configure the computing environment and select the hardware,

database and additional software components that best suit the organisation;s requirements.

8. **Lower Costs**

The best advantage is that it is cost saving. After a one time investment, the new system would be less expensive to install and operate than the legacy systems of old.

9. **Investment Protection**

The integrated system would provide long term solution with minimal risks. The software industry is changing so rapidly that one needs to keep up with technology trends. While no software investment is risk free one must be aware that there could be changes in business requirements, competitive pressures, changing workforce demographics, and other factors which can place new demands on the organisation and generate new business requirements. Consequently, a product capability unimportant two years ago can be critical today or tomorrow. A good technology investment therefore, should be responsive and thrive in the dynamic business environment by accommodating change easily.

4.5   OTHER ISSUES

A review of recent publications on management indicate that books on total quality management, total quality control, total quality excellence and business process reengineering are a priority in many organisations involved in manufacturing. With Logos, comes new techniques that allow manufacturing enterprises to collect, manage, and distribute critical quality information throughout the enterprise. Organisations like Perdana have taken the radical step of business process reengineering as indicated in their SISP. Perdana's attempt in redefining the entire business process has resulted in dramatic changes to the company managed information or corporate data as they call it. The system changes made by Perdana indicate that flexibility and reconfiguring system applications (customising to individual needs) are critical to business survival. The result of all this research and market study is Logos which is feature rich, parameter -driven, one that emphasises quality management, and is adaptable to fundamental changes in business process.

As shown by the changes made in Perdana, business process is more than just improving a business function or introducing new streamlined ways of completing business transactions. It is about fundamental rethinking and changing the way business is done. Although there are many different views on how to apply business process reengineering, it is very clear that IT is a part of this process. In most cases, IT is the key to allowing the business to change. Organisations like Perdana understand why information is needed and they do not process it just because it exists. Information and its use have been carefully managed and controlled to avoid waste. Efforts

were focussed on those areas which needed it most. It is obvious from the SISp, that the need to identify the flow of critical information is fundamental in driving organisational change.

As the system adopted becomes more feature rich and complex, implementation may take a long time but that is taken care of by doing away with the traditional vast array of manuals that one associates with the installation of any technology. Companies are now issued with manuals on compact discs (CD). This makes reference, key word searching, and documentation processing much easier, as it can be done online with just a key stroke. It is also readily accessible and very user friendly. Moreover, in terms of documentation, entering client details on start up automatically writes headings and fully formatted templates of genres are generated for customisation by the member or for use as is.

Documentation is automatically collated and indexed. Members do not require much skill in writing as most documents are machine generated. What the users should know is information and how to use it and where to use it in the document generated. They need to only fill in the required information at the specific places directed by the machine. This approach has shown immediate benefits in terms of standardising documentations as well as improving the quality of documentation. Documentation is not left to the mercy of lack of proficiency or lack of content. Documentation is inbuilt into the system and it has an online help function to prompt those unfamiliar with document writing. For example, if a user is unclear on what to write in a particular section of a document, he/she has just to click on the file

required and the system will actually prompt by listing the items to enter into the document.

Also when one enters information at one department, be it at the sales or accounting department, the information is 'posted' automatically to all the relevant places in the system that are affected by this new change initiated at the sales or accounting level. In other words near real time in terms of updates are possible. Computerisation of creating documentation and other amenities were done by embedding and integrating the methodology directly on to Logos. To illustrate the possibilities of the system one can look at this example. If a team is working on a project and if at the operations analysis stage of the project involves documenting the actual operations of the company, the project team, can make their decisions based on real data that is up to date and readily available online.

The whole team involved in the project can be taken through a process flow diagram displayed on any personal computer during interactive discussions and indications as to where various decisions are made , when a process starts and completes, the control points, etc can all be generated if required. These decisions are keyed in and the broad parameters and possible decision points will be made available to the project team straightaway.

4.5.1 QUALITY CONTROL

There is also a very important feature available on the system. This feature, known as quality collection systems, has important implications for it ensures Malaysia's participation and acceptance in the international arena. These quality collection systems are now an

important part of quality management. In the US, for example, to become a preferred supplier (that is to be selected from a host of contenders as the supplier for a particular product to the US) , one must demonstrate a complete and exact quality standard that covers all aspects of one's processing. In this last decade, the international standard for quality systems has become increasingly important. The International Standard Organisation details (ISO 900) is the international standard governing the operation of a company's quality system. There are a number of strands for example - 9001,9002.9003 and 9004 covering different types of manufacturing and service processes. Achieving ISO 900 registration (quality collection system) does not in itself improve the quality of the output of the company, but does provide the mechanisms necessary to evaluate it.

Logos supports this process and there is also flexibility to handle the different standards requirements throughout the world. For example, there is the British standard, then there are other European standards, and American standards, etc. Consequently, the system must provide a method of collecting the required data for the various standards by providing tools to evaluate as necessary and also easily by quality personnel and others in the company. ISO 900 provides an internationally recognised mechanism for managing quality. In addition, in the manufacturing sector as well as in other sectors we all know that mistakes or errors always happen. It does not matter if the company has ISO 900 or the Malaysia quality award, what is important is that the purpose of ISO900 is to ensure the sensible application of management controls to reduce the number of mistakes made. This helps to ensure errors are recognised quickly and early in the development process as possible and resolved efficiently and

effectively. Once the problem is resolved, lessons learnt are disseminated through the system across the company and its subsidiaries for the benefit of all. Therefore, there is continuous update, and training ,going on all the time, and quality is maintained.

The management, through dissemination of information and training, ensure that similar mistakes are not repeated in the other subsidiaries. The ISO 900 thus acts as an international baseline to measure the company management system for consistency and completeness. At the same time the company can also use aspects of the findings to upgrade and better themselves thereby ensure maintaining the the competitive edge. In addition, cost is reduced by identifying faulty or poor grade material early in the manufacturing process, and production planners and engineers will have available to them the tools to collect and analyse quality data.

Besides that, data collection is automatic and engineering time is more effective when doing data analysis and developing quality data plans. Furthermore, monitoring production yield ensures that production does not start with insufficient material to ensure commitment dates to customers are achieved. There is also provision for inspection and monitoring customer finished products to avoid returns. This provision is essential to achieve the highest possible quality in customer services.

Perdana and market research has shown that for a quality management systems like Logos to be successful, it must have the total commitment of management at all levels. The level of quality to be adopted across the company should be clearly stated and defined. A

common approach should be adopted across all projects. A comprehensive set of procedures is fundamental to the operation of a successful quality system . These procedures should cover management controls needed for the complete development life-cycle and all project -related functions. Managers use quality controls throughout the system development life-cycle. All these are ensured with Perdana's SISP. In today's rapidly changing environment Perdana is meeting the challenge by creating the system to handle fundamental changes in business operations. The power of Logos is in its ability to handle change and focus on quality management.