Guidelines for Implementing an Enterprise Resource Planning (ERP)
System: A Case Study of SAP Application in a Construction Firm

by

Ms. Wallapa Shawkanha

A Final Report of the Three-Credit Course
CE 6998 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
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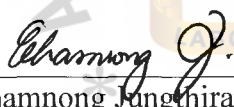   Construction Firm

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Academic Year   November 2006

The Graduate School of Assumption University has approved this final report of the three-credit course, CE 6998 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.
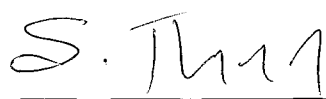
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                           CHE Representative

                           November 2006

ABSTRACT

This project introduces, recommends SAP project implement for everyone who wants know concept and overview about SAP system.

SAP was founded in 1972 in Walldorf, Germany. It stands for Systems, Applications and Products in Data Processing. Over the years, it has grown and evolved to become the world premier provider of client/server business solutions for which it is so well known today. The SAP R/3 enterprise application suite for open client/server systems has established new standards for providing business information management solutions.

SAP products are considered excellent but not perfect. The main problem with software product is that it can never be perfect. There are about knowledge of users and consultant and about communication between all users.

The main advantage of using SAP as your company ERP system is that SAP has a very high level of integration among its individual applications which guarantees consistency of data throughout the system and the company itself.

For all company, the production system should only contain transports that have passed all the tests. SAP is table drive customization software. It allows businesses to make rapid changes in their business requirements with a common set of programs. User-exits are provided for business to add in additional source code. Tools such as screen variants are provided to let you set fields attributes whether to hide, display and make them mandatory fields.

ACKNOWLEDGEMENTS

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I. INTRODUCTION

1.1 Introduction SAP system

To create a good IT infrastructure requires some awareness of the business functionality being addressed. The server, storage, and network infrastructure solutions presented in this book are focused on SAP @ business application software. The choice and configuration of these software components plays an important role for the hardware configurations and ongoing IT operations needed. There are operating system, database, and server platform dependencies of these software solutions that may impact the performance (including sizing), availability, and total cost of ownership of the IT hardware infrastructure. Thus, some introduction to SAP is business software solutions is useful.

SAP was founded in 1972 in Walldorf, Germany. It stands for Systems, Applications and Products in Data Processing. Over the years, it has grown and evolved to become the world premier provider of client/server business solutions for which it is so well known today. The SAP R/3 enterprise application suite for open client/server systems has established new standards for providing business information management solutions.

In a standard SAP project system, it is divided into three environments, Development, Quality Assurance and Production. (http://www.sap-img.com/sap-introduction.htm)

The development system is where most of the implementation work takes place. The quality assurance system is where all the final testing is conducted before moving the transports to the production environment. The production system is where all the

daily business activities occur. It is also the client that all the end users use to perform their daily job functions.

1.2 OBJECTIVES:

a.   To know and study the structure of Systems and Applications Products Enterprise in Data Processing (SAP).

b.   To suggest how to prepare if the companies want to implement their system with SAP.

c.   To introduce what are the benefits of SAP.

1.3. SCOPE:

This project will introduce the structure Systems and Applications Products Enterprise in Data Processing (SAP), and introduce what the benefits of Systems and Applications and what SAP provide for the company and if the company wants to implement the system with SAP what they should be and should prepare.

II. LITERATURE REVIEW

ERP (Enterprise Resource Planning) is a package which supported by application software to help business, inventory, and manufacturer manage, collect, and analyst the data or information part of their business, it's covering product planning , parts purchasing, maintaining inventories, interacting with supplier and customer, providing customer service and transportation management, tracking order, finance, sale and distribution and human resource.

SAP (System of Applications and Products in Data Processing) is a package one of ERP tools, SAP was found in Germany in 1972. It has many modules for supporting all different operation in company or for different industries.

2.1 HISTORY OF SAP

On April 1, 1972 five IBM employees created SAP as System analyzes und Programmentwicklung ("Systems Analysis and Program Development") in Mannheim, Germany. Their concept, they want to develop and market standard enterprise software which would integrate all business processes with real-time processing this concept came to them through their work as system consultants for IBM they notice that client after client was developed the same or very similar, computer programs..

From a start-up software vendor to global market leader

Over twenty-five years, their concept has transformed SAP from small regional enterprise into a world-class international company. Today the SAP group is the global marker leader in enterprise resource planning software, and has subsidiaries, affiliates and branch offices in nearly every industrial nation in the world. Important milestones

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in the company's corporate history include its conversion to a GmbH (a closely-held corporation) in 1977, the opening of the company's headquarters in Walldorf, and its conversion into a publicly-held corporation whose shares are listed on several stock markets.

SAP changing its structure to a publicly-held corporation, SAP significantly strengthened its capital base and laid the foundations for its employees to enjoy more of a share in the company's success. In the end, it is SAP's employees whose know-how, motivation and performance have nurtured the company's progress. And it is their commitment and innovative drive which will pace the company's future success and keep it ahead of the competition.

Over one million R/3 users

First, the development and 1979 market release of the R/2 software system for mainframes, and, second, the R/3 client/server software system introduced in 1992. Since its debut, the R/3 System use has grown explosively. At present there are more than one million end users around the world work with the R/3 System.

The first customer of SAP is the German ICI subsidiary in Ostringen in 1972, in those days, mainframes only had 500 kilobytes with a limited data volume were feasible. It was against this technological background anyway the development of SAP products has continually benefited from major advances in hardware sector.

For finished implementation of its initial project, SAP had nine employees and end of its first fiscal year, SAP posted a profit on revenues of DM 620000. In the second year of operation, SAP had 2 local business there are the Tobacco and cigarette manufacture Roth-Handle and pharmaceutical company Knoll to be new customers.

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They chose SAP Financial Accounting (RF) System this system quickly earned a reputation as an excellent standard package and installations expanded to 40 customers. After that SAP had the newly development this is Materials Management (RM) system which included modules for purchasing, inventory management and invoice verification, with modules for purchasing, inventory management and invoice verification, and this system can integrate into Financial Accounting also.

SAP moves to Walldorf

For fifth year of operations, SAP became a GmbH (a closely-held corporation) and changed name to be System, Anwendungen, Produkte in der Datenverbeitung (" System, Applications, Products in Data Processing") . This system made revenues close up to DM 4 millions, and 25 employees. In 1977, SAP move headquarter to Walldorf and this year it got 2 foreign customers from Austria, after that for one year it had 100 customer and 50 employees otherwise SAP had introduce new module that is Asset Accounting (RA) and SAP developed a French version of the accounting module, SAP had stepped toward to international markets.

In 1878 SAP provided R/2 System as sales headed toward the DM 10 millions milestones, SAP began operation of its own computer center in Walldorf which completed in 1980 that year software SAP got 50 of the100 largest industrials companies in Germany to be its customers.

R/2 System goes international

In 1982, SAP had tenth anniversary and sales growth up to over DM 24 millions they had SAP users from 236 companies in Germany, Austria and Switzerland.

In 1984 occurred SAP (International) AG in Switzerland, which focused on to increase sales of the R/2 System in international markets. SAP provided 2 new applications that are Personnel Management and Plant Maintenance and that time SAP installed Production Planning and Control System for its first pilot customers.

1985 The Walldorf headquarter had expand to 10,000 square meters of space and at Swiss subsidiary occurred a new headquarter. And SAP system was used in European countries its customers are in South Africa, Kuwait, Trinidad, Canada and US.

The DM 100 million sales mark exceeded

1986 SAP GmbH the capital stock was increased from DM 500,000 to DM 5 millions. The largest single hardware investment to date was made in Walldorf with the installation of an IBM mainframe costing DM 7 million. The year's sales topped DM 100 million, and SAP exhibited at CeBIT, the world's largest IT trade fair, for the first time.

The 15th years of the company's history, SAP opened branch offices in Munich and Hamburg, and subsidiaries in four European countries there are Netherlands, France, Spain and UK. SAP had sales more than doubled to DM 245 millions, with 850 companies. In 1987 SAP introduced it's a new generation of software, and the R/3 system.

SAP goes public

1988 SAP had strengthened by subsidiaries in Denmark, Sweden, Italy and US. SAP consulting GmbH had joint project SAP and the consulting firm Arthur Andersen, and got Dow Chemical as 1000th customers, and important event of the year were

capital stock of SAP was increased from DM 5 millions to DM 60 millions, the subsequent conversion of SAP GmbH into a stock corporation, SAP AG, and the flotation of SAP shares on the stock market. SAP shares were quoted on the securities exchanges in Frankfurt and Stuttgart.

In 1989, SAP shares began trading on the Zurich stock exchange. SAP expanded its alliance and strategic cooperation approaches by taking a majority investment in TOS GmbH in Freiberg. Through the "International User Conference" in Lausanne, Switzerland, and the first "SAPPHIRE" user conference in North America, SAP demonstrated its solid commitment to direct international customer contact.

Over 1,000 employees

SAP growth to twelve subsidiaries included Canada, Singapore and Australia, in 1989 the large number of participants attending the first Annual Stockholders' Meeting; it had strong employees more than 1000 and expansion of the customer base. This success manager magazine called SAP that "Company of the Year" for the few years later.

In 1990 capital stock of SAP growth to DM 85 millions and Siemens Nixdorf founded SRS GmbH in Dresden. SAP had a foothold in East German market and had sales to over DM 500 millions and had 1700 staffs.

SAP develops Russian R/2 version

In 1991, Steeb GmbH was completed and merged with CAS to form STEEB-CAS GmbH, created a high-caliber software company by an attractive product offered for the small and medium size company market. Eastern European business of SAP developed

quickly, SAP collaborated with Russian Software Company to develop R/2 version in Russian. At the end of year, SAP group got 2,225 customers in 31 countries and got sales of more than DM 700 millions.

In twentieth year of SAP, SAP introduced new product and Sales Center in Walldorf. Share capital of SAP was growth from DM 15 millions to DM 100 millions, SAP became firmly established a global company includes South Africa, Malaysia and Japan. In 1992, its software was supported for 14 different languages.

Shipment of the client/server system R/3

R/3 was released in mid of 1992, SAP started to penetrate the mid size market.

SAP took top position among German software vendors in 1993. The company moved to 7th place among software companies, establishing a clear lead in the global business applications software market. Sales surpassed the important DM 1 billion mark for the first time in 1993, and the global customer base stood at 3,500 companies. SAP made an investment in iXOS Software GmbH with the aim of developing and marketing graphical user interfaces and optical archiving of documents.

New development center in Foster City, California

R/3 releases 2.0 and 2.1 provided more functionality. SAP and Microsoft singed an agreement to port R/3 to Windows NT included 18th subsidiary of SAP occurred in Czech Republic the establishment by SAP America of a development center in Foster City in Silicon Valley, California, and SAP introduced SAP Japan that had supported for Kanji in version of R/3

1994 SAP had 66 % of sales to over DM 1.8 billions, at the end of year SAP had customer 200 of the more than 4000 customers using R/3 in production operation. Swiss customer was the first customer to go live with R/3 on Microsoft Window NT

1992 R/3 had been installed more than 1000 times. SAP received ISO 9000 certification and SAP completed R/3 release 2.2 that included a wide rang of enhancements in Logistics. SAP expanded its sales organization and strategic alliances. In Germany, SAP acquired a 52% stake in DACOS Software GmbH with the aim of developing an integrated software solution for the retail industry. The 19th subsidiary opened in Mexico City.

The Annual Stockholders' Meeting agreed to a DM 400 million capital increase out of retained earnings, bringing total capital to DM 500 million. The resulting 1:4 stock split was positively received by the market and led to a significant increase in stock price levels.

Microsoft chooses R/3

In 1995 SAP had more than 6,000 companies to be its customers. During the year Microsoft joined IBM as an R/3 customer from the high-tech sector.

In 1995 R/3 became the largest source of overall revenues, SAP had total sales DM 2.7 billion continued growth with new release 3 this version had important areas of Production planning and control and including used IBM AS/400 platform.

Sales reach DM 3.7 billion in SAP's anniversary year

In its 25th year of operations, sales growth up to DM 3.7 billions, SAP showed that business processes can be modeled in a standard way across and with industry

sectors, when IT industry developed flexible and cost-effective client/server architecture, SAP provided its customer by the right product at the right time.

