The Development of Transport Request System in SAP using ABAP Language

by

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Dissertation submitted in a partial fulfillment of

the requirement for the

Bachelor of Technology (Hons)

(Business Information Systems)

July 2005 / Jan 2006

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CERTIFICATION OF APPROVAL

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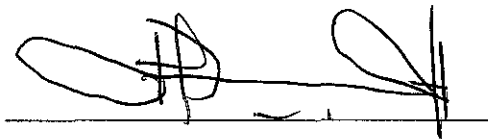
UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

July 2005 / Jan 2006

CERTIFICATE OF ORIGINALITY

This is certify that I am responsible for the work submitted in this project, that the original work in my own expect 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.

AHMAD FIKRI AMER HAMZAH

LIST OF ILLUSTRATIONS

LIST OF ABBREVIATIONS

DEV   –   Development System

QAS   –   Quality Assurance System

PRD   –   Production System

SAP   –   Software Application Programming

ABAP   –   Advanced Business Application Programming

TMS   –   Transport Management System

MBS   –   Act as DEV and QAS for the project implementation

RPR   –   Act as PRD for the project implementation

LIST OF APPENDICES

ABSTRACT

A transport request is a process of transferring SAP system components from one system to another and the components to be transported are specified in the object list of a transport request. Current transport request process is using hardcopy form that is printed with the details about the requester, the change request and change request id. The usage of the form rise problems that include the problem on storage and filing the forms, standardizing the form structure, and the process is not easy to monitor and analyze. The purpose of the study is to develop a system in SAP that can cater for change request transportation to different client server where the system is fully integrated with all SAP functionality and can overcome all problems that rise from the used of hardcopy form. Manual paper-based process is transformed into automate-based process that is integrated within SAP. The boundary for the study is within transport architecture in SAP and the transport architecture focus on two system environment with several clients. ABAP programming is used as the programming language to develop the entire graphical user interface including screen, and analysis. The implementation of the project involves identification of the business process flow analysis on the SAP transport architecture, designing and creating database tables and graphical user interface, developing program code for screens and analysis, and running program testing that includes subsystem, integration and system testing. The system is be able to cater for all user requirements in term of requesting a transport request, communication between requester and approver, perform transport process, and generates analysis for the management.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The transport workflow provides a framework for transporting enhancements or new developments of existing business functions through a system landscape. System landscape consists of elements like servers, databases, systems, and systems components. These elements recite in three basic generic environments that are DEV system, QAS system, and PRD system. Changes to the standard SAP "off the shelf" product are made in the DEV system or also known as Customizing and Development system. Basic testing in relation to the system architecture may also being done in this system where small quantity of realistic data is stored (DimensionConsulting.com, 2005).

Rigorous testing of changes occurs in the QAS system known as Quality Assurance system, where contains large amount of realistic data that may be a copy from PRD system in order to facilitate realistic testing (DimensionConsulting.com, 2005). PRD or Production system is the "live" version of the system where contains all business transaction data (DimensionConsulting.com, 2005). Normal users only interact with PRD system to perform day-to-day operation and changes should be moved into this system only after they have been thoroughly tested. Therefore, the transport workflow will transport enhancement or changes between DEV system, QAS system and PRD system from developer to user supported with enhancement testing. A transport management system that is currently not in SAP is needed to cater for transport request by the developer to transport administration.

1.2. PROBLEM STATEMENT

1.2.1 Problem identification

When a user requests for change transport to QAS or PRD, a paper-based transport request form is filled before it is approved for transport. The form contains details on requester, change request id, details on approval and transport process result (see Appendix A). As workload increase, number of forms that needed to be stored also increase, and question regarding form storage rise. The form storage required specific filing system and it is hard to maintain.

Throughout the end of the business period, top management is having difficulty in performing analysis on the transport request, for example forms that are process for a specific month in a year are hard to locate and it is time consuming.

The management is also having difficulty to the issue of standardizing the form elements such as font size and short forms. This will lead to the auditing problem which will be performed by the external auditor. They will question about the not standardized forms and the reasons it should ever happen.

1.2.2 Significant of the Project

The system is implemented to tackle the problems faced using the hard copy form. Besides, it can also provide extra functionally like email for notification purpose that can help in increasing the efficiency of the business process.

Details regarding change request id that stores the changes on SAP system, is located within the SAP itself and it could not be accessed from outside SAP. By applying the developed system, SAP Team will found no difficulty in retrieving data as all required details are integrated within the SAP.

All fields that are entered by the user will be stored in a normalized database server. This can overcome the problem of form filing. Data will be stored in server and it

will not require additional storage since SAP is using server to store its own database. Plus, storage for this transport request form will not consume a lot of hard disk space because on average, transport is requested only twice a day compared to other business operation that may involves up to hundreds and thousands of transaction per day.

The system can limit user action in the sense that it provides drop down menu or check box selection for certain input that can help to standardize data entered by user. SAPscript is use for printing purpose able to provide a good standards output.

1.3. OBJECTIVES AND SCOPE OF THE STUDY

1.3.1 Objectives of the project

This project caters and overcome the weakness of hard copy forms that is currently used by the organization and transforms the existing business process into automated-based system. It is targeted to simplify the tasks of the SAP consultants when requesting a transport. The objectives of the project are:

1. To analyze transport process in customer site that uses 2 different servers for development and production. The development server contains two client servers while production server contains single client server.

2. To develop a system in SAP to cater for change request transportation to different client server that can ease user to create transport request.
   The system will have integration with the SAP system in order to ensure for smooth transport process flow.

3. To design an additional database tables that will be used to store information and details on a transport request.
   The database table will be normalized and field will be linked to existing SAP database fields to ensure for efficiency of data storage.

4. To design screens and its fields that will be used to perform task in the transport process such as create request, approval, and rejection.

1.3.2 Scope of the project

The study for the project includes specific boundary and limitations so that the study does not turn into wrong direction. Several outlines have been address to cater for the boundary of the study:

1. Analysis caters in the boundary of transport in SAP.
2. Transport process is between two different SAP systems with several client environments.
3. The transport can process for all change request id to any client in the system environment.
4. The system used ABAP language as the programming language.

1.3.3 Relevancy of the project

Change request transport is one of the important tools that SAP provided for their client to transfer their changes such as business reporting analysis to other client or system. Developer experience handling transport request shows that it is best to get connected with SAP system during the transport request. Since all data are located in the SAP system itself, it would be easier to extract those data like change request id from its database table before requesting for transport.

Auditing process for software development by third party will check for the standardize business process used by user. Using the system, input can be clearly standardized using certain functionality in SAP and ABAP programming.

1.3.4 Feasibility of the project

The project implementation calculated to complete in 24 weeks approximately in two semester of study. Considering all time consuming that need to be divided to other

subjects, 24 weeks is an adequate period to come out with a complete working final product.

During the first half of the project implementation, research and analysis is done mainly to cater for understanding the business process as well as identifying any related information that necessary in developing this project. One of the related analyses that have been made is about the transport protocol in SAP and understanding methods on how the data traveled within every client and server.

Resources such as hardware and software that are needed to implement the project are available at the faculty facilities. Computer that is used to run SAP system can easily be found at the lab facilities provided by the university. Any related tools are well integrated in SAP system itself such as SE80 transaction that is used to implement the system design.

Since transport process related to Basis module in SAP, therefore Mini SAP system will be fully used during the project implementation because Mini SAP system provide best interface in configuring Basis module. Mini SAP system can be installed in standalone computer and the installation required free license only. By installing the system to the standalone computer, it can help the student to testing and amendment on the system architecture thoroughly. The limitation of access and security on the UTP testing SAP system can be overcome with the Mini SAP system.

CHAPTER 2

LITERATURE REVIEW AND/OR THEORY

Client/server configurations in SAP R/3 can be divided into 3 different tiers. There are one-tier configuration, two-tier configuration, and three-tier configuration. The fundamental services in a business application programming system are presentation services, application services, and database services (Basis System Kernal, 2004).

In one tier-configuration, all processing tasks are performed on one server, as in classic mainframe processing. The two tier configuration usually implemented using special presentation servers that are responsible solely for formatting the graphical user interface. This type of configuration is particularly useful for processing-intensive applications such as simulation, but due to the additional administrative requirements is usually used for the test purposes only. In the three-tier configuration, separate servers are used for each tier. Using data for the database server, several different application servers can operate at the same time. This can released the load from on the individual servers to achieve optimal performance.

A transport request process is the transfer of SAP System components from one system to another and the components to be transported are specified in the object list of a transport request (help.sap.com, 2005). The SAP System maintains a transport log of all actions during export and import. Each transport consists of an export process and an import process. The export process reads objects from the source system and stores them in a data file at operating system level while the import process reads objects from the data file and writes them to the database of the target system.

The transport request is used when the new changes needed to be copied to the other system architecture. All changes that are done in SAP whether it is a reporting creation or amendment, or maintaining SAP system landscape, a change request id is created and the changes recite in it. The transport request will used that change request id to transport the changes to other system architecture using transport module provided by SAP.

In order to create a good IT infrastructure, it is requires that some awareness of the business functionality being addressed. The server, storage, and network infrastructure solutions focused on SAP business application software where the choice and configuration of these software components plays an important role for the hardware configurations and ongoing IT operations needed (HP.com, 2005).

Although SAP software is generally independent of any one particular relational database management system (RDBMS), there are some important software architecture concepts that apply to each database (HP.com, 2005). Just like SAP software, each RDBMS has a kernel, or a set of executables that enable the database application to run. These kernel files are compiled specifically for each server OS platform. The actual data stored in the database is logically stored as rows within relational tables. Physically, however, the data is stored in data files on disks, configured with a file system or as raw disks.

STMS is the transaction in SAP that is used to perform transport to specific target client server (Ramachandran, 2005). It collect all released change requests that are ready for transport and check for the consistency by passing the return value of the transport.

Configuration of transaction STMS can be done through SAP Mini system to get real environment of the transport system (Giovanni, 2005). Parameters need to be set by the user that has Administrator privilege.

Command prompt can be used to check for the setup server whether it is alive or not (Ramachandran, 2005). This way, transport administration does not have to log on to the server to monitor the system. If some cases that SAP could not be access, command prompt can give good interface for interaction between the user and server.

When organizations decide how they want to manage the creation and progression of changes in their SAP systems, they typically create procedures and manual processes that incorporate a reasonable degree of flexibility. Such procedures and processes usually recognize that different types of change should have their own rules concerning testing, approval and migration. For example, the approval and migration requirements for a minor bug fix are normally different from the requirements for a major development. Manual procedures may also contain quite flexible provisions about who is eligible to approve a change in the absence of a normal signatory. By contrast, the same procedures

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tend to embody a highly idealized view as to how these changes are typically progressed (Wilkin, 2005).

One of the main purposes of the rules and procedures is to prevent damage to an organization's production system. Such damage may cause considerable disruption, resulting in loss of business and incurring considerable repair costs (Wilkin, 2005). The damage may occur when the changes that are introduced have not been properly tested or approved or transports are imported in an incorrect sequence.

Transport Management System (TMS) in SAP need to be configured thoroughly in order to be able to create transportable requests; otherwise no transport will be able to other systems. Transport routes will allow the system to dram a transport path between systems. A system without a transport route cannot export transport request (Huseyin, 2002). The transport routes are used to define in which target system you want to consolidate change requests, and which SAP Systems are forwarded this information automatically (SAP Library, 2006).

TMS can be configured in three types of setting that are virtual system, external system and domain link.

CHAPTER 3

METHODOLOGY/PROJECT WORK

3.1. WATERFALL MODEL OF DEVELOPMENT CYCLE

Implementation of the project is based on the waterfall model in system development life cycle. During the first half of the semester, the first four phase of the waterfall model need to be completed:

1. Document the system concept
2. Identify system requirement and analyze them
3. Break the system into pieces (Architecture Design)
4. Design each pieces (detailed design)

- please refer to Chapter 4 Result and Discussion for thorough explanation on every phase of implementation

During the second half of the semester, process of creating the database, graphical user interface, testing and implementation of the system is done. The phase includes the fifth up to seventh phase of the waterfall model:

5. Code the system components and test them individually
6. Integrate the pieces and test the system
7. Deploy the system.
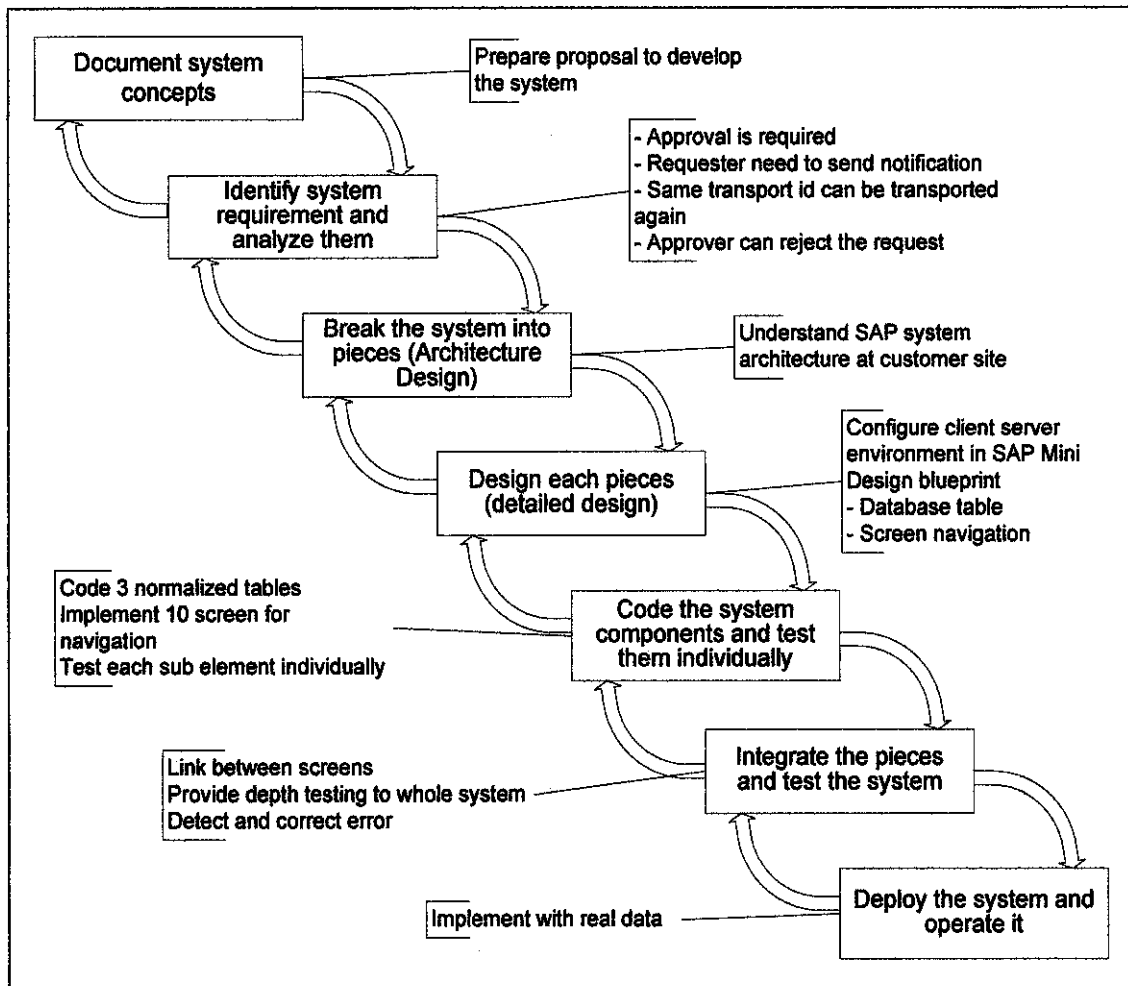
Figure 3.1 Waterfall Model for the System Development

Under the waterfall model, development for every step can be made flexible whereby if the requirement is not complete, the phase of development can return to the previous state (pint.com, 2005). Nevertheless, developer needs to ensure that each step of constructing the system is completed.

