

PROJECT INFORMATION SYSTEM
FOR PUTRAJAYA HOLDINGS SDN BHD

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Dedicated to my dearly husband, Mohd Nasir; and to my beloved parents, Haji Kamarol Zaman and Hajjah Esah Esa for being there always to give moral support and encouragement.

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Many people and forces made this project achievable. First and Foremost “Syukur Alhamdulillah”, praise to Allah SWT for his permission, strength, and patient given to us that made possible the completion on this project

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ABSTRACT

Independent information banks produces different mindset and values within the respective divisions causing misunderstanding, incoherence, and incompatibility in group communication, which results in unsound decisions that are not mutually beneficial to the group. A feasibility study was done and has shown the requirements to implement a system called Project Information System (PIS). It is designed for Putrajaya Holdings Sdn Bhd (PJH), a mega project developer for Putrajaya City (the Administrative Center for the Government of Malaysia) to facilitate an effectual management of an organization by providing centralized access from a single source to the required information. The objective of the project is to give direct benefit for the company such as fast retrieval of information, enhances decision-making and tactical planning whilst avoiding confusion and/or ambiguous situation where misinterpretation could be costly both in terms of monetary and time factors. With currently available and more innovative technology, the organization uses IS/IT to realign its business activities to achieve performance breakthrough. In this way, organization and its environment, workers and external third parties who involve in PJH projects, stand to benefit by having real time and online reference to project information at their fingertips. PIS, a client/server and web-based system, is implemented using open source solutions that are MySQL as the database, and PHP as the programming language. Waterfall approach was chosen for the system implementation. The PIS system consists of five modules and was developed in phases. Therefore, PIS is a necessity as a tool to provide a competitive edge to Putrajaya Holdings in controlling its projects, and improve communications within the group and its environment (contractor and consultant).

ABSTRAK

Bank informasi bebas menghasilkan corak pemikiran dan nilai berbeza dalam tiap-tiap divisyen akan menyebabkan salah-sangka, kurang pemahaman, dan kurang keserasian dalam komunikasi bersama justeru mengakibatkan keputusan yang tidak tepat serta tidak menyeluruh terhadap kebaikan bersama organisasi. Melalui kajian kebolehlaksanaan (feasibility) yang telah dilakukan, ianya telah menunjukkan keperluan mengadakan satu sistem informasi menyeluruh yang dinamakan – Sistem Informasi Projek, PIS (Project Information System). Ianya di rangkakan untuk Putrajaya Holdings Sdn. Bhd. (PJH), pemaju projek mega, Bandaraya Putrajaya (Pusat Pentadbiran Kerajaan Malaysia). Sistem ini ialah untuk membantu memudahkan serta meningkatkan lagi keberkesanan pengurusan berkumpulan dengan menyediakan laluan dan simpanan pangkalan data terpusat. Ini membolehkan semua pihak terbabit dapat ‘mudah capai’ dan berkongsi informasi yang ada demi untuk perancangan dan keputusan yang lebih jitu dan menyeluruh. Selain dari itu, ianya juga dapat mengelakkan kesangsian dan situasi yang mengelirukan dimana interpretasi yang salah berkemungkinan besar amat merugikan dari segi faktor kewangan dan masa organisasi. Dengan keupayaan semasa dan kewujudan teknologi yang lebih inovatif, organisasi kini menggunakan IS/IT untuk menyusun semula aktiviti perniagaan bagi menghasilkan tahap pencapaian lebih baik. Dengan cara ini, organisasi, para pekerja, dan pihak ketiga yang terlibat dalam projek PJH dapat menikmati faedah ‘mudah capai’ informasi projek secara masa nyata dan sistem dalam talian (online). PIS adalah jenis sistem pelanggan/pelayan (client/server) dan berasaskan sistem web yang diimplimentasi menggunakan kaedah sumber terbuka (open source), yakni MySQL sebagai pangkalan data dan PHP sebagai bahasa pengaturcara. “Waterfall approach” telah dipilih untuk mengimplimentasi sistem. Sistem PIS merangkumi lima modul dan telah dihasilkan secara berperingkat/fasa. Oleh yang demikian, PIS adalah satu keperluan yang boleh dijadikan alat untuk memberikan PJH kelebihan dalam mengawal projek-projek disamping meningkatkan lagi faedah komunikasi ‘mudahcapai’ informasi secara dalaman dan luaran (kontraktor dan konsultan) organisasi.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
1	INTRODUCTION	
1.1	Introduction	1
1.2	Background	2
	1.2.1 Company Profile	2
	1.2.2 Business Functions	3
1.3	Problem Statement	4
1.4	Project Objectives	5
1.5	Project Scope	6
	1.5.1 Main Scope/Tasks	6
	1.5.2 Data	7
	1.5.3 Software/Hardware/Platform	8
	1.5.4 Features	9
	1.5.5 User	9
	1.5.6 Type of Testing	10
1.6	Importance of Project	10
1.7	Operational Framework	11
1.8	Chapter Summary	12
2	LITERATURE REVIEW	
2.1	Introduction	13
2.2	Understanding of Project Information System	14
	2.2.1 Project Information System	14
2.3	Key Elements in Developing The Project	17
2.4	Available Project Information System Software	18
2.5	Data Model	20
	2.5.1 Database Management System	20
	2.5.2 Data Mining	21
	2.5.5 Data Warehouse	22
2.6	Types of Information System	24
	2.6.1 Decision Support System	24
	2.6.2 Executive Information System	24
	2.6.3 Comparison of DSS and EIS	25
2.7	Internet Technologies	26
	2.7.1 Web Technologies	26
	2.7.2 Internet Security	28
2.8	Chapter Summary	30

