

**EQUIPMENT TRACKING SYSTEM
FOR ELECTRICAL & INSTRUMENT DEPARTMENT
AT MCOT (MIRI CRUDE OIL TERMINAL)**

By

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FINAL PROJECT REPORT

**Submitted in Partial Fulfillment of the Requirements
for the Bachelor of Technology (Hons)
(Information & Communication Technology)**

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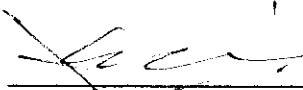
EQUIPMENT TRACKING SYSTEM FOR ELECTRICAL & INSTRUMENT DEPARTMENT AT MCOT (MIRI CRUDE OIL TERMINAL)

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Aerna Wani Binti Ahmed

A project dissertation submitted to the
Information & Communication Technology Programme
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Approved:



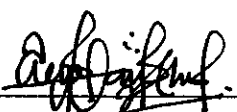
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June 2006

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 acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



Aerna Wani Binti Ahmed

ABSTRACT

This dissertation is written upon completion of the two semesters of Final Year Project in Information Technology Program. This project entitled '*Equipment Tracking System for Electrical & Instrument Department at MCOT*' is done to cater the ease for E&I (Electrical & Instrument) Department to have a proper database and inventory listing in tracking the equipment movement at MCOT (Miri Crude Oil Terminal) as well as tracking the work order resulted from the SAP system. Currently, MCOT are having problems with managing huge data of work orders (WO) and inventory tracking activity. The SAP system is used to raise and plan the WO and also to outline the necessary steps required to raise and plan the WO, prior to work order approval. The SAP stated all the output of the work orders that had been created and the expected finishing date of service or repair completion, but after planning the work order, it is then the responsibility for the maintenance supervisor to keep track of the procurement and the inventory tracking in the department. Thus, the maintenance supervisor finds it difficult to keep track on the finishing date and as well as to have a follow up on the planned WO. These problems need to be solved as each instrument is very critical to MCOT operation. The objective of the project is to provide user with a system that can assist them in tracking the equipment smoothly, to create tracking history and records of the equipment, to avoid any hindrance pertaining to the equipment in order to fasten the processing time of work and to ensure that MCOT will be running with zero shutdowns because each components and instruments in operation is vital prior to receiving crude oil. An evolutionary development approach is chosen in making the project a success as the specification in evolutionary approach can be developed incrementally. After applying the methodology the requirements of the client, this project can be best described as successful and had made the clients and the personnel in the MCOT to be satisfied when performing their job. This is strengthening when a survey conducted shows that 91% of the workers find ETS has helped them well in managing their daily work efficiently.

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Special thanks are also conveyed to Mr Mohd Faizul Abdul Manap and Mr Feizol Ahmad, the programmers of IN4TRACK+ project, in PETRONAS PENAPISAN (MELAKA) SDN BHD. Thank you for their assistance in helping the author to develop this prototype version of project.

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LIST OF ABBREVIATIONS

ETS	Equipment Tracking System
MCOT	Miri Crude Oil Terminal
USD	US Dollar
E&I	Electrical and Instrument Department
WO	Work Order
MMM	Material Maintenance Management
ASP	Active Server Pages
DBMS	Database Management System
HTML	HyperText Markup Language
WYSIWYG	What You See Is What You Get
CMMS	Computerized Maintenance Management System
IN4TRACK+	Information Tracking System in PP(M)SB
PP(M)SB	PETRONAS PENAPISAN (MELAKA) SDN BHD
TOra	Toolkit for Oracle
SQL	Structured Query Language
UTP	Universiti Teknologi PETRONAS



CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

The Miri Crude Oil Terminal (MCOT) is situated near Miri, Sarawak, at approximate latitude of 40N, longitude of 1140E and height of 1.0m above sea level. The function of MCOT is to receive, dehydrate, store and export crude oil from the Baram Delta fields, which consist of West Lutong, Tukai, Siwa, Betty, Baronia, Bokor, Bakau and Baram fields' offshore Sarawak. MCOT is a hub with current receiving +/- 140 K barrel of crude oil from offshore which is equivalent of RM 26million per day. (Estimating price per barrel = USD30.) At present, MCOT is still running with zero shutdowns.

In MCOT, there exists a division called Electrical & Instrument (E&I) Department, focusing on the maintenance and management on electrical and instrument system of the whole MCOT. E&I Department can thus be labeled as the heart of plant in MCOT. In May 2006, MCOT will be having MCOT Rejuvenation Phase II, where the organization will include the addition of new processes with the latest technology in increasing the productivity of the plant. Thus, with this rejuvenation, the E&I team would need a proper system that could manage and track all the equipment condition and status for each location and process in the plant. The company will be expecting about 330 K barrel of crude oil after the Rejuvenation Phase II.

Thus, this thesis is done to achieve the target for the Rejuvenation Phase II by providing information regarding the status of equipment involved in E&I, at each location in each process. From this project, the E&I team can track the movement of equipment (in and out) in the plant efficiently. For an example, a vessel need to be sent to workshop for service, thus from the system, they can state and track the date the vessel needed to be sent to the workshop, which of the parts have been changed during the service, as well as the cause regarding the service matter.



1.2 PROBLEM STATEMENT

1.2.1 Problem Identification

The dilemma takes place at the Electrical & Instrument Department in MCOT where the department doesn't have a proper documentation of document listing and tracking inventory in order for the maintenance supervisor to execute the task at the right time. Any material procurement activities must be accomplished by approved Work Order (WO) before the procurement action can be carried out. For example, in order to sent an equipment to workshop for repair or to buy a newer one, the current system need a WO to be produced by Material Maintenance Management (MMM) in the SAP system.

The SAP system is used to raise and plan work order (WO) and also to outline the necessary steps required to raise and plan the WO, prior to work order approval. The SAP stated all the output of the work orders that had been created and the expected finishing date of service or repair completion, but there is no alarm or reminder for keeping it updated and noticeable by the people responsible to do it. After planning the work order, it is then the responsibility for the maintenance supervisor to keep track of the procurement and the inventory tracking in the department. For example, in *Figure 1.2.1*, there are many of work orders that had been generated, but at the same time, the maintenance supervisor finds it difficult to keep track on the finishing date and as well as to have a follow up on the planned WO.

The E&I Department had come across a solution to put an effort in organizing all the information of equipment listing and also the work order progress by documenting it in files. However, problems still remain because documentation is not the effective way to store and keep track of all the important and crucial data.

SAP						
Display PM Orders: List of Orders						
Order Operations Selections...						
Order	Type	P	Short text	Bsc start	FuncLocation	MPG
91403019	SSM	3	Wehaya to reinstate ICCP Sys for W.Ltg A	01.10.2005	MCOT	B23
91403020	SSM	3	Technotrend to do civil works at W.Ltg I	01.10.2005	MCOT	MOS
91407093	SSM	3	To produce structural integrity report &	28.09.2005	MCOT	MOS
91411007	SSM	3	To chk&rectify Jiskoot SSC7 Sampler Cont	01.10.2005	MCOT-METERING	MOS
91413763	SSM	3	To remove FCV-1264 for repair by Wehaya	01.10.2005	MCOT-V126	MOS
91416329	SSM	3	To install and commission DE2500 Control	05.09.2005	MCOT	MOS
91430729	SSM	2	Vendor support for Alitronic CPU-95.....	01.10.2005	MCOT-P10	MOS
91452516	SSM	3	JUNE'05 : Supply of General Labourer	01.06.2005	MCOT	MPL
91452521	SSM	3	Wehaya to carryout workscoping on MCOT S	01.10.2005	MCOT	MOS
91467441	SSM	3	JULY'05:Monthly Jetwashing/Vacuum Tanker	01.07.2005	MCOT	MPL
91467482	SSM	3	JULY'05 : Supply of General Labourer	01.07.2005	MCOT	MPL
91476128	SSM	3	Refurbishment on Plot 10 at Sludge Farm	28.07.2005	MCOT	MOS
91479144	SSM	3	Isolate & Clean pressure vessel V-5742 b	01.10.2005	MCOT-V5742	MPL
91479145	SSM	3	Isolate & Clean pressure vessel V-5743 b	01.10.2005	MCOT	MPL
91479146	SSM	3	Isolate & Clean pressure vessel V-126 by	01.10.2005	MCOT-V126	MPL
91479147	SSM	3	Isolate & Clean pressure vessel V-101 by	01.10.2005	MCOT-V101	MPL
91484187	SSM	3	MCOT Main Bldg : To remove and replace e	22.07.2005	MCOT	MPL
91484189	SSM	3	To remove and replace workshop gutter	22.07.2005	MCOT	MPL
91488118	SSM	3	AUG'05 : Vacuum Tanker	01.08.2005	MCOT	MPL
91488124	SSM	3	AUG'05 : General Labourer	01.08.2005	MCOT	MPL
91492520	SSM	3	Surface preperation,supply/apply paintin	02.10.2005	MCOT	MOS
91492523	SSM	3	Surface preperation,supply/apply protect	02.10.2005	MCOT-SLPS	MOS

Start

OUR THE VOICE : MCOT

Display PM Orders: Li...

Serawak Operation Intran...

1:18 PM

Figure 1.2.1: An Example of Work Orders (WO) created from SAP Program

1.2.2 Significance of the Project

These problem need to be solved due to the fact that each instrument is very critical to MCOT operation. With this proposed system that tracks the movement of the equipment flow, it is hoped that the supervisor in charged could perform equipment maintenance systematically so as to fasten the delivery & processing time of work. Furthermore the proposed system can help MCOT to achieve the target in expecting more barrels of crude oil during and after the Rejuvenation Phase II.



1.3 OBJECTIVES AND SCOPE OF STUDY

The goal of this thesis is to deepen the understanding of the current problem so as to come across a good solution in achieving the aim of having good productivity for the success of Rejuvenation Phase II.

1.3.1 Objectives of Study

- ✦ To provide user with a system that can assist them in tracking the equipment smoothly.
- ✦ To create tracking history and records of the equipment, this is under E&I Department's supervision.
- ✦ To avoid any hindrance pertaining to the equipment in order to fasten the processing time of work.
- ✦ To ensure that MCOT will be running with zero shutdowns because each components and instruments in operation is vital prior to receiving crude oil.

1.3.2 Scope of Study

- ✦ Study the current system in MCOT and its structure.
- ✦ Study any current system about plant maintenance and its structure.
- ✦ Concentrate on how to build a good yet user friendly system for the E&I Department.
- ✦ Study on designing the system using Oracle Platform as the back end structure.
- ✦ Study on the compatibility and dependability of using Oracle Technology to be running on web browser.
- ✦ Explore the ASP programming technology to be used in web development



CHAPTER TWO

LITERATURE REVIEW AND THEORY

2.1 INTRODUCTION

The concepts of designing a system using an Oracle Technology and embedding it into a web browser can be fully understood when literature review is performed. In this literature review, the objective is to understand and to learn more on the author's project scope. From here it will help the author to identify and gain more relevant materials for the projects.

2.1.1 What is a system?

The definition of a system can be viewed from many perspectives. According to Wikipedia Encyclopedia on the term of a system, "A system is an assemblage of inter-related elements comprising a unified whole. From the Latin and Greek, the term 'system' meant to combine, to set up, to place together¹." Webopedia Computer Dictionary stated that "A system is a group of interdependent items that interact regularly to perform a task²." Thus, a system typically consists of components (or elements) which are connected together in order to facilitate the flow information, matter or energy. Then, according to Ian Sommerville in his book of *Software Engineering*, "A system is a purposeful collection of interrelated components that work together to achieve some objective³."

The essential attributes in producing a good software system are based on four (4) product characteristics⁴. First would be maintainability, where software should be written in such a way that it may evolve to meet the changing needs of customers. Dependability of a software means that the software being developed should not cause physical or economic damage in the event of system failure. On the other hand, efficiency of software includes responsiveness, processing time, memory utilization, etc. Last but not least, software must be usable, without undue effort, by the type of user for whom it is designed. This means that it should have an appropriate user interface and adequate documentation.



2.1.2 Oracle Platform

In developing the system software, the author plans to design the system using Oracle 9i Developer Suite. Oracle9iDS supports the full development life cycle of many applications—from modeling to coding, testing, and debugging—with comprehensive team support capabilities for global development efforts. It also offers powerful version control capabilities with dependency management and impact analysis to manage the continuing evolution of the applications⁵.

The database that the author plans to use would be by using Oracle 9i Enterprise Edition Release 9.0.2.0. The choice of using Oracle database rather than Microsoft Access is due to the fact that Oracle DBMS does provide better security than Microsoft Access. A dissertation made by Norlina Ahmad Subki on the comparative study of Microsoft Access and Oracle DBMS has proven that compliance had been made by the professionals in the field of database that Oracle DBMS is proven to be solid and stable rather than that of Microsoft Access⁶. Moreover, Oracle database is compatible with many web programming languages that enable easier data manipulation by end users without the need to know the exact query structure.

Finally, the author quoted a statement by Richard Kolaczewski, the Chief Financial Officer, at Master Lock Company, about the factor that made the company choose Oracle in managing their business, *"We have chosen Oracle as our standard for applications, database, and development tools. Oracle solutions provide a flexible, scalable system that enables us to implement common best practices across the enterprise."* -- Richard Kolaczewski, Chief Financial Officer, Master Lock.⁷ By using the Oracle technology in the company, Master Lock has cut two weeks from its customer order time, reduced work in progress (WIP) by 70%, and saved 40% on IT maintenance costs. And, according to Rick Kolaczewski, "the biggest benefits have yet to be realized as the company continues to leverage the new technology."




2.1.3 Active Server Pages (ASP)

In managing the content of the web browser when embedding it with the Oracle system, the author has chosen to use Active Server Pages (ASP) as the scripting engine. An article from Alan Mendelevich, in the Web Reference Update Newsletter which was appeared in the December 16, 1999, has given the reasons on why people should use ASP in developing web application⁸. From research, the author manages to find out 10 good reasons in proving to the public on the advantages on using ASP. First would be the ease of use in ASP. ASP is just plain HTML pages with ASP code embedded into the enclosed in `<%` and `%>` tags. Users can just place ASP files into a directory on the server with scripting or execute permissions and the ASPs are ready to run. Whenever users need to change something, they may just have to edit the .asp files and that's it, their changes are applied.

The second advantage would be the language independence that an ASP has. ASP is a scripting engine enabling user to develop in virtually any language of their choice. The two languages available by default are VBScript and JScript (Microsoft's version of JavaScript). This enables the novice ASP developer to utilize his or her previous programming experience. The third advantage would be short learning curve for ASP users. As we have seen, users may use their current expertise in some programming language or technology to jump into ASP in short time. Even if they know only HTML, it will not be difficult for them to learn how to insert ASP commands into the HTML files.

