

E-Procurement Solution
(Bid Evaluation and Clarification Module)

by

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the requirements for the
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(Information System)

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CERTIFICATION OF APPROVAL

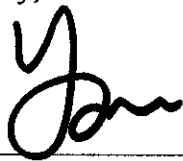
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A project dissertation submitted to the
Information System Programme
Universiti Teknologi PETRONAS
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Approved by,



(Ms. Vivien Yong Suet Peng)

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TRONOH, PERAK

November 2004

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgments, and that the original work contained herein have not been undertaken or done by unspecified sources or person.

AMALIA KHAIRUNNISA BINTI ABDUL RAHIM

ABSTRACT

The Internet's rapid growth has motivated many companies to add electronic commerce components to their otherwise traditional business operations to gain competitive advantage against rising competitors. Business-to-business online procurement has recently emerged as one of the hottest topics in the world of commerce and business technology. The growth of the Internet and procurement automation software is offering ever-increasing operational cost savings to enterprises; extending trading communities and lowering the financial barriers to E-Commerce and E-Procurement participation from both the buying and the selling sides. The objective and scope of the study is to present the benefits, challenges and evolutions of E-Procurement approaches generally and of automated procurement solution specifically. To narrow down the scope further, this study / research will be focusing on the bid evaluation and clarification module of automated procurement system; its approaches, developments and expansions.

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Alhamdulillah be to Allah, the Most Gracious and Most Merciful.

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CHAPTER 1

INTRODUCTION

1. BACKGROUND OF STUDY

Procurement is the term most commonly employed to refer to the purchasing of goods and services for the day-to-day operation of a business and is an essential part of any organization's ability to be able to function effectively and efficiently. The term *procurement* itself is understood to refer to the purchase of both direct and indirect goods and services while *electronic procurement* or E-Procurement is about taking this process online and automating the whole process with the underlying aim centered on saving money. Starting with the DotCom explosion that hit the global economy during the mid-90, electronic commerce or E-Commerce had become a significant economic element and would continue to be so for another 10 to 20 years. With the fast growing of E-Commerce came two new economic elements, namely business-to-business (B2B) and business-to-consumer (B2C). One of the functions under the B2B which can be defined as a business making online transactions with other businesses is the E-Procurement itself. Increased cost, competition and customer pressures in conducting traditional procurement have served as part of the major motivation that drive companies big and small to review the internal processes of the procurement practice and convert the traditional manual procurement practice into the more modern automated procurement in order to tap into the enormous savings potential from indirect spending.

Before moving further into the discussion of automated procurement, it is necessary to establish the differences between both E-Tendering and E-Procurement. From a buyer's perspective, E-Tendering means electronically notifying, intuiting, vetting and selecting suppliers to tender for a product or service. For vendors, E-Tendering can be defined as the electronic submission of competitive bids for the provision of said product or services. On the other hand, E-Procurement is the business-to-

business purchase and sale of supplies and services over the Internet and serves as an important part of many B2B sites that allows for qualified and registered users to look for buyers or sellers of goods and services. Depending on the approach, buyers or vendors may specify prices or invite bids and then followed by the transactions' initiation and completion. E-Procurement software that are available in today's market makes it possible for companies to *automate* some buying and selling and traditional procurement process which is the main focus of this project. As stated in the description above, E-Procurement consisted of E-Tendering but is endowed with added function such as the ability to *automate the back-end procurement activities*.

1.1 Procurement Practice in Upstream Oil Industry

Automated procurement system which is the main focus of this study refers to the automation of the traditional manual procurement stages. For the purpose of this study, the scope had been narrowed down to the research on the automation of Malaysia's upstream oil companies' procurement process. The following is a general description on how the common procurement activities are practiced in the upstream oil industry. First and foremost, a list of potential bidders is prepared before the invitations to bid request are arranged and transmitted to each of those potential bidders on the list. Bid due dates are established when the bid request is prepared and the information is included in the invitation to bid document. The number of working days which are counted up from the date the bid is transmitted to the contending bidders until the bid's due date is normally 10 working days but the nature and complexity of the bids may necessitate up to 20 working days or more or even reduced to a mere 5 working days.

Bid's evaluation and clarification stage is an essential part of an overall procurement process. At the bid due date and time, procurement staffs (buyer and support staffs and witnessed by the package's engineer) opens the bids received (the technical bids are opened first), review the bids for obvious potential problems, tabulate the technical bids in ascending order and sends the bids along with the tabulation sheet

to the requesting engineering department to be technically evaluated. The package's buyers on the other hand are only responsible in evaluating the commercial bids in effort to identify the lowest priced-bid that meets the bid technical specifications (essential and general criteria). The result gathered from both evaluations (technical and commercial) marks the end of the bid evaluation and clarification stage. Finally, the successful bidder is contacted and a post-bidding meeting is held to cover any loop-holes before the actual exchange of product or service is conducted. Figure 1.1 shows the basic working principles of any procurement activities conducted by an oil company in Malaysia as a PETRONAS' Production Sharing Contractor or PSC [1].

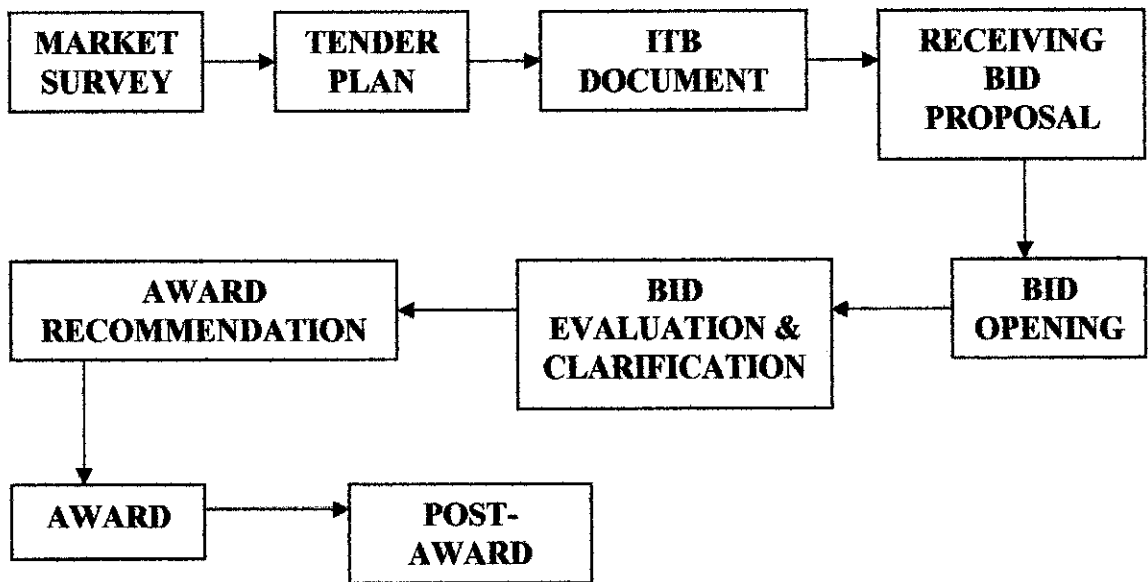


Figure 1.1 PSC Procurement Activities / Stages

As per the detail descriptions of the traditional procurement process above, research done had proven that the bids' evaluation and clarification stage by itself can takes up to about thirty-five percent (35%) of the total procurement turnaround time [2]. With the implementation of an automated module that has the ability to automate the whole bid evaluation and clarification process, companies can expect a saving of time, costs and personnel. However, there are a lot of issues that need to be resolved before any automated procurement module can be implemented enterprise-wide.

2. PROBLEM STATEMENT

2.1 Problem Identification

Even with all the hypes that come from E-Commerce, research done by various financial agencies had shown that more than eighty-five percent (85%) of the companies all around the world have not automated both their direct and indirect purchases yet and are still performing the procurement practices manually [3]. The reason is that for most companies, the procurement process accounts for thirty-sixty percent (36%) of overall costs and sixty-eighty percent (68%) of purchasing transactions, as had been proven by business researchers [4]. With that large percentage of importance, most companies are quite intimidated to automate their procurement processes in case of any problems that may arise after the implementation of the automated procurement.

Narrowing down, reasons that constrained the implementation and mobilization of automated procurement system in companies Malaysia-wide consisted of (1) the lack of enterprise-wide promotion undertake to introduce the automated procurement software both to company's employer and employees, (2) initial installation and training costs, (3) future maintenance cost, (4) limited on-the-shelf products for smaller companies that had less revenues and different procurement practices in comparison to the big players in the market, and (5) the lack of customized automated procurement software that can fulfill the requirements of the bigger companies in the market. The shortage of industry-specific automated procurement software is also one of the many reasons why companies had not been eager to embrace the technology of automated procurement. As an example, the procurement activities in the manufacturing industry differ from what is being practiced in the oil industry such as in the supply-chain management. The current E-Procurement systems available in the market are of the so-called 'standardized' type, developed with the aim to fits as many company's procurement environment as possible and disregarding the fact of existing differences of the procurement activities within different industries.

2.2 Significant of the Project

This study is dedicated to the development of an automated procurement module that would be fitting for Malaysian's upstream oil companies' procurement environment (refer to Figure 1.1). The main significant of this project is the development of an automated bid evaluation and clarification module which conforms to the guideline in conducting the technical and commercial evaluations manually. Among all the stages of a traditional manual procurement process, this particular stage had been known to be the most essential and critical in ensuring the successfulness of the procurement process itself. Various researches also shown that the bid evaluation and clarification stage usually requires thirty-five percent (35%) of the total tendering time. Figure 1.2 below shows the percentage of time taken by each stage as identified in Figure 1.1 in Section One (1), in comparison to the total procurement turn-around [2].