3.2. PROCEDURE IDENTIFICATION

Implementation of this project consists of 7 major tasks that spread from setting up client server environment using SAP configuration up to system testing.

The tasks that have been allocated for first half of the project implementation include:

1. Setting up system with target client environment.

   Mini SAP is used to create two servers for the purpose transport. These systems will be linked on domain using transaction STMS. The transport route is configured to allow for transport.

2. Analysis on business process flow.

   The business flow include process of the requester request for the transport, approval is done for every transport, communication between approver and requester, transportation to each change request id to target server, and user acceptance toward the changes.

3. Identify related transaction in executing transport process.

   Transport Administrator uses standard transactions to perform transport and client copy between DEV, QAS and PRD system such as STMS.

The tasks that have been allocated for second half of the project implementation include:

4. Identify standard database table and fields involved.

   In order to integrate the system with the standard fields in SAP, SAP standard fields from transport transaction need to be linked to the developed system.

5. Modeling new database table.

6. Develop system graphical user interface: screens, elements of the screen, transaction code of the system, and function help.

7. Testing: Server testing, subsystem testing, integration testing, system testing

3.3. TOOLS

The project development involved within Mini SAP system that is installed in a standalone computer. Mini SAP system is chosen to be the platform of implementing the system because student does not have the authorization toward the testing SAP system

provided by UTP. Nevertheless, Mini SAP system can provide a wide range of functionality that student needs in order to cater for the project. Thus, implementing in the Mini SAP system can also provide same environment in SAP especially for Basis Module. Basis Module is a wide range of functionality that any SAP system should have and it can provide sufficient support toward the project.

All tools needed during execution of project are located within the SAP system itself (Ramachandran, 2005). Therefore no additional tool like hardware and software is needed. All SAP technical transactions that required are:

- SE80 – Object Navigator

  It is a tool for central processing of Repository objects. In the Object Navigator, all objects belonging to a particular category are displayed in the navigation area as a tree structure and can be processed by forwards navigation.

- SE11 – ABAP Dictionary

  The ABAP Dictionary describes the logical structure of application development objects such as tables, views and data types, as well as their representation in the structures of the underlying relational database. The ABAP Dictionary is an active data dictionary and is fully integrated in the ABAP Workbench.

- SE37 – ABAP Function Modules

  It is a module to maintain Function Modules that can be used as a tool for testing for standard Function Module. Mainly for this project, SE37 is used to test any relevant function module on its functionality usage.

- SE71 – SAPscript Form

  It is a module to maintain SAPscript form in SAP. The transaction can be used to create, copy, display, change, or delete a SAPscript.

- STMS - Transport Management System

  It is a set of all tools in the SAP System for organizing, performing and monitoring transports between SAP Systems. The Transport Management System is part of the Change and Transport System.

- SCC1 - Client copy transport

It is a function for copying a client. This applies in particular to copying the entire customizing context (environment) of a source client to a target client, either within one SAP system or to a different SAP system. The system settings determine what is to be copied.

CHAPTER 4

RESULT AND DISCUSSION

4.1. SYSTEM DEVELOPMENT PHASE BASED ON WATERFALL MODEL

4.1.1. Identify System Requirement

- Approval will be made upon any transport to every client for the targeted system; each transport into any target system need to be approve by QAS controller, team leader and/or project manager. The purpose of this action is to monitor any changes that the SAP team (requester) has done and whether that the changes follows all guideline in meeting the user needs.

- Requestor can send notification to approver noticing about new change request; upon any changes to the system, a means of communication need to be created to inform the approver that there are new changes that needs for approval and transport.

- Approver and requestor can communicate freely upon any issue during any transport phase; approver need to communicate with the requester to ask about the transport details and to inform the requester about the approved or rejected the request.

- The same transport id can be transported again under correction status; if any error should happen during the transport request, the same transport id can be transport again and the system should be able to cater for the requirement

- Can be used for both client copy and transport management; for transport within the same server to different client, a client copy is perform by the Transport Team and if the transport is between a different system, a transport management is done.

- User should have advantage to navigate to standard SAP transaction by using the system
    - releasing the change request
    - transporting directly
    - automatically detecting return code and response to each return code uniquely

4.1.2. Break the system in subsystem (Architecture Design)

Change request management architecture consists of at least 2 servers with several clients. A simple architecture will contains 2 servers, one for development (K460), and one for production (N4000). A simple development server may consist of at least 2 different clients for multi checking (038 and 088).
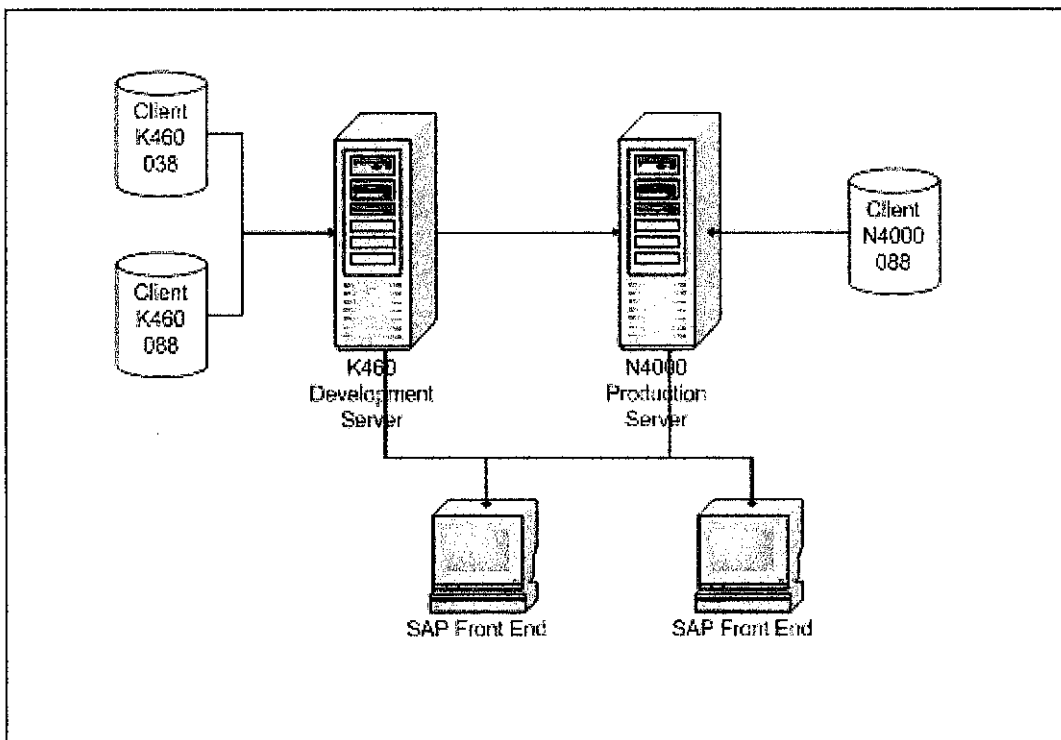

Figure 4.1 SAP System Architecture at the Customer site

- Server
  - Development server: K460
  - Production server: N4000
  - need for two or more servers environment to enable for change request transport architecture
- Client
  - K460 038 DEV
  - K460 088 QAS
  - N4000 088 PRD
  - need for two or more clients in one server architecture to enable for client copy architecture
- Database Object
  - tables
  - data elements
  - domains
  - foreign key linkage
- Screens
  - screen elements
  - screen integration
- Testing
  - server testing – server working, and can perform transport task
  - subsystem testing – test each individual subsystem by its own, by ensuring it to work without error
  - integration testing – integrate each subsystem between one another and check for integration logic. Two primary integration:
    - between newly created subsystem
    - between standard system/transaction in SAP
  - system testing – test system as a whole after all subsystem have been integrated

4.1.3. Design each subsystem (Detailed Design)

- Server with client

  STMS in SAP mini; client and server environment is created to mimic the architecture of the targeted customer. This is to ensure that the system can be adapted to the targeted customer SAP environment without any complexity. But the system will be ensured to follow standard SAP architecture to minimize complexity upon any client and server upgrade for example creating new server and adding new client.

- Database object

  Database created using Data Dictionary to add new field to fit to client requirement. Fields will be linked to standard SAP database fields when necessary, to ensure that all database tables are integrated with the standard table.

- Screens

  Development of screen includes the creation of screen elements using screen painter. Apply the standard structure in SAP to get the linkage between screen and database table. Ensure all linkage and screen creation to follow standard screen architecture, to allow for future enhancement of the SAP system will have no defect.

4.2. TRANSPORT REQUEST REJECTION PROCESS

Upon approval process, not all transport will be approved to be transported and the required person may reject the transport request. Upper level management who have better experience in term of managing the system integrity and performance have better judgment regarding the matter compare to the developer who request the transport. Among others, the reasons for rejection are as follows:

- The task not complete:

  Usually this happen at team leader approval level whereby the team leader do not approved the transport since not all tasks are completely configured by other team members.

- Redundancy of object:

  From time to time, developer may not realize that they are creating the same changes regarding the same object, and the approver who realize the situation will reject the changes so that the integrity of data can be maintain in the production.

- Authorization purposes:

  If the changes can grant access or limit authorization to non appropriate user, the project manager will reject the request and the developer needs to apply other approach to meet the user requirement.

Approval is important in transport request process because it can help the manager to monitor each change that submitted the SAP team. Manager can have better view on the task that the users required developer to create and whether the developer creating the right objects in the system. The reasons to monitor the system are listed as follows:

- Prevent damage to production system.

  Since the production system contains data that the organization uses to run its daily operation, any damage to the system cannot be entertained because it can cause considerable disruption, resulting in loss of business and incurring considerable repair costs (Wilkin, 2005).

- Ensure the production system is clean from rubbish.

  Rubbish such as incomplete reporting, damage SAPscript form, and unused objects can congest the system and drop the production performance.

- Maintain integrity of production system:

  Ensure that the system is not burden with unnecessary processing that may cause damage the system.

4.3. PROCESS FLOW FROM AS-IS TO TO-BE

The AS-IS process for the transport request is shown in Figure 4.2(A). It shows the process flow of the current transport request applied by the SAP Team. It starts with a change request submitted by requester to the support team and the request need to get team leader and QAS controller approval before it can be transported to QAS. Then user will be required to test the changes before it can be approved by the project manager for PRD transport. Along the way of the transport process, requester will have to be there physically especially during the approval by team leader, QAS controller, and project manager. Then user will have to test the changes again in PRD so ensure the changes really meet their expectation.

There can also be rejection on any approval process and in the case that it happen, the process will jump to previous steps and requester need to reconfigure the changes that are about to be transported. There are several cases where the changes cannot be transported to PRD, for example, if the changes required amendment of the PRD configuration, sometimes project manager will not approved the request if the configuration is not needed in PRD. In this case, the requester has to look for alternative to counter the user problems. There are also cases where user is not satisfy with the solution and the requester needs to redo the solution before it is transported again to required system.