3	METHODOLOGY	
3.1	Introduction	31
3.2	Project Approach and Methodology	32
	3.2.1 Waterfall Approach	32
	3.2.2 Iterative Approach	33
	3.2.3 Spiral Methodology	35
	3.2.4 Rational Unified Process	36
3.3	Selected Project Approach & Methodology	38
3.4	Propose Waterfall Methodology	39
	3.4.1 Requirement Study	40
	3.4.2 Specifications	40
	3.4.3 Design	41
	3.4.4 Coding	42
	3.4.5 Testing	42
3.5	Project Schedule	43
3.6	Chapter Summary	43
4	ANALYSIS & DESIGN	
4.1	Introduction	44
4.2	Organizational Analysis	44
4.3	Current Business Process and Data Model	47
	4.3.1 Current Business Process	47
	4.3.2 Problems Identification	48
	4.3.3 Identification of Users and Data	49
	4.3.4 Weaknesses of the Current System	53
4.4	Project Information System (PIS) Proposal	53
	4.4.1 PIS System Architecture	54
	4.4.2 Interface Chart	55
	4.4.3 System Access Design	57
	4.4.4 Modules and Functionalities	58
	4.4.5 Database Design	60
	4.4.6 Data Relationship	62
4.5	Test Plan	63
4.6	Chapter Summary	64
5	IMPLEMENTATION & TESTING	
5.1	Introduction	65
5.2	Implementation Strategies	65
5.3	Programming Approach	66
	5.3.1 Database Development	66
	5.3.2 Programming	67

5.4	Testing	72
5.4.1	Unit Test	73
5.4.2	Integration Test	74
5.4.3	System Test	75
	5.4.3.1 Technical Test	75
	5.4.3.2 Functional Test	76
5.4.4	User Acceptance Test	76
	5.4.4.1 Setting Up UAT Team	77
	5.4.4.2 User Acceptance Test Plan	77
	5.4.4.3 User Acceptance Test Category	78
5.5	System Documentation	78
5.6	Chapter Summary	79
6	ORGANIZATIONAL STRATEGY	
6.1	Introduction	80
6.2	Roll Out Plan	81
6.3	Change Management	82
	6.3.1 People	83
	6.3.2 Organization	84
	6.3.3 Technology	85
6.4	Data Migration Plan	85
6.5	Business Continuity Plan	86
	6.5.1 Server Replication	87
	6.5.2 Hard Disk Replication	88
	6.5.3 Tape Backup	88
	6.5.4 Manual System	89
6.6	Expected Organizational Benefit	89
6.7	Conclusion	92
7	DISCUSSION & CONCLUSION	
7.1	Achievements	93
7.2	Constraints & Challenges	95
	7.2.1 Constraints	95
	7.2.2 Challenges	96
7.3	Lesson Learned	97
7.4	Recommendation	99
	REFERENCES	100
	APPENDICES	102