The fourth is that users can have tons of information by using ASP. There are currently more than 150 sites listed in Open Directory's ASP category. This is more than for any other server-side development engine or language. Lots of online magazines will deliver new articles on ASP to users' mailbox on a weekly or even daily basis. Next is that there are huge community of professional ASP developers ready to answer users' questions in numerous ASP newsgroups and forums.

Next would be the low cost of ownership, which mainly applies to site owner, not directly to the developer. Nowadays it's easier to find an NT



administrator and ASP developer than a UNIX guru. Users may think that as a developer, this isn't a compelling reason to use ASP. However, low cost and abundance of support is just one more reason users can give to their employer/customer as to why they should do business with them.

Using ASP also encourages extensibility, which means that there are virtually no limits to what can be done with ASP. For example, there's no way to send email using standard ASP functions but there are lots of components (both free and commercial) enabling users to do this, as well as choosing the methods and features users want to implement. Recent introduction of Java Server Pages - an ASP style scripting language developed to work in conjunction with server-side Java, shows that the approach is recognized as powerful by one of the biggest Microsoft competitors, Sun Microsystems.

Hosting companies widely support ASP. A search on HostIndex¹⁷ returned 889 matches for hosting companies supporting ASP with hosting prices starting below \$10. This is quite enough to find the host that meets all the needs for a reasonable price and user will be able to switch hosting companies easily if their current doesn't satisfy them.

Microsoft has two tools supporting ASP: their most popular WYSIWYG editor - FrontPage and Visual InterDev. Other vendors have also implemented ASP support into their products, including the popular HTML coding package HomeSite from Allaire¹⁸. There's also scheduled support for ASP in upcoming versions of other widely-used code based editors, such as HotDog Pro from Sausage Software¹⁹.

Last but not least is that user can get a good job when being an expert on ASP. This statement is strengthened when a search for ASP on high tech job search engine *dice.com* stated that more than 10000 matches with average salary around \$70K⁹.



2.1.4 The Importance of Equipment Tracking System

In managing a large work environment, technology plays an important role to provide efficient and effective completion of job. Narrowing this down, the needs to have equipment and tracking system in a plant is essential so that this system can help operations personnel in organizing and planning their daily activities, as well as improving productivity and to reduce equipment downtime. Moreover, the existence of equipment and tracking system would benefit the operations management to analyze the facilities and craft performances¹⁰.

Referring to a dissertation made by a group of students and lecturers in the university of Arkansas and Mississippi State University, the ideal system of tracking and positioning software is that it would allow authorized users to track equipment real-time with little human intervention, as this would serve both major purposes-service and efficiency¹¹. This will also allow for increased automation and reduced need for hands-on tracking and tracing.

Using a tracking system will also allow real time assessment of doing auditing for any equipment or other hazard issues, thus it will provide states with capability for early detection of emerging hazards in the future¹². As a result, it will help a particular plant to run with none or nearly zero problems of related issues as prevention had been made as fast as possible when using the system. The system also provides many advantages to a plant when the Department Occupational Safety and Health (DOSH) need to perform any spot check inspections, as the operations management can track any problems that have not been resolved as fast as the could.

With an automated system tracking, it allows integrity and authentication to be made, where the system allows tracking through secured access identifiers and a password system¹³. For example, the system maintains product information and order information in the database so that the operations personnel can track all the information that is being created in order to have reviews with the suppliers and vendors pertaining to the product.



Quoted from the Computerized Maintenance Management Software (CMMS) solutions, with the tracking system, users can instantly submit requests and assign requests to work orders. They can save time and money while providing better maintenance response time¹⁴.

2.1.5 IN4TRACK+ : Information Tracking System

IN4TRACK+ is a PETRONAS Penapisan Melaka Sdn. Bhd PP(M)SB's Information Tracking System, which enables active notifications and progress tracking of PP(M)SB's corrective and preventive work processes with respect to Health, Safety, Environment, Opportunity Losses, Audits and Other Monetary PONCS. In4Track+ is an enhancement of the former In4Track system, which now uses a web-based application and Oracle 9i platform, rather than the previous Lotus Domino Designer platform¹⁵.

IN4TRACK+ is using similar platform of Oracle and ASP web application like what the author intends to do, on which the system caters the necessity of providing information for the entire plant. However, the system is very big and includes the entire department in the whole refinery. So far, there is no system tracking using web based as the interface and Oracle platform as the back end existed in MCOT, thus this project is being made for MCOT in order to manage the department of Electrical & Instrument, and it is hope that it bring benefits to all parties involved.



CHAPTER THREE

METHODOLOGY

3.1 METHODOLOGY

For developing the system software, the author has gone through some phases and had planned to use an **evolutionary development** as a guideline in completing the development of this project. Evolutionary development is based on the idea of developing an initial implementation, exposing this to the user comment and refining this through many versions until an adequate system has been developed. Early versions of the system are presented to the customer and the system is refined and enhanced based on customer feedback. The cycle continues until development time runs out (we refer this to schedule constraint) or funding for development runs out (i.e. resource constraint). Rather than having separate specification, development and validation activities, these are carried out concurrently with rapid feedback across these activities.

The author had chosen evolutionary development in making the project a success due to the fact that the specification in evolutionary approach can be developed incrementally. Software systems are often developed and implemented based solely on detailed specifications and operational concept documents. Only after the systems have been delivered do users realize that the systems are not what they predicted. It is very difficult to determine the detailed preferences of customers and exactly how a system will be used before it is placed before the users, especially when potential users have a diverse set of tasks to perform. With this in mind, the author believes that this is the right methodology to be used in developing the system.

It is also often more effective than the waterfall approach in producing system which meet the immediate needs of customers. Other than that, evolutionary development is the best approach for small systems or medium-sized system. Below is the graphical representation of the evolutionary delivery approach that the author is currently using¹⁶.

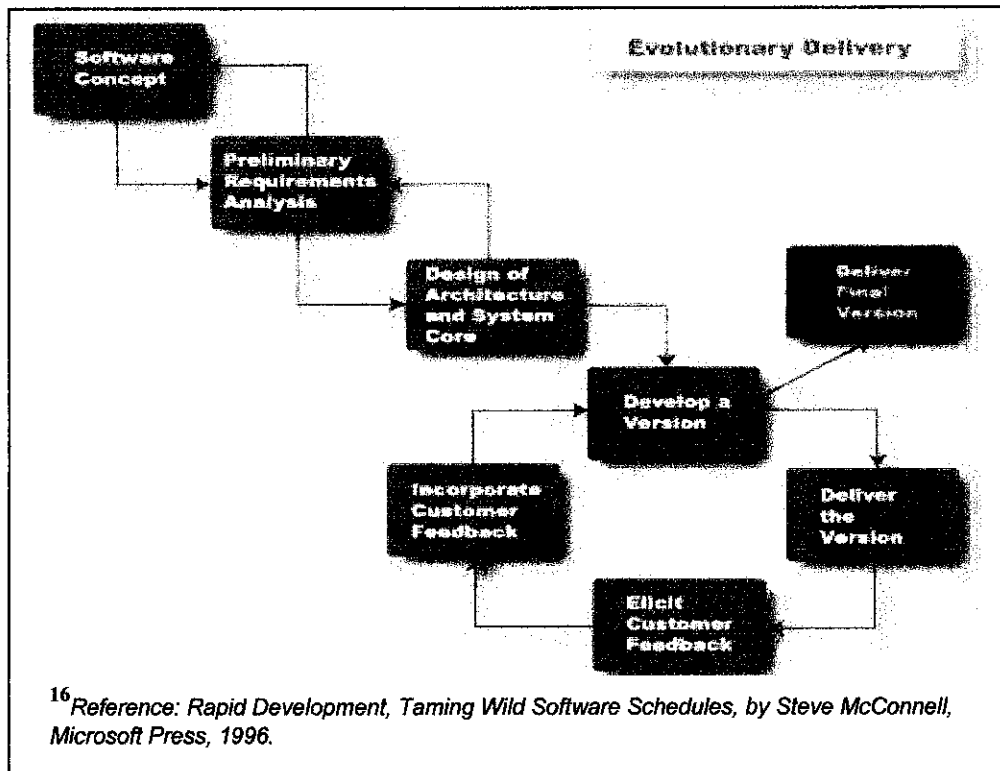


Figure 3.1 a : Evolutionary Approach

Referring to *Figure 3.1 a*,

- **Software Concept**

First and foremost, the author need to know the software concepts clearly in order to get the whole idea on what will be done during the entire period of development.

- **Preliminary Requirements Analysis**

Preliminary requirements of the system flow and the objectives of the process are being explored by gathering all the data from the discussion and meeting with client. At this time, client gives all the things needed to perform the equipment tracking system. For examples, client had given a list of area location and list of fields needed to be in the system. However, the information given is parallel with the design of architecture in the system development in order to track all the requirements that should really be in the system very well.



- **Design of Architecture and System Core**

The system architecture and process flow is being generated after getting the requirements and understanding all the needs from client. Many of the times that this architecture has being changed due to the requirement changes.

- **Develop a Version, Deliver the Version, Elicit Customer Feedback, and Incorporate Customer Feedback**

After having confirmation and agreement on the system architecture, then only the project could be done by developing a version of the project, delivering the version to the client, eliciting customer feedback and incorporate the feedback before delivering the final version. These 4 processes are done concurrently until the customer is satisfied with the final result. Therefore, during these steps, more time is required to perform the tasks as it should being made until to the customer's satisfaction.

- **Deliver Final Version**

Delivering a final version will be made after the client is satisfied will all the things that should be in the system. A validation is being made in order to release the software to be used in reality.

All of these steps above can be summarized into *Figure 3.1 b³*, where the evolutionary development is actually based on the idea of developing an initial implementation, exposing this to user comment, and then refining this through many versions until an adequate system has been developed. Rather than having separate specification, development and validation activities, these activities are carried out concurrently with rapid feedback across these activities, which is between the developer and the client.

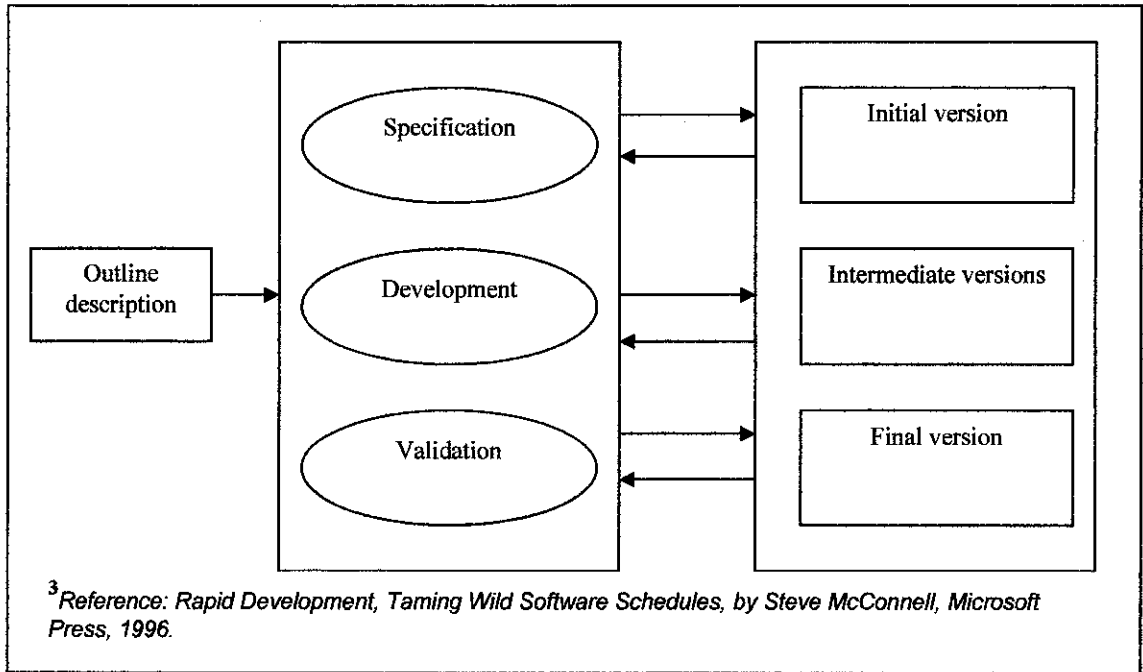


Figure 3.1 b: Evolutionary Development

3.2 SYSTEM ARCHITECTURE

Figure 3.2 a depicts the process flow on the tasks that can be done in the proposed system. Firstly, user will enter the system from the web application, and then they may have to register or to log in their username and password to enter to the system. These users are mainly from the E&I staffs, E&I supervisor and also the administrator. After registering or logging into the system, they may choose on whether to perform work order tracking or inventory tracking. Assessment on work order tracking or equipment tracking can only be done by administrator or supervisor being nominated to use the system. Thus, if the supervisor chooses to perform assessment, the flow will continue to the confirmation of the assessment being made and it will then be saved in the database. After performing the action, the supervisor may choose to print the report that is available in the web application or he can corrects any action being made before closing the task. This overall view of process flow is just in the back end of the system, using Oracle Platform. The reporting and email notification is being done for the ease of the communication between the supervisor and the employees.

The part where the web browser took part will only be performed after this system in Oracle Platform is being implemented. In the web application, every employee in MCOT can view all the tracking performances and they can print the needed reports of a particular task, without having to go to the E&I department. This will make the system and all of the operation in MCOT to be time beneficial.