On all processes in AS-IS process flow, the requester need to be there to facilitate the transport flow. The approver need to bring the transport form to the appropriate person to ask for approval and it consume time as the person might not be available there and the requester need to explain about the request three times to three different approver.
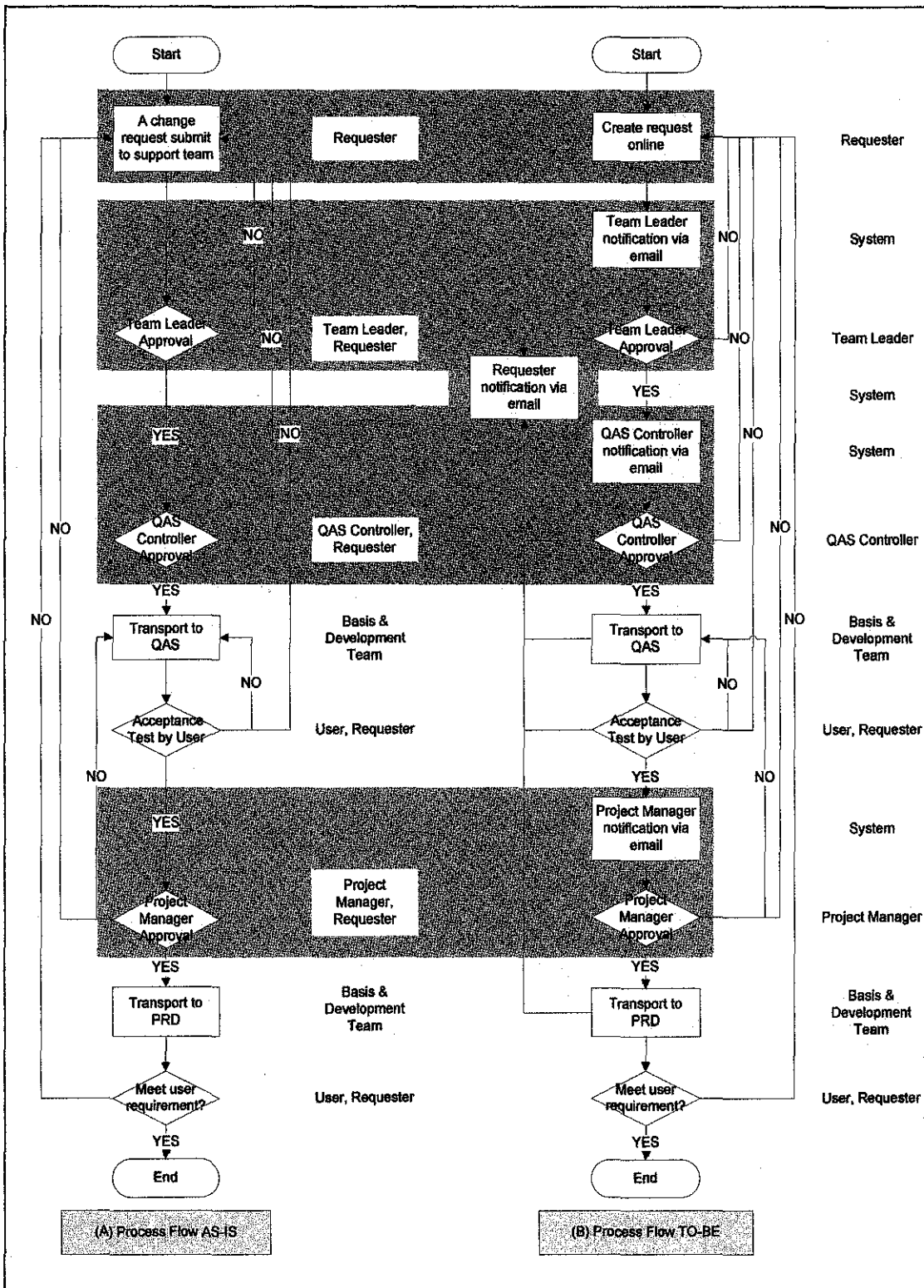
Start

Start

A change request submit to support team

Requester

Create request online

Requester

NO

Team Leader notification via email

NO

System

Team Leader Approval

NO

Team Leader, Requester

Team Leader Approval

NO

Team Leader

Requester notification via email

YES

System

YES

NO

QAS Controller notification via email

NO

System

NO

QAS Controller Approval

QAS Controller, Requester

QAS Controller Approval

NO

QAS Controller

YES

YES

NO

Transport to QAS

Basis & Development Team

Transport to QAS

NO

Basis & Development Team

NO

NO

Acceptance Test by User

User, Requester

Acceptance Test by User

NO

User, Requester

NO

YES

YES

YES

Project Manager notification via email

System

YES

Project Manager Approval

Project Manager, Requester

Project Manager Approval

Project Manager

YES

YES

Transport to PRD

Basis & Development Team

Transport to PRD

Basis & Development Team

Meet user requirement?

User, Requester

Meet user requirement?

User, Requester

YES

YES

End

End

(A) Process Flow AS-IS

(B) Process Flow TO-BE

Figure 4.2 Transformation between AS-IS process flow to TO-BE process flow

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The developed system will create a slightly different process flow that is shown in Figure 4.2(B), whereby most of the requester tasks have been delegated to the system. Process flow TO-BE will make full use of the SAP system functionally in communicating between SAP user. All notification about the transport process is done through transaction SBWP which this transaction acts as the email application for SAP user. Notification about the approval or rejection status, and transport status can easily catered using this tool.

The shaded area in Figure 4.2 shows the transformation between the AS-IS process flow to TO-BE process flow. It is clearly indicated that before any approval by the appropriate person, the person will be notify via email through transaction SBWP. After any approval and transport, the requestor will also be notified indicating whether the transport is approved or rejected and whether the transport is completed or not. This email function has already embedded in SAP system and the project is fully implemented the function in order to prevent it from wasted.

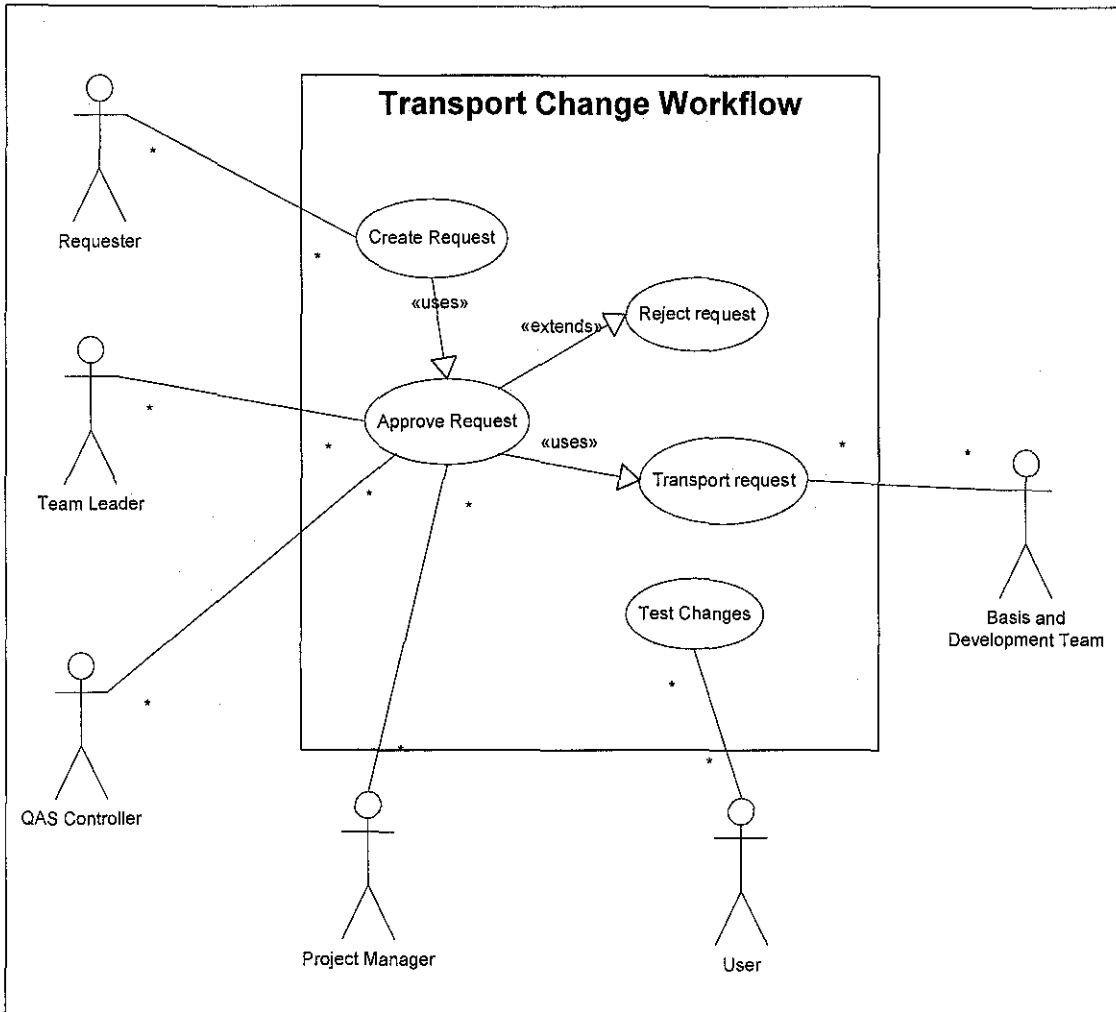## 4.4. USE CASE DIAGRAM FOR TRANSPORT REQUEST

Figure 4.3 Transport Change Workflow Use Case

Table 4.1 Description on Actor Task in Use Case Diagram

Actor	Task Description
Requester	Create Request: - Fill in form for request - Input details about changes - List change request id that need to be transported
Team leader, QAS controller, project manager	Approve request / Reject request - after reviewing the changes, decide to whether approve or reject the request

User	Test Changes
	- Test changes that going to be transported to production
	- Test changes that have be transported to production
Basis and Development Team	Transport Request
	- Released the change request id
	- Transport the change request id to target client/server

Figure 4.3 shows the actor and use case that involves in the business flow of the system. The actors involve include Requestor, team leader, QAS controller, project manager, Basis and development team, and user. All actors except user are from the SAP department at client site while user is a novice user and do not know about technical specification of SAP. Requester is the person who performs a request for SAP transport. Team leader, QAS controller, and project manager are an upper level management who review the request and approve or reject the request before it can be transported.

Table 4.1 provides detailed description on the actors' tasks in the use case diagram.

4.5. DATA FLOW DIAGRAM FOR THE TRANSPORT REQUEST

On most processes in the Data Flow Diagram as shown in Figure 4.4, the request form itself becomes the input and output of the system. The request form traveled through all the processes and retrieve approval information along the way. In some cases, the processes will stop on one of the approval process if the request is rejected by the approver. If this happen, the form would directly cross all other remaining process and head off to the requester to notify the requester about the rejected form. Upon completion of all processes, appropriate details will be updated immediately to the database.
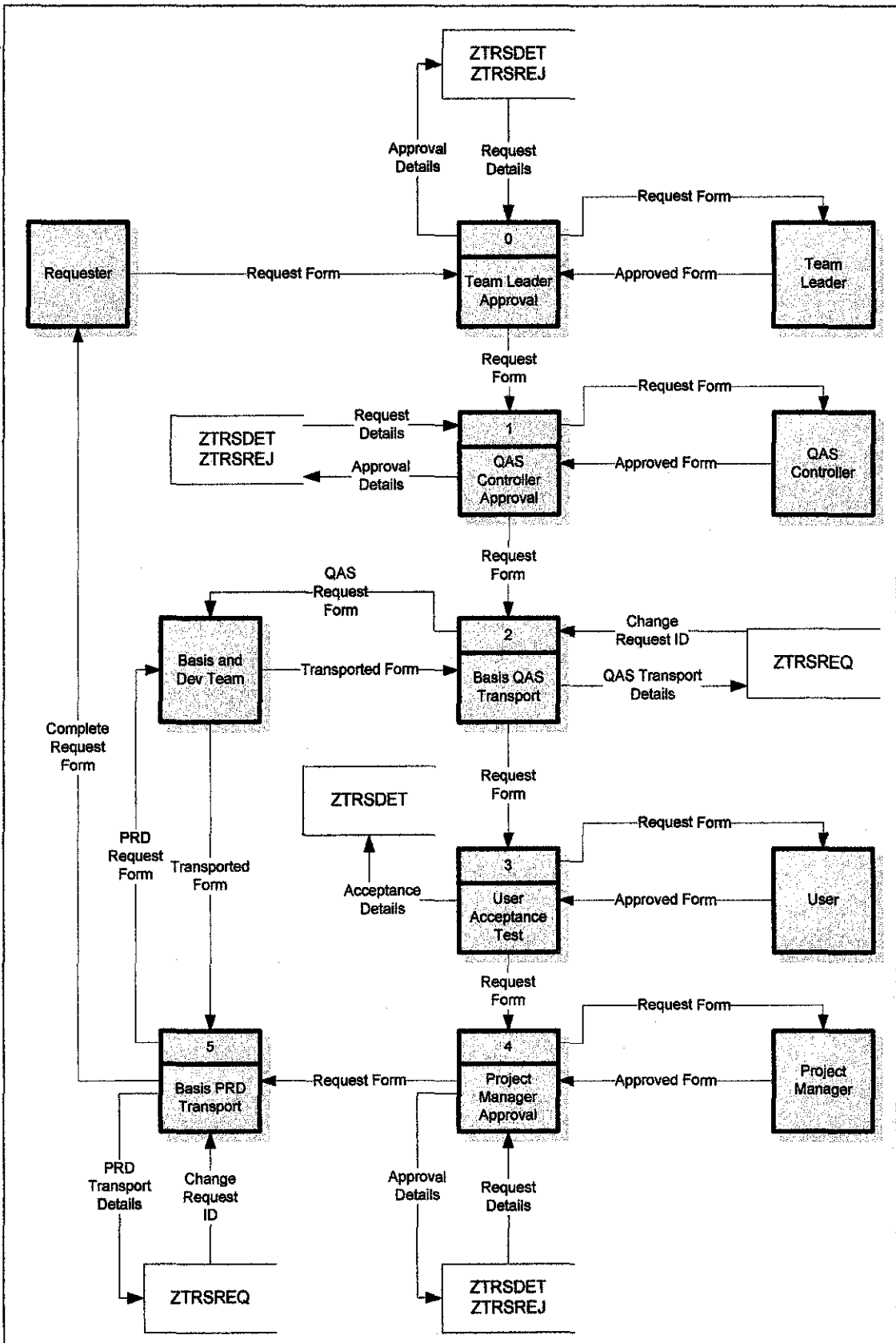
Figure 4.4 Data Flow Diagram for the Process

Table 4.2 Detail description on the data flow diagram processes

Process	Description
Team Leader Approval	Team leader reviews the changes that are submitted by requester. Then decides whether to approve or reject the request. The details will be updated immediately in table ZTRSDET. If the request is rejected, table ZTRSREJ will also be updated.
QAS Controller Approval	QAS controller reviews the changes that are submitted by requester. Then decides whether to approve or reject the request. The details will be updated immediately in the ZTRSDET. If the request is rejected, table ZTRSREJ will also be updated.
Basis QAS Transport	Upon receiving approved request form, Basis team will work out the transport request to QAS using appropriate change request ID. Details will be updated to the database immediately upon successful transport.
User Acceptance Test	User will review the transport that has been done at QAS and perform user acceptance. The details will be updated immediately to the database.
Project Manager Approval	Project manager reviews the changes that are submitted by requester. Then decides whether to approve or reject the request. The details will be updated immediately in the ZTRSDET. If the request is rejected, table ZTRSREJ will also be updated.
Basis PRD Transport	Upon receiving approved request form, Basis team will work out the transport request to PRD using appropriate change request ID. Details will be updated to the database immediately upon a successful transport. A complete form (contains all transport

	and approval details) is send back to requester for review.

Table 4.2 shows the details description on every process in data flow diagram including its input and output.