LIST OF FIGURES

FIGURE NO.	NAME	PAGE
1.1	Operational Framework	11
2.1	Project Management Framework	15
2.2	Data Mining Processes	22
2.3	A Browser Communicates With the Web Server	27
2.4	A firewall Is Being Placed Between Internet and Organization's Network	29
3.1	The Waterfall Approach Sequence	32
3.2	The Waterfall Approach Deliverables	33
3.3	Iterative Approach Sequence	34
3.4	Iterative Approach Deliverables	34
3.5	A Spiral Methodology	35
3.6	RUP Four Phases of Life Cycle	36
3.7	Rational Unified Process Framework	37
3.8	A Waterfall Method	39
4.1	Current Organizational Structure	45
4.2	Basic Putrajaya Holdings Infrastructure	46
4.3	Current Business Flow	48
4.4	Current DFD (As-Is)	50
4.5	Proposed System Concept	54
4.6	Context Overview of DFD	55
4.7	PIS System Architecture	56
4.8	PIS Interface Chart	56
4.9	Entity Relational Diagram of New Database	63
5.1	TCD Main Menu	67
5.2	Snapshot of User ID Authentication	68
5.3	New Project Registration Screen	69

LIST OF FIGURES

FIGURE NO.	NAME	PAGE
5.4	Variation Order Screen For TCD Verification	69
5.5	Partial Of Variation Order Program	70
5.6	OPS Main Menu Program Snapshot	71
5.7	Sample of PIS Report	72

LIST OF TABLES

TABLE NO.	NAME	PAGE
4.1	A Summary of Users And Their Current Responsibilities	51
4.2	Common Data	52
4.3	User Access Rights	57
4.4	PIS Modules and Sub-Modules	58
4.5	PIS Table: Contractor	59
4.6	PIS Table: IPC	60
4.7	PIS Table: User	60
4.8	PIS Table: Project	61
4.9	PIS Table: Variation Order	62
6.1	Roll Out Planning	81
6.2	Comparison Between Old and New System	90
6.3	Benefits of PIS System	91

LIST OF APENDICES

APPENDIX	TITLE	PAGE
Appendix 1	Interim Payment Certificate	102
Appendix 2	Interview/Survey Forms	104
Appendix 3	Project Schedule	110
Appendix 4	Sample Reports	113
Appendix 5	Database Tables Details	119
Appendix 6	System Administration Manual	124

CHAPTER 1

PROJECT OVERVIEW

1.1 Introduction

To effectively manage projects, an organization should have a system that is able to provide critical information whenever it is required, and share the same information from a single source within the organization to support its daily operations and decision-making. This chapter will describe the background of Putrajaya Holdings Sdn Bhd with the objective to give a brief understanding of the company basic profile and further on, detailing the current problems that it faced especially with regards to project related information, and its data compilation by various divisions which can be improved further to be more efficient in information accessibility and reporting. With the new system implementation, it will increase company's performance in monitoring projects, improve communications within the group, and have more reliable and accurate project information. From these study findings, it enables to define the project problem statement, its objectives, scopes and potential benefits that the organization can gain from the new system. At the end of this chapter, a project operation framework is shown to briefly describe the process flow for the overall project implementation.

1.2 Background of Problem

1.2.1 Company Profile

Putrajaya Holdings Sdn Bhd, the main developer for Putrajaya City, has been given a concession by the Government of Malaysia to develop a new Federal Government Administrative Center that comprises government office buildings, residential units (both government and public), and also the commercial buildings in the vicinity of Putrajaya. It also includes developing the infrastructure, amenities and parks such as wetlands, lake, mosque, schools and etc.