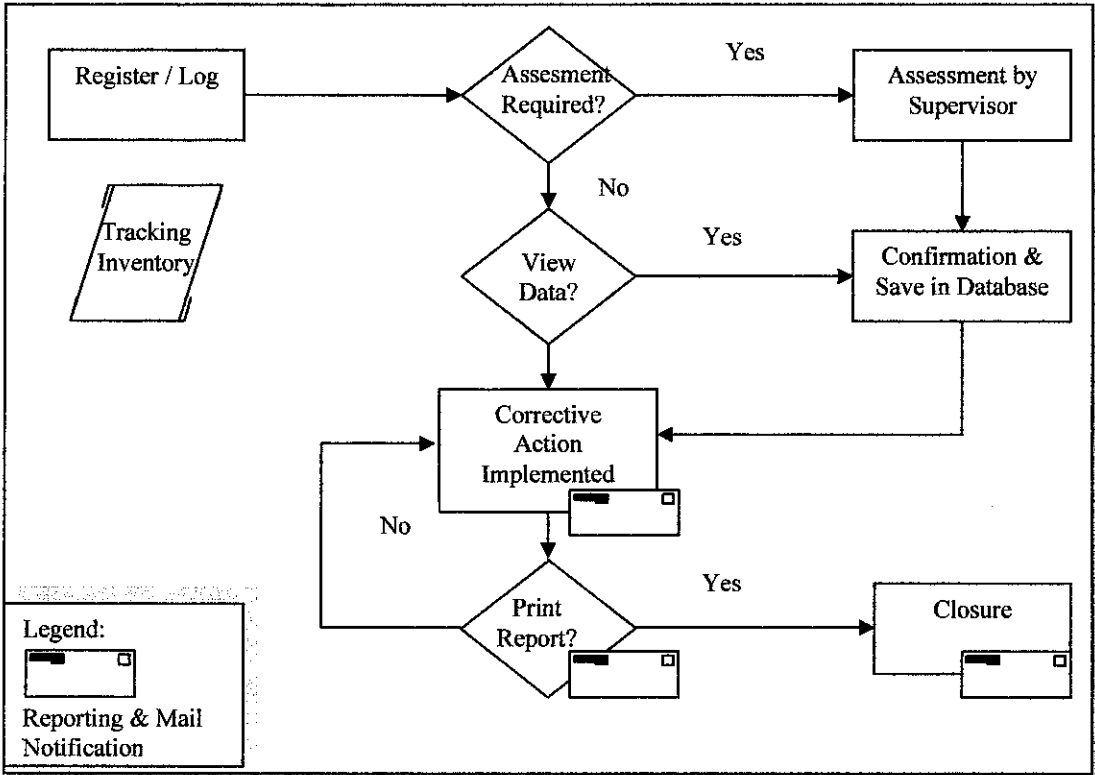


Figure 3.2 a : Process Flow



Figure 3.2 b below is the overall view of the system architecture that will be used in the project development and that will be implemented in MCOT.

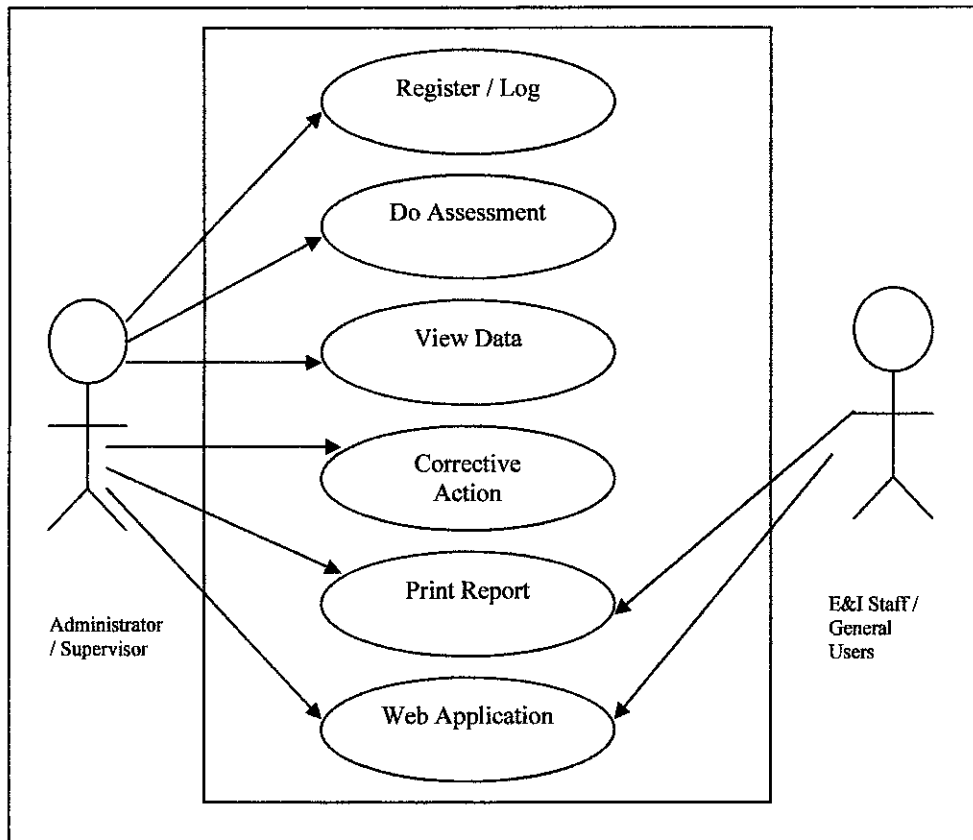


Figure 3.2 b : Architectures of ETS

3.3 USER REQUIREMENTS

3.3.1 Interfaces

On the preliminary and ongoing discussion of the project, both the client and the author agree that:

- ETS will be utilizing 'click n play' user interface design, where a lot of clicking and selecting from listed values will be implemented, rather than getting users to key in all of the details, especially crucial data fields such location, areas, area owners, vendors, categories and etc that decides the direction of the log.
- However, inputs such as description of the incident, hardware or equipments related to the task and such needs to be keyed in by users.



- The 'look n feel' of ETS is being designed in a flexible, structured manner for future references, updates and enhancement.

3.3.2 Report Generation

Based on conducted discussion, ETS will accommodate flexible structure, as the following requirements:

- ETS will be able to provide trending report and tracking report, provides statistical approach to monitor status of each equipment tracking.
- Every reports generated through ETS will be using Oracle Form report template;
 - To ensure every documents are in a standardized document format especially printouts
 - For easy references and documentation

3.3.3 Navigation

As standard design of web-based applications, ETS will be user -- intuitive and friendly where normal web users will have no difficulties in using the system and minimal training to be done to familiarize end user with the system.

3.3.4 Communications

For communications, ETS will provide 2 means of communications;

- Notification mail
 - ETS will send notification mail to end users that have PETRONAS domain internet mail.
 - Notification will contain any updates or task pending / created in ETS for user perusal and further action.
- Feedback form
 - Feedback form will be provided for users to leave any feedback or suggestion to ETS administrator or expert users.



3.4 INPUT REQUIREMENTS

- 1) Financial : Minimal developmental cost.
- 2) Manpower : Cooperation from client, supervisors and expert programmers
- 3) Information and Data : From Mr Mohamed Ridzuan Abdul Wahab, the Electrical and Instrument supervisor in MCOT.

3.5 SYSTEM REQUIREMENTS

Development Tools :

- Using Macromedia Dreamweaver MX as user interface designing tool
- This system will be designed as a web-based application and developed using Oracle Forms Developer 9i:
 - To enable inter-platform compatibility as it is deployed as web-based application and needed only internet browser (available on most PC in MCOT)
 - Oracle scripts and queries are executed on server to improve response time as well as improved security feature while reducing processing load on user's pc.
- Database : Oracle 9i Enterprise Edition Release 9.0.2.0
 - Oracle database is also proven solid and stable
 - Able to handle security and data integrity efficiently for MCOT usage
 - Centralized database and multi user environment supported.
 - Oracle database is compatible with many web programming language that enable easier data manipulation by end user without needing to know the exact query structure.

All of the requirements had been discussed and the author had come across with a mutual agreement with the client on the planning.

3.6 ETS FRAMEWORK SOLUTION IMPLEMENTATION

Figure 3.6 a summarizes the ETS framework of solution implementation which the author had used as a guide in completing this project. The framework is helpful for the author to keep track on the step by step processes in producing a good product in the final stage.

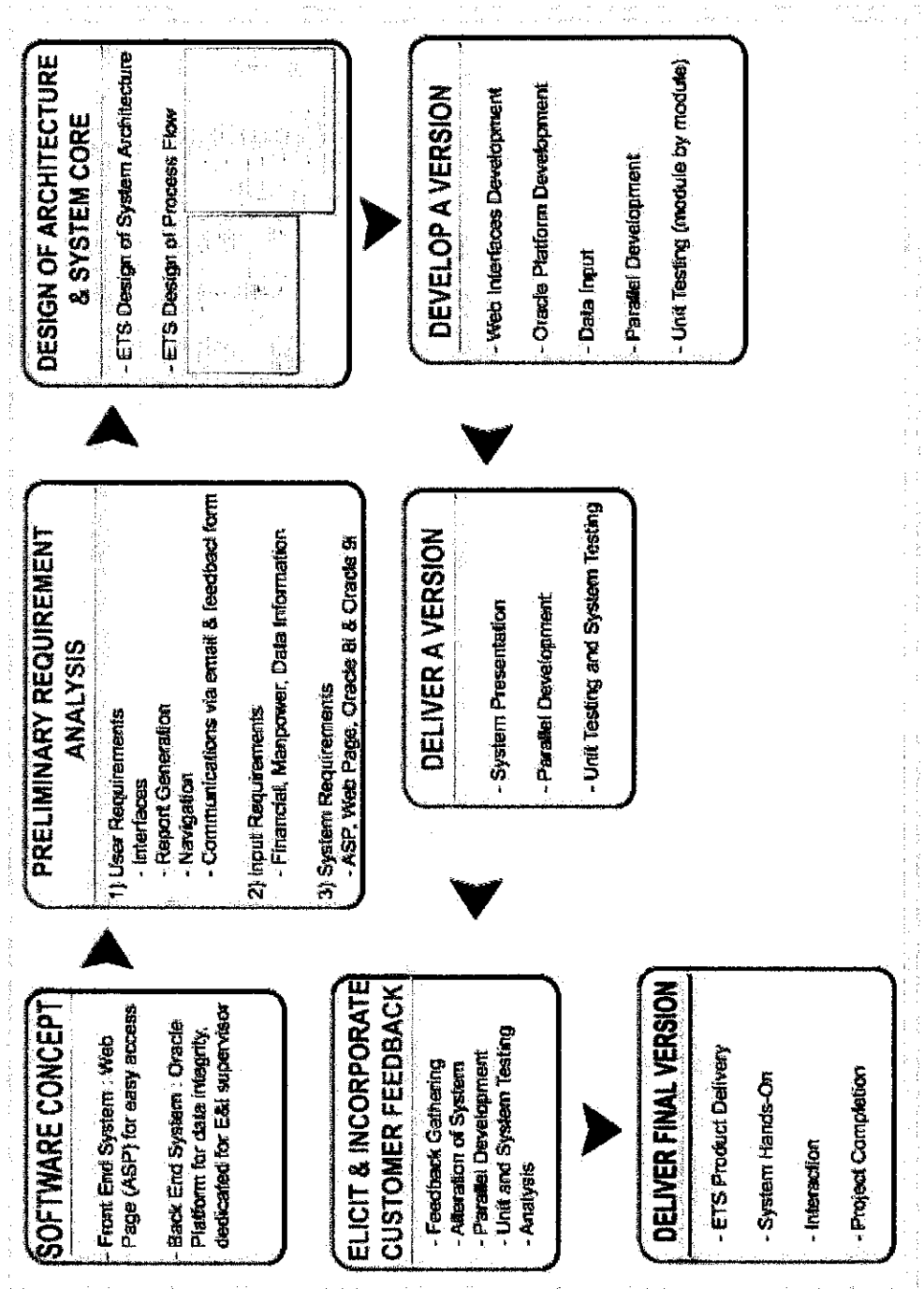


Figure 3.6 a : ETS Framework Solution Implementation



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 RESULT FINDINGS

By using the methodologies in the previous section, the author had come out with several results and achievements from this project. However, this project hasn't been fully completed yet as the author is still in the process of satisfying the entire client's requirements and information needed to accomplish this mission.

In making sure that this system meets user requirements, the author had been studying the current system in MCOT and its structure thoroughly. The SAP system used along the process is undeniably good and efficient for planning work orders. However, after performing the work orders, then only the issue arises, due to human imperfection in managing the work orders and inventory tracking manually. Thus, when ETS is being implemented, it is believed that this system will definitely meet client's objectives in performing better work in the future. This is due to the fact that this project will eliminate all the insufficient paper-based as well as unorganized work performs by the people in charged.

To support this statement, the author had conducted a survey of 35 people who are directly or indirectly responsible with the E&I system work flow in managing work orders and inventory tracking. From the survey, it shows that majority of the workers do not keep track on the WO completion date before this, they find SAP to be an effective way in planning the WO, they really find it hard to track the work orders manually and they really find it hard to track the entire inventory available in the department. From the survey too, majority of the workers also believe that ETS system had helped them a lot in making their work easier in managing the WO dateline and tracking the inventory systematically. *Figure 4.1* a show the type of questionnaires.

**Questionnaires of Efficiency of Completing Work Orders on Time &
the Ease of Tracking Inventory in E&I Department**

Question 1

Do you always keep track on the WO completion date?

A) All the time B) Most of the Time C) Sometimes D) Not at All

Question 2

Do you find SAP to be an effective way in planning the work order?

A) Absolutely B) Maybe C) Sometimes D) Not at All

Question 3

Do you find it hard to track the work order in getting it done before the due date?

A) Yes, it is hard B) Most of the time C) Sometimes D) Not at All

Question 4

Do you find it hard to track all the inventory under the E&I department?

A) Yes, it is hard B) Most of the time C) Sometimes D) Not at All

Question 5

Do you think that ETS System had helped a lot in making your work easier
in managing the dateline of WO?

A) Absolutely B) Yes C) Maybe D) Not at All

Question 6

Do you think ETS had helped in tracking the entire inventory systematically than before?

A) Absolutely B) Yes C) Maybe D) Not at All

Figure 4.1 a : Example of Questionnaires Used for Survey

4.1.1 Questionnaires Interpretations

The questionnaires above are used for surveys for the ETS system. Each and every question asked are being analyzed and interpreted by the author for clearer understanding on the purpose of the survey. *Table 4.1.1 a* interprets the questions given to the people who are directly or indirectly responsible with the E&I system work flow.

In question 1, majority of the users stated that they do not keep track on the WO completion date. From the survey taken, they commented that due to many other works, they couldn't track the date as frequent as possible. There are no any alarms and reminders for them to be alert when the completion date is around the



corner. However, 31% of the users do check and track the work orders completion date most of the time, due to their awareness of the crucial thing that they had to do. 20% of the users always alert on the date completion, and the balance of 14% of users only keep track the WO some times.

For question 2, a majority of 71% of users stated that SAP is an undeniably an effective way to plan the work order. This is because through SAP, all the planned work orders can be tracked and can be kept safely in the database. There will be no data lost when using SAP. Only a few of the users think that SAP might be an effective way to plan the work order, while none of them thinks that SAP is not an effective system.

Question 3 of the surveys however, shows that a majority of 83% of the users say that it is really hard to track the work order in getting it done before the due date. As being told previously, they are not alert when the time of completion is near. This is because, after the SAP system had planned the work order, it becomes the responsibility of the people in charge to know the exact date of completion and do the work efficiently. Human error always happen when they forgot to check the schedule of work needed to be completed, and they only figured out their mistakes when they received emails from the upper level management asking about the completion of the work order.

