



UNIVERSITI PUTRA MALAYSIA

**FACULTY OF COMPUTER SCIENCE & INFORMATION
TECHNOLOGY ICT STRATEGIC PLAN**

ZAIMAH MOHD. NOOR.

FSKTM 2004 12





**Faculty of Computer Science and
Information Technology
ICT Strategic Plan**

**ZAIMAH MOHD NOOR
GS10379**

A Project Report Submitted to the
Faculty of Computer Science and Information Technology
In partial to Fulfilment of the Requirement
Master in Computer Science

Universiti Putra Malaysia
2003/2004





Date: of , 2004

Project Supervisor
Faculty of Computer Science and Information Technology
Universiti Putra Malaysia

MRS NORHAYATI MOHD ALI

Has been received, checked and approved by

ZAIMAH MOHD NOOR
GS10379

Has been prepared by

**Faculty of Computer Science and
Information Technology
ICT Strategic Plan**



This Project on

SUPERVISOR ENDORSEMENT AND CERTIFICATION



ICT Strategic Plan

ZAIMAH MOHD NOOR
MASTER IN COMPUTER SCIENCE
(MANAGEMENT INFORMATION SYSTEM)
GS10379

ABSTRACT

Organisations today are challenged to compete on a global level to achieve more by using fewer resources. With the advancement in technology, organisations have strived to find ways to leverage on technology to achieve excellence. Clear examples are how organisations use technology in procurement, human resource management and communication among others. However, research has found that most organisations only obtained 20%-30% of the potential benefits from the investment in technology. This gap between the investment and the benefits needs to be addressed by integrating all business components to form a practical strategic IT plan. The Faculty of Computer Science and Information Technology and its departments are embarking on the development of a strategic plan on how best to leverage on technology. Undoubtedly, there are numerous areas where technology can assist such as Operations Management, Information Gathering and Sharing amongst others. This is the proposing to develop the **ICT Strategic Plan for FSKTM**. The approach to Information Technology Strategic Planning will strongly complement FSKTM's ICT environment. The approach combines the best methods to develop an appropriate FSKTM's ICT Strategic Plan, through the experiences in ISP development for other Government departments in Malaysia.

ABSTRAK

Pelbagai cabaran harus dihadapi oleh sesebuah organisasi untuk bersaing mengejar kemajuan dan kejayaan dalam era globalisasi ini. Malahan, sesebuah organisasi dikatakan dapat memperoleh kecemerlangan seandainya kemajuan teknologi turut diimplemen dan diadaptasi dalam bidang penguatkuasaan, pengurusan sumber manusia dan juga komunikasi. Kajian telah menunjukkan bahawa organisasi kini hanya memperoleh 20% hingga 30% pulangan untuk kos pelaburan dalam bidang teknologi. Jurang perbezaan ini akan dapat diatasi seandainya sesebuah organisasi mengambil kira semua aspek perniagaan di dalam pelaksanaan Pelan Strategi Teknologi Maklumat. Susulan dengan pendedahan ini, Fakulti Sains Komputer dan Teknologi Maklumat, Universiti Putra Malaysia berusaha untuk membina satu **Pelan Strategi Teknologi Maklumat dan Komunikasi** bagi tujuan membangun dan mengoptimumkan penggunaan teknologi dalam pengurusan organisasi bagi mencapai visi dan misi fakulti.



Terms and Abbreviations

Term/Abbreviation	Meaning
CEO	Chief Executive Officer
CIO	Chief Information Officer
CSF	Critical Success Factor
DLL	Dynamic Link Library
FSKTM	Faculty of Computer Science and Information Technology
HR	Human Resource
ICT	Information and Communication Technology
IS	Information Systems
ISP	Information Communication Technology Strategic Plan
IT	Information Technology
LAN	Local Area Network
MAMPU	Malaysian Administrative Modernisation and Management Planning Unit
TA	Target Applications
UPM	Universiti Putra Malaysia

Table of Content

1	INTRODUCTION	12
1.1	PROJECT BACKGROUND.....	12
1.2	PROJECT OUTLINE.....	14
	1.2.1 Business and Services Capabilities	15
	1.2.2 Technical	16
1.3	PROJECT OBJECTIVE	17
2	LITERATURE REVIEW	20
2.1	INTRODUCTION.....	20
2.2	THE DEFINITION	23
	2.2.1 Definitions of Strategy.....	23
	2.2.2 Definitions of Planning	25
	2.2.3 Definitions of Strategic Planning	26
2.3	THE HISTORY OF STRATEGIC PLANNING	31
2.4	THE EVOLVING NATURE OF STRATEGIC PLANNING IN ORGANISATIONS	35
2.5	COMPARISON BETWEEN STRATEGIC PLANNING AND LONG-RANGE/CONVENTIONAL PLANNING	38
2.6	ICT STRATEGIC PLANNING	40
2.7	THE ELEMENTS FOR SUCCESSFUL ICT STRATEGIC PLANNING PROCESS.....	43
2.8	CHALLENGES FOR ICT STRATEGIC PLANNING	46
	2.8.1 Reviewing Benefits	46
	2.8.2 Managing Business Change.....	47
	2.8.3 Assessing Organizational Competencies.....	48
3	METHODOLOGY	50
3.1	INTRODUCTION.....	50
	3.1.1 Questionnaires and Interview Session.....	52
	3.1.2 Questionnaire Respondent List	54
3.2	THE MAMPU'S GUIDELINE	55
3.3	STAGE 1: ANALYSE BUSINESS ENVIRONMENT.....	61
	3.3.1 Phase 1: Develop Agency Overview.....	62
	3.3.2 Phase 2: Review of Current Business Environment	67
	3.3.3 Phase 3: Identify Areas of Potential Strategic Advantage.....	76
3.4	STAGE 2: ANALYSE ICT ENVIRONMENT	81
	3.4.1 Phase 1: Perform ICT Assessment.....	83
	3.4.2 Phase 2: Recommend Short Term Action	108