Putrajaya Holdings was incorporated on October 19, 1995 and it is now in Phase 2 of its development, which is expected to complete in year 2005. The whole city development is planned to complete by year 2012.

Its stakeholders are Petroleum Nasional Berhad (PETRONAS), Khazanah Nasional Berhad and Kumpulan Wang Amanah Negara.

Due to the enormous size of the development and one of the biggest project ever undertaken in Malaysia, it is crucial that all critical or high-level information with regards to projects are ultimately be compiled centrally into a digital format, and the system should also be able to retrieve information online and produce reports that are accessible whenever is required by the Senior Management to support in decision making. Moreover, this new system is to be used and shared amongst the divisions in the company, and with the external contractors and consultants too. As a result, Putrajaya Holdings requires a Project Information System that able to suit several level of users, internally and externally.

1.2.2 Business Functions

Basically, Putrajaya Holdings' organization structure is divided into two (2) main divisions that are Corporate Division, who is responsible to provide backend supports such as Corporate Services, Accounts & Finance and Tenders & Contracts, Legal, and - Operations Division who is responsible for the development and construction of the projects.

Currently, once Tenders & Contract department awards the project, they keep the information of the project and contractors or consultants in a spreadsheet file that is only accessible by the department. Later, when the contractor/consultant claims for their progress payments, Operations division will process the progress claims and passes the compiled supporting documents to Tenders & Contract to verify and proceed with preparing the recommendation for payments to the Senior Management. After the payment being approved, these documents will be send to Accounts & Finance to process the payments and call the contractors/consultants to collect their cheques.

The Senior Management in this case will depends only on the hardcopy of supporting documents that are attached to the progress claims submitted by Tenders & Contracts. And sometimes, the documents attached are not complete for the Senior Management to proceed with the approval and they require further details and confirmation from relevant parties either Tenders & Contract, Operations, or Accounts & Finance divisions which this will delay the payments to the contractor/consultants. This is because each department or division holds certain information that only relevant to their scopes with regards to the project information. As such, if there is a system that able to collect all this information from various departments and divisions, the Senior Management can directly refer to the system to get the most recent information about the

project's or the contractor/consultant's status before approving the progress claims which can avoid delay in the payment process.

Furthermore, after claims are approved, the documents will be passed to Accounts & Finance Dept for cheques' preparation. In this process, Accounts & Finance uses SAP system to process the payments, and the information with regards to the payment is not being shared to other departments because of SAP licensing issues that are too expensive and only given to specific personnel.

Another problem is to get the latest information of the projects if there is any variation order (VO) and extension of time (EOT). This information is normally known to the project team and usually it is not being informed to other divisions efficiently which later will result in different figures when all these divisions submitted their progress report status to the Senior Management.

In addition, with the available technology, the external parties such as contractors and consultants are able to access the system to view their project status too especially on the payment's approval status rather than spending time going to Putrajaya Holdings' office and also calling the Project Managers or Accounts & Finance personnel which sometimes is very disturbing and annoying the staff while handling their day-to-day tasks.

1.3 Statement of the Problem

Currently, each division has its own ways of handling the project information that normally consists of their own related job scope and departmental requirements. Tenders & Contract Division uses spreadsheet to monitor all awarded projects, , the Operation

Division also uses spreadsheet to monitor the projects progress claims or called Interim Progress Claims (IPC) while Accounts & Finance Division uses SAP to process payments which they have independent information banks that is not sharable. Whenever these divisions submitted progress reports to the Management, frequently these reports are not tally between each other due to lack of communication between the divisions to validate the latest project information on time. As a result, it is proposed that a new system, which enables sharing of information, is to be developed to resolve above-mentioned issues. A detail study of the project information and its data flow starting from the day the project is awarded, getting approval for progress claims, and until processing of payments need to be conducted. Furthermore, it is important too to identify critical project information that is kept isolated by the departments/divisions involved in the process to be extracted and kept centrally in a single database.