In Question 4, the author found out that majority of 51% of users find it hard to track the entire inventory under the E&I Department. This is because the entire inventory listings are kept in a paper based files, and whenever the E&I team need to revised on the acquired inventory, they need to go through one by one until they find the wanted list.

In Question 5, many of the users stated that ETS System had really helped them in making their work easier in managing the dateline of WO (86%). 3% of the users still are not sure whether the ETS System does really bring benefits to the department. This is a normal situation as the ETS System is still under development. It is hope later that this system will help all the staffs to work efficiently and diligently when the Hands-on of the system is being done.

The last question showed that almost all of the users believed that ETS had really helped in tracking the entire inventory, systematically than before. The percentage of 91% strengthened the usefulness of ETS in having a good inventory tracking.

Figure 4.1.1 a illustrates the results output from the survey, while Figure 4.1.1 b proves the result in a graph representation.

	A	B	C	D
Question 1	20	31	14	34
Question 2	71	11	17	0
Question 3	83	11	6	0
Question 4	51	14	23	11
Question 5	86	11	3	0
Question 6	91	9	0	0

Figure 4.1.1 a : Result Output from Questionnaires of 35 people which is represented in % value

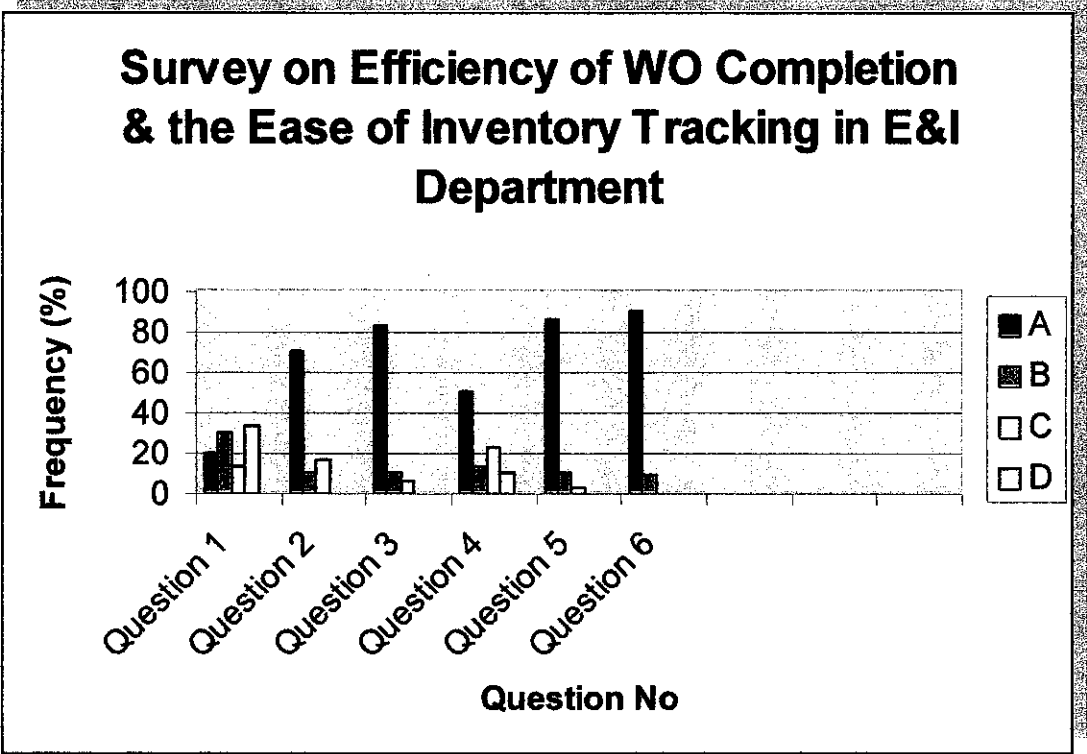


Figure 4.1.1 b: Result Output Represented in Graph Illustration

4.1.2 User Acceptance Testing

As the ETS system is partially being developed, some of the function is working. Thus, the author had shown to the client on the working part of the system and along with that, the author had come out with a list of User Acceptance Test Script for the client to check on the status of the system and whether all the requirements meet the client's satisfaction. An example of the test script is shown as in *Figure 4.1.2 a*. The client had done some testing continuously and there are some functions which work well with the input, and there are still some fields which are still malfunctioned, as both parties aware that this system is still under the ongoing development.

Equipment Tracking System (ETS) Acceptance Test for E&I Department

Tester Name:

Department:

Date:

ID Used:

Purpose
The objective of this checklist is to test out the ETS system functionality and its configuration setting accordingly as per required from the requirements' agreement.

Approved By:

Instructions
User needs to test each of the functional modules and criteria whether it met expected result accordingly.

Functionality Test Criteria

Items	Detailed Description	Expected Results	Actual Result	Status (PASS/FAIL)	Remarks
Web Access	Accessible via Internet Explorer	Opens main portal in IE without problems			
	Response Time to load initial page	Loads in 10 Sec			
	Links	All links are connected			
	ETS Online System Response Time to User Login popup	Loads in no more than 10 Sec			
	Feedback Form	Working smoothly without any error			
Login Accessibility to ETS System	Insert username, password and database	If correct, main system screen loads in 5 sec. If wrong, error message prompted, clicking cancel will reload login popup			
	GUI	User friendly			
	Inputs to the system	Easy to enter all data			
	Save Data	Easy to save data and modify it back			
System Functionality	Oracle Platform	Manageable without any problem on the server			
	ASP webpage	Manageable without any problem on the server			
	ETS Database	Able to extract data from database from an input selection screen (in the search page)			
	Report	Able to provide trending & tracking report			
	Navigation	Smooth navigation without having any lags			
	Notification email	Working notification email			

Figure 4.1.2 a : An Example of ETS User Acceptance Test Script

4.2 DISCUSSION

The author had been studying any current system about plant maintenance and their structures. Looking at all the systems, the author found out some similarities in 'IN4TRACK+' system which is implemented in PP(M)SB, thus, the author had met with Mr Mohd Faizul Abdul Manap, the person in charged in managing the system, in order to obtain any help if the author are having any difficulties at certain part of the development. In addition, the author also met with Mr Feizol Ahmad in order to learn more in configuring the connection between ASP and Oracle. During the semester break, the author had used the time wisely in learning Oracle and managing the connection between web based and Oracle from these two executives of the PP(M)SB.

Prior to that, the author had also been studying on the Oracle Form Builder and Oracle Report Developer thoroughly so that it will make an ease when programming is to be performed. The study on the compatibility and dependability of using Oracle Technology to be running on web browser has also been done, and it is proven that Oracle platform is dependable on ASP browser, as it had been accomplished by 'IN4TRACK+' system. Thus, the scope of the studies had successfully been accomplished in doing this project.

The development of the ETS website as shown as in *Figure 4.2 a* represents the ETS website main page. To link to the Oracle system, user may click at the logo of ETS or the 'Enter' word. To generate reports, user can just click it at the 'Work Order Tracking' or 'Datasheet Specs' sections at the menu bar, without having to enter to the system. Users can also give feedback in the 'Feedback' form existed in the web. If they do not know how to use the system, either by website or by ETS Oracle System, they can just browse through the 'Quick Tour' Session for easy navigation. On the other hand, the 'Search' function cater users for easy findings of work orders or inventory listing that the acquired.

As overall, clients found that the reports section really satisfy all the people who want to make some tracking and trending reports, as everyone in the whole MCOT can use it, not like the ETS system where only specified members can enter

ETS to do their jobs. The feedback form is also useful for the administrator to enhance and do some corrections if any flaws present in the system. The search function will make users to fasten their processing time of work when searching for the needed items.

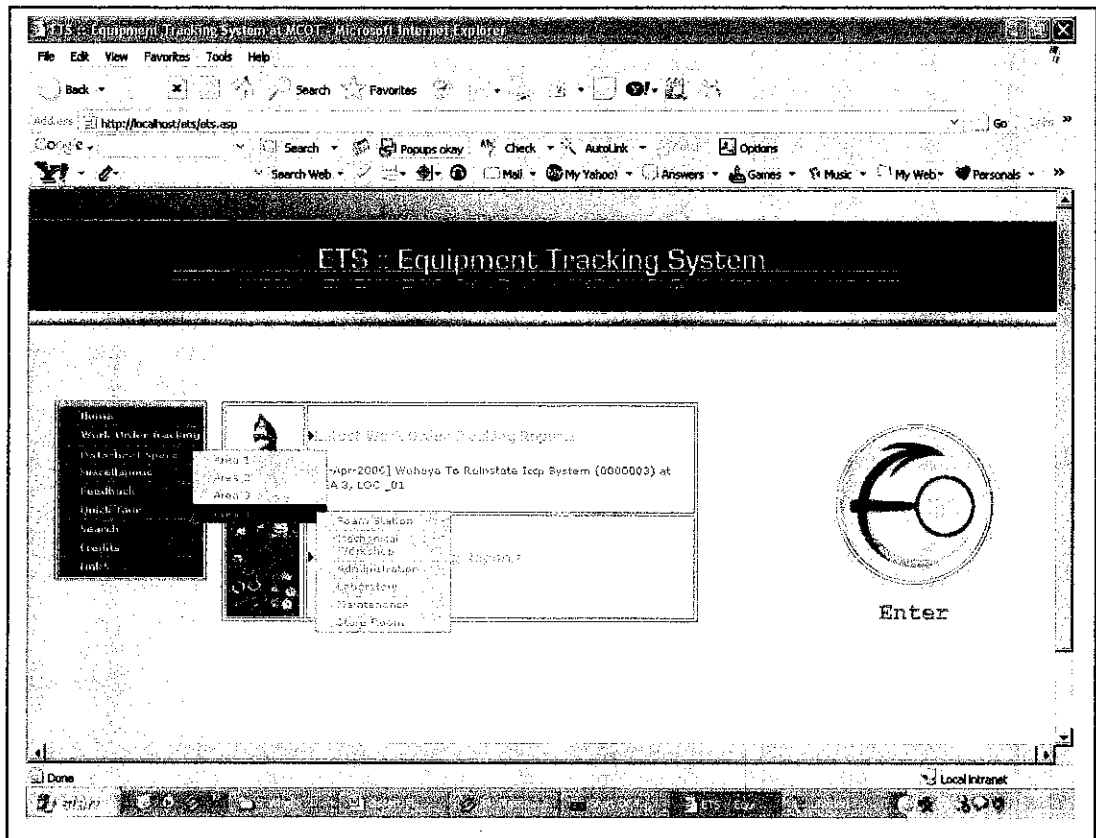


Figure 4.2 a : ETS Web Based

By clicking to the right most logo to enter the system, user can then be directly assessed to the ETS system, as being represented in *Figure 4.2 b*. The author had also performed several pages that are needed in the system and it has being confirmed in a validation sign off with the client. The pages are such as in *Figure 4.2 c*, *4.2 d*, *4.2 e*, *4.2 f*, *4.2 g* and *4.2 h*. As being shown, the author had managed to use Oracle Form Builder in order to provide user with a system that can assist them in tracking the equipment smoothly. From the stand alone system, the ETS is then being webbed based, as shown as in *figure 4.2 a* previously. As time passes by, the author is really confident in making all the forms being generated and linked to each other at the final development of this project.