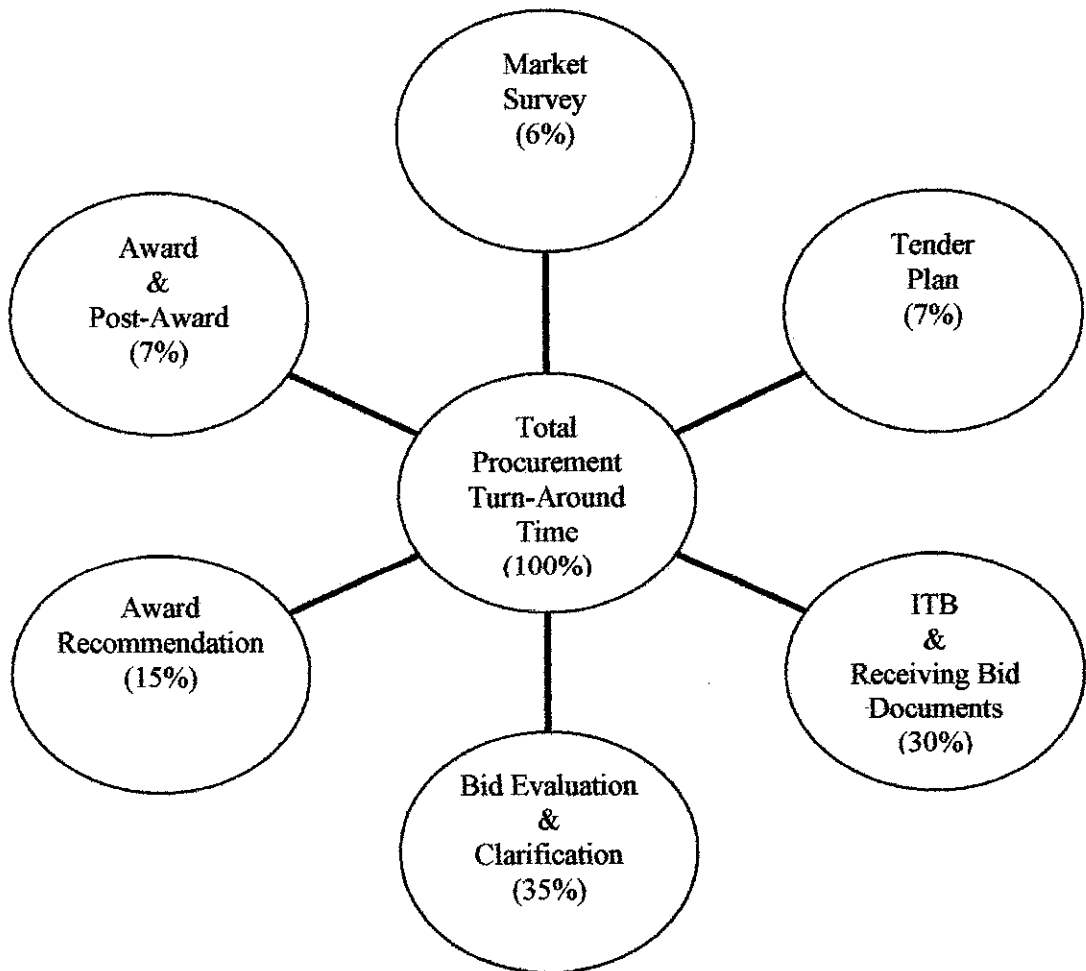


Figure 1.2 Procurement Turn-Around Time Percentage Divisions

3. OBJECTIVES AND SCOPE OF STUDY

The objective of this project is to reengineer the common manual procurement activities into one of an automated system as part of the E-Procurement initiative to be taken on by companies all over Malaysia generally and the upstream oil-companies (PETRONAS, Shell, ESSO, Murphy, etc) specifically. This project aims to achieve the objective above with the development of a bid evaluation and clarification module which covers the automation of the bid evaluation and clarification stage, an essential step within the procurement process. With a module that would automate the whole evaluation stage, the overall time taken to actually conduct the bid evaluation (technical and commercial) and clarification of the competing bids submitted can be reduced significantly.

For the purpose of this study, the procurement environment at MURPHY Sarawak Oil Ltd. (MURPHY) is used as one of the research elements. MURPHY is an example of a Production Sharing Contractor that had signed an agreement with PETRONAS (Petroleum Nasional Sdn. Bhd.) for oil E&P (Exploration & Production) activities in Malaysia. The module that is to be developed aims to a reduction in the procurement turn-around time, cost, effort and personals needed especially in the bid evaluation and clarification stage. The scope of this study and its related researches is the development of the automated bid evaluation and clarification module, with the ability to perform the following:

- Drawing the bids for the specific tender or package from the company's database / repository.
- Key searched the packages based on the requirements of the evaluators and the package's general and essential criteria.
- Preparing a checklist or template for the evaluators to save their evaluation results.
- Preparing a template for the procurement analyst to enter the bid's winner particulars to be submitted into the database.

CHAPTER 2

LITERATURE REVIEW AND / OR THEORY

1. INTRODUCTION

In today's economy and market condition, many medium and large size companies in Malaysia are moving towards the pursuit of competitive advantages over one another to enhance the value of the products and services that they have to offer to their customer and the generic market. One of the return that comes from this pursuit is the ability of a company to reduce the cost involves in the offering of said products or services; a proposition that is definitely going to keep the existing customers and clients pleased while allowing the company to continue to attract new consumers for their market. Inside every company there is a procurement opportunity that offers fewer costs involvement, the ability to maintain high quality and high volume of outputs even with a reduction in the cost and consequently improving the company's profit and revenue. Figure 2.1 is a summary of the process chain that takes place in every procurement process regardless of the company or the industry they are involves in [5].

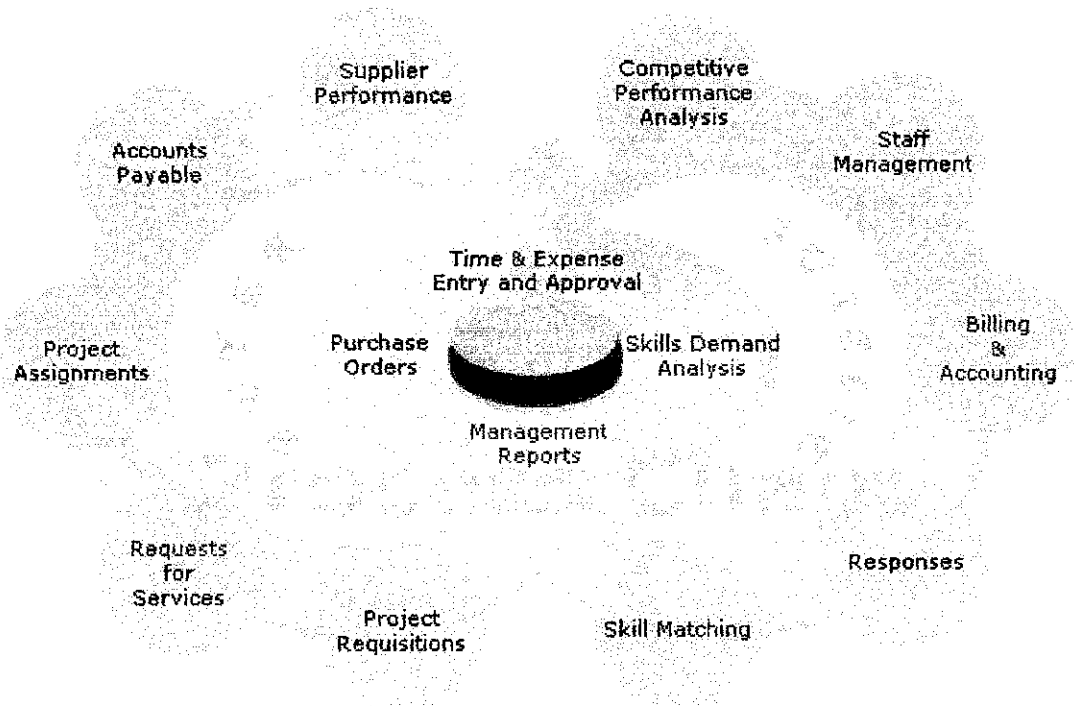


Figure 2.1 Procurement Process Chain (Source: Regina Saskatchewan, "Discussion Paper on Procurement", 2002)

In his published white paper, Sourav Kumar stated that *“to achieve these savings, companies must develop a systematic approach to purchasing which involves aggressively managing product specifications and negotiations with suppliers”* [6]. There are many strategic and systematic approaches that a company can embrace and utilize internally to achieve the savings as had been mentioned in the above paragraph. Among the approaches that are already on their way to become important elements in the global economic are procurement re-engineering, E-Procurement and automated procurement. With a balanced deployment of the right technology, re-engineering processes and effective sourcing, companies may even saves more.

2. E-PROCUREMENT APPROACHES AND CHALLENGES

E-Procurement is the business-to-business purchase and sale of supplies and services that harnesses the power of the Internet and implements the latest technologies available to make the overall procurement process both fast and convenient. Google.com definition stated that *“E-Procurement software may make it possible to automate some buying and selling”* [7].

The procurement module of the future will be seamlessly integrated with the project design module, project management and control module, finance module, and the global supply network. This will enable project teams to select products, identify qualified sources, and procure the best products at the best price with complete confidence and ability to deliver on time and within budget sources. The opportunity for the integrated procurement and supply module is to enable completely automated sourcing and supply chain interaction. The vision is centered on a project design module that seamlessly interconnects with the supply network and enables rapid completion of detailed facility designs. The E-Procurement system will enable automated specification of procured items based on parameters defined by the project planning module (cost, schedule, quantity) and by the design module (technical requirements).

There are many problems associated with traditional manual procurement processes. For example, using multiple channels to conduct the procurement activities and having multiple steps or processes makes both the internal (between departments) and the external (between buyer and seller) communication channels confusing. Among the challenges faced by those practicing manual procurement are excessive focus of procurement resources on low-value activities, on-going proliferation of supplier and product portfolio and inadequate audit and analysis of enterprise spending and trends. The aim of E-Procurement generally and automated procurement solution specifically is to enable buyers within an organization “*who have the necessary authorization to ditch manual purchase order forms, and use an automated module*” [8] as had acknowledged by Steven R. Leonard in his article. The automated procurement combined with on-line buying and selling module makes-up a total E-Procurement solution.

However excellent it may sound or seen, E-Procurement system is also not without a myriad of problems. Despite the advent of automated purchasing modules, electronic commerce, and streamlined business processes that makes-up the E-Procurement system, procurement for capital projects remains a time-consuming process. Current processes are heavily reliant on human expertise, initiative, and communication to assure that the right goods and services are acquired at the lowest possible cost and delivered on time to point of need. Many companies have moved to centralized, multi-project sourcing strategies to benefit from economies of scale. However, centralized functions often lack the understanding to buy the best product from a myriad of options, or to select the best source on the basis of factors other than cost. The front end of the process is a primary source of problems, since procurement is often tasked with inaccurate requirements. Inefficient change management is a major source of problems in the procurement cycle. Timelines for rippling a design change to all points in the supply chain are long, and customers typically face exorbitant markups on change orders. Many vendors intentionally lowball their initial bids to win the job, knowing that they will realize a healthy profit through the inevitable change orders.

3. BACK-END AUTOMATION MODULE

In his article, Samuel Greengard wrote that “*companies looking to migrate to direct E-Procurement are well advised to design a module with enough flexibility and enterprise integration to serve as a global purchasing platform*” [9]. This is true especially for the designing, development and implementation of a back-end automated procurement module or modules that would be linked to the larger E-Procurement system. For the purpose of this study, the technical parts of the procurement automation, namely the *bid evaluation and clarification* module has been given a priority.

According to researches being done, successful evaluation of proposals and negotiation plays an important role in any traditional procurement activities. A deep analysis of example cases has shown that such long period between promotion and award of any package in the procurement process is mainly due to the actual evaluation processes. The Department of Civil Construction of Portugal had proposed that in order to improve the evaluation of proposals, an evaluation module that combines the net present value (NPV) method with the score module can be used. The proposed module has a high degree of flexibility and allows the user (corporation) to choose the proposal that best meet its objectives and priorities. The module presented in Figure 2.2 consists of [11]:

1. Evaluation against the MUST (essential) criteria. This criterion is mandatory and is justified as the actual bid process does not include pre-qualification. Any proposal that cannot fulfill a MUST criterion will be discarded.
2. Evaluation against the NPV calculation. The lower is the NPV, the cheaper the offer. Proposals are compared based on NPV figures. The NPV is calculated on the basis of traffic estimates, a discount rate and an inflation rate specified in the tendering documents.
3. Evaluation against the selection criteria, including criteria weights, scores and sensitivity analysis. Points are given to the selection criteria and

proposals containing the submissions required by the tendering documents are evaluated based on the scores obtained.