3.5	STAGE 3: DEVELOP ICT STRATEGY	110
3.5.1	Phase 1: Identify ICT Opportunities.....	111
3.5.2	Phase 2: Define Target Applications	118
3.5.3	Phase 3: Develop Technology Strategy	127
3.5.4	Phase 4: Develop ICT Governance Framework.....	132
3.6	STAGE 4: DEVELOP IMPLEMENTATION PLAN.....	139
3.6.1	What is an Implementation Plan?	140
3.6.2	Phase 1: Develop Implementation Roadmap	141
3.6.3	Phase 2: Estimate Financial Implications	150
4	THE RESULTS	155
4.1	INTERIM REPORT	155
4.2	HUMAN RESOURCE REPORT:.....	156
4.3	ICT STRATEGIC PLAN REPORT:.....	156
5	CONCLUSION	159
6	BIBLIOGRAPHY	162
7	APPENDIX	166



List of Figure

Figure 1: Evolution of Strategic Management Maturity	36
Figure 2: ICT Strategy Approach	57
Figure 3: Enterprise Structure	64
Figure 4: The 5 areas of ICT assessment.....	82
Figure 5: ICT Strategic Grid.....	104
Figure 6: Systems Audit Grid	106
Figure 7: Target Application Portfolio (example).....	123



ICT Strategic Plan: Introduction

1 INTRODUCTION

1.1 Project Background

The Malaysian Government, through the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) has emphasis all Ministries and government agencies in the country to develop their own five (5) years Information Communication Technology Strategic Plan (ISP).

The ISP will serve to achieve the following objectives:

- i. To specify the directions that will be taken by the ministry or the agencies in developing their Information Communication Technology (ICT) capabilities for the next five (5) years.
- ii. To align the ICT initiatives of the organisation with its strategic vision and goals.
- iii. To identify and develop the implementation plan for key ICT projects of the organisation.
- iv. To align the organisation's ICT projects with the government's Integrated Electronic Government plan.

- v. To avoid or to minimise the implementation of ad hoc ICT project by the government agencies.

In a response to this outline, this project is an initiative to formulate a strategic plan for Faculty of Computer Science and Information technology (FSKTM) that will serve to provide a blueprint for the development and management of ICT infrastructure (which includes system, application, hardware, software, network and security) in the faculty and its departments. The blueprint will identify the ICT needs which will support the strategic mission and vision of the faculty and its departments. The strategic plan that will be developed under this project will be based on the guidelines that have been recommended by MAMPU.

1.2 Project Outline

In this section, the ideas and understanding of the strategic plan of FSKTM are crafted based on the following guidelines:

"The plan must be practical taking into consideration factors such as technology, human resources and time cost effort."

An ICT strategic plan is more than just an automation list of the existing processes coupled with a website. The understanding of an ISP includes a business analysis to identify how best to deliver FSKTM's services to the customers. In addition to that, process and back office operations will also be studied to enable FSKTM to best leverage on technology to achieve efficiency. The development of Strategic Plan according to the objectives set forth by FSKTM.

1.2.1 Business and Services Capabilities

To identify the core business and services capabilities to support the operations of FSKTM is crucial to the success of this project. This ensures that the ISP focuses on high impact and valuable initiatives.

Business capabilities refer to all aspects of the organisation that is required to support the business operations of FSKTM. Examples of business capabilities of FSKTM are case processing, scheduling and internal information management i.e. reporting. New business capabilities leveraging on technology, superior processes and human performance is the end product of an ISP.

Being aware of the fact that the initiative to develop Information Technology capabilities within FSKTM is part of its strategic objectives, it is imperative that focus is given towards utilising technology to support FSKTM's Business capabilities.

1.2.2 Technical

The study will include the development of the following components:

- i. **Application Architecture:** Overall application architecture will be developed to support all the capabilities identified during the study. This architecture will identify the functionalities of each application and how each application integrates with each other. Data requirements will also be analysed.
- ii. **Network Architecture:** The network architecture required to support the Application Architecture will be designed. The network architecture will allow information sharing between all the different departments' and any data mining that be done by FSKTM. The architecture will be designed based on requirements of all the applications identified apart from the CMS and CRT.
- iii. **Infrastructure:** To support the applications identified, the infrastructure requirements report will be provided. This report contains the infrastructure requirements of each department.