Figure 4.2 b : ETS Main Page after Clicking Link from the Web Access

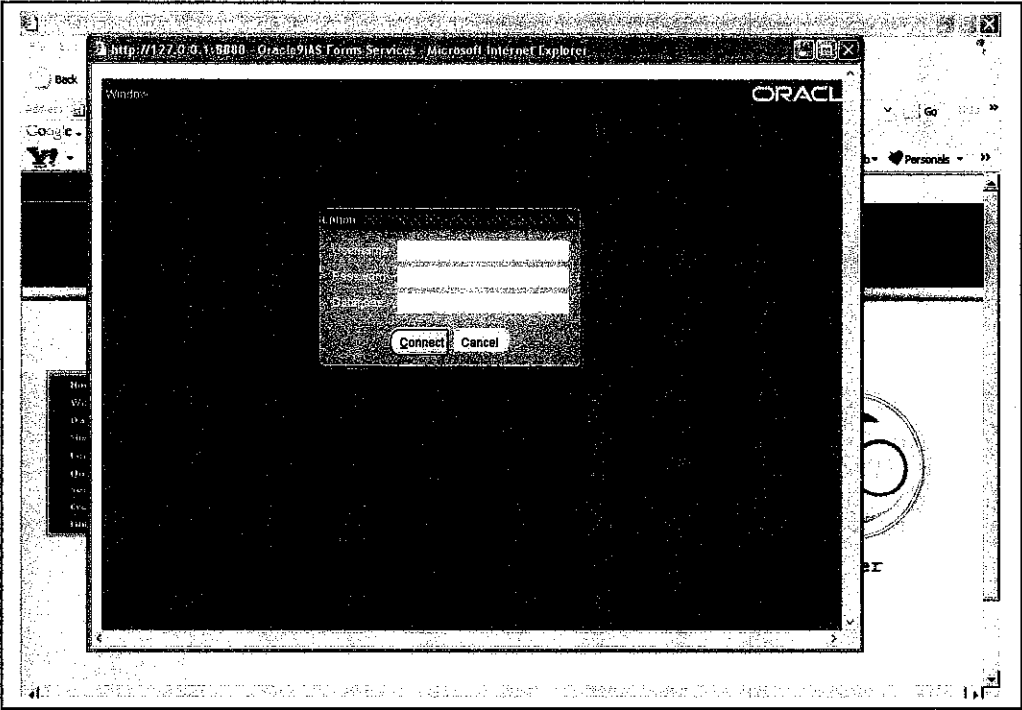


Figure 4.2 c : Authorization Access Prior to ETS System Application

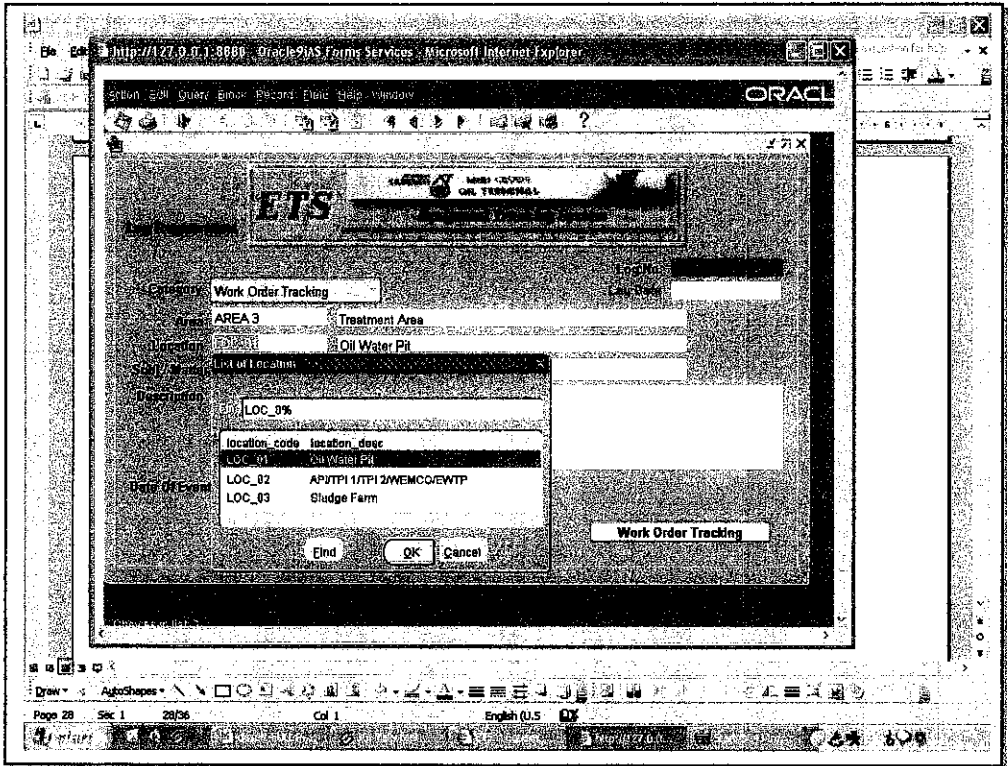


Figure 4.2 d : Example of List of input Data from Registration Page

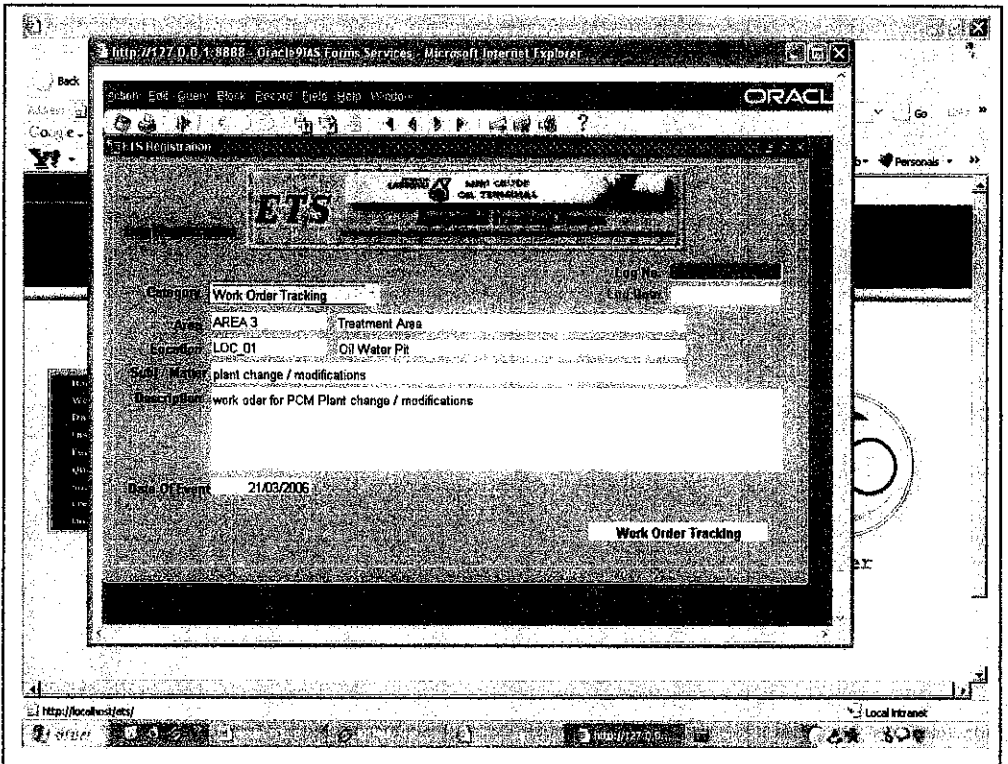


Figure 4.2 e : Example of ETS Log Registration Page

Action Edit Query Block Record Field Help Window ORACLE

ETS

Area Code Log No

Location Code Log Date

Log Title Subject/Major

Work No Delivery Range

Contractor ETA

Version Comment

Current

Status

SAVE

Click to activate and use

Figure 4.2 f : ETS Work Order Tracking Page

Action Edit Query Block Record Field Help Window ORACLE

ETS

Area Code Log No

Location Code Log Date

Equipment/Instrument

Tag No

Spec Details

Model

Type

SAVE

Figure 4.2 g : ETS Datasheet Specifications Page

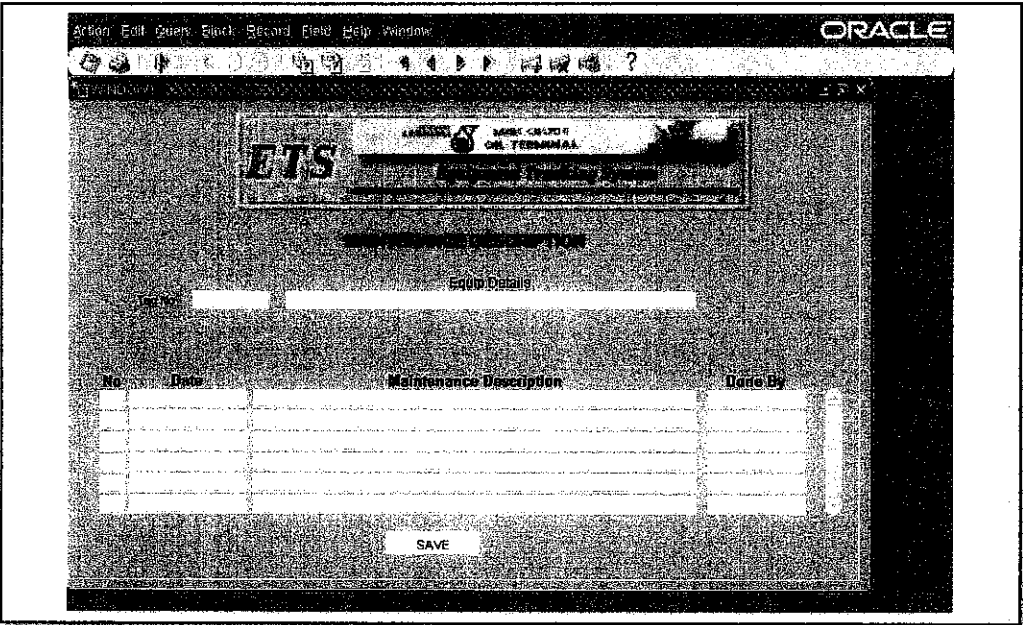


Figure 4.2 h : Inventory Tracking Page

After doing forms in Oracle Form Builder, then only the author can develop miscellaneous reports using Oracle Report Developer. An example of the output that would be printed out by users is such as in Figure 4.2 j. The report is generated via web site such as in Figure 4.2 i.

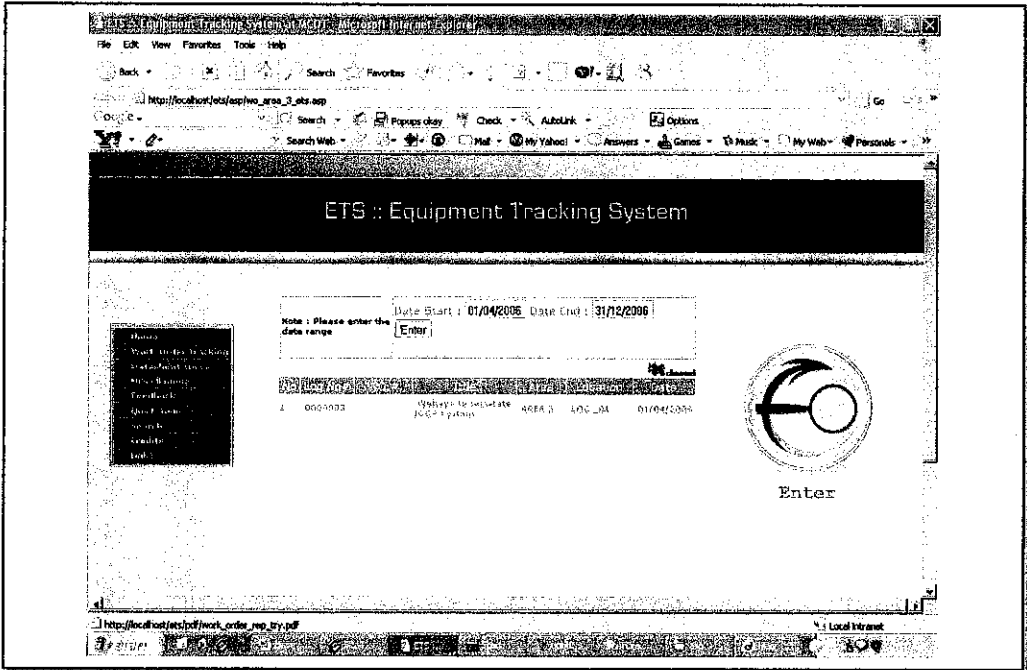


Figure 4.2 j : An Example of Report Generation Page

ETS

INTERNET
CANNARA

AMPS CRUISE
OIL TERMINAL

Equipment Tracking System

Work Order Tracking Form

Log No

0000002

Log Date

01/04/2006

Work Order No

91483819

Log Title

Wei hays to reinstate ICCP System

Subject/Matter

do it faster!

Area

AREA 3

Location

West Lutong Receiver

Contractor/Vendor

Wei hays Sdn Bhd.

Delivery Period

1 Week

Estimated Time Accomplished

20-APR-06

Current Status

BLOCKERS

Status comment

Pending due to Blockers

Figure 4.2 i : An Example of Result Generated from Oracle Report Developer

Apart from that, in creating the tables in the system database, the author had searched in the internet and had found a very useful toolkit for Oracle in creating tables. Thus, besides using SQL Plus, the author had also used a toolkit for Oracle named Tora. Using Tora had made an ease for the author in creating tables more efficiently and it is really time beneficial, especially for this short period of semester duration. An example of a print screen of Tora is as in figure 4.2 j f as below.

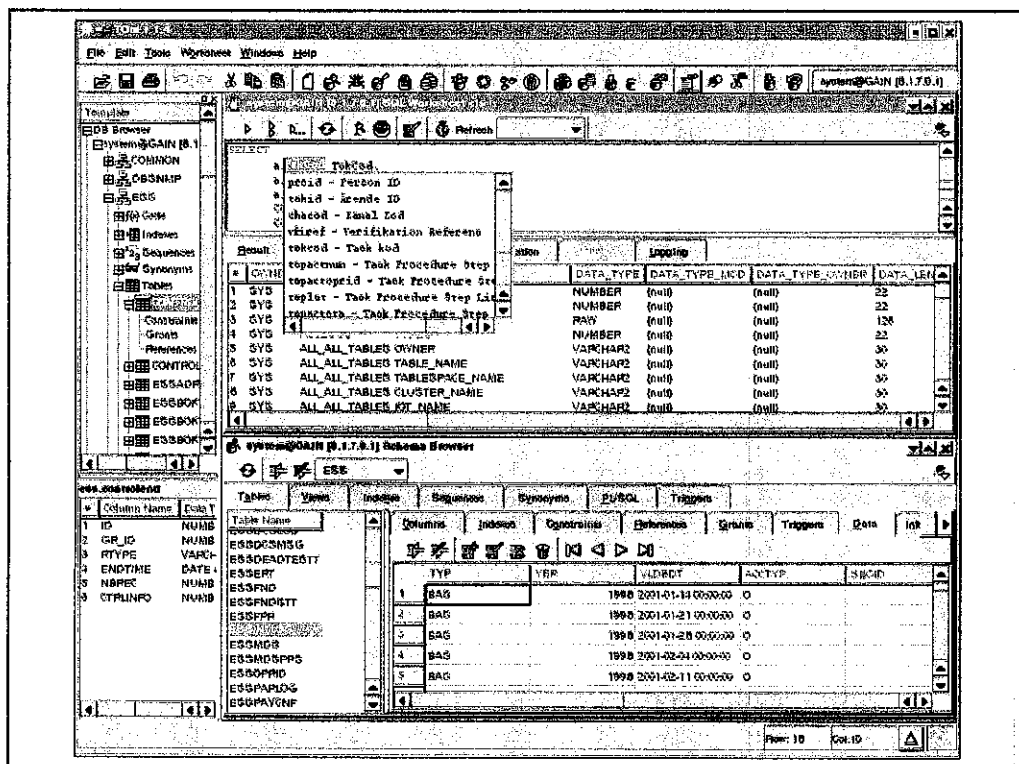


Figure 4.2 k : TORA print screen

4.3 CHALLENGES OF IMPLEMENTATION

In order to implement this project, the author had come across to several challenges that limit her to finished performing this development. One of the major factors is that the client's distance from the author would probably had made this project took longer time to complete than it is supposed to. The client is now working in MCOT, while the author is performing this project in UTP. However, the author had managed to tackle this issues by communicating with the client through emails, phone and also meeting the client whenever the client is in a closer distance from the author.

Apart from that, the author is now having problem in giving the ongoing development progress physically to the client, especially when testing phases are to be implemented. However, the author will eliminate this challenge in several more weeks by installing the Oracle platform and the ETS server in the client's office. From this, whenever new development is being done, it is easier for the client to look at, test the system and then gives comment in making this project a success.



CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Wrapping up this research, the author can say that this research and analysis of the project has been achieved after understanding the concept of the process model in order to build a good system required by the client. Client requirements should be achieved concurrently in every version being made in the system in order to have satisfaction for both parties. Using the correct method in doing the project is also a crucial part so as to maintain the timeline of the project development and so that the project could be finished in a timely manner.

All of the study objectives have been reached when developing the ETS system. From the survey conducted, it is proved that the system can assist worker in tracking the work order smoothly. The report generator later had also proved that tracking the history and records of the equipment should not be a problem anymore. Thus, when both of these situations can be settled, the system had also achieved to avoid any hindrance pertaining to the equipment in order to fasten the processing time of work. The author is confident that later this project can help MCOT to be running with zero shutdowns in the Rejuvenation Phase II.

Of all the user requirements, majority of the requests had been done by the author. However the part where email notification is needed, is still not implemented at the moment due to the difficulties in configuring the network in the university, as well as that the author doesn't really has PETRONAS email. It is easier to configure the email set up when the author has the email domain.

All of the literature review being made is essential and supportive in helping the author to be confident when doing this system. It is hoped that later this research would satisfied all the objectives and scope of studies, and could benefit the author in preparing a good prototype and to come out with a helpful yet user-friendly system for the client.