4. Adjustment of scores. Adjustments are carried out for aspects not covered by the selection criteria.

5. Ranking of proposals.

6. Selection of the proposal to enter into the detailed negotiations.

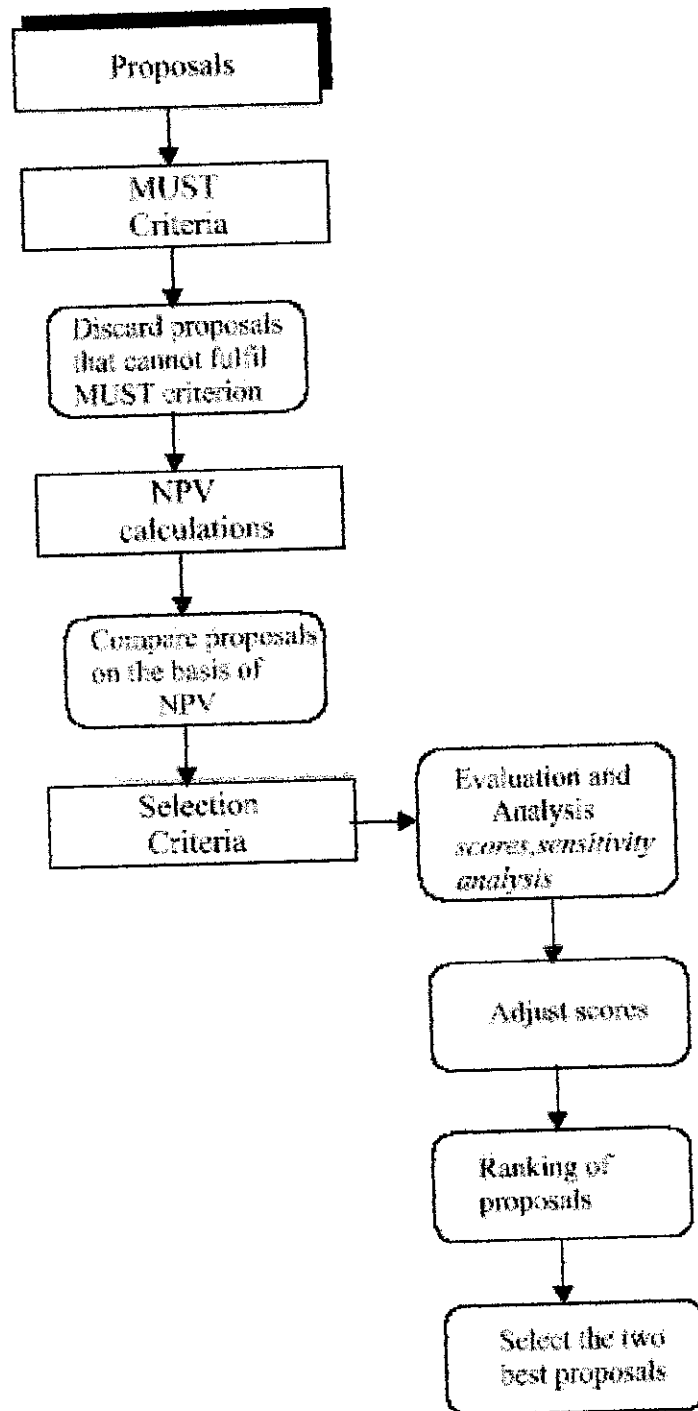


Figure 2.2 Selections of Proposals

5. CONCLUSION

Conclusively, there are many small functions that altogether make up the whole practice that had come to be known as E-Procurement. By itself, automated procurement solution is not enough to bring to the company all the benefits as had been mentioned in the previous Chapter 1: Introduction and this Chapter 2: Literature Review and / or Theory. But no matter how trivial it may seem, automated procurement solution is slowly but surely becoming one of the main forces behind the total implementation of E-Procurement specifically and E-Commerce generally. Once automated procurement had been fully embraced by companies big and small, the realization of E-Procurement will be just a corner away.

CHAPTER 3

METHODOLOGY / PROJECT WORKS

The process of developing the bid evaluation and clarification module for an automated procurement system involves the development of several smaller components or sub-components. The development was based on the Scrum model methodology which emphasized on breaking a whole module into smaller sub-components followed by an integration process. The sub-components are designed and developed concurrently due to time constraint.

1. PROCEDURE IDENTIFICATION

The methodology that had been chosen for the development of the module is the *Software Development Lifecycle* (Adaptive Software Development or ASD) and the model that is to be adopted for this project is the Scrum model [14]. This model had been chosen because it was deemed suitable for projects that are mission driven and components based; using a time-based cycle to meet the target dates and due date. The Scrum model definitions are as follow:

1. Use iterative model – repetitions are referred as ‘sprint’.
2. Work best for Object-Oriented technology and requires a sound planning to coordinate and integrate the works.

Overall, the Scrum model divides the tasks (analysis, design, development and testing) involved in the overall development of any project or module into a collection of sub-components or sub-missions. These sub-components can either be developed concurrently or after one another (predecessor-successor relationship). At the end, the sub-components are integrated back to obtain the final result.

Figure 3.1 shows the interrelation and co-dependencies of the sub-components of the *Bid Evaluation and Clarification* module that is to be developed. The total development process is divided into the sub-components as shown above after taking into consideration the time constraint of the project itself.

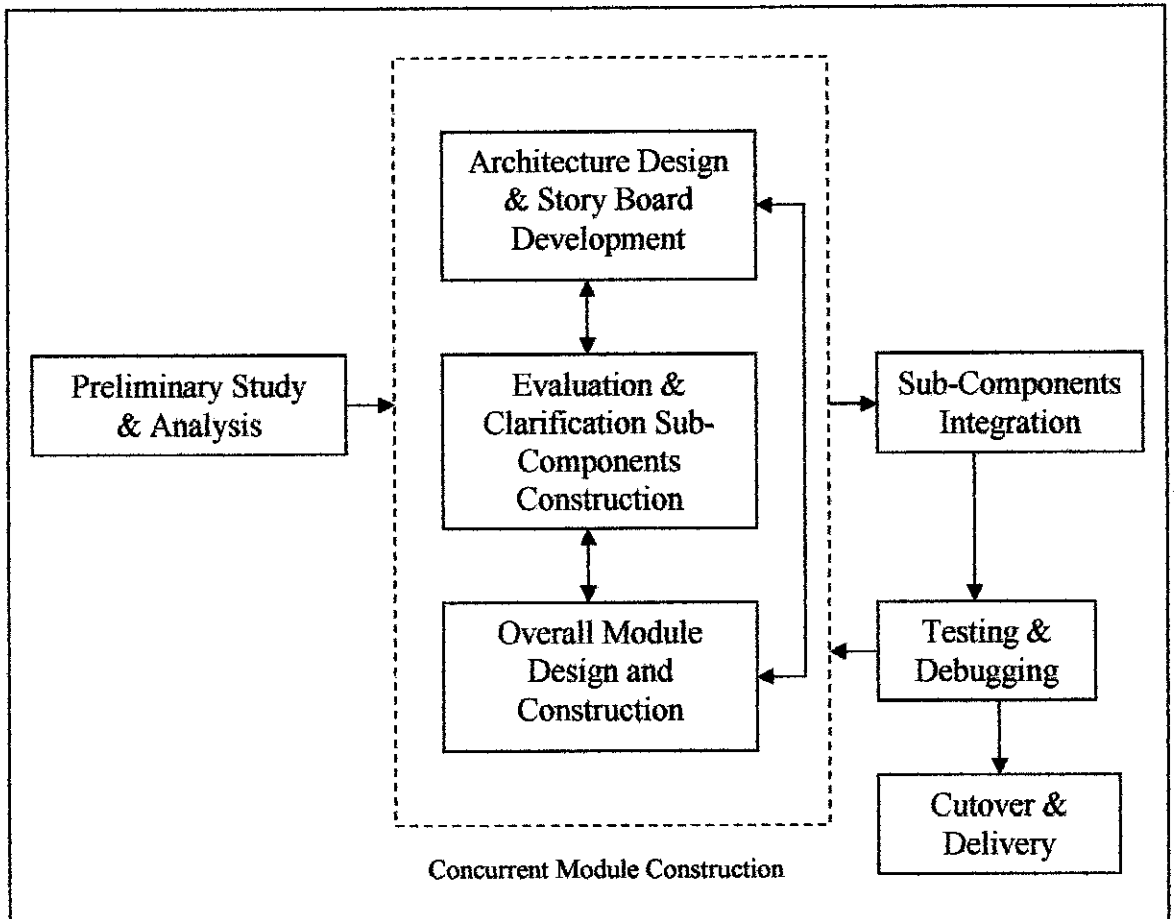


Figure 3.1 Development Model of Proposed Module

The following sections will be describing in details the works involved and undertaken for the development of each of the sub-components as shown in Figure 3.1 above.

2. PRELIMINARY ANALYSIS AND STUDY

This sub-component is the fact finding works conducted by the author in order to learn more on the topic of E-Procurement and automated procurement. Among the methods used in this components are as listed below.

- **Reading / Studies**

The result of the studies can be seen in Chapter 1: Introduction and Chapter 2: Literature Review and /or Theory of this dissertation. Among the sources used to conduct the preliminary analysis and study of this project are articles, white papers and journals regarding the topics on E-Commerce, E-Procurement and back-end automated procurement. Detailed list of the references used in this study can be found at the References section at the end of this dissertation.

- **Interviewing companies that uses an E-Procurement system**

The plan to conduct an interview with PETRONAS to learn more on their E-Procurement system and the problems they are facing in regards to the module had been postponed indefinitely at first while waiting for a reply from the PETRONAS' side. Unfortunately in the end, PETRONAS was unable to entertain the author due to unforeseen events and excessive amount of works they're currently undertaking such as the 3rd and 4th quarters internal audit (to other PSCs such as SHELL, MURPHY and Exxon) and the closing of the Master Procurement Plan program for the year 2004.

3. ARCHITECTURE DESIGN AND STORY BOARD DEVELOPMENT

3.1 Overall Module Architecture

For the development of this project, Figure 3.2 below shows the overall architecture for the proposed E-Procurement system from a buyer's (the company that is doing the buying of a product or service) point of view. First and foremost, when a buyer decides to purchase an item or service, the bid invitation proposal is transmitted to a list of possible vendors or sellers (the company that is doing the selling of a product or service) through the Internet. Competing vendors then submit in their competitive proposals through the Internet, following the same route the invitation to bid proposal had followed. The route on which the invitation and the bid submission go through is as shown by the darkest shaded boxes which represent the E-Tendering component of the E-Procurement system. The web server (IIS or Apache) transfers the vendor's bid proposal to the application server (PHP or ASP) which then is directed to the company's database (Oracle or any high-level database) for data saving purpose. The back-end automated procurement module serves the architecture as an external sub-module as had been shown in Figure 3.2 below. For the purpose of this project, the scope had been narrowed down specifically on the study and development of the bid evaluation and clarification module, which is the most time-consuming and critical stage of any procurement process.

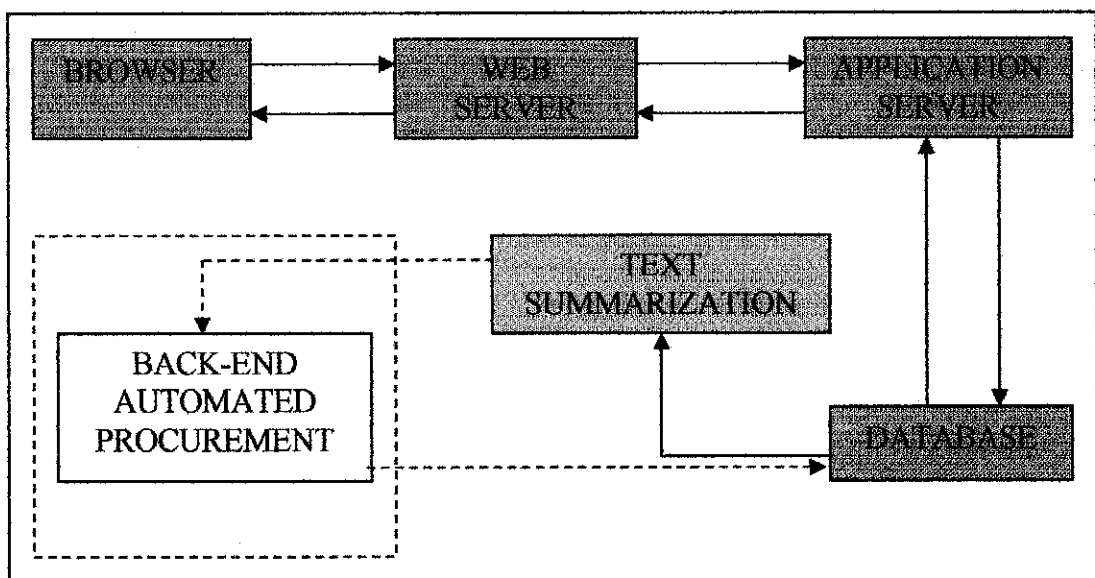


Figure 3.2 Overall Architecture of an E-Procurement System

Figure 3.3 below shows the architecture for the *Bid Evaluation and Clarification* module that is being developed for this project. First of all the bids submitted by competing vendors are kept inside the database for recording and security matter. The bids are then summarize first before being sent to the module for evaluation.