4.6. TRANSPORT MANAGEMENT CONFIGURATION IN MINI SAP

To enable a transport process, Transport Management System (TMS) in SAP need to be configured. TMS configuration can be done through transaction STMS in SAP. First step is to define one instance as the Transport Domain Controller (Giovanni, 2005). For this project, instance called MBS is chosen to the Transport Domain Controller because that instance applies all criteria to be Transport Domain Controller. MBS is the development system where all configurations are done there before it is transported to production system and it has high availability which will always be available for other system to be connected to.

Then, other instance that acts as a production system is added to MBS to be able to move transport. The instance is named RPR that represent PRD in the customer site.

Configuration of the TMS is done by adding Background Work Process (BTC) to the instance profile, then by logging on to the SAP system using super user id, TMS is configured. TMS configuration is usually done only once in one system environment because the configuration is usually fixed for whole implementation of the business. SAP Basis team is responsible to administrate the configuration if any amendment needs to be done.

A transport profile is the text based configuration that contains information regarding the configuration that has been made to the system. The transport profile contains following information (BasisConsultant.com, 2005):

- Databases form various target system
- Parameters describing the frequency of the transport
    - o Global parameter (for all SAP system in the network)

o Local parameter (only for specific SAP system)

o Operating system-dependent

o Database-dependent

● Additional information for system maintenance

Figure 4.5 Screen shot shows the configuration of MBS (DEV and QAS system) and RPR (PRD system)

After the configurations have been completed using domain link, the interface of STMS system list will look like Figure 4.5. Both systems have been connected using domain link and MBS system is set as the domain controller. A transport route is then created so that change request id can be transported to the production system from quality assurance system.

4.7. DATABASE CONFIGURATION

Additional database tables are created and linked to the existing standard table in SAP to allow the developed system to function properly. These tables store data on the requester details along with change request id that is used for transport. All details regarding the approval and rejection of the transport request are also stored in the database for future used.

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Figure 4.5 shows entity relationship diagram of the database configuration. Some fields in the created database are linked with the existing standard tables in SAP such as change request id and SAP user name. The new tables that are created for the developed system are ZTRSDET, ZTRSREQ, and ZTRSREJ.

ZTRSDET is the table that stored all details regarding the requester, transport properties such as its description. It is the main table of the system. ZTRSREQ stored list of change request id for single form. Since one transport request can have several change request id, therefore it is best to normalize the table that the change request id is stored in different table than the details table (ZTRSDET). They are linked using primary key 'FORMID' that stored unique transport request form id. Therefore the relationship is 1 to many for the two tables.

Another table is ZTRSREJ that stored details on the reject form. It contains details such as date of rejection and rejects log details. Since not all transport requests will be rejected (most will have approved status), therefore the relationship for those tables is 0 or 1 to 1. Table USR02 is the standard SAP user table where is stored details on a single user and it is used to link to the requester SAP id.
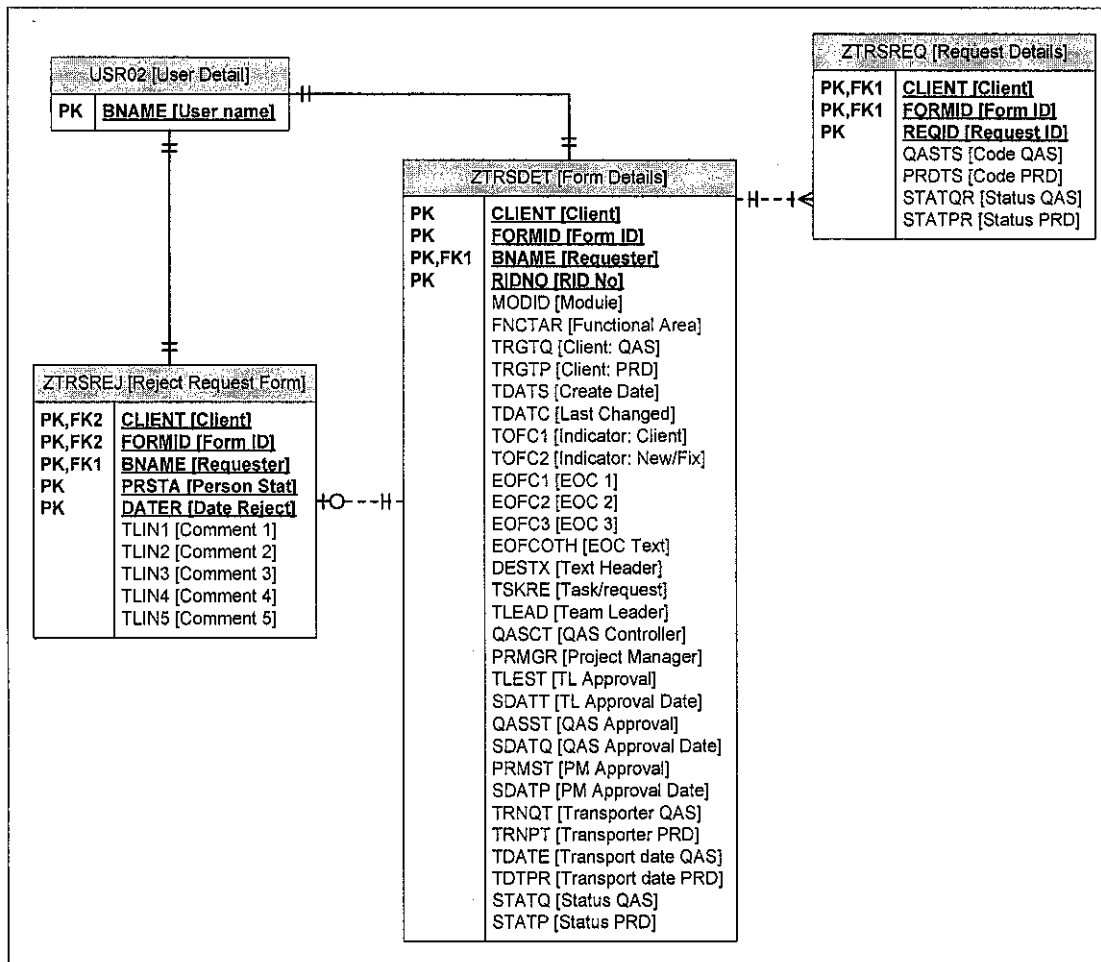
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USR02 [User Detail]

PK	BNAME [User name]

ZTRSREJ [Reject Request Form]

PK,FK2	CLIENT [Client]
PK,FK2	FORMID [Form ID]
PK,FK1	BNAME [Requester]
PK	PRSTA [Person Stat]
PK	DATER [Date Reject]
	TLIN1 [Comment 1]
	TLIN2 [Comment 2]
	TLIN3 [Comment 3]
	TLIN4 [Comment 4]
	TLIN5 [Comment 5]

ZTRSDET [Form Details]

PK	CLIENT [Client]
PK	FORMID [Form ID]
PK,FK1	BNAME [Requester]
PK	RIDNO [RID No]
	MODID [Module]
	FNCTAR [Functional Area]
	TRGTQ [Client: QAS]
	TRGTP [Client: PRD]
	TDATS [Create Date]
	TDATC [Last Changed]
	TOFC1 [Indicator: Client]
	TOFC2 [Indicator: New/Fix]
	EOFC1 [EOC 1]
	EOFC2 [EOC 2]
	EOFC3 [EOC 3]
	EOFCOTH [EOC Text]
	DESTX [Text Header]
	TSKRE [Task/request]
	TLEAD [Team Leader]
	QASCT [QAS Controller]
	PRMGR [Project Manager]
	TLEST [TL Approval]
	SDATT [TL Approval Date]
	QASST [QAS Approval]
	SDATQ [QAS Approval Date]
	PRMST [PM Approval]
	SDATP [PM Approval Date]
	TRNQT [Transporter QAS]
	TRNPT [Transporter PRD]
	TDATE [Transport date QAS]
	TDTPR [Transport date PRD]
	STATQ [Status QAS]
	STATP [Status PRD]

ZTRSREQ [Request Details]

PK,FK1	CLIENT [Client]
PK,FK1	FORMID [Form ID]
PK	REQID [Request ID]
	QASTS [Code QAS]
	PRDTS [Code PRD]
	STATQR [Status QAS]
	STATPR [Status PRD]

Figure 4.6 Entity Relationship Diagram for Developed System

Refer Appendix B for more information regarding the fields' description for each table.

4.8 THE SYSTEM INTERFACE

The developed system can be access through transaction ZTRS in the SAP Mini system. The transaction has been created and link to the program file so that the system can be called without having to execute the program name.

The initial screen of the system provides information on the pending approval and transport. All pending approval from team leader, qas controller, and project manager are

counted and displayed in the initial screen so that the approver knows about the approval that they need to make when they first execute the program. While the pending transport stated on the no of transport that need to be made either to QAS or PRD.

4.8.1 Creating Request

The important element of the system is to create request or proposal. This function allows the user or requester to create a requset and apply for approval before the change request id can be transported to QAS or PRD. The screen for creating request is shown in Figure 4.7.

Figure 4.7 Screen Create Request that include all details regarding the transport

Unlike the normal hardcopy form, the create request screen can easily be populate with data as the screen used advance technique to request information which used dropdown menu, help function that provide list of available input and option button that enable user to easily choose the request form attributes. The change request id can easily be populated in the transport request whereby the requester only need to browse through the list in the SAP system and choose which id that needs to be transported. This function eliminates the need of user to refer to the SAP system to get the change request id and list it in the hardcopy form.

4.8.2 Approval and Reject Request

Proposal ID	Requester	Team Leader	Status	QAS Controller	Status	Project Manager	Status
F10052	BCUSER	TEAMLEADER	☑	QASCTRL	☐		☐
F10074	FIKRI	TEAMLEADER	☑	QASCTRL	☑	PROJMGR	☐
F10081	BCUSER	TEAMLEADER	☑	QASCTRL	☑	PROJMGR	☐
F10082	BCUSER	TEAMLEADER	☑	QASCTRL	☐		☐
F10084	BCUSER	TEAMLEADER	☐		☐		☐
F10086	FIKRI	TEAMLEADER	☐		☐		☐
F10089	FIKRI	TEAMLEADER	☑	QASCTRL	☑	PROJMGR	☐
F10091	FIKRI	TEAMLEADER	☑	QASCTRL	☐		☐
F10092	BCUSER	TEAMLEADER	☐		☐		☐
F10093	BCUSER	TEAMLEADER	☑	QASCTRL	☐		☐
F10094	FIKRI	TEAMLEADER	☑	QASCTRL	☑	PROJMGR	☐
F10095	FIKRI	TEAMLEADER	☐		☐		☐

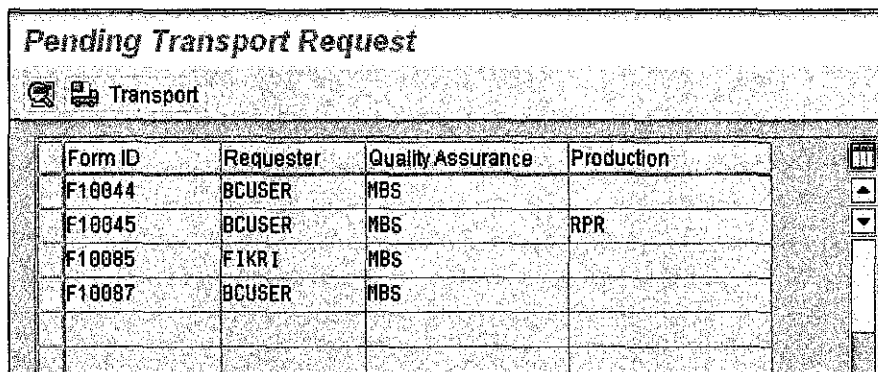**Figure 4.8 Pending list of transport request for approval**

Figure 4.8 shows the list of pending transport request that request for the approval from the team leader, qas controller, and project manager. The list provide a quick view on the pending request that ease the approver to know that they need to perform approval on which request. It listed the pending approval by specifying the required person SAP id for easy view by the required person. The approval is grouped based on the approver so that the approver will know on which level that the approval is requested.

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This screen can be navigated to an overview screen in which the approver can review the request before approve it. If the approver does not satisfy with the request, the approver can reject the request and input the reject log regarding the reason that the request is rejected, by clicking on the reject button located above on the application toolbar of the screen.

The screen is designed such a way so that it can provide easiness for the user especially the approver to use the approve function and get better navigation especially when getting an overview of the request details.

4.8.3 Transport Maintenance

The screen for transport maintenance listed all requests that have been authorized and available to be transported to QAS or PRD. Only request that have been approved by qas controller can be transported to the QAS and only request that have been approved by project manager can be transported to PRD. Figure 4.9 shows the initial screen of transport list in transaction ZTRS.

Pending Transport Request

Transport

Form ID	Requester	Quality Assurance	Production
F10044	BCUSER	MBS	
F10045	BCUSER	MBS	RPR
F10085	FIKRI	MBS	
F10087	BCUSER	MBS	

Figure 4.9 Screen shot on the list of pending transport request to QAS and PRD

The basis team who authorized to perform the transport can get an overview of the request by accessing the overview function by clicking on the overview button that located in the application toolbar of the screen. The transport maintenance can be performed by clicking on the transport button and the system will navigate the user to the maintenance screen for the appropriate server.
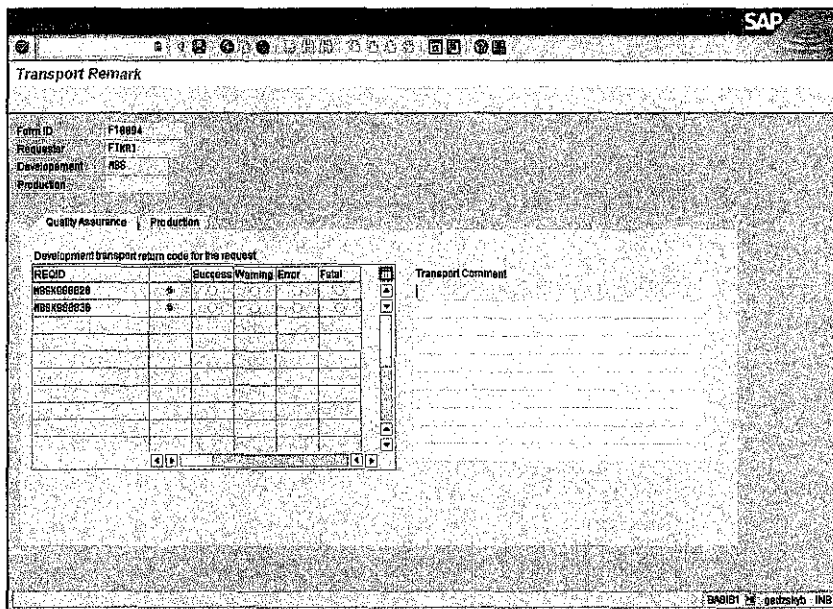
Figure 4.10 Transport maintenance screen for quality assurance server

Figure 4.10 shows the transport maintenance screen after the basis team accessing the transport maintenance function from the pending transport request screen. Only tab for the required server is enabled for maintenance for each level of transport for each request. For example, only tab for quality assurance is enabled if the form is required to be transported to this server. For the time being, the tab for production transport is disabled to indicate the process for production transport is still not authorized.