5.2 RECOMMENDATION

As the author is doing a very crucial yet a real project for MCOT, the author would suggest that all of the challenges listed above had to be eliminated, if not being prevented so that this project would be finished according to the timeline of the Final Year Project. For instance, in order for the author to really focused and had a very clear understanding of this system as well as to have a good communication with the client, the author had to really see the actual scenario that had resulted to the problems in MCOT. Thus, one of the steps that the author could make is to go to MCOT even it is far from the location where the author is in right now. It is hoped that in the future the university can provide some financial support in order to make such real project a success.

Other than that, in doing the notification email part, it is better for the author to do it using the client account (PETRONET email), and then to test whether it is working or not in the real situation because the system will be used only in MCOT, thus making the author easier to configure all the network configuration there.

Last but not least, the author believes that learning Oracle Form Developer and Oracle Report Developer are very interesting yet it should be taught in the university as to instill the motivation of the student in learning programming. Oracle is really a very powerful yet compatible tool to be used in many other programs, thus the author finds that it is good if all the students in the university can have the opportunity to learn this tool.



REFERENCES

- [1] **Wikipedia Encyclopedia**
<http://www.en.wikipedia.org>
- [2] **Webopedia Computer Dictionary**
<http://www.webopedia.com>
- [3] **Sommerville I. (2001). *Software Engineering 6th Edition*. London: Addison-Wesley.**
- [4] **Daniel Galin (2004). *Software Quality Assurance*. England: Addison-Wesley**
- [5] **Oracle 9i Developer Suit Release 2 (9.0.2), CD-ROM**
- [6] **Norlina Ahmad Subki (2001). *Database Security: A Comparative Study of Microsoft Access and Oracle DBMS*. Malaysia: University Technology of PETRONAS**
- [7] **Customer Profile MASTER LOCK COMPANY**
<http://www.oracle.com/pls/cis/profiles.print.htm>
- [8] **Alan Mendelevich. Article in WebReference Update Newsletter, December 16, 1999**
<http://www.webreference.com/new/aspdev.html>
- [9] **Search on ASP on High Tech Job Search Engine**
dice.com
- [10] **BTS/33 & BTS/331 (December 2004). *MMM(Plant Maintenance): SAP/R3 User Guide***
- [11] **Stephen A. LeMay, Richard Cassady, Jeffrey Withee, Justin Viator. *A Dissertation: Tracking and Positioning Software: A Market Need, Value, and Cost Analysis*. Mississippi State University, University of Arkansas.**
- [12] **CDC/ATSDR Environmental Public Health Tracking System**
<http://www.astho.org/pubs/FebHEES-NCEH.htm>
- [13] **Order Management (OM)**
<http://ias.rockefeller.edu/scope.php>
- [14] **CMMS Software System, Preventive Maintenance Management Software**
<http://www.expresstechnology.com/>
- [15] **Reference Work, *IN4TRACK+: Migration & Enhancement* (2005). PETRONAS PENAPISAN MELAKA SDN BHD (PP(M)SB)**

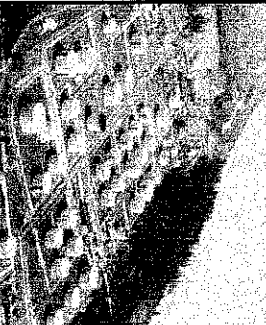


- [16] Steve McConnell (1996), *Rapid Development, Taming Wild Software Schedules*, Microsoft Press.
- [17] HostIndex
<http://www.hostindex.com>
- [18] Allaire
<http://www.allaire.com>
- [19] Sausage Software
<http://www.sausage.com>



APPENDICES

VISITORS' PRESENTATION PACK



- Receives, dehydrates, and stores crude oil from Baram Delta fields and export crude via SBM
- Treats the produced water to below the PETRONAS Corporate limit of < 40 mg/l prior to discharge
- Treats the produced emulsion and recovers back the crude oil
- Extends the gas supply to PGB for onshore consumption

Total Net Export: 113 million barrels (2000 to Apr. 2005)

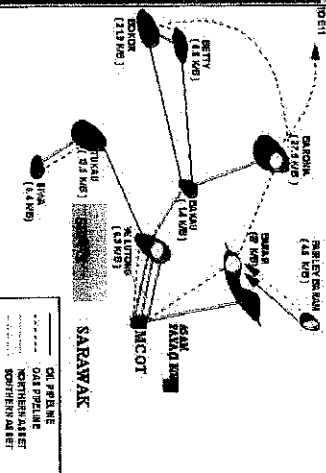
Crude Storage: 18 tanks

Export Pumps: 3 x 150,000 b/d

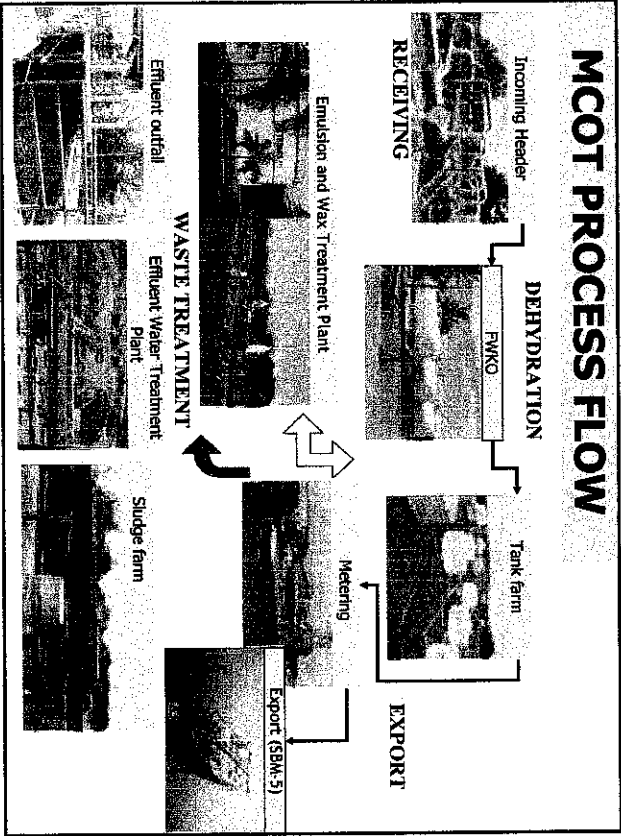
Locations: Lat 4,000 N, Long 2,000 E and height of 1.0 m above sea levels

Area: 105 acres (426,078 m²)

SBM-5: Lat. 04° 26' 49" N Long. 113° 53' 48" E



Map showing production and export routes from Sarawak fields (Baram, Bintulu, Labuan, etc.) to SBM-5 and then to export.

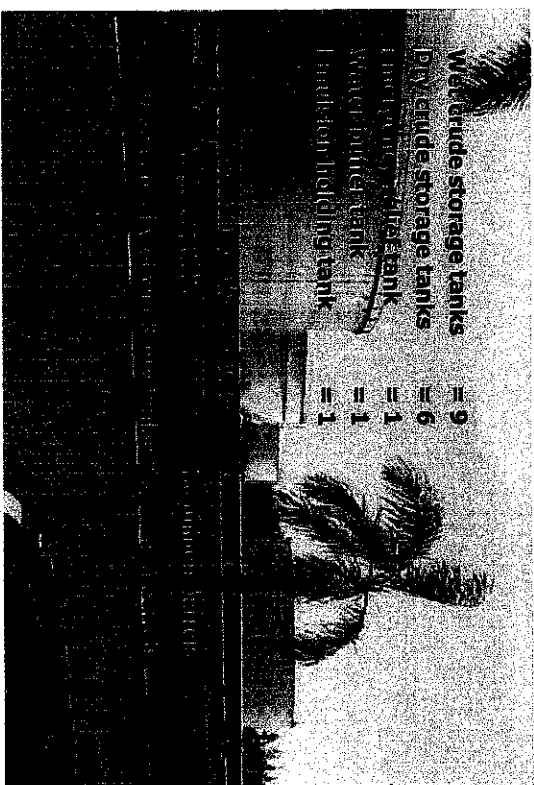


Crude Receiving & Mixing Header



Trunk line	Size (in)	Gross Received (bpd)	Water cut %	Emulsion %
4 B's (BE/BO/BN/BK)	18	93,000	46	4.0
BARAM	16	65,000	60	0.5
TUKAU/SIWA	12	24,000	63	0.5
WEST LUTONG	10	20,000	65	0.5

Storage Capacity

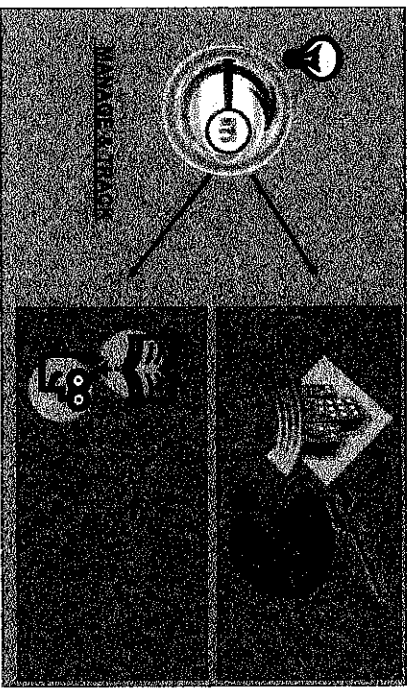


Equipment Tracking System
(ETS)

FINAL PRESENTATION
Aerina Wanli Ahmed
3669
Information Technology
Universiti Teknologi PETRONAS

INTRODUCTION
LITERATURE REVIEW
METHODOLOGY
RESULTS AND DISCUSSION
CONCLUSION
RECOMMENDATION
PROJECT DEMO

Project overview / Case Scenario



Problem Identification

- No proper documentation of document listing & tracking inventory
- Lost track of the Work Order (WO)
- Verbal communication & paper-based report



[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20]

OBJECTIVES OF STUDY

Provide user with a system that can assist them in tracking the equipment smoothly

Create tracking history and records of the equipment

Avoid hindrance pertaining to the equipment to fasten processing time of work.

To ensure that MCOT will be running with zero shutdowns

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20]

CHAPTER TWO: PREVIEW

Oracle Platform

Oracle 9iDS supports full development life cycle of many applications:

- Oracle Database Vs Microsoft Access:*
- Oracle DBMS is proven to be solid & stable
- Oracle database is compatible with many web programming languages

We have chosen Oracle as our standard for applications, database, and development tools. Oracle solutions provide a flexible, scalable system that enables us to implement common best practices across the enterprise." -- Richard Kolaczewski, Chief Financial Officer, Master Lock. *

Source : *Oracle* Ahmed Sulihi (2012). *Database Security: A Comprehensive Study of Microsoft Access & Oracle DBMS*

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20]

SCOPE OF STUDY

Study current maintenance system in MCOT and its structure

Concentrate on how to build a user friendly system for the E&I Department.

Study on designing the system using Oracle Platform as the back end structure.

Study on the compatibility and dependability of using Oracle Technology to be running on web browser.

Explore the ASP programming technology to be used in web development

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20]

CHAPTER THREE: PREVIEW

Active Server Pages (ASP)

10 Reasons why people should use ASP in developing web application:*

- Ease of Use
- Language Independence
- Short Learning Curve
- Tons of Information
- Huge Community
- Low Cost of Ownership
- Extensibility
- Hosting
- Tools
- You Can Get a Good Job



Source : Alan Mandelovich. <http://www.Wonderware.com/html/asp.asp?x=1>

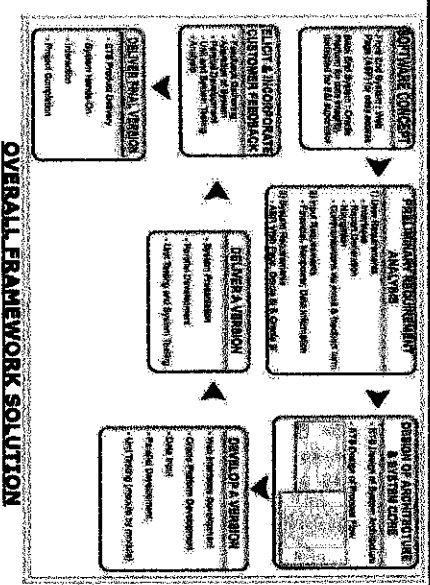
FIELDWORK PREVIEW

The Importance of Equipment Tracking System

Allow real time assessment for any equipment with or other hazard issues, thus it will provide states with capability for early detection of emerging hazards in the future, With an automated system tracking, it allows integrity and authentication to be made, where the system allows tracking through secured access identifiers and a password system, System Tracking in PP(M)SB : IN4TRACK +

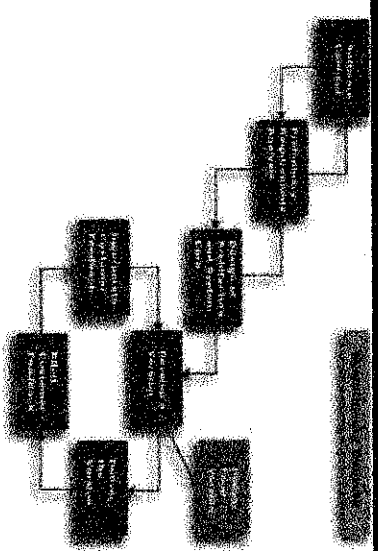
7. Source : <http://www.aphis.gov/infocenters/ncen.htm>

FIELDWORK SOLUTION



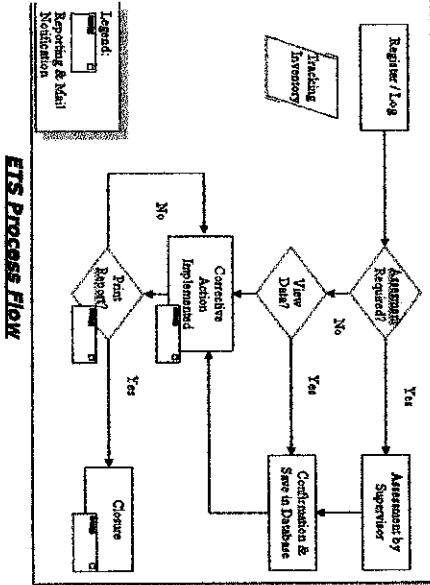
OVERALL FRAMEWORK SOLUTION

Design Methodology



Evolutionary development

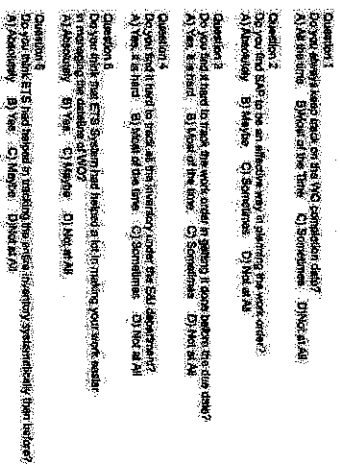
Process Flow



ETS Process Flow



Submitted Training Journal (171) Instructions and for the Beneficiary		Approved By	
Training	Signature	Signature	Signature
<p>1. The first field module is the first of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>2. The second field module is the second of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>3. The third field module is the third of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>4. The fourth field module is the fourth of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>5. The fifth field module is the fifth of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>6. The sixth field module is the sixth of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>7. The seventh field module is the seventh of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>8. The eighth field module is the eighth of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>9. The ninth field module is the ninth of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p> <p>10. The tenth field module is the tenth of the 101 pages (including all the appendices) containing the required training information required to complete the training.</p>			



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Defective Equipment Request for
Repair/Replacement

Time: _____ Date: _____

Priority (Please tick √):

☐

URGENT

☐

NORMAL

Respective Sections (√):

MECHANICAL:

☐

CIVIL:

☐

ELECTRICAL:

☐

INSTRUMENT:

☐

OTHERS:

☐

Location: _____

Description:

Request by: _____ (BOS/BTS: _____)

**Please send to respective maintenance supervisor for immediate action*

Received by: _____ (E&I/Mech, Supervisor) Date: _____

-----<REMARKS BY SV/DPIC>-----

Status:

☐

Action taken by: _____

☐

Pending due to: _____ Target of Completion: _____

☐

Job **DONE**

Questionnaires of Efficiency of Completing Work Orders on Time & the Ease of Tracking Inventory in E&I Department

Question 1

Do you always keep track on the WO completion date?