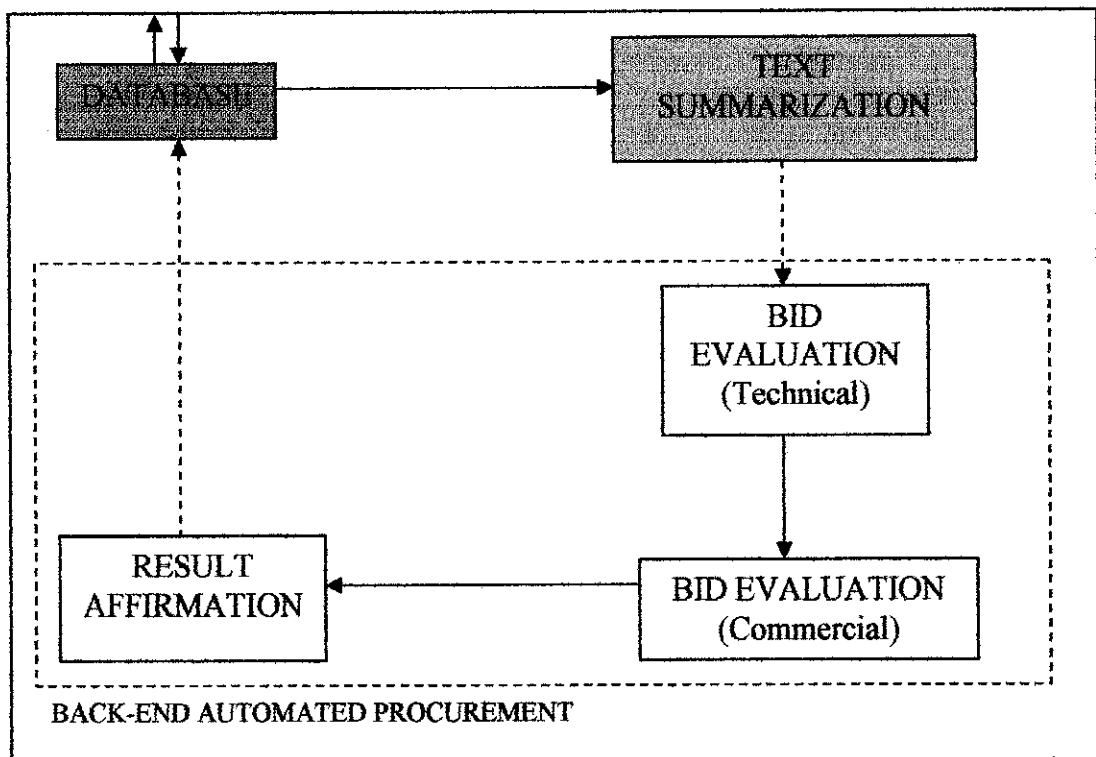


Figure 3.3 Bid Evaluation and Clarification Module Overall Architecture

- **Bid Evaluation (Technical)**

- The first component of the module is the technical bid evaluation. According to PETRONAS' Procurement Manual for Operation in Malaysia as a Production Sharing Contractor or PSC, bid evaluation can be done either in one-tier or two-tier stage. For the purpose of the module development, the two-tier bid evaluations will be implemented. In two-tier evaluation, the technical bids are evaluated first by package's engineer. Here the summarized technical bids (in text form) are evaluated on their technicality based on the general and essential criteria that had been prepared by the package engineers. The general or 'want' criteria

are those that are wanted by the package engineers such as a clean and proper bid while the essential or 'need' criteria are those that are needed by the user such as item that fulfill the requirements as set by the engineers themselves. Using the module, the key criteria are searched in the bids and then bids are filtered based on their compliances to both the general and essential criteria and are sorted into 'GREEN' for technically acceptable, 'YELLOW' for technically acceptable but with minor concerns and 'RED' for technically unacceptable.

- **Bid Evaluation (Commercial)**

- The second component of the module is the commercial bids evaluation. Following the two-tier approach mentioned above, only the commercial bids companion of a 'GREEN'-banded technical bids will be opened. Commercial bid for 'RED'-banded technical bid shall be left as it is in a secure storage (database, or Network Area Storage, NAS). This function of the module caters only for the commercial evaluation process, whereas the first component as mentioned in the previous section, only caters for the technical evaluation. For the commercial evaluation, it will be conducted by the package's buyer or procurement analyst. Basically, the functionalities of the two sub-modules (technical and commercial) are similar to each other. The only difference is the level of security accessed by each function. The technical evaluation function of the module can only accessed the technical bids folder from the Network Area Storage or NAS, while the commercial function is given the access to both folders of the competing bids for the package, technical and commercial. The access to each folder will be assigned by company's Information Technology (IT) technician.

- **Result Affirmation**

- In this component, the result of both the bid filtering and bid evaluation is affirmed by either the procurement department's manager or the requesting department's (project, operation, drilling, production, etc) manager. Here the background of the successful bidder is re-checked before the result is sent to a designated database to announce to the winner through the E-Procurement system communication channel.

3.2 Proposed Module Story Board Development

Before the actual development and construction of the module can take place, the story board is first drawn. The story board shows how the interface of the module will look like (buttons, banners, text-boxes, etc), the flow between the interfaces and serve as a guideline for the construction of the module itself.

The first page of the module is the authorization page. Noticed from the module overall architecture in Figure 3.3, the module is divided into three major sub-components. The sub-component *Bid Evaluation (Technical)* is developed specifically for the package engineer while the *Bid Evaluation (Commercial)* sub-component is developed for the procurement analyst or buyer of the package itself. Both package's engineer and buyer will enters the module into their own respective component, thus this authorization page allows the module to recognize and identify who's who and directed them to the next appropriate page.

BID EVALUATION & CLARIFICTION MODULE

USERNAME:

PASSWORD:

ENTER

Figure 3.4 Authorization Page

This page is the first page for the technical evaluation component of the module which is solely for the package's engineer. In this page, the engineer enters the code for the package that he or she is responsible for. Upon hitting the button 'UPLOAD', the list of companies participating in the provision of the package will be uploaded from the database into the page. The uploaded information is based on the requirements as shown in the story board above. Using this page of the module, the engineer can accessed to the submitted bids (technical only) by browsing to the folder that contains said bids. In the folder, there may be more than just the bids document, thus if the buyer wishes to view only the submitted competing technical bids, they can do so by hitting on the 'LIST' button that would list only the technical bids in the given list box. This allows the engineer to have a brief acknowledgment of the competing companies' code before actually going into the evaluation process.

BID EVALUATION (TECHNICAL)

SELECT TENDER'S DIRECTORY AND FOLDER:

D:

D:\

- Procurement Folder
- Package
- Technical Bids
- Commercial Bids

LIST OF BIDDERS (COMPANY):

BidderA.txt
BidderB.txt
BidderC.txt

LIST

LOGOUT

ENTER PACKAGE'S CODE:

UPLOAD

PACKAGE'S INFO:

NAME:

OPEN DATE:

CLOSING DATE:

DEPT:

BUYER:

NEXT

Figure 3.5 Package's Information Page

The second page under the technical evaluation sub-component is the technical evaluation and clarification page. After viewing the package's information and the list of contending bidders, package's engineer can now starts with their technical evaluation. First the engineer would upload the summarized bid into the module using the button 'OPEN'. The summarize bid although only consisted of the important information, is hard to be read due to the lack of pronunciations, conjunctions and articles. Thus, to allow the engineer to directly search for the specific key criteria based on the general and essential criteria, the engineer can sort all the words in the bid documents into their respective, single word. By doing so, the engineer can search for the required key words faster by going through the list of words used in the bid, rather than having to read the summarized bid sentence by sentence.

BID EVALUATION (TECHNICAL)

[LOGOUT](#)

Open Bid

OPEN

COUNT

Bid's Words Frequency

WORD
FREQUENCY

Search Sentences from Bid

SEARCH

Evaluation Result Submission:

Package's Code:

Bidder's Code:

SWEC:

Result:

ADD
RESET
SUBMIT

Figure 3.6 Technical Bid Evaluation & Clarification Page

For example, for a bid with a technical essential criterion of “*an office branch in Miri, Sarawak*”, the engineer can look up whether the words ‘Miri’ or ‘Sarawak’ are listed in the sorted list box. The engineer can make their evaluation based on the existence of the specific keywords in the technical bid that is currently being uploaded.

For a more advanced search, the engineer can use the ‘SEARCH’ button. First the engineer would enter the key criteria into the designated space. For all intent and purpose, only one word is allowed to be entered into the space per search. This is to ensure that all related sentences to the searched word will be uploaded into the list box regardless of the order of the word in the sentence.

After evaluating a bid, the engineer can then enter the result of their evaluation and submit it to the designated database using the *Evaluation Result Submission* template that was prepared in the page. The result data will be accessed by the package’s buyer in the commercial evaluation process in determining which company’s commercial bid can be evaluated (GREEN-banded) and which of those that cannot be evaluated (YELLOW-banded and RED-banded). Subsequent to finishing evaluating the technical bids, the engineer’s job in the bid evaluation and clarification stage is deemed as completed and they can logout of the module by clicking on the ‘LOGOUT’ label at the top right of each page.

This is the first page the package's procurement analyst or buyer will encounter upon entering the module. For all intent and purpose, this page has the same functionality as the one shown in Figure 3.6. The only difference between the page in Figure 3.7 here and the one in Figure 3.6 above is the level of security and access to the package's bids folder. By applying different level of Network Area Storage (NAS) security to each engineer and buyer's personnel computer, the administration can limit the engineer access to only the technical bid's folder while the buyer will have the access to both technical and commercial folders of the package in question. The procurement analyst or buyer (end-user) can access to the technical evaluation results from the database and move from one result to another using the 'PREVIOUS' and 'NEXT' button. After finishing the commercial evaluation (using optional commercial model), the buyer moves to the next page of the module, the winner submission page to submit the winner's information to the database.

BID EVALUATION (COMMERCIAL)

[LOGOUT](#)

Open Bid

OPEN

COUNT

Bid's Words Frequency

WORD
FREQUENCY

Search Sentences from Bid

SEARCH

UPLOAD

Technical Evaluation Result:

Package's Code:

Bidder's Code:

Conformant to SWEC:

Technical Evaluation Result:

PREVIOUS
NEXT
NEXT PAGE

Figure 3.7 Commercial Bid Evaluation & Clarification Page

This page is a continuation from Figure 3.7 above. Here the buyer will enter the package's information and the winner's particulars to be submitted into the database. The winner is selected based on the commercial evaluation using a predetermined policy for selecting the winner such as the *lowest-priced technically acceptable* bid. The submitted information will be saved inside the database to be accessed by the procurement manager or requesting department's manager for result affirmation. If needed, the result will be transmitted to PETRONAS through an external communication channel. Only after the result had been affirmed by the department managers can it be transmitted to the winner to notify them of their success through the E-Procurement system (E-Tendering module) as had been shown in Figure 3.2 above.

BID EVALUATION (COMMERCIAL)

[LOGOUT](#)

BID WINNER SUBMISSION:

Package's Code:	<input style="width: 90%;" type="text"/>
Package's Name:	<input style="width: 90%;" type="text"/>
Department:	<input style="width: 90%;" type="text"/>
Buyer's Name:	<input style="width: 90%;" type="text"/>

PACKAGE'S WINNER CODE:	<input style="width: 90%;" type="text"/>
TECHNICAL EVALUATION:	<input style="width: 90%;" type="text"/>
COMMERCIAL EVALUATION:	<input style="width: 90%;" type="text"/>

Figure 3.8 Winner Submission Page

3.3 Proposed Module's Functionalities Flow Chart (Technical and Commercial Evaluations)

Figure 3.9 below shows the proposed functionalities flow chart for the module that is being developed. The chart gives a visual description of the flow of functionalities or activities that take place within the *Bid Evaluation and Clarification* module. As had been described in Section Three (3) above, the evaluation takes place in two-tier where the technical evaluation must be performed first before the commercial evaluation can proceed. This is to ensure that the integrity of both evaluations is maintained all through the evaluation and clarification process and even after the process itself had been completed and the result had been announced to the winning vendor.