The basis team needs to specify the return code for the each change request id that specified the status of the change request id whether it is successfully transported, or have warning message, error message, or have fatal error. If the change request id does not have successful return code, it can be transported again and the process for maintaining the transport process is still valid for the request.

4.8.4 Management Analysis

Analysis for the transport request can be accessed through function analysis that is created within the main system interface. It can be accessed through the menu list of Management → Analysis. The system will navigate the user to the screen that contains links to the analysis reporting that created using ABAP language. The management can

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accessed the analysis by clicking on the button provided and the system will navigate the user to the selection screen for the analysis. After specifying the parameters, system will generate the list of reporting that can be used by the management to perform analysis regarding the transport request.
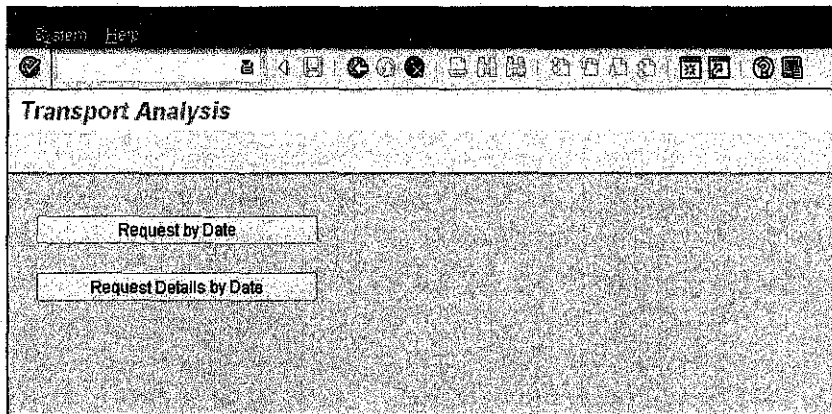

Figure 4.11 Transport analysis screen

Figure 4.11 shows the transport analysis screen that contains two links to the analysis request by date and request details by date. Both of this linked will navigate to the selection screen of the analysis and the user can specify the parameters for input before generating the analysis. Management can used the analysis function to monitor the transport request and get an overview of the transport process in the SAP system.

4.9 TECHNICAL SCREEN FLOW

The initial screen of transaction ZTRS can be used to navigate to four main screens that include screen for create request, request approval, pending transport, and transport analysis. Figure 4.10 shows the navigation between the initial screen and the main function of the system.

At the create request screen, user can choose to open an existing transport request through screen 0300. The screen will be prompt as dialog box and get input from user.

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The screen also allows the user to select a list of functional area (screen 1000) by given module when certain restriction is obeyed.
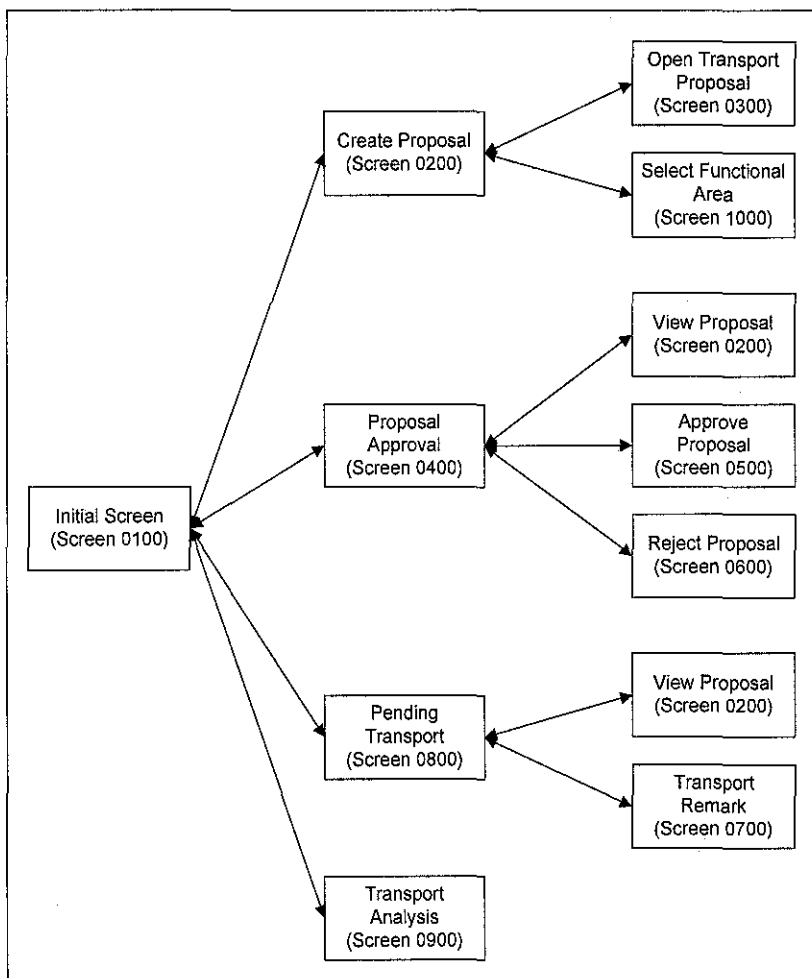
Figure 4.10 Screen Flow of Transaction ZTRS in SAP

From the screen approval, user is allowed to have an overview on the selected transport request through screen 0200. For approval and rejection, user can used screen 0500 and screen 0600 respectively.

Basis team can perform maintenance on the transport process at screen 0800 where the screen will list any pending transport request to development and production system. They can have an overview on the request by navigating to screen 0200 and perform the transport remark at screen 0700.

Screen 0900 is used to list the available analyses that are generated using ABAP and navigate to each program respectively.

4.10 TIME BENEFIT COMPARISON

AS-IS Business Process	In seconds	TO-BE Business Process	In seconds
1. Creating Request • Complete form details • List change request id	180 240	1. Creating Request • Complete form details • Search data from system	150 120
2. Team Leader Approval • Physically meet the approver • Return	240 240	2. Team Leader Approval • Notification via SAP email (automated process) • Reply via SAP email (automated process)	10 10
3. QAS Controller Approval • Physically meet the approver • Return	240 240	3. QAS Controller Approval • Notification via SAP email (automated process) • Reply via SAP email (automated process)	10 10
4. Transport Process QAS • Physically meet SAP Basis Team • Transport process to QAS system • Return	270 300 270	4. Transport Process QAS • Notification via SAP email (automated process) • Transport process to QAS system • Reply via SAP email (automated process)	10 300 10
5. Project Manager Approval • Physically meet the approver • Return	360 360	5. Project Manager Approval • Notification via SAP email (automated process) • Reply via SAP email (automated process)	10 10
6. Transport Process PRD • Physically meet SAP Basis Team • Transport process to	270 300	6. Transport Process PRD • Notification via SAP email (automated process)	10

PRD system • Return	270	• Transport process to PRD system • Reply via SAP email (automated process)	300 10
Total	3780 = 63 min		970 = 16 min

Time reduce to 25.67% (970/3780 * 100)

Time execution of the developed system has be able to reduce to 25.67% whereby the developed system managed to cut many unnecessary times especially during the request for the approval and transport to quality assurance system and production system. By replacing the physical process of meeting the required person, the system have used email function in SAP to notify the user and the requester do not need to meet the approver or basis team physically.

The process of listing the change request id has also been speed up because the requester can used the function on SAP to link to the change request id list and choose the required change request id for the request.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1. CONCLUSION

Transport request is a crucial activity to transport the changes between one server environment and the other server environment. The transport request serves the organization needs to cater for the installation of customized product in different environment without having to create the same changes to the other system. From the analysis, it is found that the system is manageable to be completed within the time period with the given resources.

During the first half of the project implementation, analysis have been made in the sense that to understand the business process, analyze the business requirement, understand the concepts of transportation within SAP. Research mainly work through the process of identifying what are the processes and steps in performing the transport for both between same the client in same server and different server.

During the second half of the project implementation, server to mimic the SAP environment at the customer site has been generated within SAP Mini that has be installed in a standalone computer. Database has been developed and normalizes to allow the new system to operate properly. Testing has been done thoroughly throughout the system implementation to ensure that the system is in good shape and to prevent for major breakdown especially during the integration of the subsystem.

The developed system is managed to create satisfaction to the user in speeding up the business processes and activities. This system has help to eliminate the unnecessary time wastage in requesting for approval and replace the process with automated email alert function. Since the email function is fully implemented in SAP and by default the function embedded when deploying a SAP system, the function is now take to full use by the SAP team thus prevent the function from being wasted.

5.2 RECOMMENDATION

Currently the developed system is not integrated with the Transport Management System (TMS) is SAP therefore after performing the transport process the Basis team needs to maintain the transport on a single change request id to the developed system. The maintenance includes the recording on the transport return code which indicates whether the system is successfully transported or not.

The integration do not taken place because Mini SAP system that the student use to developed the project is not in capable for the function. In order for the integration to be successful, two clients need to be created in one development server and two servers need to be linked and connected in order to allow for full transport between the system client and servers, but the server linkage generates unknown error and needed standard SAP table is not build-in in the system.

Therefore for the next step of implementation, the system should be deployed in a SAP system that implements the requirement and the integration can took place.

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APPENDICES

APPENDIX A:

TRANSPORT REQUEST HARDCOPY FORM

DEVELOPMENT TO QUALITY ASSURANCE / PRODUCTION

Date:	Module/Functional area:

Requestor Name:	Telephone #:

Product: [X] SAP R/3	Source Client: 038 DEV Customizing Target Client: [ ] 088 QAS Quality Assurance Client *(pl's tick)* [ ] 088 PRD Production

Change Request No:

Type of Change: *(pl's tick)*	[ ] Client-dependent [ ] New [ ] Client independent [ ] Fix

Effect Of Change: [Yes / No] Will this change a process step
[Yes / No] Will this change screen fields
[Yes / No] Will this effect data migration activities
Others : _____

Description Of Content/Change:

Tasks / Request: *(pl's tick)*	[ ] Change request released [ ] All tasks released [ ] To be released

*Approved By Team Leader: (Name, Signature & Date)	[ ] FI-CO [ ] MM [ ] SD [ ] HR Others: _____

*Approved By QAS Controller (Name, Signature & Date)	*Approved to Production By Prj. Mgr. / App. Mgr. (Dataone) (Name, Signature & Date)

DATAONE USE ONLY	Date:

Imported By:	088 (QAS) 088 (PRD)	Return Code
	[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]	0 Transport (export and import test) was successful 4 Warning messages were generated 8 Error messages were generated 12 Fatal error has occurred
Transport Log Return Codes:		
Comments/ Error message if any		

*Form must be approved before Basis can do the transport)   [STB001/REV 2.0 24/04/05]

APPENDIX B:

DATABASE TABLE

APPENDIX B.1: TABLE ZTRSDET FIELDS DETAILS

FIELD	KEY	TYPE	LENGTH	TEXT
CLIENT	X	CLNT	3	Client
FORMID	X	CHAR	13	Form ID
BNAME	X	CHAR	12	Requester SAP ID
RIDNO	X	NUMC	6	RID Number
MODID		CHAR	3	Module ID
FNCTAR		CHAR	30	Functional Area
TRGTQ		CHAR	1	Target Client: QAS
TRGTP		CHAR	1	Target Client: PRD
TDATS		DATS	8	Request Creation Date
TDATC		DATS	8	Last Changed
TOFC1		CHAR	1	Type of change indicator: Client
TOFC2		CHAR	1	Type of change indicator: New/Fix
EOFC1		CHAR	1	EOC: Will this change a process steps?
EOFC2		CHAR	1	EOC: Will this change the screen fields?
EOFC3		CHAR	1	EOC: Will this effect data migration activity?
EOFCOTH		CHAR	50	Effect of Change Other Text
DESTX		CHAR	72	Text Header Description
TSKRE		CHAR	1	Task/request Indicator
TLEAD		CHAR	12	Team Leader
QASCT		CHAR	12	QAS Controller
PRMGR		CHAR	12	Project Manager
TLEST		CHAR	1	Status Approval: Team Leader
SDATT		DATS	8	Team Leader Status Approval Date
QASST		CHAR	1	Status Approval: QAS Controller
SDATQ		DATS	8	QAS Controller Status Approval Date
PRMST		CHAR	1	Status Approval: Project Manager

SDATP		DATS	8	Project Manager Status Approval Date
TRNQT		CHAR	12	Transporter ID - QAS
TRNPT		CHAR	12	Transporter ID - PRD
TDATE		DATS	8	Transport date – 088 QAS
TDTPR		DATS	8	Transport date – 088 PRD
STATQ		CHAR	1	Status form (QAS)
STATP		CHAR	1	Status form (PRD)

APPENDIX B.2: TABLE ZTRSREQ FIELDS DETAILS

FIELD	KEY	TYPE	LENGTH	TEXT
CLIENT	X	CLNT	3	Client
FORMID	X	CHAR	13	Form ID
REQID	X	CHAR	20	Request ID
QASTS		CHAR	2	QAS Return Code
PRDTS		CHAR	2	PRD Return Code
STATQR		CHAR	1	Request Status (QAS)
STATPR		CHAR	1	Request Status (PRD)

APPENDIX B.3: TABLE ZTRSREJ FIELDS DETAILS

FIELD	KEY	TYPE	LENGTH	TEXT
CLIENT	X	CLNT	3	Client
FORMID	X	CHAR	13	Form ID
BNAME	X	CHAR	12	Requester SAP ID
PRSTA	X	CHAR	1	Person Status: 1 – TL; 2 – QAS; 3 – PM
DATER	X	DATS	8	Date Reject
TLIN1		CHAR	60	Comment text line
TLIN2		CHAR	60	Comment text line
TLIN3		CHAR	60	Comment text line
TLIN4		CHAR	60	Comment text line
TLIN5		CHAR	60	Comment text line