- A) All the time B) Most of the Time C) Sometimes D) Not at All

Question 2

Do you find SAP to be an effective way in planning the work order?

- A) Absolutely B) Maybe C) Sometimes D) Not at All

Question 3

Do you find it hard to track the work order in getting it done before the due date?

- A) Yes, it is hard B) Most of the time C) Sometimes D) Not at All

Question 4

Do you find it hard to track all the inventory under the E&I department?

- A) Yes, it is hard B) Most of the time C) Sometimes D) Not at All

Question 5

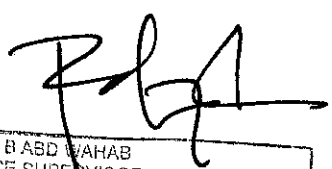
Do you think that ETS System had helped a lot in making your work easier in managing the dateline of WO?

- A) Absolutely B) Yes C) Maybe D) Not at All

Question 6

Do you think ETS had helped in tracking the entire inventory systematically than before?

- A) Absolutely B) Yes C) Maybe D) Not at All


MD RIDZUAN B ABD WAHAB
MAINTENANCE SUPERVISOR
(ELECTRICAL & INSTRUMENT-BOS/216)
MIRI CRUDE OIL TERMINAL
SOUTHERN ASSET





Equipment Tracking System (ETS) Acceptance Test for E&I Department

Tester Name	Department
Date	ID Used

Purpose

The objective of this checklist is to test out the ETS system functionality and its configuration setting accordingly as per required from the requirements' agreement.

Instructions

User needs to test each of the functional modules and criteria whether it met expected result accordingly.

Functionality Test Criteria

Approved By:

[Signature]

MD RIDZUAN B ABD WAHAB
MAINTENANCE SUPERVISOR
(ELECTRICAL & INSTRUMENT-BOS/216)
MIRI CRUDE OIL TERMINAL
SOUTHEAST ASSET



Items	Detailed Description	Expected Results	Actual Result	Status (PASS/FAIL)	Remarks
Web Access	Accessible via Internet Explorer	Opens main portal in IE without problems			
	Response Time to load initial page	Loads in 10 Sec			
	Links	All links are connected			
	ETS Online System Response Time to User Login popup	Loads in no more than 10 Sec			
	Feedback Form	Working smoothly without any error			
Login Accessibility to ETS System	Insert username, password and database	If correct, main system screen loads in 5 sec. If wrong, error message prompted, clicking cancel will reload login popup			
	GUI	user friendly			
	Inputs to the system	Easy to enter all data			
	Save Data	Easy to save data and modify it back			
	Oracle Platform	Manageable without any problem on the server			
System Functionality	ASP webpage	Manageable without any problem on the server			
	ETS Database	Able to extract data from database from an input selection screen (in the search page)			
	Report	Able to provide trending & tracking report			
	Navigation	Smooth navigation without having any flaws			
	Notification email	A working notification email			



PETRONAS CARIGALI SDN BHD (39275-U)

Wholly-owned subsidiary of Petronas

PETRONAS CARIGALI SDN BHD, SARAWAK OPERATIONS, PETRONAS CARIGALI BUILDING, JALAN SEKOLAH, LUTONG, P. O. BOX 1452, 98008 MIRI, SARAWAK, MALAYSIA.
TEL: 085-470000 TELEX: CAGALI MA 74074 TELEFAX: 085-475757

343, Lorong Setia 9,
Ayer Keroh Heights,
75450, Melaka

6th March 2006

Dear Miss Aerna Wani Ahmed,

Invitation to PETRONAS Carigali Sdn Bhd, Miri, Sarawak for Final Year Project of Equipment Tracking System at MCOT

With reference to the above, I would like to invite you to PETRONAS Carigali Sdn Bhd in Miri, to have a look on the current system used for equipment tracking at MCOT.

2. I am aware that you have proposed to build a database system for equipment tracking in MCOT as an enhancement to the current system. Thus, I am glad to inform you that your help is very much appreciated. For this, you are invited to have a look at the real existing situation in MCOT and the reason why this system of yours is really beneficial to the plant personally and to the company generally. Furthermore, the Rejuvenation Phase II is on the move and thus you will have the opportunity to have some idea of these Rejuvenation Phase.

3. The invitation period is from **17th March (Friday) until 20th March 2006 (Monday)**. Flight tickets and accommodation will be borne by us.

Should you require more information, without hesitation, please call me before 13th March 2006.

Regards,

(Mohamed Ridzuan Abdul Wahab)

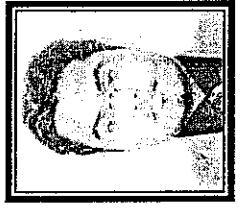
Electrical & Instrument Supervisor,
Miri Crude Oil Terminal,
Southern Sector,
Miri Sarawak



Bansa (Head Op)



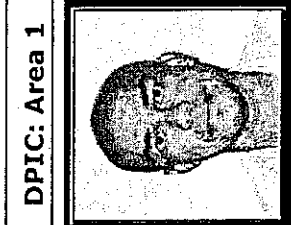
Norazeman (SOS)



M Ridzuan (SV)

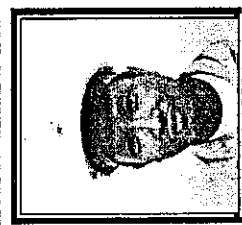


Md Zaini (Planner)



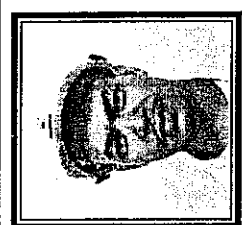
Sy Omar
(Elect T. Leader)

DPIC: Area 1



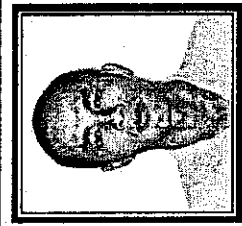
Lizazman

DPIC: Area 2



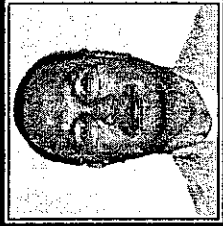
Ruslan

DPIC: Area 3



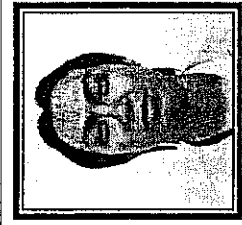
Abu Samah

DPIC: Area 4



M Zollani
(Instr T. Leader)

DPIC: Area 1



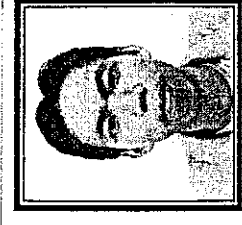
Andy John

DPIC: Area 2



Aaron

DPIC: Area 3



Muqtadir

DPIC: Area 4

*Note: Each personnel have has been assigned a dedicated area. In case of certain occurrences, the person is shift would be able to rectify the problem. (Any major issues would required DPIC authority).

Support Services Maintenance (SSM) Raise and Plan Work Order

Transaction Overview

Background

Any Material procurement activities must be accompanied by approved work order before the procurement action can be carried out

What

This procedure is used to raise and plan work order (WO) and outline the necessary steps required to raise and plan a work order, prior to work order approval.

Objective

To ensure that all procurement activities are entered and planned on the MMM system Work Order.

Roles

Materialsman / Material Planner, Asset Support Services

When

As and when required.

Transaction Code

IW31

Screen Flow

Create Order : Initial Screen

Create Support Services Maintenance : Central Header

Create Support Services Maintenance : Operation Overview

Create Support Services Maintenance : Component Allocation Operation

Create Support Services Maintenance : Component Detail Data

Create Support Services Maintenance : Central Header

Before SAP R/3 Session

Identify the functional location/equipment , priority of work and materials to be procured.

ENU PATH : Order >Create (general) or use Transaction (IW31)

1

2

1

2

Order type

Priority

Plant Change / MODIFICATIONS.

Predictive Maintenance.

Planned Preventive Maintenance.

Proactive Rectification.

Plant Statutory Inspection.

Plant Turnaround.

Reactive Maintenance Order.

Support Services Maintenance

Loss of HSE/economic

Pot. loss HSE/Econom

Moral Maintenance

Screen : Create Order : Initial Screen

STEPS

Enter the following

1. Enter SSM in "Order Type".

2. Priority

Order Edit Goto Header Extras Environment System Help

1

2

Order type

Priority

Plant Change / MODIFICATIONS.

Predictive Maintenance.

Planned Preventive Maintenance.

Proactive Rectification.

Plant Statutory Inspection.

Plant Turnaround.

Reactive Maintenance Order.

Support Services Maintenance

Loss of HSE/economic

Pot. loss HSE/Econom

Moral Maintenance

Screen : Create Order : Initial Screen

STEPS

Enter the following

1. Enter SSM in "Order Type".

2. Priority

Order type

Priority

Plant Change / MODIFICATIONS.

Predictive Maintenance.

Planned Preventive Maintenance.

Proactive Rectification.

Plant Statutory Inspection.

Plant Turnaround.

Reactive Maintenance Order.

Support Services Maintenance

Loss of HSE/economic

Pot. loss HSE/Econom

Moral Maintenance

Screen: Create order Initial

STEP :

3. Click the pulldown button to get the Equipment no.

Order Edit Goto Header Extras Environment System Help

Order type

Priority

Plant Change / MODIFICATIONS.

Predictive Maintenance.

Planned Preventive Maintenance.

Proactive Rectification.

Plant Statutory Inspection.

Plant Turnaround.

Reactive Maintenance Order.

Support Services Maintenance

Loss of HSE/economic

Pot. loss HSE/Econom

Moral Maintenance

Screen: Create order Initial

STEP :

3. Click the pulldown button to get the Equipment no.

Order Edit Goto Header Extras Environment System Help

Create Order: Initial Screen

Equipment by technical ID number

Order type: Technical ID No. 1
Priority: Equipment
Func. Location: Equipment description
Equipment: Restrict display to 500
Assembly: Multiple selection
Planning plan: ☒ ☐ ☐ ☐
Business: ☒ ☐ ☐ ☐

Reference
Order

T01 (1) (010) bdc302s5 OVR

Screen : Equipment by
Technical ID number

EQUIPMENT BY TAG no.

- STEPS:
1. Type Equipment Technical Identification number (TAG No. or part of it (use wild card search *)
E.g. BAPA-P801*
 2. Click to Continue

Order Edit Goto Header Extras Environment System Help

Create Order: Initial Screen

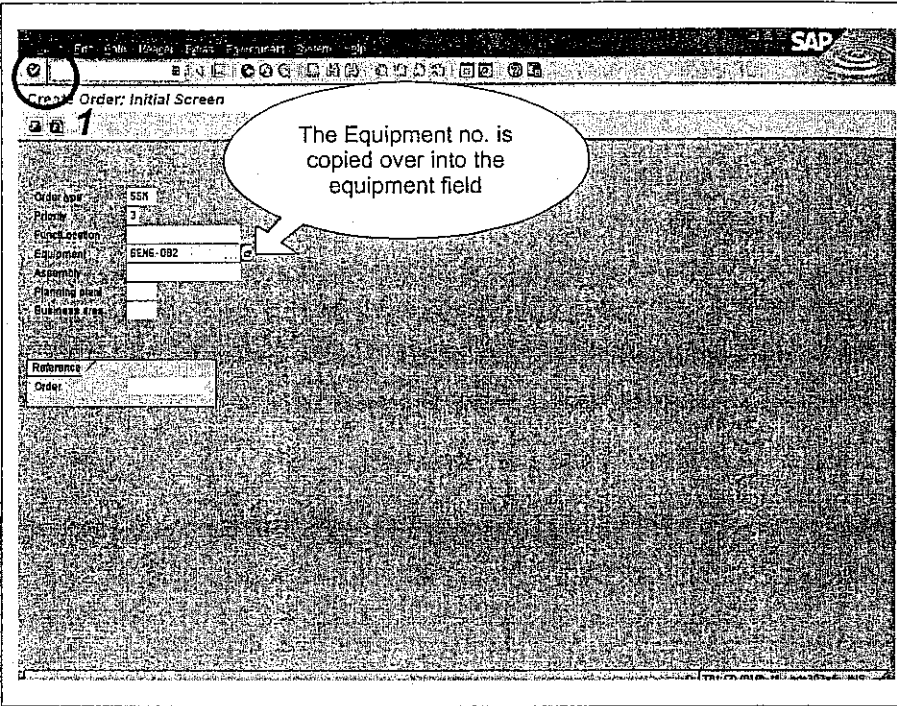
Hit List

Technical ID No.	Equipment	Equipment description
BAPA-P801-CPL1	COUP-189	COUPLING, ASSEMBLY; ENGINE-680X, TSAS0750
BAPA-P801-CPL2	COUP-189	COUPLING, ASSEMBLY, 680X TO PUMP, TSAS 0100
BAPA-P801-E	EX-501	EXCHANGER, HEAT LIBRA PERFEX OV21EC6SA
BAPA-P801-GB	680X-001	GEARBOX, LUFKIN NM800C INCREASING 450HP
BAPA-P801-M	ENG-002	ENGINE, GAS CATERPILLAR 63412TA
BAPA-P801-P	PUMP-1421	PUMP, VMX 6-STAGE HORIZ CENTRIFUGAL