The flow of the module starts with the package engineer entering into the technical sub-component of the module through the personnel authorization page. Here the system will refuse and block any person that tries to enter the module without proper authorization as part of the security measure undertaken. The engineer will then check the list of submitted technical bids for that specific package and also the information on before proceeding with the evaluation of the technical bids. Only after each and every technical bid for that package had been evaluated and the results are submitted to the designated database for recording and viewing purpose is the engineer jobs deemed finished and the package buyer can starts with their own evaluation on the commercial bids of the same package.

The buyer enters the module from the same authorization page but is taken into the commercial sub-component using different username and password from the ones given to the package engineer. The buyer access the results of the technical evaluation previously performed by the engineer through the module and continue with their own evaluation from there. The final result of which companies wins the package is decided through the commercial evaluation and the information is saves into another database to be relayed to the higher management and to the winning vendor. After the package winner information had been saved into the database the buyer can logout from the module and marks the end of the bid evaluation and clarification process.

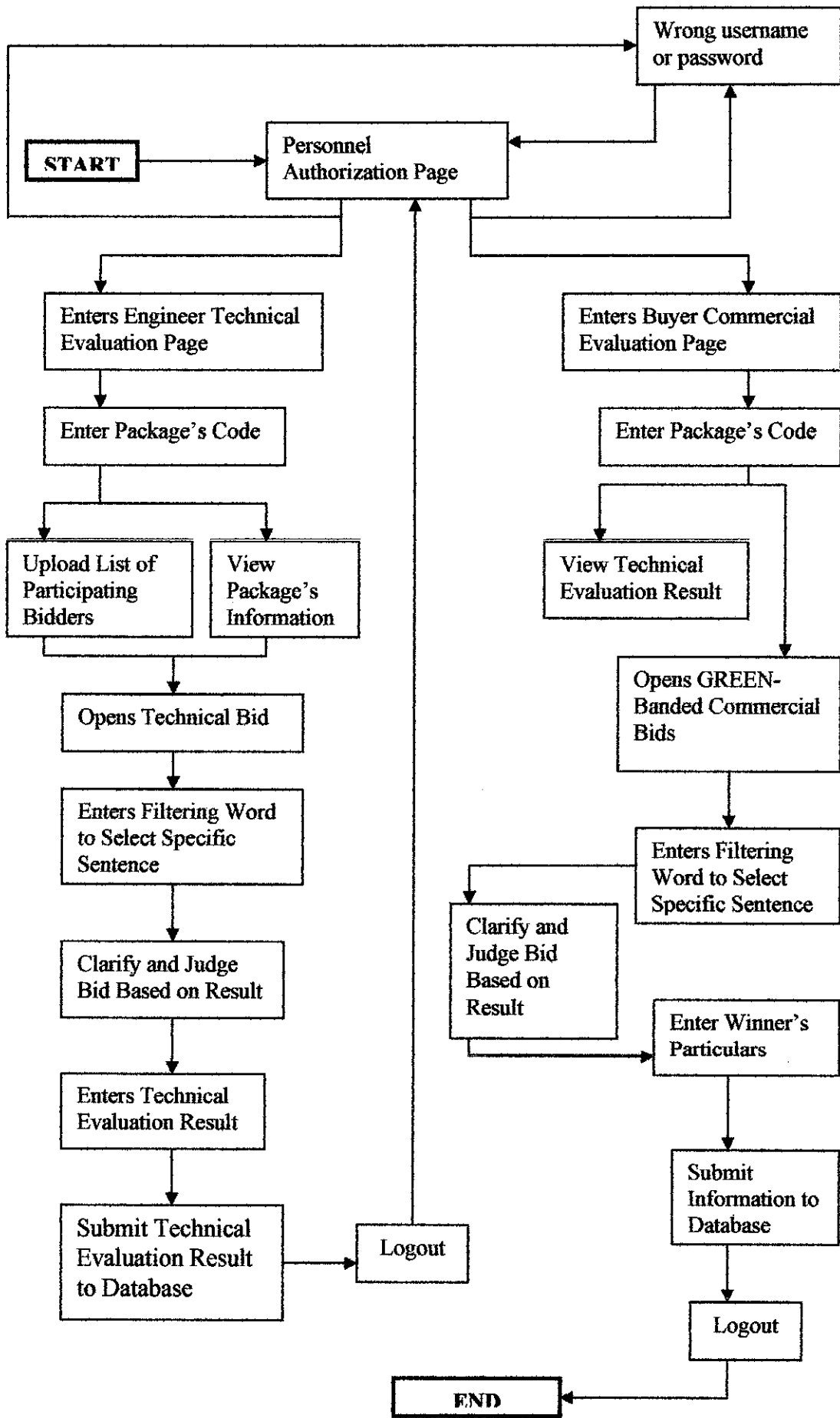


Figure 3.9 Proposed Module Functionalities Flow Chart

4. EVALUATION AND CLARIFICATION SUB-COMPONENT CONSTRUCTION

4.1 Development Tools

For the development and construction of the *Bid Evaluation and Clarification* module the following set of hardware and software had been used.

1. Managerial / Documentation Purpose Tools

- **Microsoft Project**
 - Used for the preparation of project works schedule (Gant Chart), resource allocation and project tasks identification.

- **Microsoft Visio**
 - Used to generate professional module diagrams such as the data flow diagram (DFD), entity relationship diagram (ERD), class diagram and other that are used in the initial designing of the proposed module.

- **Microsoft Word and Excel**
 - Used in the preparation of the log book, weekly report, project's documentation and the final dissertation of this study.

- **Microsoft PowerPoint**
 - Used in the preparation of the slides for the presentation of the study and the proposed module to the internal and external examiners.

2. Module Development & Construction Tools

- Microsoft Visual Studio version 6.0 (Visual Basic)
 - The main development and construction software in the creation of the proposed module. As the module will be a stand alone back-end, this software is deemed the most feasible to be used to develop the module itself.

- Microsoft Access
 - Used to create the databases necessary for the module.

- Development & Construction Hardware
 - The hardware that is used in the development and construction of the proposed module is the ASUS Notebook A2 Series. The specifications of the notebook are as listed below.

Module:

Microsoft Windows XP Professional
Version 2002
Service Pack 1

Computer:

Mobile Intel ®
Celeron ® CPU 2.40GHz
2.39 GHz
224 MB of Ram

CHAPTER 4

RESULT AND DISCUSSIONS

This chapter shall be discussing the result of the study that had been conducted and the development of the *E-Procurement Bid Evaluation and Clarification* module. The aims of this chapter are to create a link between the study being done and the final product in terms of the objectives during the development of the module design and followed by a discussion on the finished module's functionalities and limitations. The author aims so that with this discussion, more data and information regarding the development of a practicable automated procurement module will be able to be put into light. The information will be useful for all as to accelerate the future development and growth of E-Commerce environment in Malaysia generally and of E-Procurement system in upstream oil companies specifically. The discussion will also be focusing on whether the developed module had managed to fulfill the four scopes of project or objectives as had been proposed earlier.

1. MODULE DESIGN'S DEVELOPMENT OBJECTIVES

The module was developed with two objectives in mind. The first objective is to develop a module that would allow all parties that involve with the technical and commercial evaluations stage of a package to perform their designated tasks. The second objective is the development of a module with the most efficient design; one that would cater for each and every step done in traditional manual evaluation stage. The two objectives above will be further discussed in this section.

1.1 Catering for Personnel to Perform Designated Tasks

During the design and development phase of the module, an intention that comes to mind is to ensure that the module caters for all related personnel in conducting the tasks that they are required to do in evaluating any package; be it the technical evaluation or the commercial evaluation. In any evaluation stage, the two main parties involve are the package's engineer (for technical evaluation) and the

package's procurement analyst or buyer (for commercial evaluation). Therefore, the module was designed in a way so that both parties can conduct their specific evaluations without giving extra preferences or privileges to either one party.

1.2 Efficient Design in Catering for Evaluation Steps

The second intent in the whole development of the module is the creation of the most efficient and practicable module design. This design must be in a particular way so that all essential steps of both the technical and commercial evaluations can be performed electronically rather than manually. In traditional manual evaluation stage, the steps that are performed in chronological order are as shown in Figure 4.1 below.

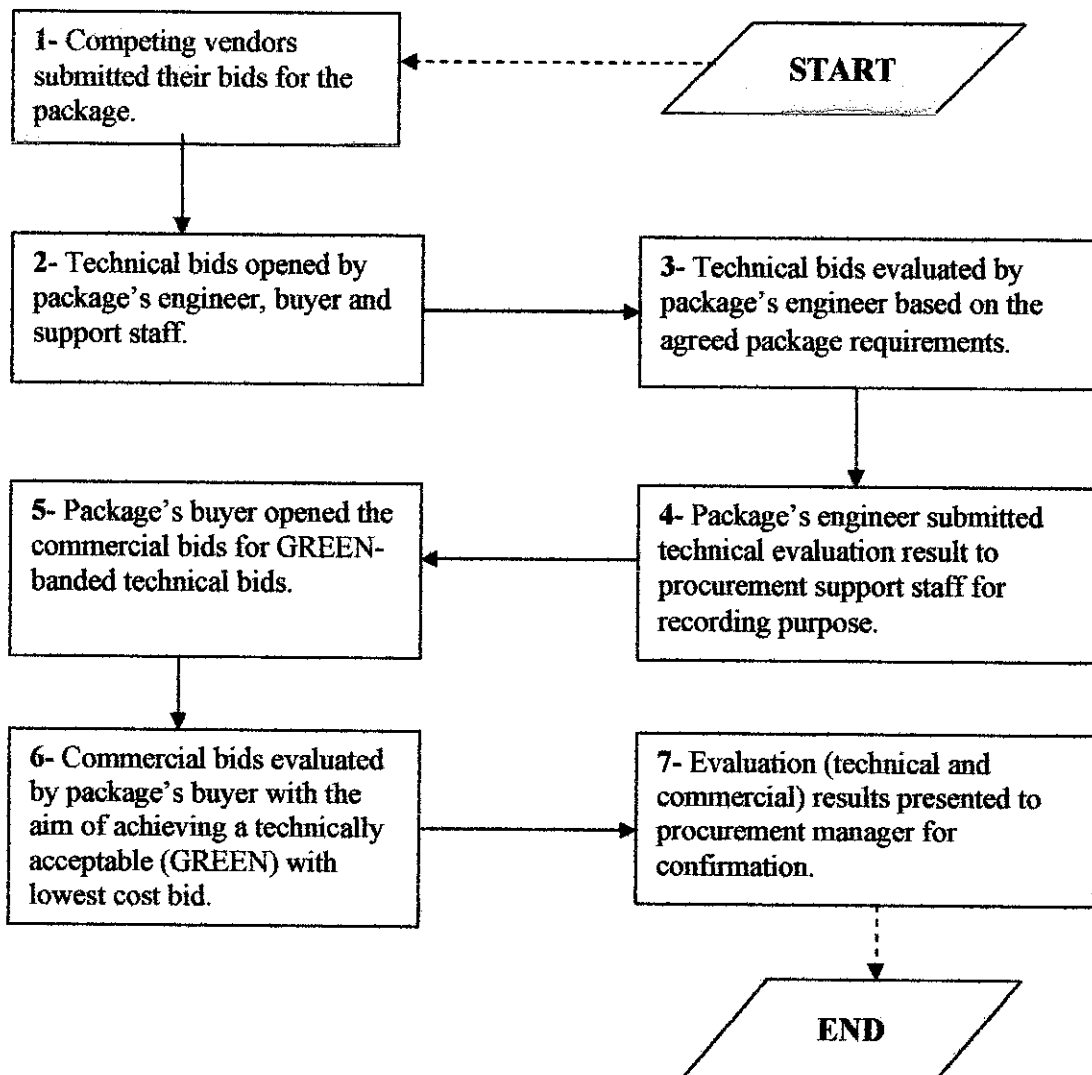


Figure 4.1 Traditional Manual Evaluations Stage

Referring back to the previous Figure 4.1, with the development of the *Bid Evaluation and Clarification* module the steps as showed in the figure can be completed electronically (click and mortar) rather than through the traditional paper-based way (brick and mortar). The module also allows for less important steps to be combined with other more important steps or even directly eliminated from the stage itself. After the process has been reengineered, the steps that are eliminated from the process flow in Figure 4.1 above are step 2, step 4 and step 5. A more detailed discussion on the eliminated steps is included after Figure 4.2 below which is the improved steps of a reengineered evaluations stage.