APPENDIX C:

USER MANUAL

Transport Request System

in SAP

User Manual

Author: Ahmad Fikri Amer Hamzah

Supervised by: Mr. Khairul Syafee Kalid

Table of Content

Transport Request System in SAP

User Manual

1. Execute transaction ZTRS
   a. Execute transaction ZTRS by key in 'ZTRS' in the command field at the initial screen of SAP.
      • ZTRS is the transaction that is used to call the system
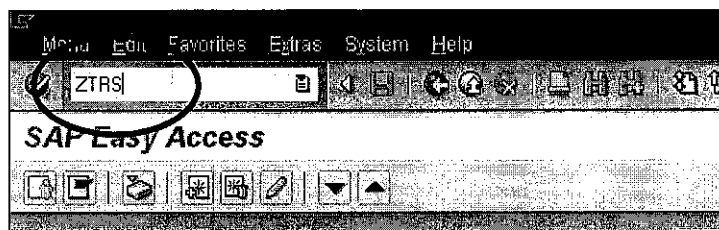
Figure 1 Execute transaction ZTRS

2. Main Menu
   a. After transaction ZTRS is successfully executed, screen at Figure 2 will appear.
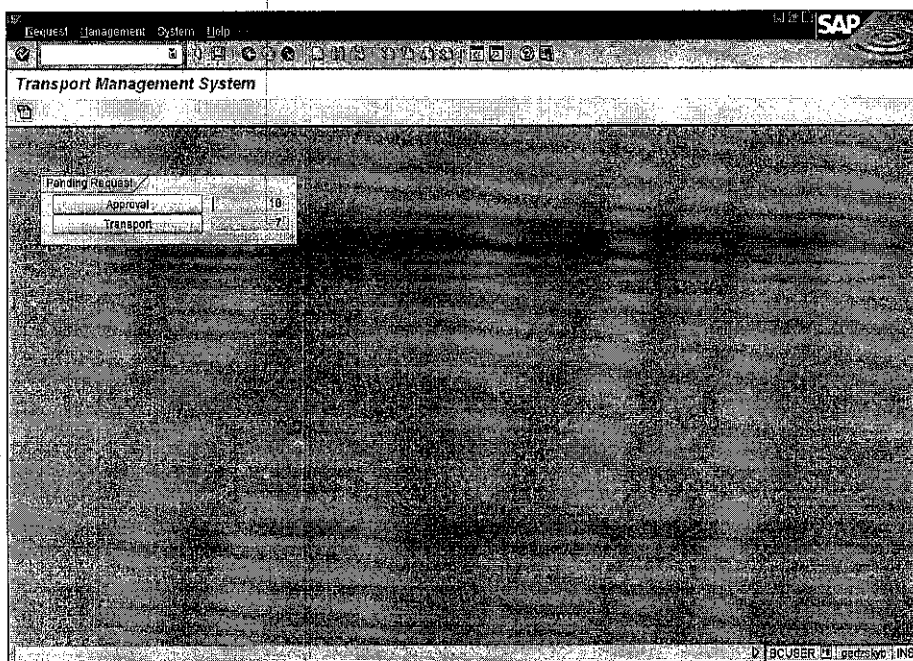
Figure 2 Main menu of transaction ZTRS
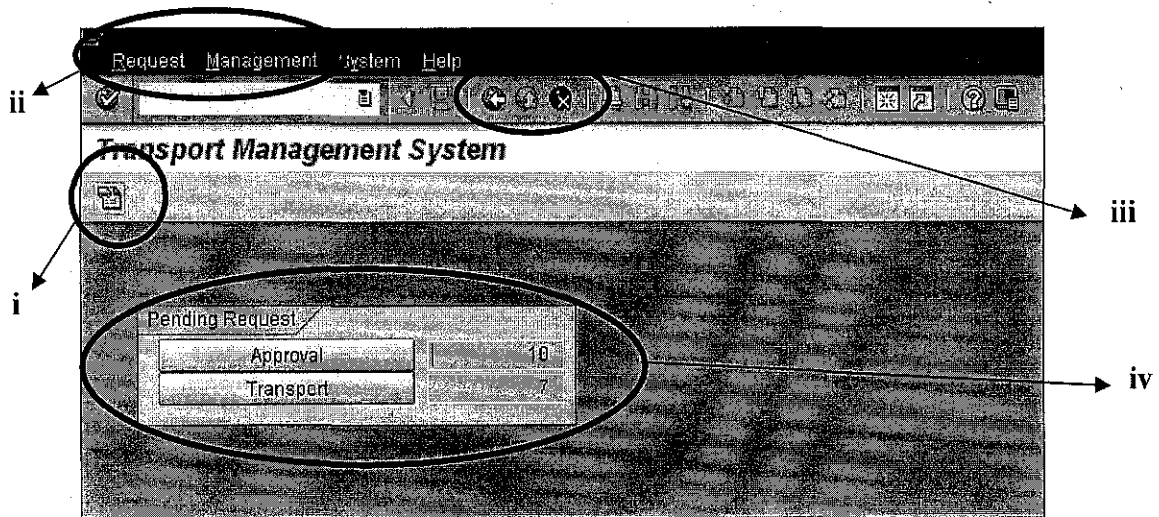
Figure 3 Details on Main Menu function

b. Details on each functions are as follows:

    i. Button to navigate to create request screen

    ii. Menu bar that group functions in two sections that are *Request* and *Management*. Under *Request*, contains *Transport* request and *Approval*, while under *Management* contains *Analysis*.

        o Transport Request – Navigate to create request screen

        o Approval – Navigate to Approval and Rejection screen

        o Analysis – Navigate to analysis screen

    iii. Navigation button

        o 🔵 Back button

        o 🔴 Exit button

        o This button applied for every section in the system

    iv. Pending request section

        o Approval button – Navigate to approval and rejection screen

        o Text box next to approval button – Shows the pending approval request to the team leader, qas controller, and project manager.

        o Transport button – Navigate to transport listing screen

o Text box next to transport button - Shows the pending transport to development server or production server

3. Create Request

   a. To execute create request function, perform one of the listed method:

      i. Click on button ⊞ to navigate to create request screen

      ii. Choose *Request* from menu bar. Click on *Transport Request*.
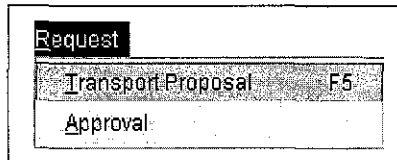
      iii. Press F5 button on keyboard.

   b. Screen at Figure 4 will appear.
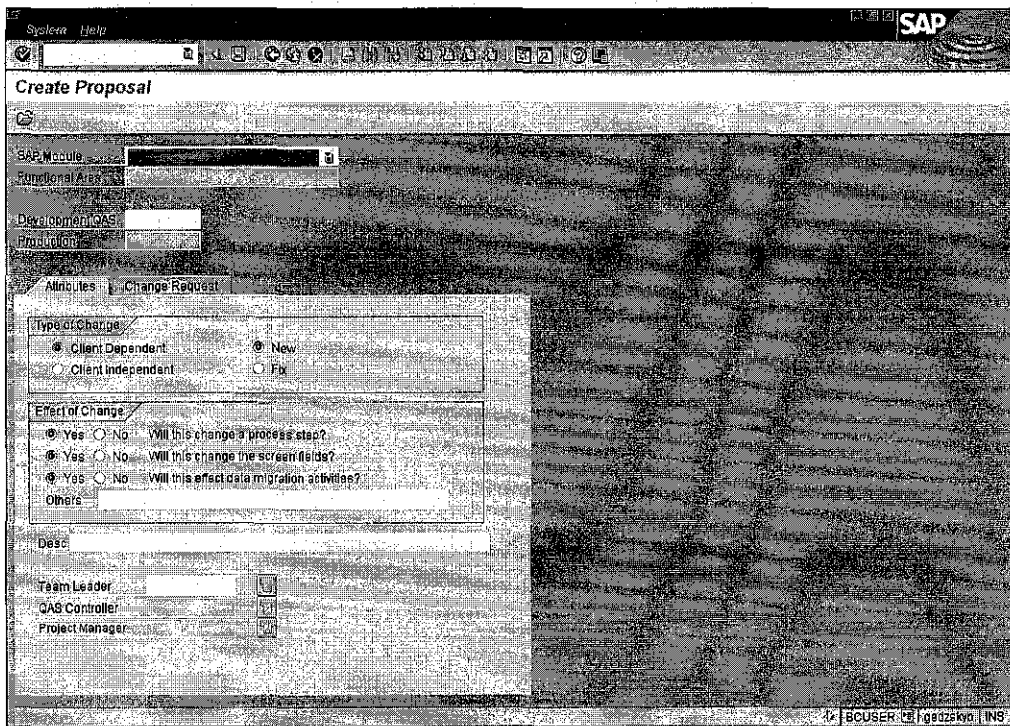
Figure 4 Create request screen

   c. Fill in all attributes regarding the transport request

- To activate Functional Area input box, fill in the SAP Module and then press Enter button on keyboard

- To get list of available input for functional area, perform one on the method:
    - Click on that located next to the field
    - Press button F4 on keyboard to get the listed functional area based on the SAP module
- Choose available input from the list of functional area
- Complete other details on the *Attributes* tab.

d. List the change request id of the form

- Choose *Change Request* tab

- To get list of available input for change request id, perform one on the method:
    - Click on that located next to the field
    - Press button F4 on keyboard to get the listed functional area based on the SAP module
- Click to add another change request id space. (one by one)
- Click to add another change request id space. (ten by ten)
- Click to delete one row of change request id

e. To save the request, click on that located at the standard toolbar.

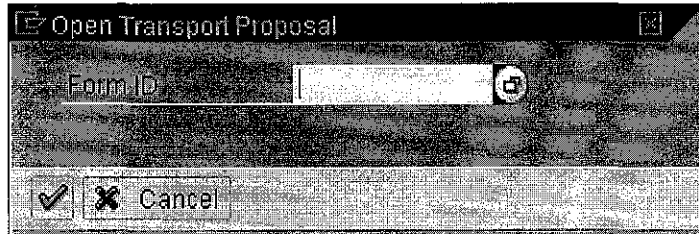f. A message is prompt stating the request has been created and saved, and the form id for the request.
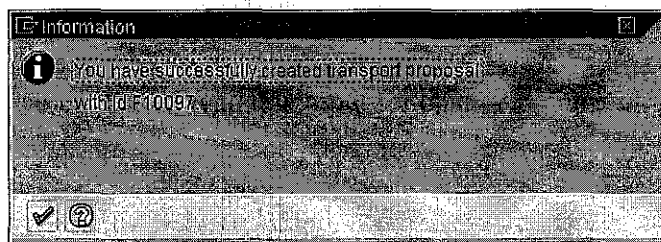
Figure 5 Example of save message that prompt upon the saved request

4. Open existing request

   a. Click on 📂 that located at the application toolbar of create request screen.

   b. Screen below will appear

   c. Type in the form id or press F4 to get the list of form id.

   d. Click ✓ to proceed with the process

   e. Click ✗ Cancel to halt the process

   f. When successfully open a form, new features will appear on screen:

      i. *Edit Request* – allow user editing on the request as long as the form is not approved or rejected by the required person.
         Only creator of the request can edit the form.

      ii. *Delete Request* – allow user to delete the request.
         Only creator of the request can delete the form.

iii. Additional attribute of the form appear on the right side of the screen.

- The requester SAP id
- Request created date
- Last changed date
- The request status that include approval status and transport status.

g. To save the edited form, click on the save button

5. Send email to required person

a. Click on that located next to the approver input field. The button will only be available for action when the field for the required person is filled and saved.

b. Email will be send automatically to the required person.

6. Approval

a. At the main screen of transaction ZTRS, click on *Approval* button.

b. Screen at Figure 6 will appear.
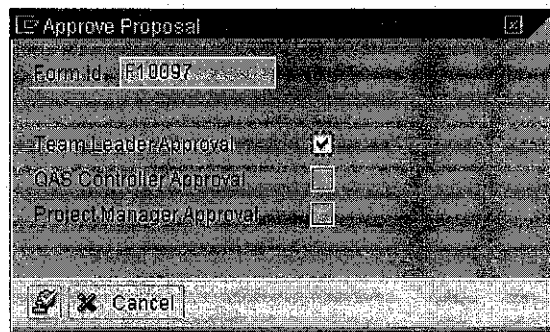

Figure 6 Approval screen

c. The approval screen listed all pending approval by their position that are team leader, qas controller, and project manager.