R/3 becomes Internet-enabled

The success of R/3 has become to the top of global software market, SAP provides the latest version which is the first comprehensive, Internet enabled business application package. Release 4.0 is already development to increase the attractiveness of R/3 with more user-friendly this increased attractiveness from small and mid size business. The R/3 system is here but users can look forward to its continuing enhancement. (http://www.sapfans.com/sapfans/saphist.htm)

2.2 Architecture of SAP

SAP R/3 is event-driven transaction processing software for business events in an organization is primary value chain. Transaction processing systems supported by enterprise software are most concerned with the day-to-day needs of a business in conducting its on-going activities.
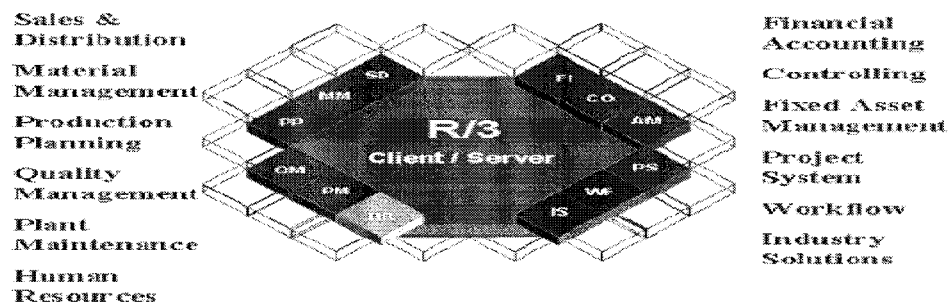
Figure 2.1   SAP R/3 Enterprise Architecture

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The R/3 Basis is the software that implements SAP three-tier client/server architecture. It consists of application modules and application servers, which are distinct components. The application modules support all of a company's business transactions and are integrated interactively. All application modules share data through the R/3 database, which contains the data for all modules

The SAP Business Framework is a family of SAP and non-SAP products. It is an open, integrated, component-based enterprise business application solution for companies of any size in any industry. Business Framework provides flexibility in setting up enterprise-critical distributed IT systems using independent components. The R/3 System is an evolving family of application components that can be combined into an integrated, continuously maintainable network solution regardless of the release of the components. Business Framework is an open design, allowing integration of components from third-party vendors.

The SAP R/2 System was developed to run on mainframe computers; SAP R/3 System has been developed to run with distributed multi tier client/server architecture. SAP R/3 can be configured to run on a single computer or it can be distributed among many different machines at different locations. There is a clear distinction between the presentation, application, database, and Internet-enabling layers.

The presentation layer is the user interface, and a number of different graphical user interfaces (GUIs) can be used. SAPGUI is user interface software (in over 20 different languages) of SAP, but Microsoft Windows or Internet browser interfaces can be used in its place. Other examples of interfaces are kiosk systems, and telephone answering systems.

Application servers contain the complete business process logic of R/3 applications. These application servers can run on Windows NT, XP systems and latest version, major UNIX operating systems, and AS/400 systems. A number of different application servers can be connected in a network, distributed geographically.

The database layer manages both the R/3 System application components and the enterprise's working data. This task is performed using relational database management systems. Supported are IBM DB2, Informix Online, Microsoft SQL Server, and Oracle. Database servers can be on different servers from the application servers, and can include mainframes, Windows NT, UNIX or AS/400. The industry standard SQL (Structured Query Language) is used for defining and manipulating all data. Applications are fetched from the database as required, loaded into the application layer, and then run from there.

(http://www.ryerson.ca/~ppille/sap/Resources/EnterpriseResourcePlanningSAP2.htm)

SAP also has an Internet layer (with access through a Web server) that works with System R/3 that enables a corporation to couple its systems with customers and vendors. Employees can access the system over the Internet or intranet, customers can place orders, and vendors can access their customers' warehouse data to schedule deliveries just in time.
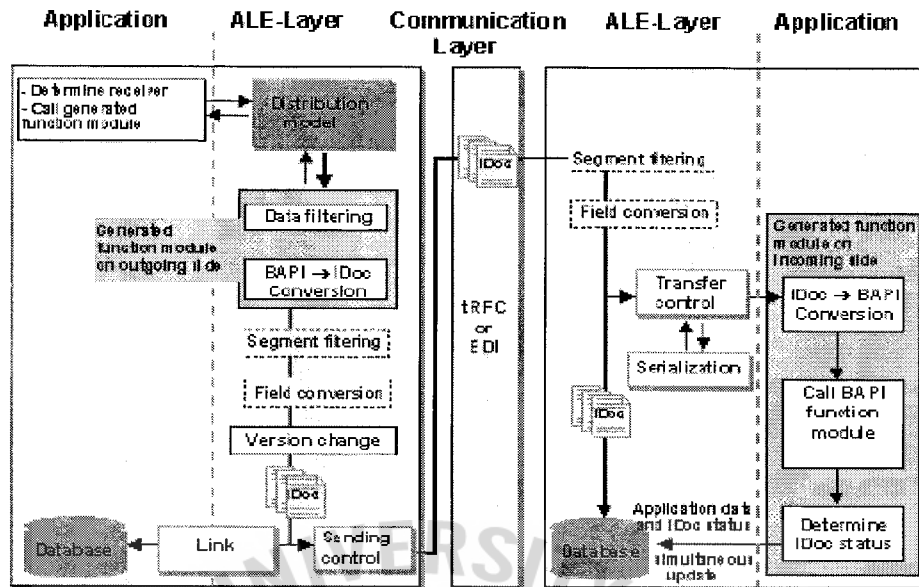
Figure 2.2   Application Link Enabling

SAP Application Link Enabling (ALE) is used to manage widely distributed, loosely coupled systems, based on an exchange of messages controlled by business processes. Individual companies in a corporation can distribute their transaction workloads where data are distributed, while a common service is offered throughout the network. Individual tasks can be distributed across locations. The systems involved can be different R/3 systems or non R/3 systems. With ALE, applications are integrated using asynchronous communications mechanisms.
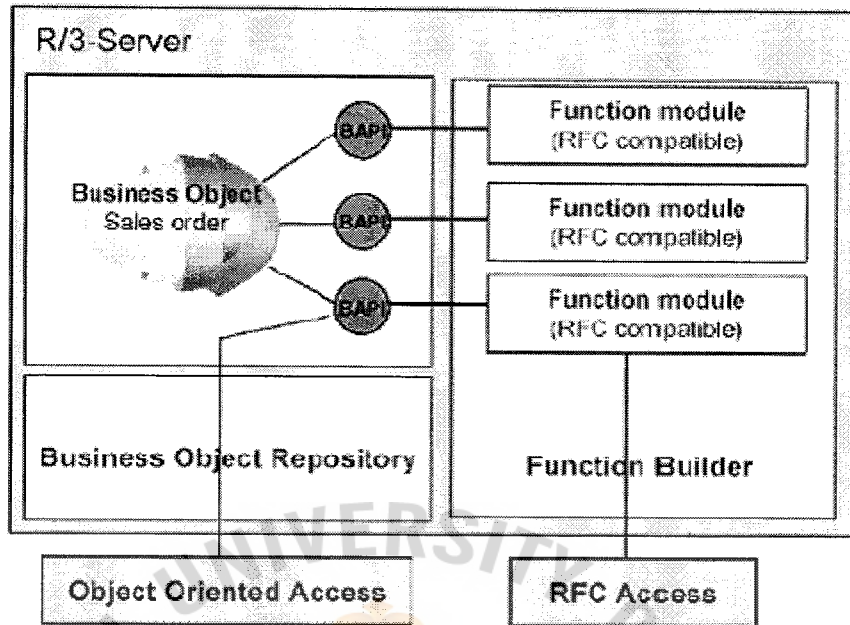
Figure 2.3   SAP R/3 BOR and BAPI

The R/3 System provided standard interfaces to run R/3 integration with the processes and data of business applications from other vendors and itself. These object-oriented interfaces are called Business Application Programming Interfaces (BAPIs). BAPIs are compatible with Microsoft's Distributed Component Object Model (COM/DCOM) specifications and the Object Management Group's Common Object Request Broker (CORBA) specifications.

R/3 applications are modules that can be used alone or combined with other solutions and business processes. R/3 is scalable and can be used with from 30 to several thousand users.

(http://www.ryerson.ca/~ppille/sap/Resources/EnterpriseResourcePlanningSAP.htm)

Popular desktop programs such as MS Word, MS Excel, and MS Project can be linked to R/3 applications. Electronic Data Interchange (EDI) between companies is also part of R/3

The BASIS System is the fundamental software within R/3 Application module. (http://www.sapfans.com/sapfans/sapr3con.htm)

2.3 ABAP

ABAP (**A**dvanced **B**usiness **A**pplication **P**rogramming) is a high level programming language created by the German software company SAP. It is currently positioned as the language for programming Web Application Server for SAP, part of its NetWeaver platform for building business applications.
ABAP is the SAP programming language that is used to develop and modify in the application modules. Custom programming with ABAP is possible for add on modules (http://en.wikipedia.org/wiki/ABAP)

2.4 SAP R/3 Applications

R/3's applications are modules. They can be used either alone or combined with other solutions or business processes. The integration capability of these applications increases the benefits derived for any company. R/3 applications are categorized into 3 main areas:

- Financial applications

- Logistics applications

- Human resources applications

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Financials

Financials is a package of integrated financial application components encompasses all aspects of financial accounting, investment management, controlling, treasury management, and enterprise controlling.

- **FI: Financial Accounting** Collects all the data in company relevant to accounting, providing complete documentation and comprehensive information, and is at the same an up-to-the-minute basis for enterprise-wide control and planning.

- **CO: Controlling** CO is a complete array of compatible planning and control instruments for company-wide controlling systems, with a uniform reporting system for coordinating the contents and procedures of company's internal processes.

- **IM: Investment Management** IM offers integrated management and processing of investment measures and projects from planning to settlement, including pre-investment analysis and depreciation simulation.

- **TR: Treasury** TR is a complete solution for efficient financial management that ensures the liquidity of worldwide company, its structures, financial assets, profitability and minimizes risks.

- **EC: Enterprise Controlling** EC continuously monitors company's success factors and performance indicators on the basis of specially prepared management information

Logistics

Logistics includes all processes involved in purchasing, materials management, manufacturing, warehousing, quality management, plant maintenance, service

management and sales and distribution. All applications access a shared consistent database, supported by production data management.

- **SD: Sales & Distribution**   SD actively supports sales and distribution activities with outstanding functions for pricing, prompt order processing, and on-time delivery, interactive variant configuration, and a direct interface to profitability analysis and production.

- **PP: Production Planning and Control**   PP provides comprehensive process for all types of manufacturing: from repetitive, make-to-order, and assemble-to-order production, through process, lot and make-to-stock manufacturing, to integrated supply chain management with functions extended MRP || and electronic, add optional interfaces to PDC, process control systems, CAD and PDM.

- **PS: Project System**   PS coordinates and controls all phases of a project, in direct cooperation with Purchasing and Controlling, from quotation to design and approval, to resource management and cost settlement.

- **MM: Materials Management**   MM cover all purchasing processes with workflow-driven processing functions, enables automated supplier evaluation, lowers procurement and warehousing costs with accurate inventory and warehouse management, and integrates invoice verification.

- **QM: Quality Management**   QM monitors, captures, and manages all processes relevant to quality assurance along the entire supply chain, coordinates inspection processing, initiates corrective measures, and integrates laboratory information systems.

- **PM: Plant Maintenance**   PM provides planning, control, and processing of scheduled maintenance, inspection, damage-related maintenance, and

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service management to ensure availability of operational systems, including plants and equipment delivered to customers.

- **SM: Service Management** SM provides highly integrated customer service functionality to compete in today's global markets.

- **PDM: Product Data Management** PDM supports in creating and managing product data throughout the product life cycle.

Human Resources

HR provides solutions planning and managing company's human resources, using integrated applications that cover all personnel management tasks and help simplify and speed the process.

- **PM: Personnel Management** PM is a complete solution for personnel administration, recruitment management, travel management, benefits administration and salary administration.

- **OM: Organizational Management** OM assists in maintaining an accurate picture of organization's structure, no matter how fast it changes. It is systematic and forward planning tool that considers the final affects of all personnel events thus it is complete solution for personnel cost planning.

- **PA: Payroll Accounting** PA addresses payroll functions from a global point-of-view and gives the capability to centralize payroll processing or decentralize the data based on country or legal entities.

- **TM: Time Management** TM is integrated with payroll accounting, controlling, production planning, plant maintenance, project system, external services and shift planning. It provides with a variety of standard reports that will assist in tracking and analyzing employee time with completeness and accuracy.

- **PD: Personnel Development**   PD assists with planning, monitoring, and analyzing scheduled seminars, training courses, and business events, registration and booking, price determination and invoicing.