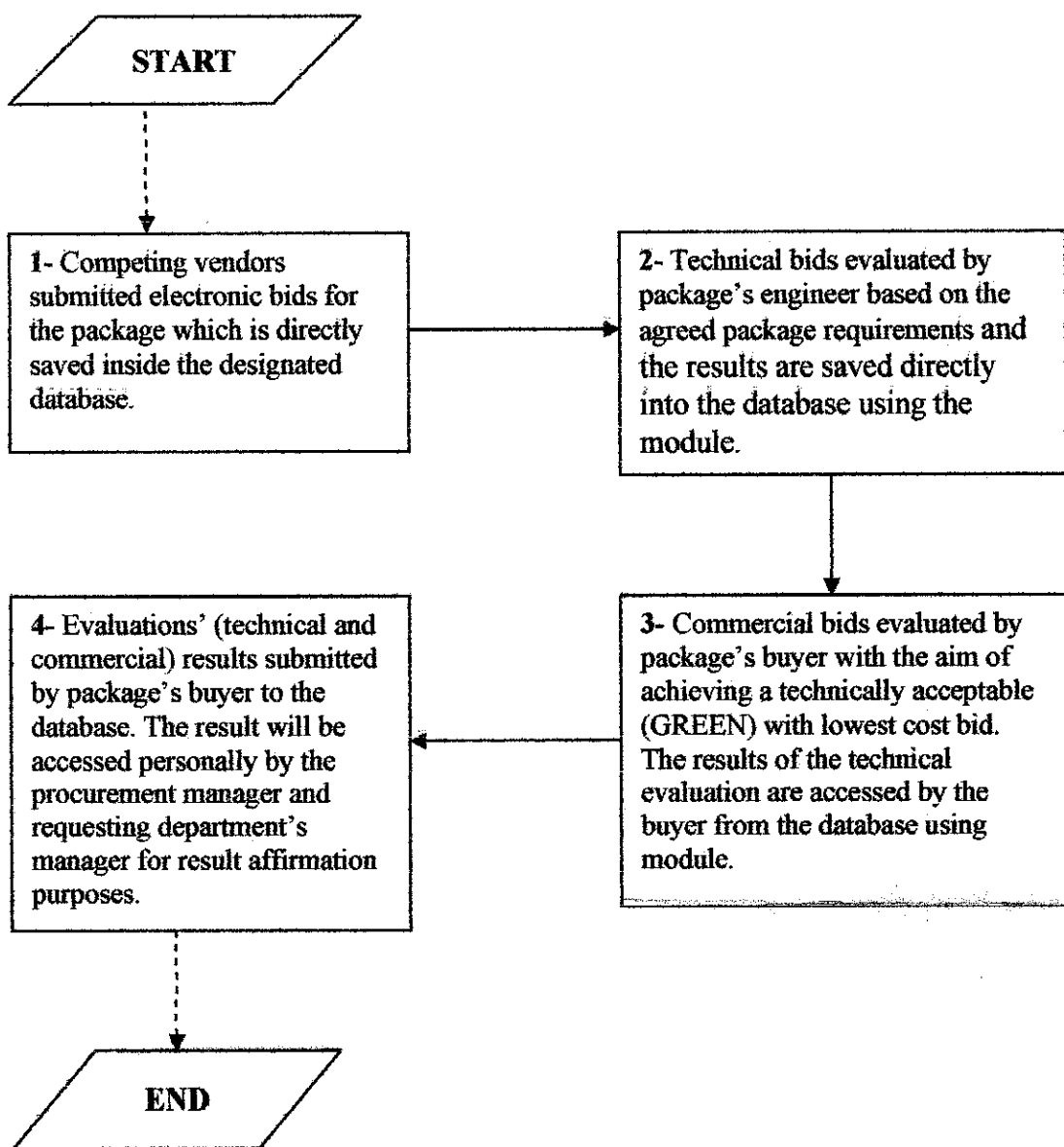


Figure 4.2 Reengineered Evaluations Stage

By means of the implementation of the module, the package's engineer, buyer and procurement support staff no longer have to set up a meeting date to open the submitted technical bids (Step 2 and Step 5 of Figure 4.1). It is a norm practice for all three parties to meet up in an isolated room (aptly named Bid Opening Room) and opens the submitted technical bids one by one while the support staff records the event using a formatted form. As for the commercial bids, they are opened by the buyer with the assistance of the procurement support staff once the result for the technical evaluation had been received from the engineer. However, due to the clashing commitment between the parties, the bids opening sometimes more often than not is done with the absent of either one party (usually the package's engineer). By using the module, the three parties no longer needs to meet up at the same place on the same time since the bids are submitted in electronic form (Microsoft WORDS document, Notepad text or any equivalent forms). The electronic bids are then saved inside their respective folder inside the database (Network Area Storage or NAS) to be accesses by both the package's engineer and buyer in conducting their evaluations.

Using the module, the package's engineer is now given the authority to enter the result of their evaluation themselves into the designated database (Step 4 of Figure 4.1). The engineer no longer have to submit the result of the technical evaluation to the procurement support staff for recording purpose, thus ensuring the integrity and security of the result from the knowledge of unrelated personnel. The package's buyer can then access to this result from the module's database and continue with their commercial evaluation based on the result.

2. DEVELOPED MODULE FUNCTIONALITIES AND LIMITATIONS

As per the module architecture in Figure 3.3 in Chapter 3: Methodology / Project Work, the submitted electronic bids are summarized first using a text summarization function which is outside the scope of this study / project. For all intent and purpose, the text summarization function will be defined as creating an abstract out of the original electronic bid. Some features that had been identified based on Goldstein and Edmundson works are:

- *Keyword Occurrence* – Words most often used in document usually represent theme of document
- *Title* – The title and the following sentences are indicative of the themes of the document
- *Location Heuristic* – Location of the document on the most important information lies where genres put important sentences in fixed positions, whereas here, the data needed are mostly included are at the beginning of the document e.g. for Form of Package
- *Upper-Case Word Feature* - Sentences containing acronyms or proper names are included, example “Power Trainer”
- *First Sentence* - First sentence of each paragraphs are the most important sentences

While the above features increase the score of a sentence to be included in the summary, there are exceptions are made in using these technique which are by not including:

- *Pronouns*: e.g. “she, they, it”
- *Articles*: e.g. “the, a, an”
- *Conjunction*: e.g. “and, if, or, but”
- *Preposition*: e.g. “to, in, on, near”

The summarized bids are then saved into a Network Area Storage (NAS) inside their specific folders. The NAS allow the folders to be shared among authorized personnel's computers such as the procurement analysts and procurement support staffs desktops.

As for the filtering / key word searching function of the module, the initial idea was to create the module so that end-users would only need to enter the bid's criteria into the specified text box and the module would proceed to filter the bids in the database based on the criteria themselves. Further study and research however had shown many flaws in the proposed function in term maintaining both the security and the integrity of the submitted bids. As such, the key word search function was developed in a way that the bids are summarized first using the text summarization module before being upload into the *Bid Evaluation and Clarification* module for key word and key sentence searches.

Another problem that arises from the initial idea is that there can only be two technical evaluation parity bands, **GREEN** (technically acceptable) and **RED** (technically unacceptable). However, according to PETRONAS' Procurement Manual for Operations in Malaysia as a Production Sharing Contractor, a third parity band, **YELLOW** (technically acceptable but with areas of minor concern) can also be used in evaluating the technical bids. As per the initial idea, the bids will be filtered solely based on the general and essential criteria, thus bids that are actually acceptable but does not have words similar to the entered criteria would be deemed as unacceptable by the module.

Thus, the current module's technical and commercial evaluations page functionality takes into consideration the problems that was discussed earlier and also of the fact that for the clarification process, the bid in question need to be in a dynamic form such as WORDS document or text document so that both engineer and buyer can clarify the bids even as they are being evaluated. Therefore, the current filtering / keyword searching function had been developed as part of the prototype module.

The last function of the module allows the package's buyer to enter the particulars of the package's winner into the module to be saved into a designated database (Microsoft ACCESS). Referring back to Figure 3.2 from Chapter 3: Methodology / Project Works; the result from the back-end automated procurement module will be sent to a database that is linked to the online E-Procurement system (application server, web server and browser). The design of this function allows for the information (package's identification and winner's information) to be entered personally by the buyer. This will allow the buyer to clarify all data before it was submitted to the database that is linked to the online E-Procurement system.

3. MODULE CONFORMANT TO SCOPE OF PROJECT / STUDY

This section aims to do a post-mortem on the prototype module to see whether the module had managed to conform to the four scope of project that had been decide for this study in Section Three (3) of Chapter 1: Introduction. The discussion will be on the success or the failure of the module to meet each one of the scope mentioned above. Discussion will be made on unsuccessful attempt of the module to meet the required scope / function and the reason as to why it is so.

Objective 1: Drawing the bids for the specific tender or package from the company's database / repository.

Status: Objective achieved.

Details:

The module would access into the specific package / tender folder that was created by the procurement support staff upon the initial starting of the package within the Network Area Storage or NAS. The module would then upload the summarized bids into the text box prepared for the engineer and the buyer to read the summarized bids and conduct their respective evaluations.

Objective 2: Key searched the packages based on the requirements of the evaluators and the package's general and essential criteria.

Status: Objective achieved.

Details:

Using the developed function, module's user would first opens a bid to be evaluated and then enters the pre-agreed criteria into the text box provided. The module would search for the words from the bid that is currently being uploaded in the text box. The user would then judge the bid for its conformant to both the essential and general criteria based on the result of the search function. The developed searching function was designed based on the "functional-equivalent" approach which was introduced by the United Nations Commission on International Trade Law (UNCITRAL) in regards to the creation of E-Commerce legislation and law [15]. Using the mentioned approach, the searching function was developed by placing traditional evaluations processes (technical and commercial) on the same practice as an automated procurement module.

Objective 3: Preparing a checklist or template for the evaluators to save their evaluation result.

Status: Objective achieved.

Details:

In the module design, this function was developed as to support and allow both package's engineer and buyer in saving their evaluation result electronically by preparing a template for them to do so. The templates were designed so that they can be used even for different packages' evaluation. Using the templates, both engineer and buyer can save their evaluation result directly to the prepared databases without having to do so externally (manually). The templates are design so that they conform to the designated databases' tables and fields.

Objective 4: Preparing a template for the procurement analyst to enter the bid's winner particulars to be submitted into the database.

Status: Objective achieved.