F10093	BCUSER	TEAMLEADER	☑	QASCTRL
F10095	FIKRI	TEAMLEADER	☐	
F10097	BCUSER	TEAMLEADER	☐	

d. Choose the form that need to be maintained as shown in the example above.

e. Click Approve button

f. Screen below will appear

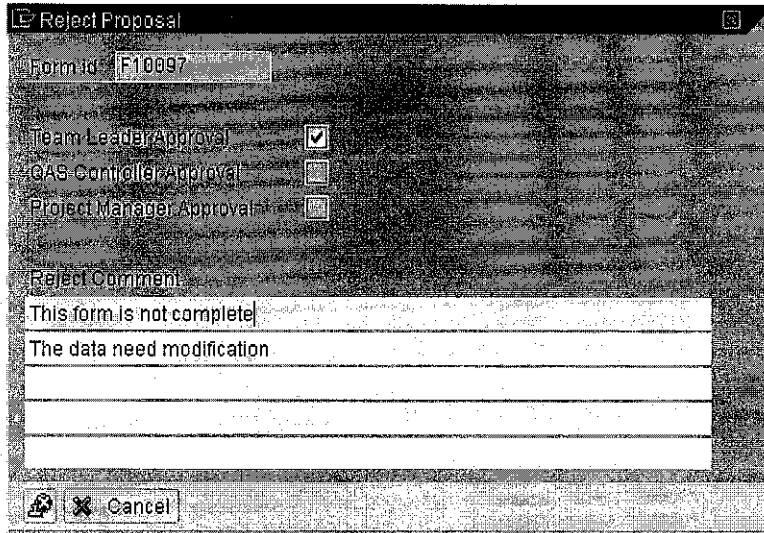

g. Tick on the checkbox or the required person

h. Click to proceed with approval

i. Click to halt the process

7. Rejection

   a. Follow steps 6a – 6d.

   b. Click Approve button ![Reject]

   c. Screen below will appear

   d. Tick on the checkbox or the required person

   e. Enter reject comments

   f. Click ![icon] to proceed with approval

   g. Click ![Cancel] to halt the process

8. Transport Maintenance

    a. At the main screen of transaction ZTRS, click on *Transport* button.

    b. Screen at Figure 7 will appear.
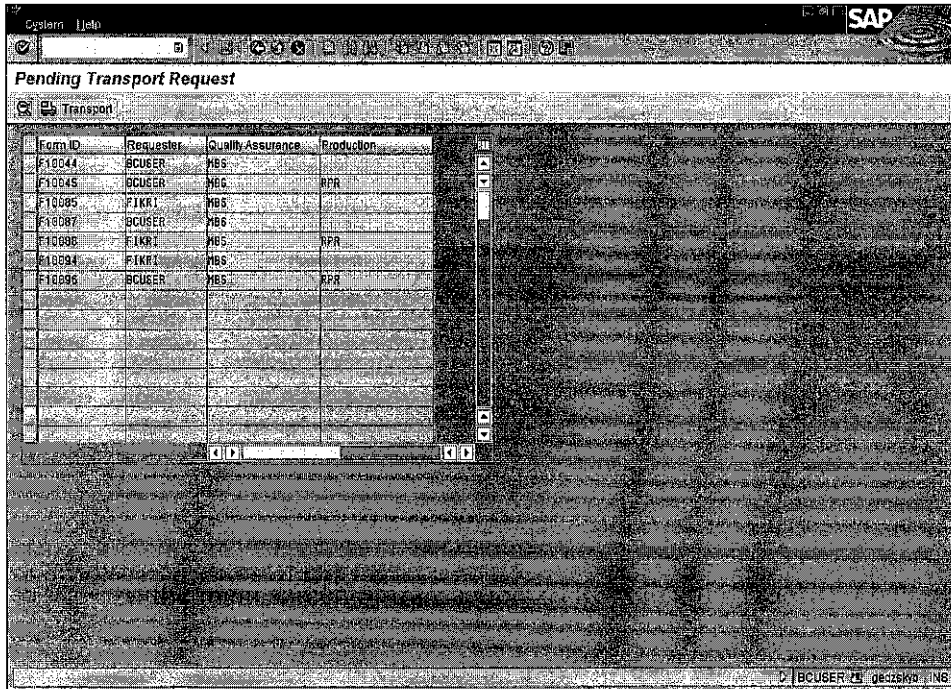
Figure 7 Transport maintenance screen

    c. The transport screen listed all pending transport to the required server for development and production.

    d. Choose the form that need to be maintained as shown in the example above.

    e. Click on button to proceed with the transport. Only authorized person will be allowed to access this function.
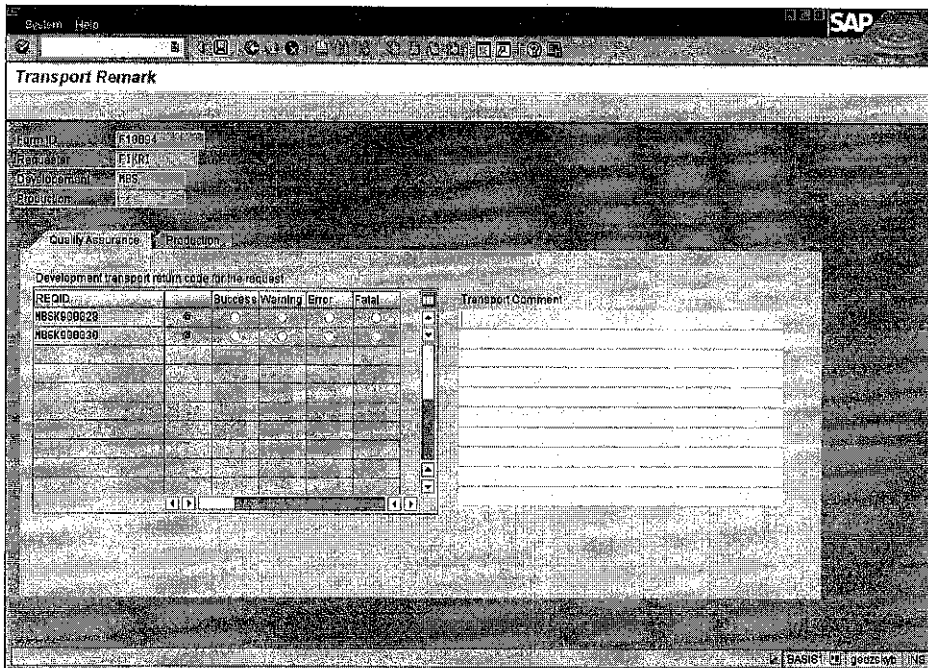
Figure 8 Transport remark screen. Only applicable to BASIS team.

f. Screen in Figure 8 will appear.

g. Maintain the return code for each change request id.

    i. Success – return code 0; means the transport is successful

    ii. Warning – return code 4; means the transport is not successful

    iii. Error – return code 8; means the transport is not successful

    iv. Fatal – return code 12; means the transport is not successful

h. Click ▣ to save when complete maintain the request.

i. For transport to production server, the tab will change to

 from .

9. Analysis for Management

    a. Click on *Management* at the menu bar and choose *Analysis* or press F6 on the keyboard to activate the function.
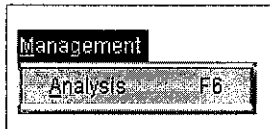
    b. Screen in Figure 9 will appear
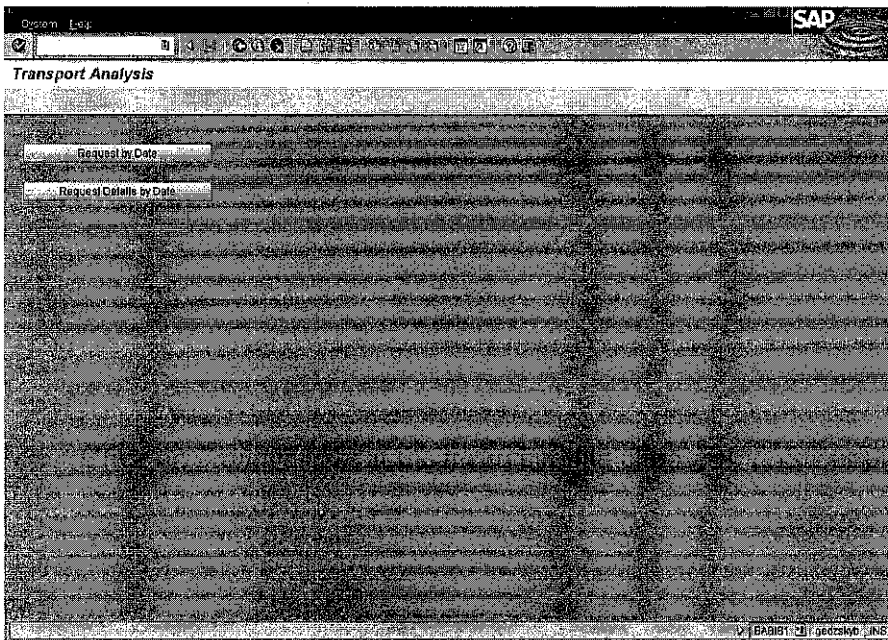
Figure 9 Transport analysis screen

    c. Click on the buttons available for analysis.

    d. Currently the analyses that available are *Request by Date* and *Request Details by Date*.

APPENDIX D:

DEVELOPER MANUAL (TECHNICAL SPECIFICATION)

Technical Specification – Transaction ZTRS

1. General status information

Developer	Ahmad Fikri Amer Hamzah
Version	1
Date (last modified)	6/19/2006
Report ID	ZTRS_TRANS
Transaction Code	ZTRS

2. Screens Declaration

Screen No	Description	GUI Status	GUI Title
0100	Main Screen	S_0100	T_0100
0200	Create Request Screen	S_0200I S_0200L S_0200V	T_0200I T_0200L T_0200V
0201	Subscreen for tabstrip *Attributes* (0200)		
0202	Subscreen for tabstrip *Change Request* (0200)		
0300	Open existing form	S_0300	T_0300
0400	Pending list for Approval	S_0400	T_0400
0500	Approval screen	S_0500	T_0500
0600	Reject screen	S_0600	T_0600
0700	Transport maintenance screen	S_0700	T_0700
0701	Subscreen for *Quality Assurance* (0700)		
0702	Subscreen for *Production* (0700)		
0800	Pending list for Transport	S_0800	T_0800
0900	Analysis screen	S_0900	T_0900
1000	List of functional area by module	S_1000	T_1000

3. GUI Title Text

GUI Title	Text

T_0100	Transport Management System
T_0200I	Create Request
T_0200L	Edit Request - Form &
T_0200V	View Form &
T_0300	Open Transport Request
T_0400	Request Approval
T_0500	Approve Request
T_0600	Reject Request
T_0700	Transport Remark
T_0800	Pending Transport Request
T_0900	Transport Analysis
T_1000	Select Functional Area

4. Technical description of report

Main include program used:

INCLUDE ZTRS_TRANSTOP. → for declaration

INCLUDE ZTRS_TRANSO01. → to store module Process Before Output

INCLUDE ZTRS_TRANSI01. → to store module Process After Input

INCLUDE ZTRS_TRANSF01. → to store all subroutines in the program

Other Include program used (PBO):

INCLUDE ztrs_transo01_0100. → for screen 100

INCLUDE ztrs_transo01_0200. → for screen 200, 201, 202

INCLUDE ztrs_transo01_0300. → for screen 300

INCLUDE ztrs_transo01_0400. → for screen 400

INCLUDE ztrs_transo01_0500. → for screen 500

INCLUDE ztrs_transo01_0600. → for screen 600

INCLUDE ztrs_transo01_0700. → for screen 700, 701, 702

INCLUDE ztrs_transo01_0800. → for screen 800

INCLUDE ztrs_transo01_0900. → for screen 900

INCLUDE ztrs_transo01_1000. → for screen 1000

Other Include program used (PAI):

INCLUDE ztrs_transi01_0100. → for screen 100

INCLUDE ztrs_transi01_0200. → for screen 200, 201, 202

INCLUDE ztrs_transi01_0300. → for screen 300

INCLUDE ztrs_transi01_0400. → for screen 400

INCLUDE ztrs_transi01_0500. → for screen 500

INCLUDE ztrs_transi01_0600. → for screen 600

INCLUDE ztrs_transi01_0700. → for screen 700, 701, 702

INCLUDE ztrs_transi01_0800. → for screen 800

INCLUDE ztrs_transi01_0900. → for screen 900

INCLUDE ztrs_transi01_1000. → for screen 1000

Subroutines:

FORM save_request.
Assign data that need to be save under subroutine "assign_det_0200".
Check whether the form is an existing form or mew form by checking in
the load_indic variable. If it is initial, then the form is new. Get
new form id.
Assign change request id under subroutine "assign_transport_id".
Input data into table ztrsdet and ztrsreq.

FORM get_form_id.
Use function module "NUMBER_GET_NEXT" to get the next number for form
id. Concatenate 'F' into the retrieved id.

FORM get_as4text.
Get text for each change request id that is written by user into the
table control by retrieving it from standard SAP table. Store it
temporarily in the internal table.

FORM confirm_loss.
Use function module "POPUP_TO_CONFIRM_LOSS_OF_DATA" to make
confirmation on the loss of data that will trigger on the back button
from screen create request.

FORM load_existing.
Call screen 0300

FORM clear_data.
Clear all work area and internal table in order to get fresh variable.

FORM assign_det_0200.

Assign data from screen 0200 into work area before it is saved into the database table.

FORM assign_transport_id.

Assign change request id for each request into an internal table before it is saved into the database table.

FORM get_form.

When open an existing form, select data from table ztrsdet, ztrsreq, and ztrsrej. Assign indicator to load_indic variable to remark that it is an existing form.

FORM get_approval_reject.

Get the number of request that is still in approval mode whether by the team leader, qas controller or by project manager.

FORM get_transport.

Get the number of request that required for transport to development server or production server.

FORM assign_load_0201.

On load form, assign screen element based on data saved in the database table (for screen 0201).

FORM get_detail_0201.

Get details from the screen element, and assigned it to the variable declared before proceeding with any next step (for screen 0201).

FORM assign_load_0202.

On load form, assign screen element based on data saved in the database table (for screen 0202).

FORM edit_proposal.

If team leader status is pending or still not requested, set variable edit_indic to "E1". If team leader have approved the request, set variable edit_indic to "E2". If team leader have rejected the request, no editing allowed.

If qas controller status is pending or still not requested, set
variable edit_indic to "E2". If qas controller have approved the
request, set variable edit_indic to "E3". If qas controller have
rejected the request, no editing allowed.
If qas controller have approved the request, check if the transport to
development server have completed or not, if yes, proceed with editing,
if not, process halt.
If project manager status is pending or still not requested, set
variable edit_indic to "E3". If project manager have approved the
request, set variable edit_indic to "E4". If project manager have
rejected the request, no editing allowed.
If project manager have approved the request, check if the transport to
production server have completed or not, if yes, proceed is complete,
if not, process halt.

FORM approve_request.
Call screen 0500.

FORM view_proposal_0400.
Retrieve data from database before assigning it to all screen elements.
Leave to screen 0200. Set variable load_indic to 'V' to indicate only
view is allowed by this user.

FORM approve_request_0500.
Check for all person approval that is team leader, qas controller, and
project manager. Check for only authorized person to do the approval.
If yes, proceed with approval and send email to requester to notify
about the approval. For qas controller approval and project manager
approval, upon successful approval, email is also send to the basis
team to notify about the pending transport to development and
production.

FORM reject_request.
Call screen 0600.

FORM reject_request_0600.
Same process with subroutine approve_request_0500 with only email
notification to the requester.

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FORM assign_approval_status_text.

To assign status text based on the status of current request. The status is regarding the approval and rejection and status on the transport to the required server that are shown on screen 0200.

FORM get_transport_data_0800.

Get a list of pending transport to development server and production server.

FORM view_proposal_0800.

Retrieve data from database before assigning it to all screen elements. Leave to screen 0200. Set variable load_indic to 'W' to indicate only view is allowed by this user.