Material Management (MM)

To supports the procurement and inventory functions occurring in day-to-day business operations such as purchasing, inventory management, reorder point processing etc.

This area contains the following modules:

- Purchase Order

- Inventory Management
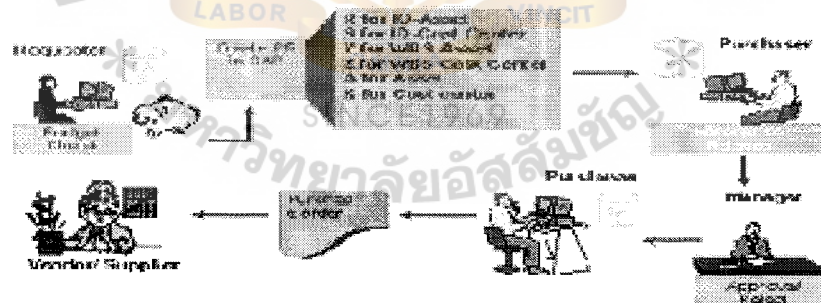
Figure 2.4   Purchasing Flows

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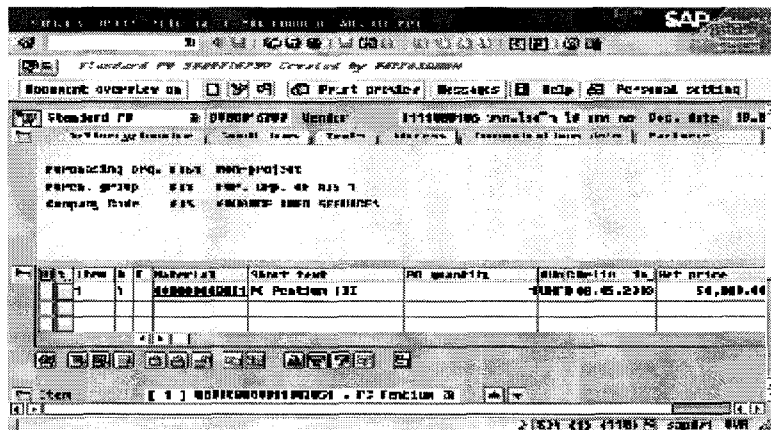
Figure 2.5 Purchase Order Screen

Figure 2.6 Material Management Integration
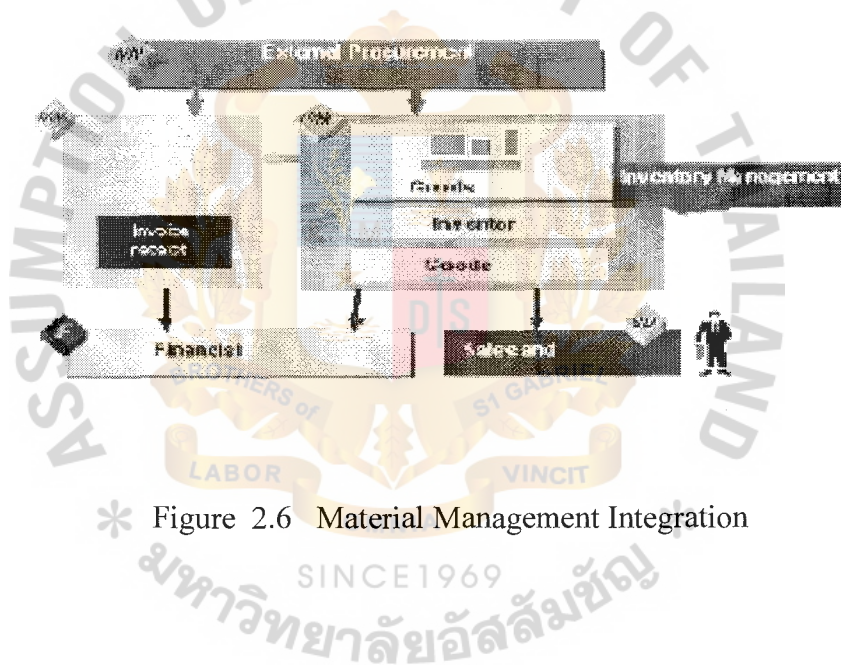
Sales & Distribution (SD)

Help to optimize all the tasks and activities carried out in sales, delivery and billing. Key elements are pre-sales support, inquiry processing, quotation processing, sales order processing, delivery processing, and billing and sales information system.

Sales & Distribution Process
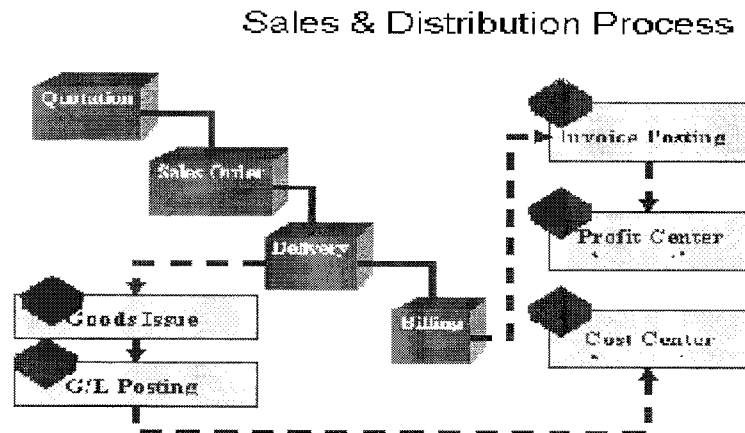
Figure 2.7   Sale & Distribution Process

Financial Accounting (FI)

This area contains the following modules:

- FI-GL   General Ledger

- FI-AP   Accounts Payable

- FI-AR   Accounts Receivable

- FI-AA   Asset Accounting

- Fully integrated with other modules.

- Automatic and simultaneous posting of all sub-ledger items in the G/L accounts.

- Real-time evaluation of and reporting on current accounting data.
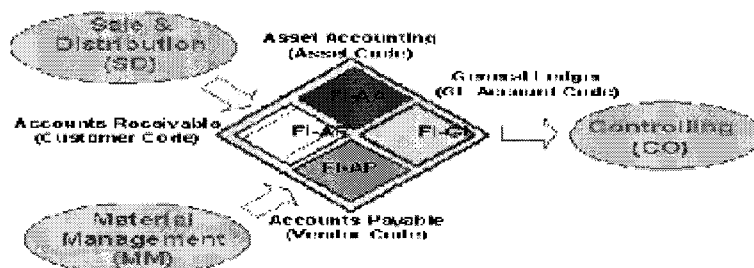
Figure 2.8   Integrated with other module

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Figure 2.9   General Ledger Integrated

Financial Management

It comes with new post processing of electronic bank account statements functions that enable customers to select and correct bank statement items faster in case the function did not post automatically. This enables the users to trigger automatic postings for several items at the same time. It also has an accrual accounting engine that enables users to automatically calculate and post accruals such as license fee, rent costs, or revenues in the general ledger accounting facility of SAP R/3 Enterprise core. Besides this, the functions have been added or changes have been made in the functions for process improvements, valuation and legal improvements, and technical improvements.

Asset Accounting Features

Designed to manage and supervise individual aspects of fixed assets including purchase and sale of assets, depreciation and investment management.
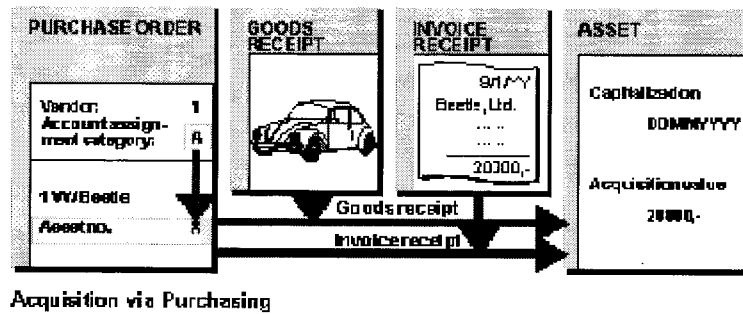
Figure 2.10   Acquisitions via Purchasing

Controlling (CO)

Represent the company's flow of cost and revenue. It is a management instrument for organizational decisions. It is automatically updated as events occur.

This area contains the following modules:

- CO-CCA   Cost Center Accounting

- CO-PCA   Profit Center Accounting

- CO-IO   Internal Orders

- Controlling provides you with information for management decision-making.

- Implementation depends on your organization's structure.

- Integrated with other modules.

- Reconciliation with FI.
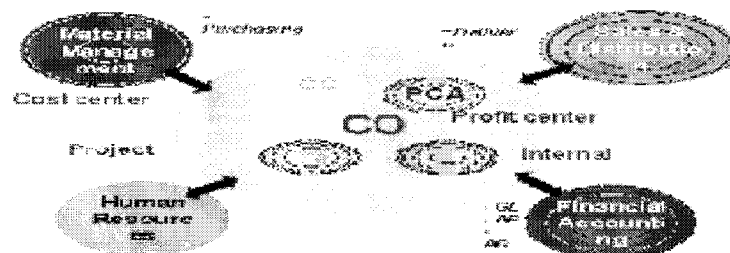
Figure 2.11   Controlling Integration

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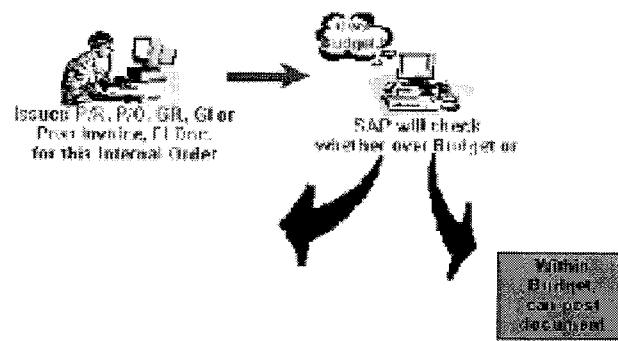
Figure 2.12   Active Check Budget

Supply Chain Management

The 4.7 version provides users with manufacturing execution that is based on the process management functionality of the previous SAP R/3 releases. It delivers additional production execution features and serves as a basic manufacturing platform. This version also comes with the function for managing cross- system flow of goods. It attains this function by facilitating the management of good movements relating to sales and purchase orders within a business system group. Moreover it comes with the functions for advanced warehouse interface, business application add-ins, document change management for purchase orders, interfaces and extractors, task and resource management.

2.5 SAP Enterprise Release 4.7 Introduction

SAP R/3 Enterprise Core – popularly known as Enterprise Release 4.7 - is the latest version of the SAP R/3 suite of enterprise software applications. It is designed to

offer the best possible foundation for easily carrying the company through to e-business with mySAP Business Suite.

The first release of SAP R/3 Enterprise Core (4.7) contains some functional enhancements, but it is primarily a technical change. SAP R/3 Enterprise is built on SAP Web Application Server (SAP Web AS) and integrates seamlessly with the enterprise portals and exchange infrastructure.

SAP Enterprise Core is the heart of SAP R/3 4.7 and supports the packaging concepts, business configuration sets and Unicode-compliance. In addition, enterprise core provides users with the SAP R/3 Enterprise HR and non-HR Core Support Packages.

Release 4.7 is a major change of direction for SAP and therefore for its customers. This new release needs to be closely studied by each of its customers and then acted on. In this 7 article tutorial we will cover subjects such as:

- Architecture

- Features and Benefits

- Technical Specifications

- New Functionality

- Upgrade Path

2.6 Benefits of SAP

- Simultaneous visibility across the whole enterprise

- Reporting and analyzing

- Offers a good understanding of the current situation of the company

- Consulting managers about how much value they can add to their firm by improving each department

- Supports databases, applications, operations systems and hardware from almost every major supplier

- Offers a high security and information consistency to manage the firm's production according to customers' demand

- To choose the best marketing strategy that fits best to the firm's customer database - coordination across the company provides managers a satisfying control in every phase and department

- Eliminates unnecessary use of effort

- Enables managers to focus their attention on the core process.