Details:

The template is created under the buyer's section of the module since the buyer is the person with the authority to select the winner of the package's based on each company's commercial bid performance. Using the template, the buyer will be entering the data as had been specified in the module. Since the buyer is also the person who is responsible in opening the package, it is assumed that they have all the necessary knowledge regarding the package's itself such as package's code number, name and the department that initiated the package itself. After entering the package's information, the buyer will proceed with entering the winner's information into the same template before submitting the completed information to the database to complete the E-Procurement processes as had been shown in Figure 3.2 and Figure 3.3 of Chapter 3: Methodology / Project Works.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

1. CONCLUSION OF STUDY CONDUCTED

Overall, the study conducted and the module developed represents only a small margin of the total E-Procurement system development. However, may with the data and information gathered from this study, more efforts will be taken by other parties (industry expert, information system's expert) in conducting further and in-depth research on the design, development and implementation of the E-Procurement system to ensure that Malaysian' companies are not being left out in the race towards total digital market (E-Commerce) implementation in the near future. As per Figure 5.1 below, it shows that a company must spends some money to develop and to implement the most feasible procurement module for their business before they can actually makes money out of the module itself [13] .

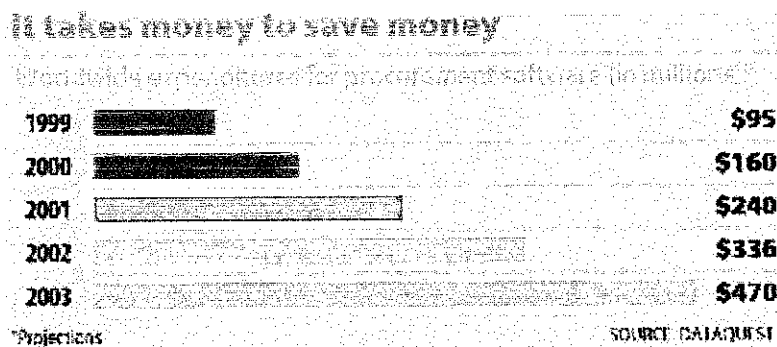


Figure 5.1 Expenditures for Procurement Software

The reason as to why this study is being focused to upstream oil companies is due to the fact that these companies are more often involve in a buying / acquiring process that values far more than other industries (speaking in terms of hundred thousands to millions of Ringgit Malaysia (RM)). Therefore, the common automated procurement module that allows a company to conduct their buying through a selection of pre-approved vendors is not feasible for these oil companies due to the value of the item or service being procured and the procurement policies.

This study had shown that it is not an easy task to automate the procurement process that had been performed manually using paper as its main medium for over hundreds of year. It helps to understand that a procurement process involves more than just the buying or accusation of a desired item or service. It requires for sound communication channels to exist between buyer and the seller and well as between the department that request the buying and the procurement group that actually conducts the whole buying / acquiring process. The *Bid Evaluation and Clarification* module that was developed along with this study aims to help in bridging the communication channel between the latter parties as well as to allow the bids' evaluation process to be conducted electronically. As per finding, it can be concluded that automated evaluation process resulted a faster evaluation turn around for both the package's engineer and the package's buyer. The saved time can be used for other business purposes that would further allow the company to grow and flourish.

Automated evaluation process also resulted in numerous amount of saving in the long run for both the buyer and the competing vendors, mostly in the bid production area. With the usage of electronic bids, competing vendors no longer have to spend tons of money in producing a paper bid document and making copies of the bids for further references. For an example, lets assume that a company (buyer) had released three *Request for Quotations* (RFQ) or *Invitation to Bids* (ITB) that are closely linked to one another (pipelines, bolts and fabrications). There is a high possibility that a vendor's name would be short- listed for all three packages due to the similar nature of the items. Thus the vendor would then have to produce three different technical and commercial bids that are required for them in order to compete for each of the package mentioned above. In the long run, the costs that the vendor incurred in producing the bids (paper, ink, printer, binder) would be better off for other business purposes. This is where electronic bids and automated procurement module came into the picture.

As for the buyer-side, automated evaluation process helps them to better perform the necessary tasks (bid technical and commercial evaluations) as required in choosing a winner for the package. In relation to the *Bid Evaluation and Clarification* module, the bid evaluation and clarification process that usually take over five working days or more to be completed can be reduced by almost thirty-percent (30%). This assumption is achieved by conducting both evaluations of a single bid using the module and compares it to the time usually taken to perform the tasks manually. Table 5.1 below shows the calculation that was done in achieving the result as stated above by comparing the amount of time required to complete the traditional bid evaluation and clarification process manually in comparison to conducting the reengineered process using the automated module.

<u>Traditional Method</u>	<u>Automated System</u>
<p>Given data:</p> <ul style="list-style-type: none"> • 10 competitive bids (technical & commercial). <p>Based on actual data:</p> <ul style="list-style-type: none"> • 5 days for each evaluation. • 1 hour per day to evaluate / 2 persons. <p>Constraint:</p> <ul style="list-style-type: none"> • Limited time to use the bid room. <p>Result:</p> <ul style="list-style-type: none"> • Average of 2-3 bids evaluated per day. 	<p>Given data:</p> <ul style="list-style-type: none"> • 10 competitive bids (technical & commercial). <p>Based on test data:</p> <ul style="list-style-type: none"> • 3 days for each evaluation. • 1 hour per day to evaluate / 1 person. <p>Constraint:</p> <ul style="list-style-type: none"> • Evaluating from own workspace. <p>Results:</p> <ul style="list-style-type: none"> • Average of 3-4 bids evaluated per day. • Reduction of almost 30% from the overall time usually needed.

Table 5.1 Time Comparison between Traditional Process and Automated System

2. DEVELOPMENT CONSTRAINTS AND PROBLEMS ENCOUNTERED

The *Bid Evaluation and Clarification* module was developed not without facing numerous constraints along the way. One of the most significant constraints is the lack of similar module or automated back-end procurement module that existed in Malaysian's upstream oil companies. Currently, these companies are still resorting to conduct the traditional evaluations (technical and commercial) stage the paper-based way. Therefore, this module was developed as a prototype with the procurement environment at MURPHY Sarawak Oil Ltd. as both its guidelines and basis of development. This constraint had caused an inability for the module to be developed to be as efficient, effective and practicable as it was aimed to be.

The second constraint to both the project and the study that was being done is the lack of established studies or researches conducted by experts in term of the technicalities of the E-Commerce and the E-Procurement themselves. As per finding, most journals written on E-Commerce and its branches more often than not are discussing the theoretical part of it, rather than the technical explanations and guidelines of developing an E-Commerce system and its related sub-modules (E-Procurement, E-tender and etc). This had been most disheartening especially when being added to the first constraint that is the lack of existing automated back-end procurement module in Malaysia to be used as an example for the module development. As such, the author had to make do of the existing studies and experiences gathered while working as a trainee procurement analyst cum procurement support staff to overcome this constraint.

3. RECOMMENDATIONS FOR FUTURE ENHANCEMENT

Table 5.2 below shows some of the future expansions that are recommended for the *Bid Evaluation and Clarification* module. These expansions are not absolute and are to be modified as more information regarding the scopes, performances, functionalities and practicability of the prototype module are received from the end-users.

<p style="text-align: center;">Future Module Expansions</p>	<p><u>Scope:</u></p> <ul style="list-style-type: none"> • Customized the module so that it would better serve the end-users (technical and commercial evaluators) in performing the evaluation steps required. • Connecting the module to a higher-level database so that tables-joining can be performed between the module's tables in order to provide the end-users with better data and information. <p><u>Functionalities:</u></p> <ul style="list-style-type: none"> • Integrating the text summarization module with the bid evaluation and clarification module so that end-users can performed the text summarization themselves while conducting the evaluation rather than having two sets of bids saved inside the Network Area Storage (NAS), the original electronic bid and the summarized bid.
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Table 5.2 Bid Evaluation and Clarification Module Future Expansions

This study does not attempt to suggest a 'one size fits all' module when it comes to procurement automated solution. Procurement process is very dynamic and changes accordingly to fit in the business process of the company (the manufacturing industry's procurement activity differs from that's being implemented in oil industry). This study aims to point out the benefits, problems, limitations and the space of functionality one must consider when developing an automated procurement module particularly for automating the bids' evaluation and clarification stage.

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APPENDICES

APPENDIX I
SYSTEM INTERFACES

SYSTEM INTERFACES

As Per System Storyboard

BID EVALUATION AND CLARIFICATION



Authorization

USERNAME: engineer

PASSWORD: *****

ENTER

RESET

EXIT

Engineer Authorization Page

PACKAGE INFORMATION PAGE

BID EVALUATION (TECHNICAL)

IDED01

SELECT TENDER'S DIRECTORY AND FOLDER:

- ..d
- ..jdv
- ..wPOC - 172
- ..Technical Base

ENTER PACKAGE'S CODE: WPOC 172

UPLOAD

PACKAGE'S INFORMATION:

NAME: WPOC 172

OPEN DATE: 12/7/2004

CLOSING DATE: 20/10/2004

DEPARTMENT: Production

BUYER: Amalia Abdul Rahim

LIST OF BIDDERS (COMPANY):

- BidderA.txt
- BidderB.txt
- BidderC.txt
- BidderD.txt

LIST

NEXT

Package's Information Page

BID EVALUATION (TECHNICAL)

OPEN BID

Kazanah Sdn. Bhd

Production Manager

Proposal for the Provision of Non-Professional Manpower Supply Service for West
Patricia Production Operation Bintulu Branch (WPOC-172)

Response Invitation to Bid document dated 12/7/2004

would like present
proposal provision Non-Professional Manpower Supply Service West
Patricia Production Operation.

Understand that MURPHY wish acquire Non-Professional Manpower Supply Service
indefinite time West Patricia production operations.

Proposal defines understanding required scope of supply.

With proposal presents reply stated technical requirements per ITB.

Lists all trades service

Trust proposal provides level information require provision project.

INTRODUCTION

Open File

Count

BID'S WORD FREQUENCY

01 = acquire
01 = addressess
01 = all
01 = assistance
01 = bid
01 = coded
01 = construction
01 = criteria
01 = defines
01 = document
01 = essential
01 = following
01 = from
01 = general
01 = had
01 = indefinite
01 = information
01 = introduction
01 = invitation
01 = level
Sort by

LOGOUT

Word

Frequency

SEARCH SENTENCES FROM BID

- 1 Understand MURPHY wish mobilization rate less 7 days personnel rig Bintulu branch
- 1 Mobilization less 7 days from Bintulu office
- 1 Company branch office Bintulu personnel mobilization

EVALUATION RESULT SUBMISSION

PACKAGES CODE: WPOC 172

BIDDERS CODE: Bidder B

SWEC: Passed

RESULT: GREEN

bintulu

Search

ADD

RESET

Technical Bid Evaluation & Clarification Page

AUTHORIZATION PAGE

BID EVALUATION AND CLARIFICATION

Authorization

USERNAME:

PASSWORD:

Buyer Authorization Page

TECHNICAL BID EVALUATION & CLARIFICATION

BID EVALUATION (COMMERCIAL)

OPEN BID

Kazanh Sdn. Bhd
Production Manager

Proposal for the Provision of Non-Professional Manpower Supply Service for West Patisia Production Operation Sirtulu Branch (WPOC-172)

Response: Invitation to Bid document dated 12/7/2004 would like present commercial proposal provision Non-Professional Manpower Supply Service West Patisia Production Operation.

Understand that supply with acquire Non-Professional Manpower Supply Service indefinite time West Patisia production operations.

Total service price RM 500000.

Lists all trades service.

Trust proposal provides level information require provision project.

INTRODUCTION

Open File Count

LOGOUT

BID'S WORD FREQUENCY

- 01 = 000
- 01 = 500000
- 01 = acquire
- 01 = addressee
- 01 = all
- 01 = bid
- 01 = birkatu
- 01 = branch
- 01 = criteria
- 01 = document
- 01 = essential
- 01 = financial
- 01 = indefinite
- 01 = information
- 01 = introduction
- 01 = invitation
- 01 = level
- 01 = like

Sort by Word Frequency

SEARCH SENTENCES FROM BID

1	Total service price RM 500000
---	-------------------------------

price Search

WPOC 172

TECHNICAL EVALUATION RESULT

PACKAGE CODE: WPOC 172

BIDDERS CODE: Bidder B

CONFORMANT TO SWRC: Passed

TECHNICAL EVALUATION Green RESULT

Commercial Bid Evaluation & Clarification Page

BID EVALUATION (COMMERCIAL)**INSTRUCTION:**

To use the Bid Winner Submission function, first click on the ADD button or press Alt-A. Type in the package's information and the winner's particulars into the designated text boxes. Ensure that all particulars are entered and correct before clicking on the SUBMIT button or press Alt-S to send the information to the database. To reset entered particulars, click the RESET button or press Alt-R.