- iv. **Security:** To ensure that the systems implemented are fully secured from intrusions, the security requirements of the applications will be analysed. This includes any encryption requirements, PKI infrastructure, authentication and other security related requirements.

1.3 Project Objective

The prime objective of this project is to develop a strategic plan that will guide the development of ICT infrastructure in the faculty and its departments.

To achieve this objective, the strategic plan that will be developed will focus on the following key issues:

- i. The strategic plan will support the implementation of the 8th Malaysia Plan.
- ii. The strategic plan will identify the application systems and infrastructure that needs to be developed and implemented in the faculty and its departments.

- iii. The ICT infrastructure that will be recommended for the faculty will promote the sharing of data and applications among the faculty and its departments.
- iv. The strategic plan will promote a standardisation for the operations and management of ICT infrastructure in the faculty and its departments.
- v. The strategic plan will be aligned with the strategic vision and mission of the faculty and its departments.



ICT Strategic Plan: Literature Review

2 LITERATURE REVIEW

2.1 Introduction

An ICT Strategic plan is the process of establishing a program for the implementation and use of information system in such way that it will optimize the effectiveness of the organisation's information resources and use them to support the objective of the whole enterprise as much as possible [Remenyi, 1991].

The products of ICT Strategic plan will typically include a short term plan for the next 12 to 18 months as well as a longer term plan for next three to five years. ICT Strategic plan is believed by many to be one of the most important issues facing management today. It can make a significant impact, not only in information system practices, resources and management, but also on the overall performance of the organization.

ICT Strategic plan is the concept which has been involving over twenty years. It is a development which has grown out of a realization that the hardware or software requirement

approach to information system planning was not producing adequate results for the information system department, or the organization as whole. ICT Strategic plan matching the computer applications with the objective of organisations to maximise the return on the efforts of the information system department, as well as the return of organisation's profit as a whole.

Although ICT Strategic plan has its roots in traditional strategic planning, today it places strong emphasis on how firm can identify strategic information systems which will give the organization the competitive edge.

Research conducted by the Society of Information Management in the USA shows that ICT Strategic Planning is the one of the most important issues facing the IS managers. The survey identified the key issues that elaborate what is the ICT Strategic Planning and why it is so important to organization;

- i. Strategic Planning,
- ii. Competitive advantage,

- iii. Organisational learning,
- iv. ICT's role and contribution,
- v. Alignment in the organization,
- vi. End user computing,
- vii. Data as corporate resources,
- viii. Information architecture,
- ix. Measuring efficiency,
- x. Integrating data processing, office automation and telecommunication.

Formalized strategic planning grew out of budget exercises in the America of the 1950s and spread rapidly. By the mid-1960s and throughout the 70s, strategic planning (in many forms) was occurring in most large corporations [Mintzberg, 1994].

2.2 The Definition

Here are some important terms for understanding the strategic planning process, its purpose, functions, and practices. This list begins by defining strategic planning as it applies to any organization (business or educational), moves on to define strategic planning as applied and an overview of building blocks common to any successful strategic planning effort.

2.2.1 Definitions of Strategy

Etymologically, the word *strategy* can be traced back to the Greek word *strategos*, defined as the commander in chief of the ancient Greek city. Further, *strategos* is composed of two other words: *stratos* (the army) and *agein* (to lead). By extension, the concept of strategy came to imply 'the art of the general in the conduct of war'.

The etymological meaning of *strategy* relates this concept to that of leadership. One of the leader's main roles is to formulate and implement strategy. This function of leadership implies continues flow of decisions, often made under

conditions of high stress and with incomplete, ambiguous information. Such a decision making process is an art that integrates experience with analytical and intuitive capabilities. The next step is to implement these decisions. Strategy implementation then relies on another set of leadership skills that includes the ability to communicate clearly and to mobilize the necessary people and resources to translate decisions into actions. This early conception of strategy has strongly influenced the strategy literature throughout the ages.

Arnoldo C. Hax and Nicolas S. Majluf (1996) also provide one of the most comprehensive definitions of strategy available:

- i. Strategy determines and reveals the organizational purpose in terms of long-term objectives, action programs, and resource allocation priorities;
- ii. Strategy selects the businesses the organization is in, or is to be in;
- iii. Strategy attempts to achieve a long-term sustainable advantage in each of its businesses by responding appropriately to the opportunities and threats in the

- firm's environment, and the strengths and weaknesses of the organization;
- iv. Strategy identifies the distinct managerial tasks at the corporate, business, and functional levels;
 - v. Strategy is a coherent, unifying, and integrative pattern of decisions;
 - vi. Strategy defines the nature of the economic and non-economic contributions it intends to make to its stakeholders;
 - vii. Strategy is an expression of the strategic intent of the organization;
 - viii. Strategy is aimed at developing and nurturing the core competencies of the firm;
 - ix. Strategy is a means for investing selectively in tangible and intangible resources to develop the capabilities that assure a sustainable competitive advantage.

2.2.2 Definitions of Planning

Planning is a formalized procedure to produce an articulated result, in the form of an integrated system of decisions. Thinking about and attempting to control the future are