T01 (1) (010) bdc302s5 OVR

Screen : Create Order
: Initial

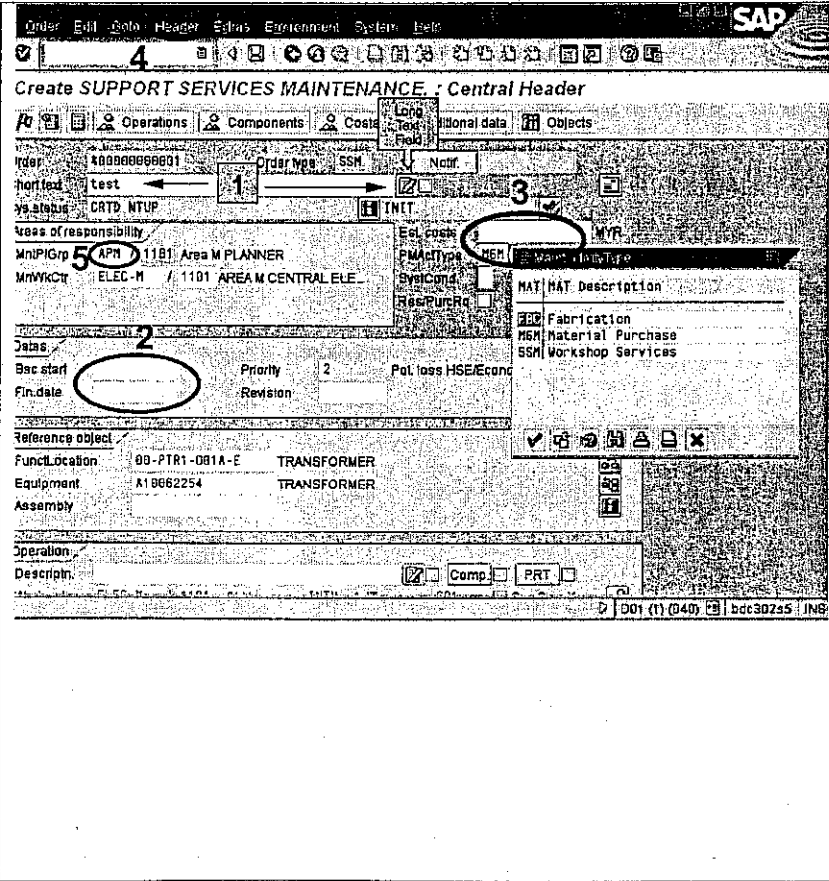
1. Highlight the selected Equipment
2. Confirm your selection.



Screen :
Create Order : Initial
Screen

- STEPS:
1. Click ENTER to continue

Note :
Ensure the right equipment is selected in order to capture correct equipment historical data.



Screen: Create Support
Services Maintenance :
Central Header

- STEPS:
1. Type job description short text.
Enter detailed description in
the Long Text field .

2. Enter the start and end date

Note:
The start date of the order is directly
linked to Material delivery date.
Always ensure that the start date
should be the expected material
delivery date.

3. Select PMAct type - MGM

4. The equipment is defaulted to
Surface Routine cost center.
To change the cost center do
the following

Menu path:
Headers → Settlement Rule →
Settlement Rule

5. Check the Planner Group

Settlementrule Edit Goto System Main

SAP

Maintain Settlement Rule: Overview

Order: 99725638 To rectify ignition system problem

Actual settlement:

Category	Receiver	Receiver short text	Percentage	Equivalence no.	Settlement type	No.	Ma.	From	From
CTR	BARM-800	BARM-SURFACE ROU	100.00		PER				

T01 (1) (010) bdc302s5 INS

Start Free... M. Saz... Word... SAP L... Main... 2:56 PM

Screen : Maintain Settlement Rule : Overview

STEPS:

1. Enter the relevant rule :

- Category : CTR for Cost-Center or WBS for project no.(real)*
- Receiver : cost-center code, project no. code or multiple receiver
- Percentage distribution: must be 100%
- Settlement type : Per

* Statistical project must be accompanied with cost-center.
The cost-center must be entered first then double click the cost-center.

STATISTICAL PROJECT

Settlementrule Edit Goto System Main

SAP

Maintain Settlement Rule: Distribution Rules

Settlement sender

Order: 99725638 To rectify ignition system problem

Company code: 0803

Actual settlement:

Settlement receiver

Costcenter: 07816M 800

WBS element: 1

Order: (7)

Real estate assigned: ☐ Detail: ☐

Asset: Company code: 0803

Distribution rule

Number: 1 Settlement type: PER

Percent: 100.00 Valid from:

T01 (1) (010) bdc302s5 INS

Start Free... M. Saz... Word... SAP L... Main... 2:55 PM

Screen : Maintain Settlement Rule : Distribution Rules

STEPS:

1. Enter statistical project no.
2. Click " back " to return to the previous screen

[illegible]

Screen : Create Order
type : Operation
Overview

1. Click "Back" to return to Central Header screen

SAP

Order Edit Help Header Edit Maintenance Screen Help

Create Support Services Maintenance : Central Header

Operations Components Costs Additional data Objects

Order no. 1000000000001 Order type SEN Next

Object TEST - FOR SSA ORDER CREATION 2

Customer CRTO NTUP INT

Responsible person

Plant W05 / 0330 W.LUTHEBAU OPER SU Est. costs MYR

Plant W05 / 0330 W.LUTHEBAU OPER SU PMA type G

Plant W05 / 0330 W.LUTHEBAU OPER SU Syn. Cost

Plant W05 / 0330 W.LUTHEBAU OPER SU Res. Proc. Rate

Material

Start date 31.01.2005 Priority 3 Normal Maintenance

End date 31.03.2005 Revision

Reference object

Incident location WLKA-K7189 COMPRESSOR,RECIP.EXPORT GAS,GAS ENGINE

Equipment location ECON-004 COMPRESSOR,RECIP.GAS,DRESSER-RAND 4R

Assembly

Version

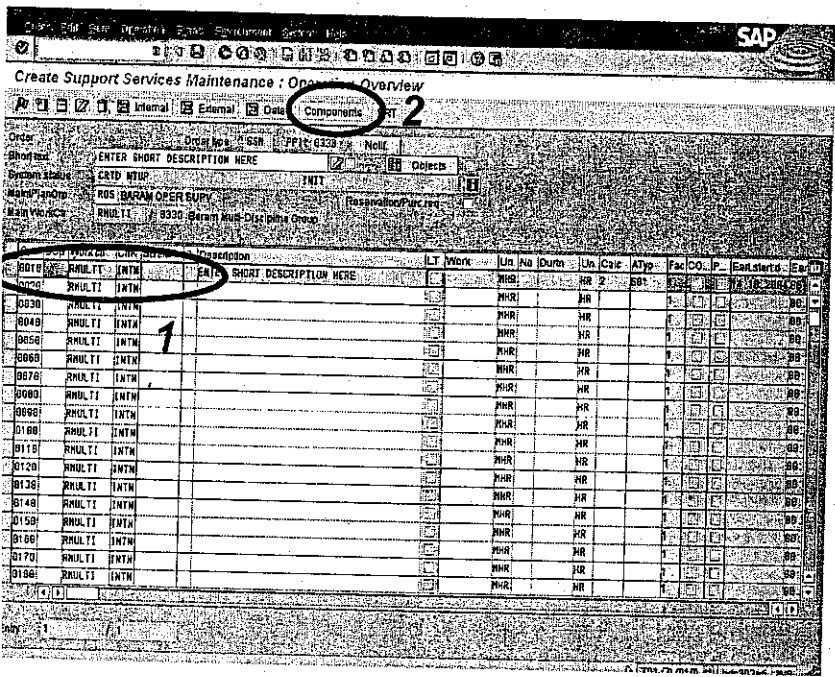
Personnel 2 Comp. PRT

Work center WHUL1 F 0330 Ctrl key INTN Act type SB1 ServSpec

Work center HRH Number Norm. dur. HR Calc. key 2

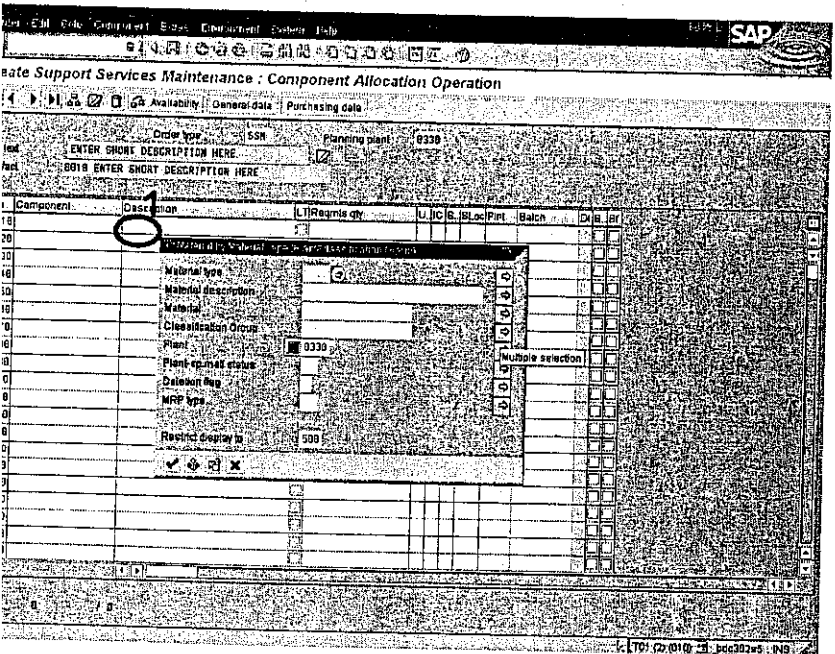
Screen : Create Order
type : Operation
Overview

1. Click "Operation" to go to the Operation screen



**Screen : Create Order
type : Operation
Overview**

- STEPS:
1. Highlight Operation #####.
Check :
Ctrl must be:
 - "INTN" for internal operation and
 - "ESVC" for external Services
 2. Click "Components" to select the material to be procured.



**Screen : Create
Material For General
Maintenance :
Component Allocation
Operation**

1. To select the material click the pulldown menu

SAP

Order Edit Info Component Extras Environment System Help

Create Material For General Maintenance : Component Allocation Opera

Availability General data Purchasing data

Order type MSH Planning plant 8330

Portex test

Object 0010 test

Item	Component	Description	LT	Reqtis qy	U	C/S	S Loc	PInt	Batch	Dl B.	B.
0010	50256901	SHOE, HALF, W2531P1, COMPR, DRRX			2	PCN		8330			
0020											
0030											
0040											
0050											
0060											
0070											
0080											
0090											
0100											
0110											
0120											

ntxy

P01 (01) P# bdc302s2 INS

Screen : Create
Material For General
Maintenance :
Component Allocation
Operation

Once the material code is selected , initiate procurement action by filling up

1. Req. Qty
2. IC-Item Category .
Select N - "Non Stock"
(defaulted).

Note :

One or more operations can be used to handle the job.

Order Edit Cuto Component Extras Enhancement System Help

Display Material For General Maintenance 91049554; Component Overview

General data **Purchasing data** 2

Order: 91049554 Order type: SSM Planning plant: 8338

Short text: GENERAL PURPOSE TOOLS/ RONALD/ BAKB ☒

Ita	Component	Description	AT	Reqs	Qty	B	IC	S	Loc	Plant	Op	Batch
8338	20900077	SMALL TOOLS & MACH TOOLS, GEN	<input checked="" type="checkbox"/>							8338	0010	
8338	20900077	SMALL TOOLS & MACH TOOLS, GEN	<input checked="" type="checkbox"/>	2	PC	N				8338	0010	
8338	20900077	SMALL TOOLS & MACH TOOLS, GEN	<input checked="" type="checkbox"/>	2	PC	N				8338	0010	

Select a component

P01 (1) (010) bdc302s2 1 INS

Screen: Display
Material For General
Maintenance #####
: Component
Overview

To enter details of the Purchasing data

1. Select the component line item
2. Click "Purchasing data"

Order Edit Goto Component Extras Environment System Help

Display Material For General Maintenance 91049554: Purchasing Data

Order: 91049554 Order type: SSM Planning plant: 8330
Short text: GENERAL PURPOSE TOOLS/ RONALD/ BAKB
Operation: 8810 GENERAL PURPOSE TOOLS/ RONALD/ BAKB Sequence: 0

Component data
Item: 8810
Item text: PLASTICS CASE - 25 PCS 1-DRILL-BITS ☒ Long text
Component: 28888877 SMALL TOOLS & MACH TOOLS GEN
Rqmts. quantity: 1 PC
Item category: N Non-stock item

Purchasing data
Purch. group: 018 / 8301 Plant: 8338
Vendor: Valuation price: 433.88 MYR
Outline agmt: / 8 Price unit: 1 PC
Del. time (days): 0 OIL account: 43883609 1B
Material group: 63 Unloading point: BAKB/ RONALD 1C
Ship-to party: Ronald/ saur 1A Requisition: 264558 / 18
QR proc. time: 0 Received: 1 PC

POT (1) (110) bdc307s2 INS

Screen : Display
Material for General
Maintenance
#####:
Purchasing Data

1. In the Purchasing Data screen fill up the relevant details such as:

A. Ship to part

B. GL account

C. Unloading point.
2. Click "Back" to return to previous screen.

Order Edit Goto Header Extras Environment System Help

Create Support Services Maintenance : Central Header

Operations Components Costs Additional data Objects

Order: 1088888888888888 Order type: SSM Notif.
Short text: test- FOR PCSB
Status: CRTD ESTC NTUP ☒ AWAP 2
Areas of responsibility: ☒ MGS / 8330 MCOT OPER SUPV ☒ PMActType: MGN Material purchase
MinVwCtr: HMULT1 / 8330 MCOT Multi-Discipline G... BystCond: ☐
ResPurcRg: ☐

Dates
Bsc start: 29.10.2004 Priority: 2 Pot. loss HSE/Econom
Fin. date: 10.11.2004 Revision:

Reference object
Funct. location: MCOT-EWTP-CS SYSTEM ,CONTROL EMULSN TREATMNT PLANT
Equipment: VALV-120 VALVE,PRESSURE INDICATOR CONTROL
Assembly:

Operation
Descriptn: test for PCSB ☒ comp ☒ RT

Screen : Create
Support Services
Maintenance : Central
Header

1. A tick mark indicating components data attached.
2. Before Saving the Work Order set the "User Status" as **AWAP**.
3. Check the Maintenance Planner Group and change if needed. Address it to the next party in charge.
4. Save the Work Order for Supervisor's approval and release.

END OF TRANSACTION