LOGOUT

BID WINNER SUBMISSION

PACKAGE'S CODE	WPOC 172
PACKAGE'S NAME	Provision of Non-Professional Manpower Supply for Production Operation in Bintulu
DEPARTMENT	Operation
BUYER'S NAME	Amalia Abdul Rahim

PACKAGE'S WINNER NAME: Bidder B

TECHNICAL EVALUATION RESULT: Green

COMMERCIAL EVALUATION RESULT: Lowest-priced

CANCEL

RESET

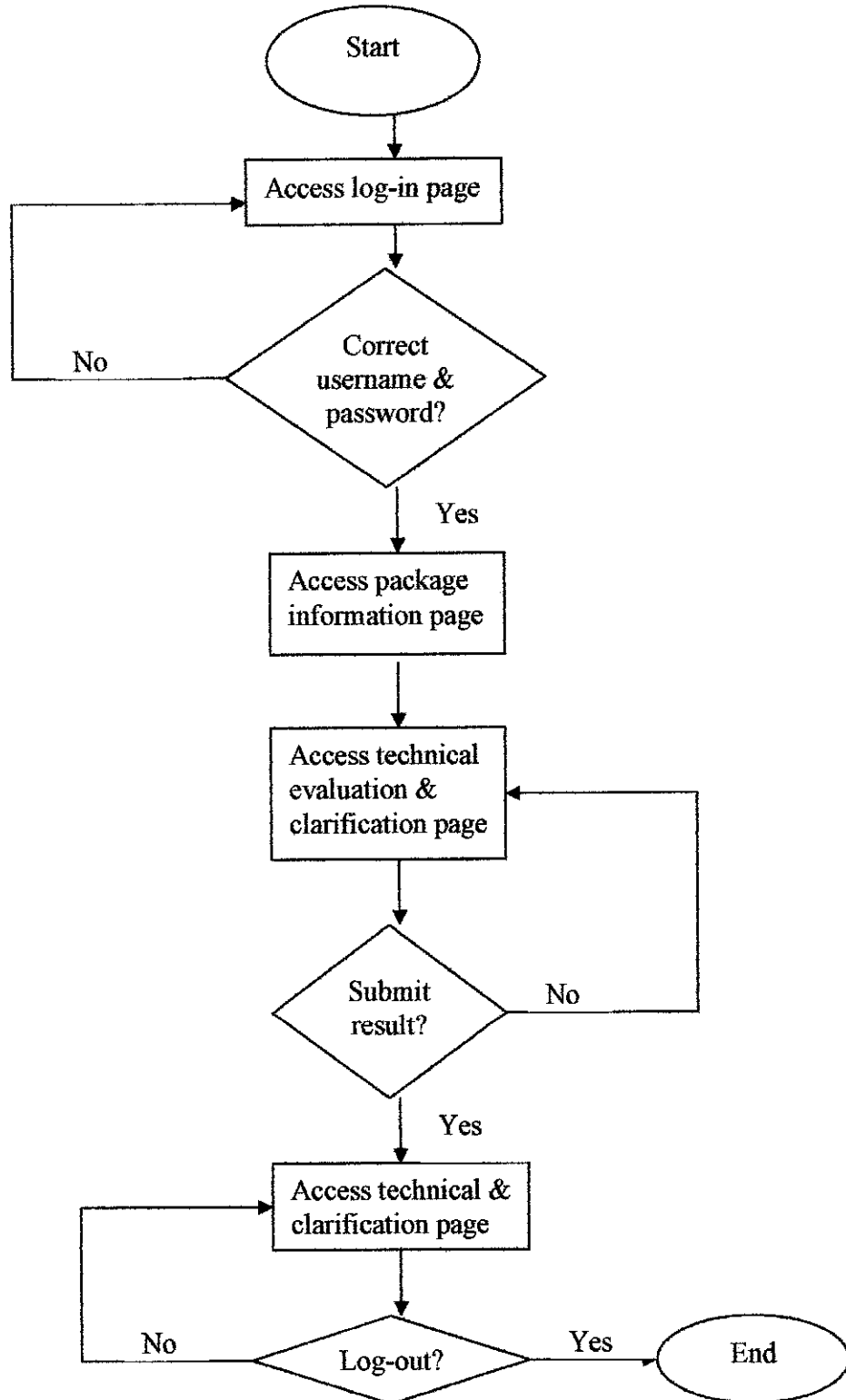
SUBMIT

Winner Submission Page

APPENDIX II
SYSTEM FLOWS

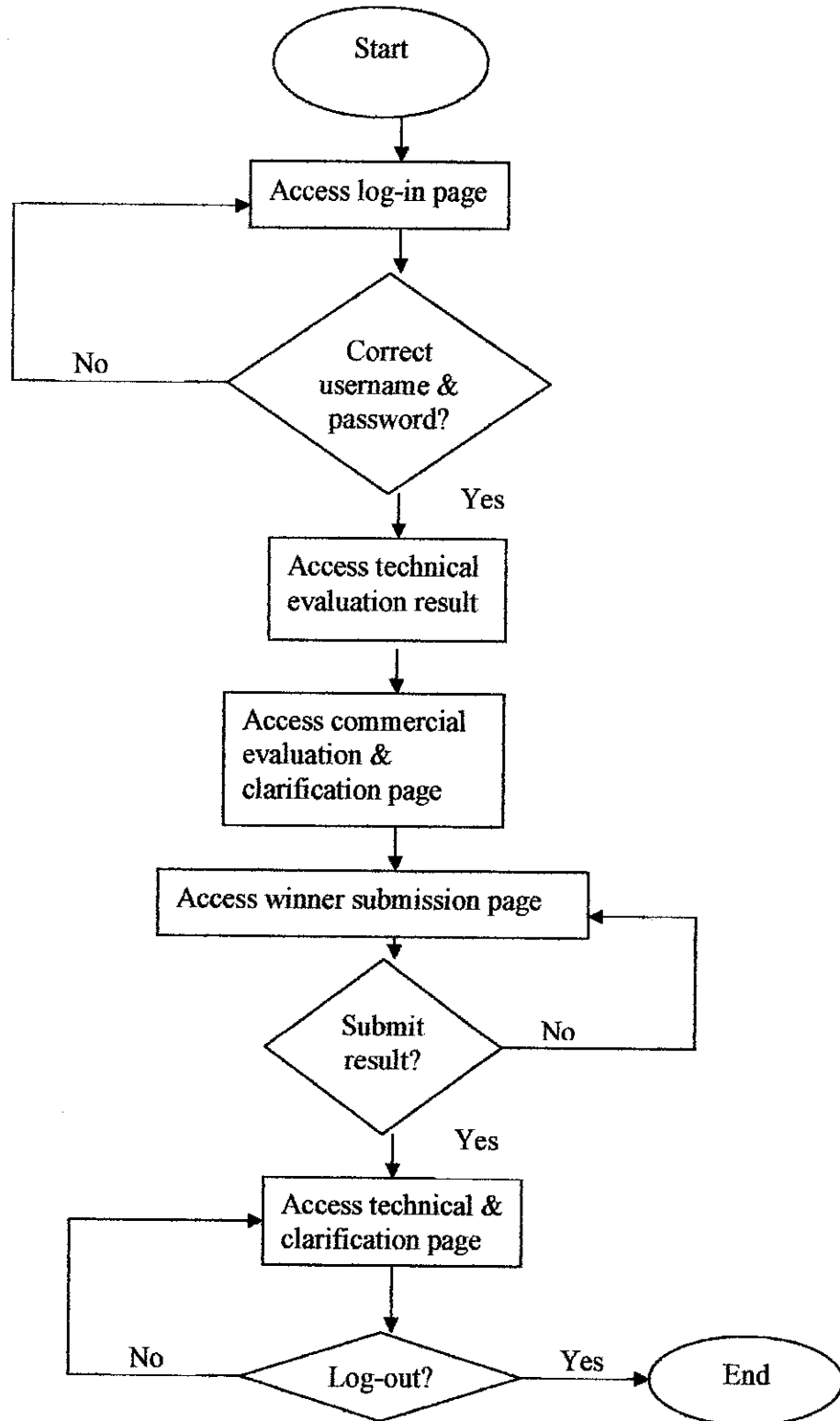
SYSTEM FLOWS

Engineer Level (Technical Evaluation & Clarification)



SYSTEM FLOWS

Buyer Level (Commercial Evaluation & Clarification)



APPENDIX III
GANTT CHART

ID	Task Name	Duration	Start	Finish	August	September	October	November	December
1	Preliminary Report	6 days	Mon 7/19/04	Mon 7/26/04	7/11 7/18 7/25				
2	Chapter 1 - Introduction	5 days	Mon 7/19/04	Fri 7/23/04					
3	Background on study	2 days	Mon 7/19/04	Tue 7/20/04					
4	Problem statements	2 days	Wed 7/21/04	Thu 7/22/04					
5	Objectives & Scope of study	3 days	Wed 7/21/04	Fri 7/23/04					
6	Chapter 2 - Literature Review	5 days	Mon 7/19/04	Fri 7/23/04					
7	Study on E-procurement & Automated Procurement	5 days	Mon 7/19/04	Fri 7/23/04					
8	References	1 day	Fri 7/23/04	Fri 7/23/04					
9	Submit Preliminary Report to the supervisor	1 day	Mon 7/26/04	Mon 7/26/04					
10									
11	Progress Report	15 days	Mon 8/2/04	Fri 8/20/04					
12	Chapter 3 - Methodology & Project Work	14 days	Mon 8/2/04	Thu 8/19/04					
13	Develop methodology for the project	5 days	Mon 8/2/04	Fri 8/6/04					
14	Analysis	5 days	Mon 8/2/04	Fri 8/6/04					
15	Plan & Design	5 days	Mon 8/2/04	Fri 8/6/04					
16	Develop	5 days	Mon 8/2/04	Fri 8/6/04					
17	Test & Debug	5 days	Mon 8/2/04	Fri 8/6/04					
18	Create story board for the module	9 days	Mon 8/9/04	Thu 8/19/04					
19	Submit Progress Report to the supervisor	1 day	Fri 8/20/04	Fri 8/20/04					
20									
21	Interim Report	10 days	Mon 10/4/04	Fri 10/15/04					
22	Chapter 4 - Results & Discussion	9 days	Mon 10/4/04	Thu 10/14/04					
23	Write the results of the project and study conducted	5 days	Mon 10/4/04	Fri 10/8/04					
24	Discuss overall achievements and challenges of the project	4 days	Mon 10/11/04	Thu 10/14/04					
25	Submit Interim Report to the supervisor	1 day	Fri 10/15/04	Fri 10/15/04					
26									
27	Dissertation	31 days	Fri 10/29/04	Fri 12/10/04					
28	Oral presentation & Project exhibition	4 days	Fri 10/29/04	Wed 11/3/04					
29	Chapter 5 - Conclusion & Recommendation	24 days	Mon 11/8/04	Thu 12/9/04					
30	Conclude the study's findings	24 days	Mon 11/8/04	Thu 12/9/04					
31	Recommend future evolution for the study & project	14 days	Mon 11/22/04	Thu 12/9/04					
32	Submit Project Dissertation to the supervisor	1 day	Fri 12/10/04	Fri 12/10/04					



Project: FYP Project Work Schedule
 Date: Mon 12/13/04

Legend:

 Progress

 Milestone

 Summary

 External Tasks

 External Milestone

 Deadline