(http://home.ku.edu.tr/~adervisoglu/c.html)
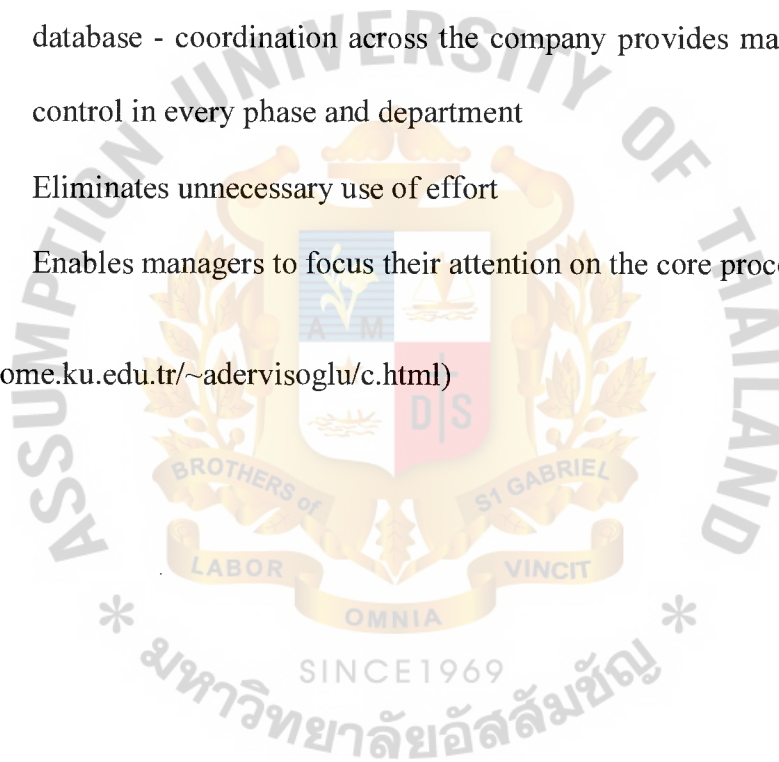
III. METHODOLOGY

3.1 Project Methodology

Streamlined, Proven Methodology

To ensure the successful, on-time delivery of your project, SAP offers the
Accelerated SAP (ASAP) methodology for project management and system
implementation. Developed by SAP to optimize the success of implementing the SAP
Business Suite, ASAP streamlines the implementation by providing templates, methods,
tools, and accelerators that have been built on the success of thousands of previous SAP
implementations.
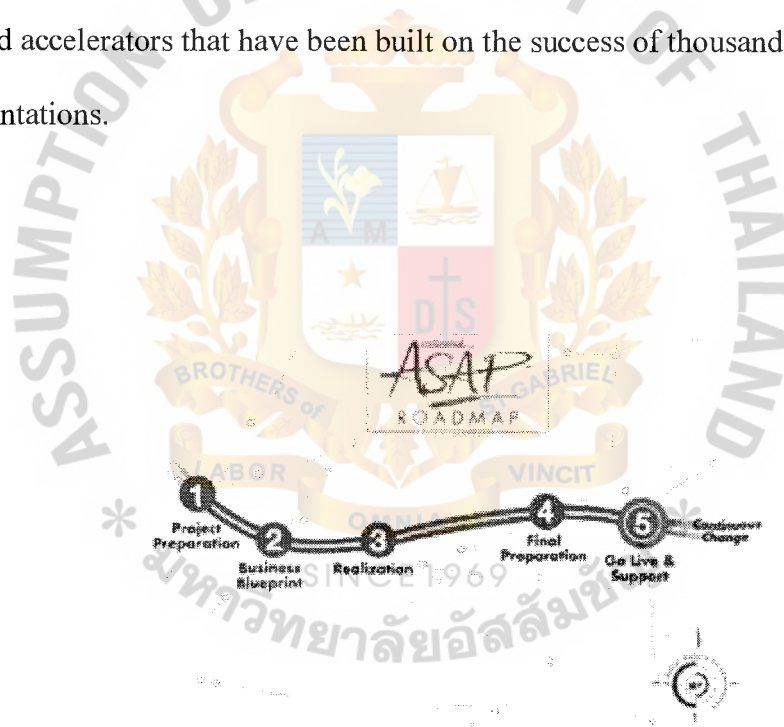
Figure 3.1   ASAP Roadmap

The ASAP methodology adheres to a specific road map that addresses the
following five (5) general phases:

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1   **Project Preparation**, in which the project team is identified and mobilized, the project standards are defined, and the project work environment is set up;

2   **Blueprint**, in which the business processes are defined and the business blueprint document is designed;

3   **Realization**, in which the system is configured, knowledge transfer occurs, extensive unit testing is completed, and data mappings and data requirements for migration are defined;

4   **Final Preparation**, in which final integration testing, stress testing, and conversion testing are conducted, and all end users are trained;

5   **Go-Live and Support**, in which the data is migrated from the legacy systems, the new system is activated, and post-implementation support is provided

ASAP incorporates standard design templates and accelerators covering every functional area within the system, as well as supporting all implementation processes. Complementing the ASAP accelerators, Project management team must create a comprehensive project plan, covering the overall project, project staffing plan, and each sub-process such as system testing, communication and data migration. Milestones are set for every work path, and progress is carefully tracked by the project management team.

3.2 Effective Communication

Weekly update meetings ensure full communication between the project team, the client project team, and project management. These meeting are used not only to update on project status, but also to identify any issues or risk areas that may threaten the

project. By identifying these problems early, they are more easily mitigated and resolved, reducing their impact on the project timeline.

3.3 Ensuring Quality and Mitigating Risk

Project quality is verified near the completion of each project phase. Using existing ASAP checklists, these quality checks ensure that all tasks for the phase have been completed properly, that all relevant documentation has been kept, and that all tasks required to commence the next phase of the project have been completed.

For more understanding the methodology, please see the case study in the next chapter. (http://www.tuiconsulting.com)

IV. PROJECT CASE STUDY

4.1. Project Introduction

Company Background

The ABC Company has been recognized for its high standard quality of construction work by private clients and government authorities and has been certified ISO 9000, ISO 9001 and ISO 9002.

At present, the business of ABC operations involves 8 major categories:

1. Large-Scale Building Construction

2. Industrial Plants and Facilities

3. Pipelines and Tank Farms

4. Highways, Railways, Bridges and Expressways

5. Airports, Jetties, Deep-sea Ports and Marine Works

6. Multi-Purpose Hydro-Electric Dams, Tunnels and Power Plants

7. Steel Structures

8. Telecommunications

4.2. Project Scope

ABC has expanded its operations to a point where existing IT systems – based on the "JD Edward – General Ledger" software package and a number of in house developed systems - can no longer handle the growth and rapid changes in current business environment. In addition, current systems are not integrated and cannot provide timely results to support management decision. To address this issue, ABC has decided to implement a state-of-the-art enterprise resource planning (ERP) solution; named SAP R/3.

ABC is management agreed to use an accelerated implementation approach to the SAP implementation in order to deliver a productive SAP system in a shorter time period enabling quicker benefits realization. The objectives of this SAP implementation are:

- To implement an integrated system to support ABC's back office operation in order to minimize redundancy of work, improve internal control and provide timely and accurate information to support management's decision

- To implement streamlined business processes in head-office and all job sites to be true state of the art operations with appropriate level of computerized system support

- To implement the system using a SAP standard reference model as a template.

- To establish a firm foundation business process, and ready for future improvement

The new ERP system will replace most of current computer systems, which are supporting business processes at head quarter as well as at major construction sites. These business processes include:

- Financial accounting area

- Purchasing area

- Inventory control area

- Equipment managements area

- Job control and costing area

- Billing area

The 8   Dimensions of Scope

Organisation

Define the business unit/division, and geographic impacted by the new system.
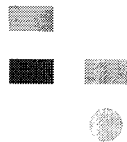
Business Process

Identify and define ABC' process chains, functions and tasks to be supported by the new system
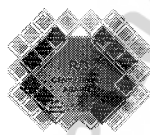
SAP Functions

Map the processes identified above to SAP R/3 functionality required to support the new business model, defining the SAP R/3 functionality to be configured

IT Infrastructure

Identify hardware, systems software and communications scope required for the development, testing, training, production and other environments

Interfaces

Identify and size the expected interfaces to and from the SAP system

Data Conversion

Identify the number and complexity of the data conversion efforts to create the opening data for the new system

Reports and Forms

List and categorize by effort the non standard reports and forms required to support the new system

| ABAP

Technical
Enhancements	Identify the custom developments, SAP "bolt-ons" or modifications required (these should be minimized where possible) to support any "gaps" in R/3 functionality

4.2.1. Organizational and Geographic Scope

Functional locations and their business functions will comprise the following:

Table 4.1   Comparing of Functional location and Business functions

Functional Location	Business Functions
Head office	Financial accounting processes
	Management reporting
	Job cost estimate
	Job result analysis
	Purchasing
	Sales and billing
On-line Construction site (5 pilot sites)*	Purchasing
	Inventory control
	Job control
	Account Payable
Off-line Construction sites	Purchasing
	Inventory control
	Job control
Equipment Maintenance Site (J675)	Equipment Maintenance

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Table 4.1 Comparing of Functional location and Business functions (Con.)

Functional Location	Business Functions
	Equipment Management
Central Store (Ayuthaya)	Spare parts inventory

Remarks: * Business Blueprint will include requirements gathered from 5 pilot sites. However number of sites to go live will depend on readiness of support team. This will be re-assessed after the Business Blueprint phase.

4.2.2 Business Process Scope

A Process Chain is defined as series of processes that may cross-functional, divisional and geographic boundaries e.g. procuring goods and services to meet customer demand. The following lists the ABC business processes that are classified as in scope and map them to the appropriate SAP functional modules.

Table 4.2 Business Processes Scope for SAP Modules

Reference	Business Processes in scope	SAP Module
1.0	**Construction job planning**	
1.1	Maintain cost planning in WBS	PS-BD, PS-PB, EC-PG
1.2	Copy planning to various versions	PS-SCH
1.3	Approve project budget	PS-PB
1.4	Maintain project budget	PS-PB
1.5	Plan revenue from manual/sales orders	PS-EXE
1.6	Carry forward budget	PS-PB

Table 4.2 Business Processes Scope for SAP Modules (Continue)

Reference	Business Processes in scope	SAP Module
1.0	**Construction job planning**	
1.1	Maintain cost planning in WBS	PS-BD, PS-PB, EC-PG
1.2	Copy planning to various versions	PS-SCH
1.3	Approve project budget	PS-PB
1.4	Maintain project budget	PS-PB
1.5	Plan revenue from manual/sales orders	PS-EXE
1.6	Carry forward budget	PS-PB
2.0	**Equipment Control**	
2.1	Create and structure new equipment	PM-EQM, EC-CEM
2.2	Record usages and maintenance activities	PM-EQM, EC-CEM
2.3	Maintain cost and revenue from the renting or leasing of the equipments	EC-CEM
2.4	Calculate operating and usage costs of the individual equipment, either time-base or performance-base, in any particular construction site and allocate them to proper financial accounts	EC-CEM
2.5	Calculate rent to each construction site base on the actual operating hours or the particular activity types.	EC-CEM
2.6	Equipment requirement and resource planning for each construction site.	EC-CEM
2.7	Preventive maintenance for individual equipments	PM-PRM
2.8	Maintenance order processing for individual equipment by internal and/or external service providers	PM-WOC

Table 4.2   Business Processes Scope for SAP Modules (Continue)

Reference	Business Processes in scope	SAP Module
2.9	Cost allocation and settlement of the repaired equipment	PM-WOC, EC-RRB
2.10	Reports show repairing and usage history through the life cycle of the individual equipment	PM-IS, EC-CEM
3.0	**General Purchase (includes finished goods, raw material, spare parts, consumable supplies, services and fixed asset)**	
3.1	Raise purchase requisition	MM-Purch, Srv, EC-BOS
3.2	Request quotation from vendors/ subcontractors and perform price comparison	MM-Purch, Srv, EC-BOS
3.3	Crate vendor contract	MM-Purch, Srv
3.4	Source determination (Source list, quota arrangement)	MM-Purch, Srv
3.5	Evaluate vendors	MM-Purch, Srv
3.6	Issue purchase orders to vendors/ subcontractor	MM-Purch, Srv, EC-BOS
3.7	Approve purchase requisition/purchase order	MM-Purch, Srv, EC-BOS
3.8	Verify vendor invoices	MM-Inv
4.0	**Inventory control (includes finished goods, raw material, spare parts, consumable supplies, services and fixed asset)**	
4.1	Receive goods and services	MM-IM, EC-BOS
4.2	Manage Inventory (inventory transfers, physical inventory counting and adjustments)	MM-IM
4.3	Consumption Based Planning	MM-CBP
4.4	Monitoring stock balance at each construction site	MM-IM

Table 4.2 Business Processes Scope for SAP Modules (Continue)