1.4 Project Objectives

Project objectives are the business benefits that an organization expects to achieve that can bring closer to its goal. At the completion of the project, these objectives will be referred to in order to determine whether the project is successful. Based on the above, followings are the project objectives for this Project Information System implementation:

- To study the process and data flow of project information.
- To analyze and design a web based Project Information System module that enable sharing of critical project information from a single source (centralize) database accessible within the organization by the Senior Management, Tenders & Contract, Accounts & Finance, and Operations divisions, and also to allow external parties such as contractors and consultants to view their project payment

- status. This will enable Senior Management in fast decision-making, as information is available at anytime, real-time and online.
- To improve project information accessibility, availability and to avoid distortion of data which currently Senior Management have difficulties to:
 - retrieve critical data that is kept isolated by many departments/divisions;
 - produce the same progress report results from these departments/divisions involved even though they are referring to the same project due to inefficient of communication within the departments and divisions that resulted in delay of updating the latest information to others; and
 - access this information real-time and online.
 - To formulate a management strategies with regards to Project Information System.

1.5 Project Scope

1.5.1 Main Scope/Tasks

Project scope is a description of the work required to deliver the system that also gives the guidance to the project manager. The scope or tasks that are required for this Project Information System (PIS) implementation are:

- To study the data flow of project information starting from the time projects being awarded until its completion, which involves Tenders & Contract, Operations and Accounts & Finance divisions.

- To determine all critical project data, which can benefit the divisional users and management, to support in their day-to-day operation and decision-making besides enable of sharing the latest and correct project information.
- To develop a prototype of a client/server and a web based system that shows project information is being updated by various departments into a centralized database, and this information can be viewed, change (amend) and delete by the users according to their functionality and access rights.
- To create some test data for demonstration purposes with regards to the projects.
- To enable external parties such as the contractors/consultants to access the system via internet.
- To develop relevant reports to assist the Management in decision-making, and also for other divisional used in their day-to-day operations.
- To create a new policy and procedures in order to ensure PIS system is always being used and updated by relevant divisions to avoid misleading report results.

1.5.2 Data

Data is very important to any new system implementation testing. For this project, hypothetical data is being used in the testing and demonstration purposes due to confidentiality of the original data. The sample data reflects the actual scenario of real life situation, and it is customized to able to show the system functionalities that cover in the system development.

1.5.3 Software/Hardware/Platform

This is a client-server architecture where a server is required to host the application and the database while the internal users will access to the server to retrieve information from their desktops via Putrajaya Holdings' local area network (LAN) and wide area network (WAN). As for the external users, they will access the system via internet.

The followings are the hardware requirements for the implementation:

- Server requirements: Intel Pentium 4, 2.8Ghz with minimum 512MB RAM memory, 30GB X 3 unit of hard disk for raid 5, tape backup drive, and a network card 10/100.
- Personal computer requirements : Intel Pentium 4, 2.8Ghz with minimum 256MB RAM memory, 30GB hard disk and a network card 10/100.

The followings are the list of software that will be used in the implementation of PIS.

- Minimum Windows 2000 as operating system for the server
- Windows XP as operating system for the users PC
- Microsoft Office for documentation
- MySQL version 5.0.1 as database
- Apache 2.0 as web server
- PHP version 4.4.0 for scripting engine for web server
- Dreamweaver for editing
- IE (Internet Explorer)
- Antivirus for protecting the PC and server from viruses.

1.5.4 Features

This new system will have the following features, which make the system more user friendly to use:

- A web browser application that interacts with the database to easily enable accessing the database via internet.
- A drop-down menu to facilitate users to choose from the list to avoid keying-in the information in full.
- A selection parameter that user may enter before executing the reports to narrow down their selection of information.
- Access authorization for specific usage of the system.

1.5.5 User

The people that are going to use this system are called users. There are two (2) main types of users, which are internal and external users. The detail of the users is described below:

- Internal Users
 - Departmental/Divisional : Tenders & Contract, Accounts & Finance, and Operations.
 - Management from various divisions including Chief Executive Officer.
 - System Administrator for maintaining the system.
- External Users
 - Contractor and Consultants who involve in Putrajaya projects that are still active.