FORM get_transport_detail.

Retrieved transport details for the selected form and assigned it to screen element if screen 0700. Assigned data to subscreen 0701 and 0702 using subroutine "assign_data_0701" and "assign_data_0702".

FORM save_transport_0700.

For development server, use subroutine "save_transport_q" and for production server use subroutine "save_transport_p".

FORM save_transport_q

Update field for development server only for table ztrsreq, ztrsdett, and ztrsdet.

FORM save_transport_p

Update field for production server only for table ztrsreq, ztrsdett, and ztrsdet.

FORM assign_data_0701

Assign data for subscreen 0701 in the transport maintenance screen 0700.

FORM assign_data_0702

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Assign data for subscreen 0702 in the transport maintenance screen 0700.

FORM delete_proposal

Delete data from table ztrsdet, ztrsdett, ztrsreq, and ztrsrej.

FORM confirm_delete

Request for confirmation to delete the form.

FORM send_email

Check for email variable email_indic, to populate the email content based on the required person.

FORM setup_trx_and_rtx_mailboxes

Setup the mailbox for transaction STMS

FORM create_and_send_mail_object

Create and send the email with its content to the required person.

FORM collect_data_functional_area

Retrieved data from function module "RS_COMPONENT_VIEW" to get the functional area of a SAP module. Store it into internal table it_tbl_1000.

Screen Technical Layout

Screen	Layout

0100

Pending Request
Approval
Transport

0200

SAP Module
Functional Area
Development QAS
Production
Attributes | Change Request

0201

Type of Change
- Client Dependent   New
- Client Independent   Fix

Effect of Change
- Yes No   Will this change a process step?
- Yes No   Will this change the screen fields?
- Yes No   Will this effect data migration activities?
- Others

Desc

Team Leader
QAS Controller
Project Manager

0202

Task/Request	Release	Description

0300

Form ID [?]

0400

Proposal ID	Requester	Team Leader	Status	QAS Controller	Status	Project Manager	Status

0500

Form id [ ]

Team Leader Approval [ ]
QAS Controller Approval [ ]
Project Manager Approval [ ]

0600

Form id

Team Leader Approval ☐
QAS Controller Approval ☐
Project Manager Approval ☐

Reject Comment
?

0700

Form ID
Requester
Development
Production

Quality Assurance | Production

0701

Development transport return code for the request

REQID	Success	Warning	Error	Fatal		Transport Comment
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	

0702

Production transport return code for the request

REQID	Success	Warning	Error	Fatal		Transport Comment
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	
	○	○	○	○	○	

0800

Form ID	Requester	Quality Assurance	Production	

0900

Request by Date

Request Details by Date

1000

Name	Text

APPENDIX E:

REPORT ON FINAL PRESENTATION

REPORT ON FINAL PRESENTATION

External examiner: Mr Izurrin, Prestigious Discovery Sdn Bhd

Lecturer: Mr Khairul Shafee Kalid (supervisor)

Dr Ahmad Kamil Mahmood (internal examiner)

Duration: 22 minutes

Presentation Outline:

Introduction
- Background
- Problem Statement
- Objectives
- Scope

Methodology
- Development Model
- Tools

System Architecture

Discussion
- Process Flow
- Use Case Diagram
- Data Flow Diagram
- Entity Relationship Diagram

System
- System Functionality
- Rejection Process
- System Benefit
- System Demo

Project Limitation

Conclusion

Q & A

Presentation Material (screen shot Flash)

1.

- The initial screen of the flash presentation
- Greetings the external examiner, internal examiner, supervisor and the members' of the floor
- Introduce myself and Final Year Project topic

2.

- Explain regarding the project background that includes clarification on what is the transport process in SAP and the change request id
- Explaining on the system background

3.

- Listing the problems that associated with the current system and why do we need the developed system in the business process

4.

- Explaining on the objectives of the study and project scope
- Project scope is important because it can limit the boundary that the project caters

5.

- Explaining on the development model that is used as the model to develop the project
- The waterfall model includes several phases and during the presentation, each phase is explained thoroughly
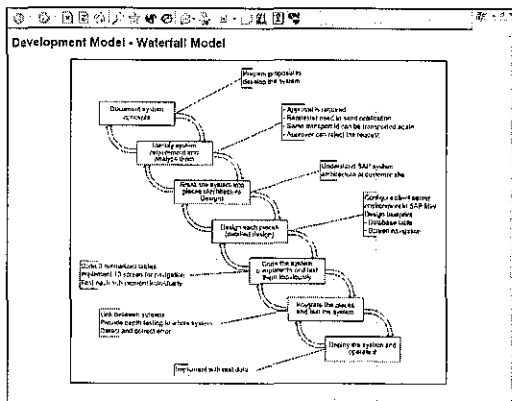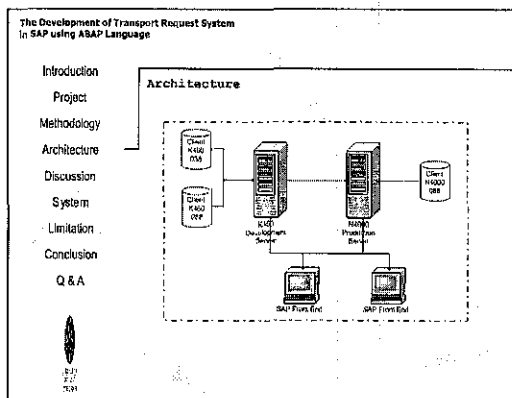

6.

- List the tools that are used during the project implementation
- All tools are located within SAP itself and do not required extra software to create the system

7.

- Explain on the business process architecture and how do transport process related in the architecture
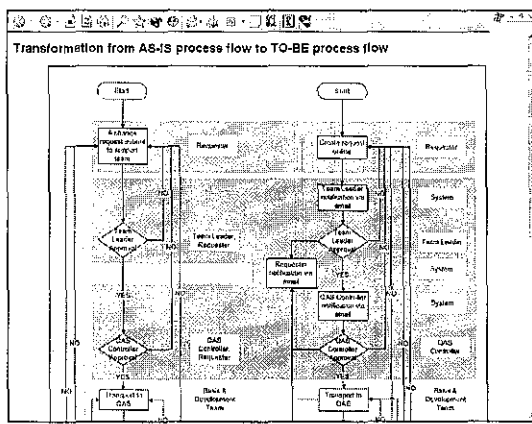
8.

- Differ the AS-IS process to TO-BE process flow and how the flow from current system change to the developed system
- Emphasize on the shaded area where all the changes taken place

9.

- Explain regarding the use case diagram for the business process
- There are six user and each user have specific task that they need to complete

10.

The Development of Transport Request System in SAP using ABAP Language

| Introduction | Functionality | Rejection | Benefits | Demonstration |
| Project |
| Methodology |
| Architecture |
| Discussion |
| System |
| Limitation |
| Conclusion |
| Q & A |

System — Functionality

Create request
Edit request
Delete request
Notification via SAP email
Approval
Rejection
Transport maintenance
Analysis
Print request form

- List the functionality of the system and notify that all functionality will be explained thoroughly during the project demonstration

11.

The Development of Transport Request System in SAP using ABAP Language

| Introduction | Functionality | Rejection | Benefits | Demonstration |
| Project |
| Methodology |
| Architecture |
| Discussion |
| System |
| Limitation |
| Conclusion |
| Q & A |

System — Rejection

Reasons for rejection
- The task not complete
- Redundancy of object
- Authorization purposes

Reasons to monitor the system
- Prevent damage to production system
- Ensure the production system is clean from rubbish
- Maintain integrity of production system

- Explain on one of the element in the business process that is rejection process
- Information that is explained reasons for rejection and the reason to monitor the transport process

12.

The Development of Transport Request System in SAP using ABAP Language

| Introduction | Functionality | Rejection | Benefits | Demonstration |
| Project |
| Methodology |
| Architecture |
| Discussion |
| System |
| Limitation |
| Conclusion |
| Q & A |

System — Benefits

Reduce process time to 26%
- Requirement of requester to meet approver physically have been replaced with internal email function in SAP (click here)

Speed up the transport analysis
- Generate understandable reporting using ABAP by click of button

Time Benefit Comparison

- System benefits is the important elements in the system implementation and the reason why do people need to use the developed system
- Explain on the two main benefit of the system that includes business processing time reduction to 26% and speed up the transport analysis
- Explain how do the processing time can reduce to the minimum level using time benefit comparison table
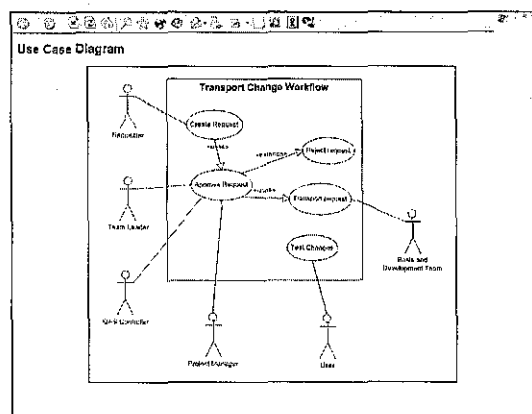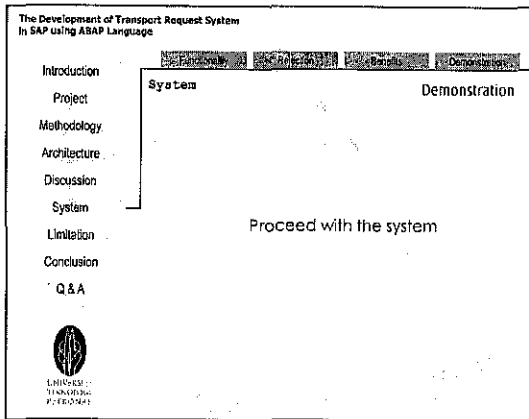
14.

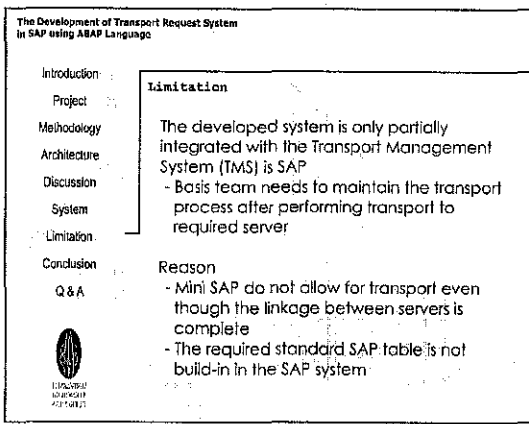The Development of Transport Request System
In SAP using ABAP Language

Introduction
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| Functionality | Reflection | Benefits | Demonstration |

System   Demonstration

Proceed with the system

- During the system demonstration, I explain all the functionality in the system thoroughly

15.

The Development of Transport Request System
In SAP using ABAP Language

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Limitation

The developed system is only partially integrated with the Transport Management System (TMS) is SAP
- Basis team needs to maintain the transport process after performing transport to required server

Reason
- Mini SAP do not allow for transport even though the linkage between servers is complete
- The required standard SAP table is not build-in in the SAP system

- Explain the limitation of the system due to the limitation in the SAP

16.

The Development of Transport Request System
In SAP using ABAP Language

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Q & A

Conclusion

The developed system is managed to create satisfaction to the user in speeding up the business processes and activities

It help to eliminate the unnecessary time wastage in requesting for approval and replaced with automated email alert function

- Conclude that the system able to create satisfaction to the user and help in eliminating unnecessary time wastage

17.

The Development of Transport Request System
In SAP using ABAP Language

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Q & A
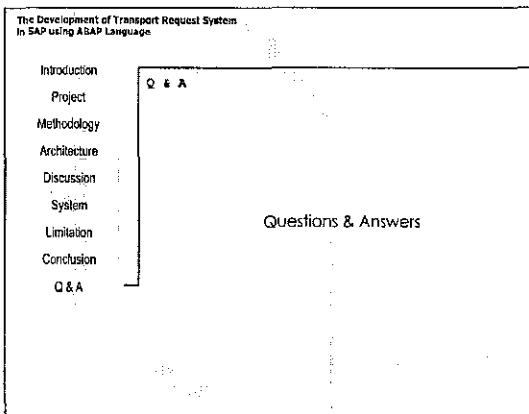
Questions & Answers

- Conduct question and answer session and open the floor for any inquiry
- 3 questions have been given to me and I manage to answer the questions perfectly

Question & Answer:

Dr Kamil: Explain more on why does approver need to reject a transport request?

Answer:

There are 3 main reasons the can lead the approver to reject the request:

a. The task not complete:

In real SAP project environment, there are man developers working for same target but doing different job tasks and scope. Let's say that one of the developers have completed the tasks and ready for transport and he have requested for the transport from the team leader. The team leader who knows more on the progress of the group may not approve the request since not all the developers have completed their job. In the team leader perspective, transport should only be taken place when all of the tasks under the project completed otherwise it need to be postpone.

b. Redundancy of object:

When time goes by, there are many changes in the company structure including the restructuring of the company staffs. The new staff may not know the task of previous developer regarding the SAP working scope. When the new staff creates one configuration and need to transport it, the request may have been created before and it will generate redundancy in the SAP system. The upper level management such as the project manager knows that the object created have redundancy, thus reject the request.

c. Authorization purposes:

Authorization for user has limitation depends on their job scope and if the granted authorization is not appropriate for the specific user, the approver may reject the request of transport.

Mr Izurrin: Is there any specific period of time that the approver needs to approve the request?

Answer:

There is no specific period of time to approve the request. This business process of approver who have received the request, to approve it do not change from the AS-IS process to TO-BE process. It does not effect the overall time taken to calculate the overall processing time for the whole one business process. The section that the system has improved is that the process of letting the approver knows that there is a pending request that required his/her approval. The current system required the requester to meet physically with the approver but it has been enhanced in the proposed system whereby it has been replaced with email alert function.

Mr Izurrin: Referring to the reason of rejection slide, it the system has the capability to detect the error rather than the approver reject the request?

Answer:

All of the errors that cause rejection by the approver are categorized as the logical error that a system cannot detect. It is logically correct and the system does not find any mistake that can violate the SAP execution for business process. A system should be integrated with intelligent in order to recognize the logical error created by human and is known as the expert system. The scopes of the project do not include the development of an expert system as it required more enhancements toward understanding the human logic. Therefore the developed system does not have the ability in identifying this type of error.