Reference	Business Processes in scope	SAP Module
5.0	**Financial accounting – General Ledger**	
5.1	G/L Account Master Maintenance	FI-GL
5.2	G/L Document Entry	FI-GL
5.3	Bank Reconciliation	FI-GL
5.4	Period-End Processing	FI-GL
5.5	Balance Sheet Planning	FI-GL
5.6	Balance Sheet, Profit and Loss Statement	FI-GL
5.7	Cash flow statement*	To be studied in detail in business blueprint phase
6.0	**Financial accounting – Accounts Receivable**	
6.1	Customer Master Data Maintenance (Accounting Information)	FI-AR
6.2	Customer Down Payments	FI-AR
6.3	Customer Billing	FI-AR
6.4	Customer Debit Memo and Credit Memo	FI-AR
6.5	Customer Payment	FI-AR
6.6	Vat and Withholding Tax Process	FI-AR
6.7	Dunning	FI-AR
6.8	Bad Debt Provision	FI-AR
6.9	AR Analysis reports*	FI-AR
7.0	**Financial accounting – Accounts Payable**	FI-AP
7.1	Vendor Master Data Maintenance (Accounting Information)	FI-AP
7.2	Vendor Down Payments	FI-AP
7.3	Processing Vendor Invoices	FI-AP
7.4	Vendor Debit Memo and Credit Memo	FI-AP
7.5	Employee Cash Advance	FI-AP

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Table 4.2   Business Processes Scope for SAP Modules (Continue)

Reference	Business Processes in scope	SAP Module
7.6	Petty Cash	FI-AP
7.7	Check Payment	FI-AP
7.8	VAT and Withholding Tax Process	FI-AP
7.9	Cheque Maintenance Process	FI-AP
7.10	AP analysis reports*	FI-AP
8.0	**Financial Accounting – Asset Accounting**	FI-AA
8.1	Asset Master Data Maintenance	FI-AA
8.2	Asset Acquisition	FI-AA
8.3	Asset Capitalization from AUC	FI-AA
8.4	Leased Asset	FI-AA
8.5	Asset Transfer	FI-AA
8.6	Asset Disposal	FI-AA
8.7	Depreciation	FI-AA
8.8	Asset Revaluation	FI-AA
8.9	Fixed Asset analysis reports*	FI-AA
9.0	**Cost Control and Cost Engineer**	
9.1	Integrate contract and billing plan Record	SD, PS, EC-BOS
9.2	Integrate commitment items from PR and PO (commitment)	MM, PS
9.3	Check availability budget against PR and PO (commitment)	MM, PS
9.4	Integrate down payment and retention record from project contract	SD, PS
9.5	Integrate down payment and retention record from purchasing	MM, FI, PS
9.6	Record equipment rental cost and cost allocation to the jobs	CO, PS, EC-CEM
9.7	Procure materials direct to jobs (Cash)	MM, PS
9.8	Issue stock from HO/other job to project location (Non-cash)	MM, PS

Table 4.2 Business Processes Scope for SAP Modules (Continue)

Reference	Business Processes in scope	SAP Module
9.9	Monitor Project cost control and cost engineer Cost control (Actual/Commitment/Budget) Cost/Revenue Work done*	PS * Need more investigate during business blueprint phase
10	**Project Cash Management**	
10.1	Record planning payment in WBS	PS
10.2	Integrate actual and commitment records	MM, SD, FI, PS
10.3	Transfer payment	PS
10.4	Monitor payment in/out flow	PS
11.0	**Sales and Product Distribution (includes sales of finished goods and services)**	SD
11.1	Master Data Maintenance (Customer, Price and other conditions)	SD-MD
11.2	Sales Order for project	SD (sales order), EC-BOS
11.4	Prepare Tax invoice, Invoice, Debit note and Credit note	SD (Billing), EC-BOS, EC-RRB

* = To be confirmed during Blueprint Phase

4. 2.3. SAP Functional Scope

The scope of the SAP implementation will include the following functional

modules:

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Table 4.3   SAP modules for implementation

	Module Name	In/Out of Scope	Comments
PS	Project System		
PS-BD	Basic Project System data	In	Not include Network
PS-EXE	Project Execution	In	
PS-PB	Project Cost/Revenue Planning & Budgeting	In	
PS-IS	Projects Information System (including Project Cash Management)	In	
MM	Materials Management		
MM-IM	Inventory Management	In	
MM-BD	Basic Data	In	
MM-PUR	Purchasing	In	
MM-IV	Invoice Verification	In	
MM-CBP	Consumption Based Planning	In	
MM-IS	Purchasing Information System	In	
SD	Sales and Distribution		
SD-MD	Master Data	In	
SD-BF	Basic Functions	In	
SD-QT	Quotation	In	
SD-SLS	Sales Order Processing	In	
SD-BIL	Billing	In	
SD-IS	Sales Information System	In	

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Table 4.3   SAP modules for implementation (Continue)

	Module Name	In/Out of Scope	Comments
PM	Plant Maintenance		
PM-EQM	Equipment and Technical Object	In	
PM-PRM	Preventive Maintenance	In	
PM-WOC	Maintenance Order Management	In	
PM-IS	Maintenance Information System	In	
PM-CEM	Construction Equipment Management	In	
EQ	Engineering and Construction		
EQ-BOS	Bills of Services	In	
EQ-CEM	Construction Equipment Management	In	
EQ-RRB	Resource-Related Billing	In	
EQ-PG	Project Progress	In	
FI	Financial Accounting		
FI-GL	General Ledger Accounting	In	
FI-AR	Accounts Receivable	In	
FI-AP	Accounts Payable	In	
FI-IS	Financial Information System	In	
CO	Controlling		
CO-CCA	Cost Center Accounting	In	
AM	Assets Management		

Table 4.3   SAP modules for implementation (Continue)

	Module Name	In/Out of Scope	Comments
FI-AA	Asset Accounting	In	
AM-IS	AM Information System	In	

Remarks:

- Development of Reports using the reporting generating utilities of the individual R/3 modules such as Logistics Information System.

- Development of analysis reports such as these is an ongoing process mostly occurring after the start of live use of the system, where the reporting requirements are continuously identified as the users become more familiar with what data is available in the system

The implement team will teach the selected ABC project team members how to use these report generating utilities and will provide guidance in developing up to five 'pilot' reports as part of the joint team approach to building the system

4.2.3   IT Infrastructure Scope

- The technical infrastructure to support the R/3 implementation will be two-tier landscape including Development System (DEV), QA System (QAS) and Production Systems (PD). It is assumed that the will be done once for individual machines. This will include, but not be limited to: Managing printers and network structure.

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- Managing and maintaining (including disk space growth rate estimates, networking/bandwidth, etc.) and establishment of a Prototyping, System Test, Training and Production clients

- Providing a stable production environment for the implementation this will include managing and maintaining the database and application servers and providing the appropriate level of support in the areas of regular back-ups, restart/recovery and performance monitoring. Ensuring adequate level of system performance for the production environment

4.2.5. Interface Scope

The interfaces scope includes a number of data transferring from sub-systems at construction sites to SAP system at head offices.

4.2.6. Data Conversion Scope

The purpose of this section is to highlight what data needs to be converted from legacy systems to support the SAP system. The guiding principle for data conversion will be to convert historical transactional and master data only if there is a driving business reason to do so. Automated conversions should be considered if there is sufficient volume (greater than 1,000 records) to warrant the programming effort required to build the conversion.

Requirement of Data conversion of Material Management module

- Master data and documents of Material Management

- Open Purchase Order

- Vendor Master (active vender only)

- Material master (active materials only)

- Initialize Stock Balance

- Sales and Distribution

- Customer master data (all relevant views) (active customers only)

- Pricing master

- Payment terms

- Open sales orders (Contract Order)

Requirement of Data conversion of Project system module

- Master and documents of Work Breakdown Structure

- Master and documents of Work Centers

- Master and documents of Network Hierarchy

Requirement of Data conversion of Financial/Controlling module

- General Ledger Accounts (Chart of Accounts-active accounts only)

- Beginning GL balances

- Open accounts receivable

- Cost Elements

- Cost Elements

- Activity Types

- Assets

- Depreciation Areas

- Exchange rates

- Recurring Journal entries

4.2.7 Conversion Assumptions scope

Historical financial transactions are not expected to be converted to SAP. Only the opening balances as they go live date will be converted. This applies to all SAP objects.

Active master for master data (such as customer master, vendor master) are defined as items, which have balances at the go-live date or have had activity during the 12 month period preceding the go -live date.

The preparation of existing data to be ready for conversion to the SAP system and the reconciliation of converted data will be the responsibility of the relevant ABC users working under the guidance of the Consultant team.

4.2.8. Reports & Forms Scope

In compliance with SAP standard, our goal will be to minimize custom development (ABAP and SAP script) requirements and we will assume that initially ABC will largely use standard SAP reports and forms. Custom development or modification of forms and reports will be limited to address legal requirements only. It is assumed that other custom development requirements will be catered for after go live.

Table 4.4 Customer development require for implementation

Short description	Software feature identification	Comments
MM area		
Purchasing Document (PO, RFQ, STO)	MM-Purchase	Format Modification
Goods Issue Form	MM-IM	Format Modification
Goods Receipt Form	MM-IM	Format Modification

Table 4.4 Customer development require for implementation (Continue)

Short description	Software feature identification	Comments
Invoice Receipt Form	MM-IV	Format Modification
FI/CO area		
Withholding Tax Certificate	FI-AP	Format Modification
Withholding Tax Report	FI-AP	Format Modification
Input Tax Report	FI-AP	Format Modification
Output Tax Report	FI-AR	Format Modification
Customer Statement	FI-AR	Format Modification
Vat Report	FI_GL	Format Modification

4.2.9 Technical Enhancements Scope (Gaps)

A technical is defined as custom code that may be developed or third party software that is connected to the SAP system or modifying existing SAP code. These technical enhancements are classified as follows:

- Source program code modifications

- SAP supported program modifications that are either developed or approved by SAP to be applied to the supplied code

- Customer supported program modifications that are developed or approved by the customer without review or approval of SAP

- Customer developed programs are new program modules written by the customer in the SAP language ABAP/4

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- Object modifications are changes to SAP delivered objects. Objects in SAP include tables, master files, documents, match-codes, screens/windows, and report formats and data elements.

- Customer developed objects, which are new objects that the customer has created and which they are solely responsible for.

4.3. Project Mobilization

Project organization
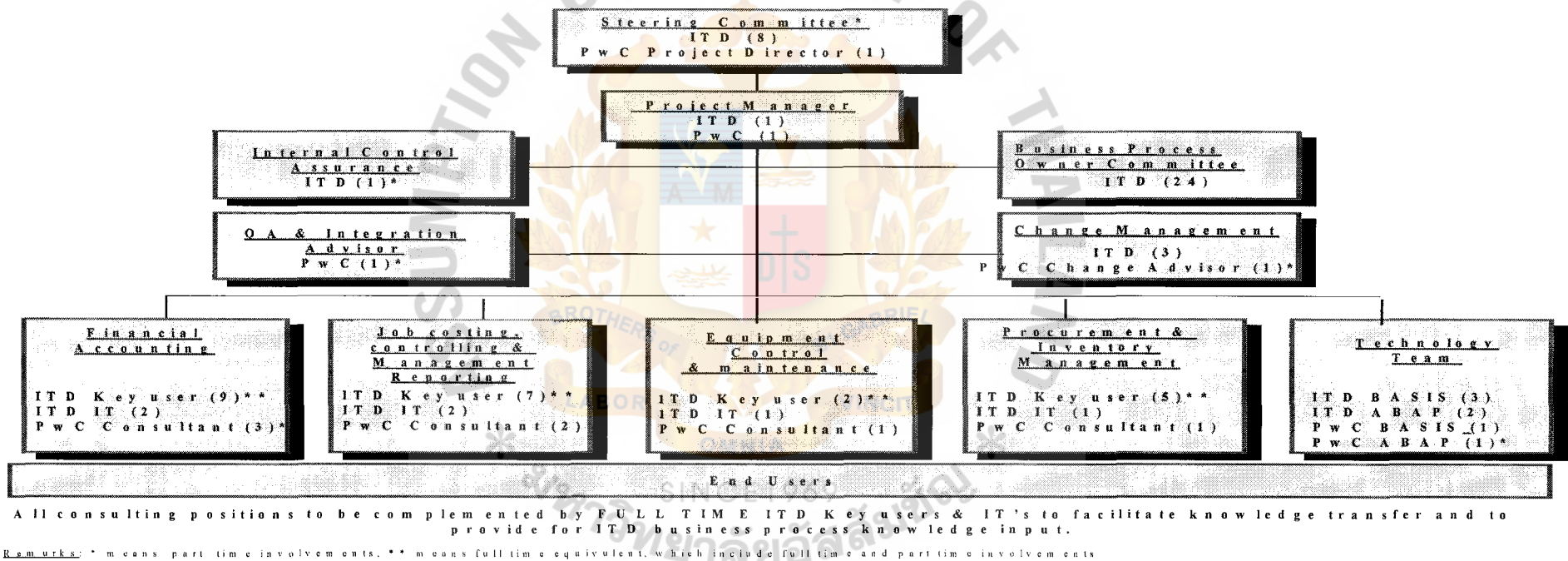
Figure 4.1   Project organization

Total number of staff as given in the above chart is broken down as follows:

Table 4.5 Number of project implement team

Group	Consultant	ABC
Steering Committee	1*	8*
Project Manager	1	1
Quality Assurance Team	1*	1*
Business Process Owners	-	24*
Functional consultants	7	-
Key Users	-	29
Technical Basis Team	1	3
Technical ABAP Team	1*	2
Change Management	2*	2
Training Management	-	1

Remarks: * means part time involvement

Full-time Team Members:

- One full time ABC project manager and assistant are required for the following areas: day-to-day management, control, direction and liaison between Consulting implementation team and the Steering Committee and wider user community within ABC

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- Similarly, one full-time between Consultant Consulting project manager is required to provide SAP-specific advice, methodology and QA input, together with prior implementation experience.