1.5.6 Type Of Testing

Testing is a very important task for a newly developed system to ensure that the system developed works as designed and is defect free. From the analysis, there are four (4) main types of testing such as follows:

- Unit Testing: to test each individual component before moving to integration test.
- Integration Testing: to test functionally grouped components or more than two modules works together.
- System Testing: to test the entire system under realistic conditions.
- User Acceptance Testing: is done by end users prior to accept the developed system.

1.6 Importance of Project

The benefits that Putrajaya Holdings can gain from this project are:

- All critical and high level information with regards to projects is digitally stored into a centralized database in a timely manner that enable the sharing of the latest and same information within the company on real-time, and online basis This will improve the communication links between the divisions more effectively and efficiently.
- The Senior Management, Tenders & Contract, Accounts & Finance and Operation Divisions are able to access the information at anytime whenever they require, 24hours X 7days (24X7) to facilitate and enable fast processing and decision-making.
- The contractors and consultants are also able to view their status of progress claims and payments with regards to their projects online (24X7) via web to provide better services.

1.7 Operational Framework

Basically, this project operational framework is based on Figure 1.1 below. The purpose of this operational framework is to describe the whole project implementation process until the PIS system is completed. It starts with Initial Study stage where preliminary proposal of project objectives and scopes. Once approved, it proceeds with Literature Review and Methodology Study concurrently to get ideas and explore possible ways of implementing the system such as the basic of system development, methods, techniques, technologies and current trends. From the study, one methodology will be adopted as a basis for the system development life cycle processes. Then, proceeds with user requirements information gathering, specification analysis, system design, implementation and testing stage until the software is completed and accepted by the users.

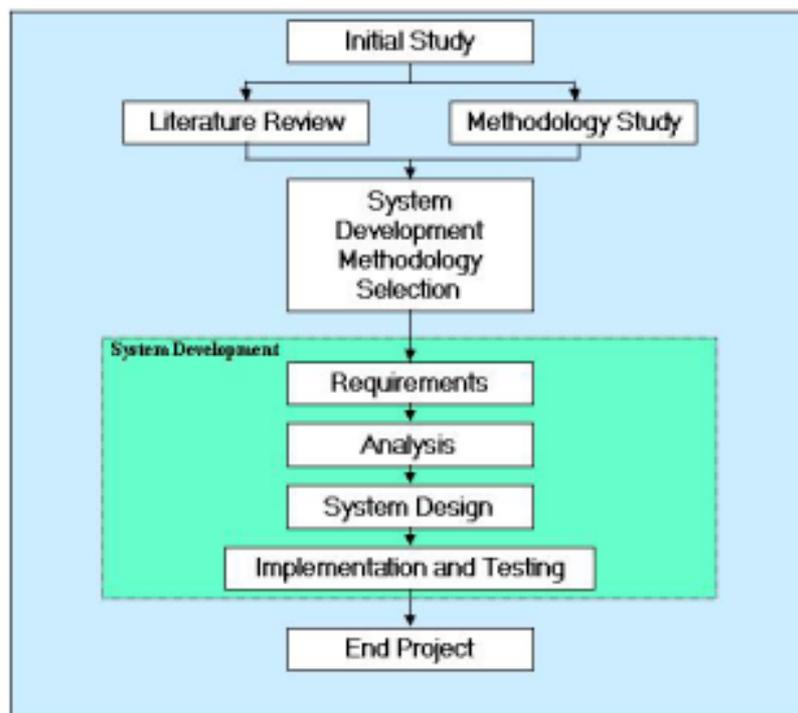


Figure 1.1 : Operational Framework

1.8 Chapter Summary

From the initial study, it is found that Putrajaya Holdings requires a Project Information System (PIS) that can gather all critical project information from three isolated locations into a centralized database. A client server type of environment and a web-enabled kind of application is required, as this will easily enable remote access to the system by the users at anytime and anywhere. From the implementation, this new system will enable sharing of information by different category of users within Putrajaya Holdings, eliminate inconsistency of information between the departments/divisions, faster in processing payments, and also improve communication with the external parties such as contractors and consultants by extending the usage to them. It is hoped with this new system implementation enable to resolve the above-mentioned problems, and further on, enable the users have the flexibility to directly access the information as and when is necessary.