- Key users from each ABC business areas, which will utilize SAP functionalities. The key users providing ABC process knowledge and forming the core of an ongoing support organization when the project is complete. In keeping with the ASAP approach, these team members should be among the "best and brightest" of the ABC organization and should be empowered to make certain on-the-spot decisions regarding business processes and other project-related matters.

- Technical BASIS support team will be required to support in all hardware and system infrastructure aspects of the project.

- Technical ABAP team will be required to develop additional program, which are needed to fulfill business requirements.

Part-time Team Members.

In addition to the above full-time team members, the project will require contributions from the following groups on a part-time basis:

- A project Steering Committee, drawn from the most senior ranks of ABC management to both reflect the importance of the project and to provide ultimate decision, arbitration and conflict resolution.

- A Business Process Owner Committee, drawn from ABC management who lead business areas, which will be impact by SAP implementation. The

BPO's are the key persons who approve the to-be process flow and related data structures as well as ensure success in implementing those new concept and procedures in each area.

- Quality assurance: a senior member of the Consultant team with multiple SAP implementation project experience able to offer experience and quality control advice across a broad spectrum of implementation issues.

- Change Management & Training Management: we anticipate, on the basis of approximately 60 impacted users, that change management will be handled by ABC with advice and support from the Consultant Change Management Advisor and the Consultant Project Manager

Project team training

The objective of the training is to provide SAP users with an appropriate level of knowledge delivered just prior to implementing activities. ABC project team will require training that includes the areas of SAP overview, new business process overview, detailed SAP instructional training and practice in performing the SAP transactions. Within ABC, we will assume that we have not more than 60 unique SAP named users. For end-user training we recommend the use of "Train the Trainers" approach. This approach will also allow ABC to retain training skills in –house and thus able to provide training on a gradual basis. The training of a tailored syllabus for the end –users will be provided, with training based on job roles, before go-live. Training materials will be based on the scripts developed during the realization phases.

For technical set up and configuration training, Consultant will transfer the configurations details to ABC project team. – As part of the knowledge transfer process.

In summary during the implementation period, Consultant will provide the following classroom training for the ABC project team. For technical set up and configuration training, Consultant will transfer the configurations details to ABC project team. – As part of the knowledge transfer process.

In summary during the implementation period, Consultant will provide the following classroom training for the ABC project team.

1. **SAP Overview to ABC management**

Course objectives: To present SAP integrated system concept, overview features and functions to ABC managements.

Trainers: Consultant Consultants

Attendees: ABC managements

2. **SAP implementation methodology**

Course objectives: To demonstrate the working methods and procedures through the life cycle of the project.

Trainers: Consultant Project Manager

Attendees: ABC Project team

3. **SAP Functional overview PS, FI/CO, MM, SD, PM**

Course objectives: To give a general view how the SAP functions in particular areas can be used to serve business requirements.

Trainers: Consultant Consultants

Attendees: ABC Project team (Key Users & IT dept.)

4. **SAP Functional workshop PS, FI/CO, MM, SD, PM**

Course objectives: To train ABC key users on how to post transactions in SAP in particular areas.

Trainers: Consultant Consultants

Attendees: ABC Project team (Key Users & IT dept.)

5.   SAP configuration overview PS, FI/CO, MM, SD, PM

Course objectives: To give a broadly view how the SAP can be adjusted or configured to serve particular businesses.

Trainers: Consultant Consultants

Attendees: ABC (IT dept)

6.   End-User-Training Train The Trainers

Course objectives: To train ABC's trainer team on how to conduct end-user training, and ensure that the trainers know how to process the SAP transactions and apply the SAP functions to daily working environment.

Trainers: Consultant Consultants

Attendees: ABC Project team (Key Users)

7.   ABC-SAP configuration

Course objectives: To train ABC's IT team to know how SAP modules have been configured to address ABC requirements

Trainers: Consultant Consultants

Attendees: ABC Project team (IT dept)

8.   Report generating utilities overview

Course objectives: To train selected end users on SAP report generating utilities such as report painter and query so that the users can develop simple report by themselves

Trainers: Consultant Consultants

Attendees: ABC selected users

4.4 Project Roles and Responsibilities

The roles and responsibilities for the individual positions within the team structure are documented below. To ensure a smooth project implementation, it is imperative to convey the roles and responsibilities attached to each portfolio to the personnel appointed to the position.

Consultant Consulting Roles and Responsibilities

Consultant Project Director

Responsibilities

- Exercise a client liaison role with the Senior Management represented on the Project Steering Committee to ensure all of their requirements are being addressed

- Provide an independent viewpoint in discussions on issues which will be raised from time-to-time

Project Manager

Responsibilities

- Plan, direct, co-ordinate and manage the overall project

- Provide implementation methodologies and tools, project standards

- Assist in developing project strategies.

- Regularly review the project from the perspective of time and cost budgets and quality of deliverables

- Ensure the appropriate level of Consultant Consulting consultant input is delivered to the project and resolve any conflicts of Consultant staff allocation to the project

- Meet frequently with the ABC Project Manager and members of the project team to discuss issues of team harmony, client satisfaction, technical problem resolution, project constraints, project staffing, etc.

Consultant QA and Integration Advisor

Responsibilities

- Provide project QA input on a regular basis

- Provide SAP cross-functional and business process advice,

- Provide SAP implementation experience ("past pitfalls and lessons learned") advice, and to ensure that the project is being managed according to jointly set standards and methodologies

- Advise ABC in areas such as organizational change management

Consultant Change Advisor

Responsibilities

- Provide a guidance and advice on Change Management processes in the following areas:

- Change planning

- Communication management

- People readiness management

Consultant Functional Consultants

Responsibilities

- Preparing detail plans for the area under their control, defining any sub-projects and identifying the tasks within each business area

- Developing resource estimates and timings and monitoring progress against those estimates;

- Managing, in discussion with their ABC counterparts, their project team personnel on a day-to-day basis;

- Managing the scope and deliverables from the team;

- Business process re-engineering which will cover procedure development, business practices, and training;

- Based on their SAP experience, provide guidance to the project team members to ensure the proposed design of the system matches the technical capabilities and business functionality of the SAP R/3 software

- Configuration SAP based on ABC requirements

- Provide work around solutions to address ABC requirements which are not supported by standard SAP

- Knowledge transfer on SAP standard business process and configuration to ABC project team

Consultant BASIS and ABAP consultants

Responsibilities

- Selection of appropriately sized hardware

- Design of the "technical environment" for the project and production

- Provide advice to ABC's technical team

- Share knowledge on BASIS and ABAP area to ABC team

ABC Project Team Roles and Responsibilities

Project Steering Committee

Responsibilities

- Approval of all major deliverables from the project team and sign-off on completed tasks

- Approval and/or endorsement of resolution of issues as they arise during the conduct of the project

- Ensure the appropriate level of user input is delivered to the project and resolve any conflicts of staff allocation to the project

- Resolve conflicts between operational areas of ABC where they may impact on the quality and/or progress of the project

Project Manager

Responsibilities

- Initiate the project by obtaining the commitment of appropriate management and operating personnel, by establishing the procedures for communication with the primary users, and by establishing project control mechanisms Work closely with the Consultant Project Manager on a day-to-day basis in the running of the project

- Meet formally with the Consultant Project Manager/Director on an as-required basis, but at least weekly, to review progress project risks and actions taken on the project

- Exercise delegated authority from the Project Steering Committee in terms of reviewing/approving the day-to-day actions of the project team leaders

- Liaises with various operational areas of ABC to ensure appropriate user personnel are made available to the project team for interview and discussion

- Call and chair the Project Steering Committee together for normal and extraordinary meetings to review/approve recommended courses of action

- Monitor time and cost budgets to ensure they are consistent with Project Steering Committee approved plans

- Develop a project organization and responsibility structure including staff with the proper skills and level of experience

- Develop a task and responsibility schedule, including estimates of the human resources and timings involved for each task and its deliverable output

Business Process Owners

Responsibilities

- Provide knowledge of ABC business requirements to the project team as well as make relevant design decisions.

- Review and approval of to be process and data definition

- Understand impacts & benefits from the to-be process

- Provide real data for testing and attend walkthrough & confirmation session including assigning appropriate staffs

- Implement new policy, procedures and organization which are agreed in the blueprint design

- Understand data requirements and assign staff for data preparation and data conversion and verify converted data

- Review and approve appropriate test results including identify any encountered problems

- Ensure end-users follow processes and identify any other requirements/issues

Skills

- Detailed and comprehensive knowledge of current business operations in the areas that the person is implementing

- Detailed knowledge of the business operations in the areas that are integrated to the areas the person is implementing

- Clear understanding of users requirements

Key users

Responsibilities

- Understand as-is process flow and develop Business Blueprint document (To-be process)

- Work with consultants on possible solutions for each Gap of the SAP

- Develop scenario list, test with real data via walkthrough, document & confirm test results with end users

- Final users name list & job role and identify & authorize user ID for each users

- Prepare Business Process Procedure for each transaction including training material preparation

- Understand data requirement via communication with end users and follow up for data collection

- Work with end users on manual data entry and verify converted data

- Conduct testing, training to end users including operation support

Skills

- Detailed and comprehensive knowledge of current business operations in the areas that the person is implementing

- Clear understanding of users requirements

- Familiarity with PC software packages in the areas of Word Processing, Spreadsheets, Graphics and Flowcharting

IT representatives

Responsibilities

- Assist key users to complete their deliverables

- Understand and develop configuration documentation

- Provide program specification sample & template and develop program functional specification

- Unit test with ABAP/4 programmer

- Provide authorization profile sample & template and identify users profile matrix & authorization

- Prepare & transport necessary configuration to QA and Production System

- Test the correctness & accuracy of conversion program

- Perform data conversion in both development system and production system

- Problem solving and additional skill transfer

- Understand SAP configuration set up for ABC

Skills

- SAP knowledge

- Clear understanding of users requirements

Familiarity with PC software packages in the areas of Word Processing, Spreadsheets, Graphics and Flowcharting

Change management team

Responsibilities

- Understand ABC's structures, business, people, and company culture to tailor communications and activities.

- Develop project deliverables.

- Identify potential Change Management issues and risks and notify the Change Management consultant

- Execute change tasks according to the Change Plan.

- Report progress to the project team leadership.

- Responsible for producing the communication media for the project

- Monitor and promote the perception of the project within ABC.

- Ensure all recipients (ABC employees) at every location receive project information sent out by the Change Management team or the functional &IT project team e.g., newsletters, training information, and other communication.

- Be responsible for all communication activities to the ABC organization including construction sites

- Liaises with Change Agents in change management and communication issues

- Liaises with staff and project team. Regarding the Change management activity and project

ABC BASIS

Responsibilities

- Provide system Administration support for the duration of the whole project with support and guidance by the IBM technical support team and consulting team. The system administration will cover:

- Operating System Installation and Updates

- Configuration of Database and Application Servers for SAP Environment

- System Backup and Recovery Procedures

- Capacity Planning and System Performance Monitoring

- Using R/3 Transport System to migrate SAP objects between systems and between client

Authorization Object Class and Authorization Objects

ABC ABAP

Responsibilities

- Develop and test programs using ABAP/4 programming tools

Work with functional team to understand program specifications, which will be provided by functional team, in order to develop program to meet with user requirements. Update ABAP information in program specification documents

4.5 Methodology

SAP offer ASAP methodology will be used in the project. The methodology is required for the following purposes:

- Serve as a reference point for subsequent audit

- Providing detailed instructions to implement the project

- Providing templates and examples of project deliverables

4.6 Project monitoring

The Steering Committee will meet once a month to monitor the progress of the project and to take any action if necessary. The project sponsor will report the progress to the ABC executives on a weekly basis. BPO meetings will be held monthly to report progress of the project, discuss / identify any obstacles, integration issues and take action as necessary. Project team meeting, the project managers will have a formal meeting weekly to discuss the status of the project, officially launch each phase to the project team according to the plan.

4.6.1 Monitoring activities & tools

Table 4.6   Minute meeting

Activities & tools	Who	Frequency
Steering Committee Meeting	Steering Committee members & project managers	Monthly
BPO meeting	BPO committee members & project managers	Monthly
Project Team Meeting (Integration Meeting)	Project manager ,All Implementation team, ABC team leaders	Weekly

4.7 Issues resolution

All issues will be identified by the following issue types:

- Software bugs

- Configuration issues

- Process issues

- Project issues

- Resource issues

- Scope Change

The issues will also be prioritized with the following priority levels:

- High Definite impact on implementation target date

- Medium   Possible impact on implementation

- Low No impact on implementation (requires more resources for investigation).

4.8 Documentation

Minute of Meeting

Detailed minutes of meetings will be taken by the appropriate team member and distributed to all relevant parties shortly after the meeting.

Documentation standards

A common documentation standard will be developed for all documents.

End-User Documentation Strategy

Provide manual documentation and training strategy to guide how to use system for users

.4.9 Training

The training philosophy used in the project will be train-the-trainer. In this method, Consultant consultants will train the ABC project team and they will eventually become the in-house trainers

4.10 Cut-over approach

The cutover approach used in this project will be a cold cut-over and therefore there will be no parallel runs in order to minimize of resources and time. If necessary contingency plans will be drawn up before production to handle any issues that arise from this approach.

4.11 Project plan

4.11.1 Overall project plan

SAP is proprietary ASAP methodology will be used in this project.

Detail plans will be developed at the conclusion of one stage for the following stage.

ID		Task Name	Duration	Start	Finish	Gantt
1		**1 Phase 1: Project Preparation**	**12.5 days**	**Tue 1/10/02**	**Thu 17/10/02**	BASIS team,PMO
2		1.0 Project site preparation	1 day	Tue 1/10/02	Tue 1/10/02	
3		**1.1 Initial Project Planning**	**3 days**	**Thu 3/10/02**	**Mon 7/10/02**	BASIS team
4		1.1.1 BASIS task planning	1 day	Thu 3/10/02	Thu 3/10/02	CM team
5		1.1.2 Change management planning	1 day	Fri 4/10/02	Fri 4/10/02	PMO
6		1.1.3 Finalize integrated project plan	1 day	Mon 7/10/02	Mon 7/10/02	
7		**1.2 Project Procedures**	**12 days**	**Tue 1/10/02**	**Wed 16/10/02**	
8		1.2.1 Submit project standard template and samples	1 day	Tue 1/10/02	Tue 1/10/02	
9		1.2.2 Prepare project charter	5 days	Tue 8/10/02	Mon 14/10/02	
10		1.2.3 Submit & review project charter	1 day	Tue 15/10/02	Tue 15/10/02	
11		1.2.4 Approve project charter	1 day	Wed 16/10/02	Wed 16/10/02	
12		**1.3 Project Kickoff & Team Building**	**6 days**	**Wed 2/10/02**	**Wed 9/10/02**	CM team,PMO
13		1.3.1 Kick off meeting preparation	4 days	Wed 2/10/02	Mon 7/10/02	All
14		1.3.2 Conduct Kickoff meeting and team building	1 day	Wed 9/10/02	Wed 9/10/02	BASIS team
15		1.4 Technical Requirements Planning	5 days	Tue 8/10/02	Mon 14/10/02	
16		**1.5 Project team training**	**9 days**	**Fri 4/10/02**	**Wed 16/10/02**	All
17		1.5.1 ASAP methodology	1 day	Fri 4/10/02	Fri 4/10/02	All
18		1.5.2 Process definition training	1 day	Mon 7/10/02	Mon 7/10/02	All
19		1.5.3 SAP Overview	1 day	Tue 8/10/02	Tue 8/10/02	FI team
20		1.5.4 FI/CO and GL Overview	1 day	Thu 10/10/02	Thu 10/10/02	FI team
21		1.5.5 AP, AM Overview	1 day	Fri 11/10/02	Fri 11/10/02	FI team
22		1.5.6 AR, SD Overview	1 day	Mon 14/10/02	Mon 14/10/02	MM team
23		1.5.7 MM Overview	1 day	Thu 10/10/02	Thu 10/10/02	PM team
24		1.5.8 PM Overview	1 day	Fri 11/10/02	Fri 11/10/02	PS team
25		1.5.9 PS Overview	1 day	Mon 14/10/02	Mon 14/10/02	
26		1.5.10 BASIS Introduction	5 days	Thu 10/10/02	Wed 16/10/02	BASIS team
27		1.5.11 ABAP Program Fundamental	5 days	Tue 8/10/02	Mon 14/10/02	ABAP team

Figure 4.2   Project Plan Chart

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ID		Task Name	Duration	Start	Finish
28		**1.6 Prepare for leadership and sponsor presentation on change activities**	**4 days**	**Tue 8/10/02**	**Fri 11/10/02**
29		Prepare presentation material	1 day	Tue 8/10/02	Tue 8/10/02
30		Conduct Leadership & Sponsor presentation	1 day	Fri 11/10/02	Fri 11/10/02
31		**1.7 Project management**	**0.5 days**	**Tue 15/10/02**	**Tue 15/10/02**
32		1.6.1 Project team meeting #1	0.5 days	Tue 15/10/02	Tue 15/10/02
33		1.8 Quality Check Project Preparation Phase	0.5 days	Thu 17/10/02	Thu 17/10/02
34		Milestone 1 Submission project charter	1 day	Thu 17/10/02	Thu 17/10/02
35		**2 Phase 2: Business Blueprint**	**64.5 days**	**Thu 17/10/02**	**Wed 15/01/03**
36		**2.1 Project Management & Risk Management**	**62.5 days**	**Thu 17/10/02**	**Tue 14/01/03**
37		**2.1.1 Project team meeting**	**60 days**	**Tue 22/10/02**	**Tue 14/01/03**
50		**2.1.2 Project steering committee meeting**	**45 days**	**Fri 18/10/02**	**Fri 20/12/02**
54		**2.2 Project Change readiness Assessment**	**7 days**	**Thu 17/10/02**	**Mon 28/10/02**
55		**2.2.1 Complete the Baseline Leadership Risk Assessment**	**7 days**	**Thu 17/10/02**	**Mon 28/10/02**
56		2.2.1.1 Identify workshop attendees	1 day	Thu 17/10/02	Fri 18/10/02
57		2.2.1.2 Develop materials and document for CRW (BPOs)	1 day	Thu 17/10/02	Fri 18/10/02
58		2.2.1.3 Conduct Change readiness Workshop(BPO)	0.5 days	Mon 21/10/02	Mon 21/10/02
59		2.2.1.4 Conduct Change readiness Workshop(Change Agents)	0.5 days	Mon 28/10/02	Mon 28/10/02
60		**2.2.2 Summarize the results and feedback to Project managers**	**5 days**	**Mon 21/10/02**	**Mon 28/10/02**
61		2.2.2.1 Develop CRW results report	3.5 days	Mon 21/10/02	Thu 24/10/02
62		2.2.2.2 Integrate Change Readiness Assessement Result	1 day	Thu 24/10/02	Fri 25/10/02
63		2.2.2.3 Submit the CRW to PM	0 days	Mon 28/10/02	Mon 28/10/02

Figure 4.2   Project Plan Chart (Continue)

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ID	Task Name	Duration	Start	Finish
64	**2.3 Change management and communication plan**	**50 days**	**Mon 28/10/02**	**Mon 6/01/03**
65	**2.3.1 Develop project communications**	**7 days**	**Mon 28/10/02**	**Wed 6/11/02**
66	**2.3.1.1 Develop communication strategy**	**7 days**	**Mon 28/10/02**	**Wed 6/11/02**
67	2.3.1.1 Develop stakeholder change awareness surveys	7 days	Mon 28/10/02	Wed 6/11/02
68	2.3.1.2 Assess Stakeholder change awareness	7 days	Mon 28/10/02	Wed 6/11/02
69	2.3.1.3 Compile and analyse the results	7 days	Mon 28/10/02	Wed 6/11/02
70	2.3.1.4 Develop communication strategy and plan	5 days	Mon 28/10/02	Mon 4/11/02
71	2.3.1.5 Otain approval from ITD	0 days	Mon 4/11/02	Mon 4/11/02
72	2.3.1.6 Execute the commu plan	0 days	Mon 4/11/02	Mon 4/11/02
73	**2.3.2 Develop Change Management Strategy**	**50 days**	**Mon 28/10/02**	**Mon 6/01/03**
74	2.3.2.1 Develop CM Strategy	10 days	Mon 28/10/02	Mon 11/11/02
75	2.3.2.2 Incorporate CRW results	10 days	Mon 28/10/02	Mon 11/11/02
76	2.3.2.3 Obtain approval	0 days	Thu 31/10/02	Thu 31/10/02
77	2.3.2.4 Execute the strategy and adjust the strategy to suit client situation	40 days	Mon 11/11/02	Mon 6/01/03
78	2.4 Project Team Training Business Blueprint Phase	5 days	Thu 17/10/02	Thu 24/10/02
79	2.5 Develop System Environment	60 days	Thu 17/10/02	Thu 9/01/03
80	2.6 Business Organization Structure	50 days	Thu 24/10/02	Thu 2/01/03
81	2.7 To-be process design	30 days	Thu 24/10/02	Thu 5/12/02
82	**Milestone 2 Sign-off to be process design**	**1 day**	**Thu 5/12/02**	**Fri 6/12/02**
83	2.8 Data preparation and analysis	50 days	Thu 17/10/02	Thu 26/12/02
84	2.9 SAP functional mapping and gaps analysis	20 days	Thu 5/12/02	Thu 2/01/03
85	2.10 Master data and key data structure design and documentation	20 days	Thu 5/12/02	Thu 2/01/03
86	2.11 Conduct Business Blueprint Process & Key Data structure Validation	3 days	Fri 10/01/03	Tue 14/01/03
87	2.12 Quality Check Business Phase	1 day	Wed 15/01/03	Wed 15/01/03
88	**Milestone 3 Sign-off SAP Business Blueprint documents**	**1 day**	**Wed 15/01/03**	**Wed 15/01/03**

Figure 4.2   Project Plan Chart (Continue)

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ID		Task Name	Duration	Start	Finish
89		**3 Phase 3: Realization**	**75 days**	**Wed 15/01/03**	**Wed 30/04/03**
90		3.1 Project Management & Risk Management	74 days	Thu 16/01/03	Tue 29/04/03
91		**3.2 Organization Impact Assessments**	**10 days**	**Wed 15/01/03**	**Wed 29/01/03**
92		3.2.1 Develop OIA Stratgey	10 days	Thu 16/01/03	Wed 29/01/03
93		3.2.2 Obtain approval	0 days	Wed 15/01/03	Wed 15/01/03
94		**3.3 Conduct baseline organization assessment and define new business environment ie**	**60 days**	**Wed 16/01/03**	**Wed 9/04/03**
95		3.3.1 Analyse the impact	20 days	Thu 16/01/03	Wed 12/02/03
96		3.3.2 Design the new roles and responsibilities, policies	20 days	Thu 13/02/03	Wed 12/03/03
97		3.3.3 Define the new reporting line	20 days	Thu 13/02/03	Wed 12/03/03
98		3.3.4 Conduct Organization change workshop with BPO	5 days	Thu 13/03/03	Wed 19/03/03
99		3.3.5 Define the number of job holders	5 days	Thu 13/03/03	Wed 19/03/03
100		3.3.6 Define the user authorization	20 days	Thu 13/03/03	Wed 9/04/03
101		3.3.7 Identify the User names	10 days	Thu 13/03/03	Wed 26/03/03
102		**3.3.8 Redeploy staff**	**10 days**	**Thu 27/03/03**	**Wed 9/04/03**
103		3.3.8.1 Define the staff deployement option	5 days	Thu 27/03/03	Wed 2/04/03
104		3.3.8.2 Deploy staff to the new organization strucutre	5 days	Thu 3/04/03	Wed 9/04/03
105		3.4 Project Team Training Realization Phase	5 days	Thu 16/01/03	Wed 22/01/03
106		3.5 System Management	70 days	Thu 16/01/03	Wed 23/04/03
107		3.6 Baseline configuration and test	25 days	Thu 23/01/03	Wed 26/02/03
108		**Milestone 4 Sign-off Baseline test results**	**1 day**	**Thu 27/02/03**	**Thu 27/02/03**
109		3.7 Final confirmation configuration and test	20 days	Thu 27/02/03	Wed 26/03/03
110		**Milestone 5 Sign-off Final Confirmation test results**	**1 day**	**Thu 27/03/03**	**Thu 27/03/03**
111		3.8 Develop Conversion Programs	50 days	Thu 16/01/03	Wed 26/03/03
112		3.9 Develop Application Interface Programs	50 days	Thu 16/01/03	Wed 26/03/03
113		3.10 Modify Reports	50 days	Thu 16/01/03	Wed 26/03/03
114		3.11 Modify Layout Sets	50 days	Thu 16/01/03	Wed 26/03/03

Figure 4.2   Project Plan Chart (Continue)

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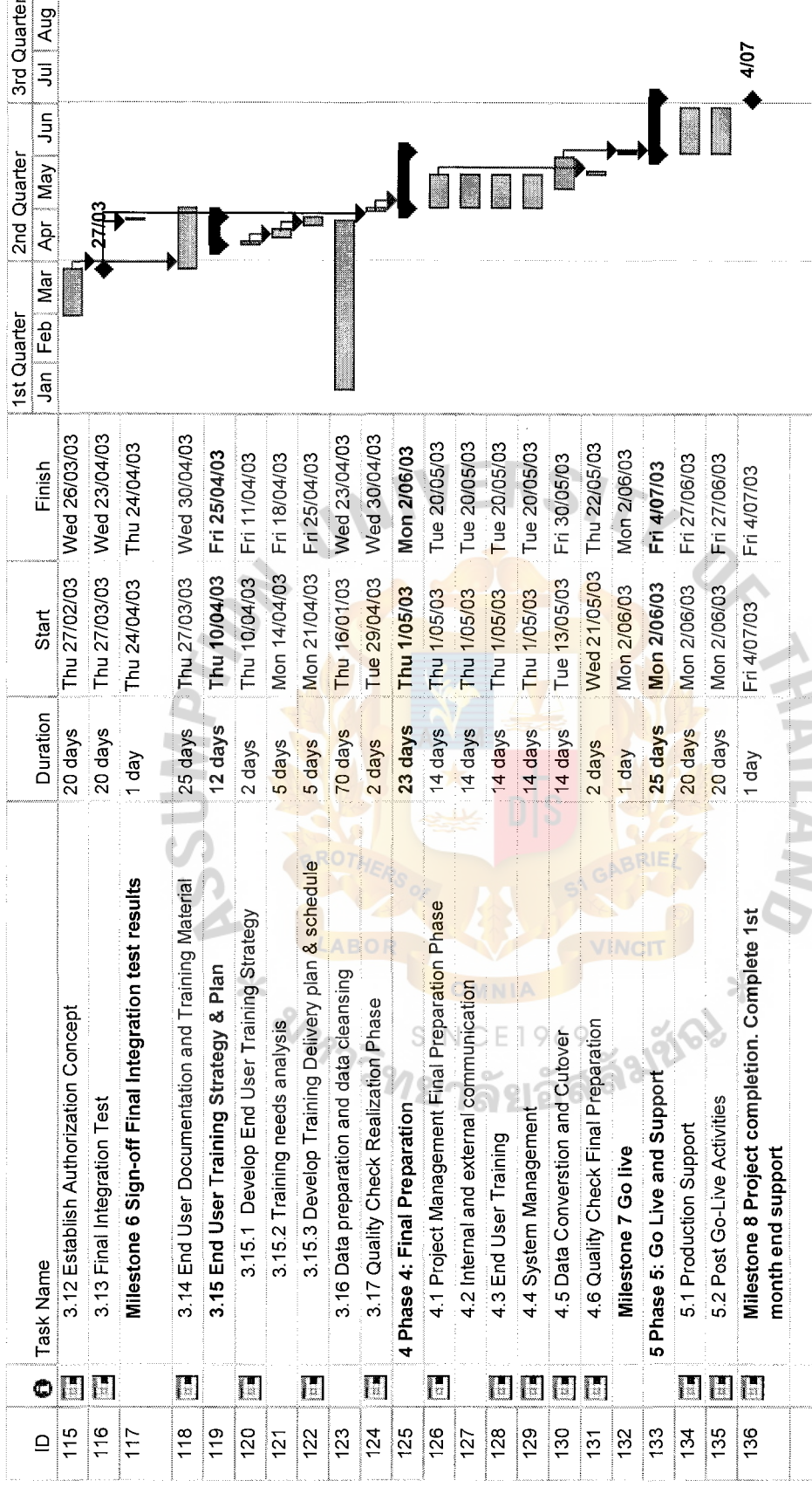| ID		Task Name	Duration	Start	Finish
115		3.12 Establish Authorization Concept	20 days	Thu 27/02/03	Wed 26/03/03
116		3.13 Final Integration Test	20 days	Thu 27/03/03	Wed 23/04/03
117		**Milestone 6 Sign-off Final Integration test results**	1 day	Thu 24/04/03	Thu 24/04/03
118		3.14 End User Documentation and Training Material	25 days	Thu 27/03/03	Wed 30/04/03
119		**3.15 End User Training Strategy & Plan**	12 days	Thu 10/04/03	Fri 25/04/03
120		3.15.1 Develop End User Training Strategy	2 days	Thu 10/04/03	Fri 11/04/03
121		3.15.2 Training needs analysis	5 days	Mon 14/04/03	Fri 18/04/03
122		3.15.3 Develop Training Delivery plan & schedule	5 days	Mon 21/04/03	Fri 25/04/03
123		3.16 Data preparation and data cleansing	70 days	Thu 16/01/03	Wed 23/04/03
124		3.17 Quality Check Realization Phase	2 days	Tue 29/04/03	Wed 30/04/03
125		**4 Phase 4: Final Preparation**	23 days	Thu 1/05/03	Mon 2/06/03
126		4.1 Project Management Final Preparation Phase	14 days	Thu 1/05/03	Tue 20/05/03
127		4.2 Internal and external communication	14 days	Thu 1/05/03	Tue 20/05/03
128		4.3 End User Training	14 days	Thu 1/05/03	Tue 20/05/03
129		4.4 System Management	14 days	Thu 1/05/03	Tue 20/05/03
130		4.5 Data Conversion and Cutover	14 days	Tue 13/05/03	Fri 30/05/03
131		4.6 Quality Check Final Preparation	2 days	Wed 21/05/03	Thu 22/05/03
132		**Milestone 7 Go live**	1 day	Mon 2/06/03	Mon 2/06/03
133		**5 Phase 5: Go Live and Support**	25 days	Mon 2/06/03	Fri 4/07/03
134		5.1 Production Support	20 days	Mon 2/06/03	Fri 27/06/03
135		5.2 Post Go-Live Activities	20 days	Mon 2/06/03	Fri 27/06/03
136		**Milestone 8 Project completion. Complete 1st month end support**	1 day	Fri 4/07/03	Fri 4/07/03

Figure 4.2   Project Plan Chart (Continue)

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4.11.2 Activity and Deliverables plan

Team leaders will plan their activities to achieve the next milestone on a weekly basis.

Deliverables Plan

Table 4.7 Deliverables planning

Phase	Major Deliverables		Key Responsibilities	
		Language	Consultant Team	ABC Team
Project Preparation Phase				
	Project Charter (Including scope document and issue Resolution Procedure)	English	Develop & document	Contribute, review & accept
	Project Plan	English	Provide plan	Review & Mobilize resources
	Change Mgmt and Communications Strategy, including Plan.	Thai	Initiate, develop	Participate, accept
	Project Kick off *	English	Initial, conduct	Organize attend & present
Business Blueprint Phase				
	Blueprint Guidelines & Standards**	English	Develop & document	Contribute, review & accept
	Client & Promote to Production Strategy	English	Develop & document	Contribute, review & accept
	Security & User Profile Strategy	English	Develop & document	Contribute, review & accept
	Change Readiness Assessment	English	Initiate, conduct	Organize, participate, develop report
	Interface Strategy	English	Develop & document	Contribute, review

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Table 4.7   Deliverables planning (Continue)

Phase	Major Deliverables		Key Responsibilities	
		Language	Consultant Team	ABC Team
	Data Conversion Strategy	English	Develop & document	Contribute, review & accept
	End user documentation & training strategy	Thai	Develop & document	Contribute, review & accept
	Develop post go-live benefit realization check list (CSFs, KPIs…)	Thai	Contribute, Review	Develop & document
	Conceptual Design/Blueprint Document: - Business Scenarios - Design Workbook - Process decompositions - SAP/GAP analysis - Report & Forms list	 English Thai Thai Thai English	Initiate, provide template & sample, review	Contribute, develop & document
	Detail Realization phase estimate**		Provide template, estimate & document	Contribute, review & accept
	Revised Scope Document (based on Blueprint)	English	Develop & Document	Initiate, review & accept
	Project team training*		Coordinate with relevant teams, present training	Organize & attend
	System Administration*		Initiate, conduct	Organize & participate
Realization Phase				
	Realization phase sign-off procedure**	English	Develop & document	Contribute, review & accept

Table 4.7 Deliverables planning (Continue)

Phase	Major Deliverables		Key Responsibilities	
		Language	Consultant Team	ABC Team
	Define System Configuration (IMG) Documentation standards	English	Develop & document	Contribute, review & accept
	System Testing and User Acceptance Strategy	English	Develop & document	Contribute, review & accept
	Post Implementation Support Strategy	English	Develop & document	Contribute, review & accept
	Training needs analysis Workshop and Report	Thai	Initiate, Provide template, review	Conduct analysis, document
	Custom Development Control Sheet	English	Estimate time required, review	Document, update
	Authorization concept workshop*		Initiate, conduct	Organize & participate
	Change Impact Analysis	Thai	Initiate, Provide template, review	Conduct analysis, document
	Design Walkthrough Presentations Documents	English /Thai	Review, support	Prepare, conduct, confirm
	Develop test plans, for baseline test, final confirmation and final integration test**	English	Initiate, provide template, plan, review	Information gathering, review plan, contribute
	Verified system test environment*		Configure, set up client	On-the-job training
	Revised scope document, project charter, team structure, etc (based on Realization)*		Develop & document	Initiate, review & accept
	Test Script for Baseline test, Final confirmation test, final integration test	Thai	Configure, review test script & result, provide resolution	Participate, test, document test scrip & result, confirm & sign off
	ABAP Handbook (ABAP Standards)	English	Develop & document	Contribute, review & accept

Table 4.7   Deliverables planning (Continue)

Phase	Major Deliverables	Language	Consultant Team	ABC Team
	System Authorization Strategy and Profile	English	Advise	Agree & execute
	Developed interfaces, reports, conversion and enhancements * programs		Advise	Participate, confirm & sign off
	System Administration procedures	English	Recommend	Develop & Document
	Business Process Procedure (User Manual)	Thai	Plan, Provide template & sample, advise, review	Initiate, Develop & document
	End user training materials	Thai	Plan, Provide template & sample, advise, review	Initiate, Develop & document
Final Preparation Phase				
	Going Live Readiness Assessment documents	English	Initiate, conduct	Organize & participate
	Detailed Data Conversion Plan	English	Plan, document	Review, agree and communicate to users
	Detailed Training Plan (inclusive of logistics)	English	Plan, document	Review, agree and communicate to users
	Create go-live check list**		Plan, conduct, recommend contingency plans	Provide information
	Conduct "Early watch review" (conducted by SAP)*		Plan, support	Organize & participate
	Create contingency plans	Thai	Plan, conduct, recommend contingency plans	Document contingency plan
	SAPGUI installation & infrastructure check*		Plan, conduct	Provide information
	End user training*		Conduct train the trainer	Execute training

Table 4.7   Deliverables planning (Continue)

Phase	Major Deliverables		Key Responsibilities	
		Language	Consultant Team	ABC Team
	Data cleansing and conversion*		Advise & review	Lead cleansing & convert data
	Improvement requirements/issues list and resolution document	Thai	Provide solution	Review & action
	User support procedure & structure	Thai	Advise & recommend	Develop & Action
Go Live and Support				
	Post-Implementation improvements/issues list and resolution document	Thai	Provide advice and assistance	Review & action
	Business benefits/ KPI review*		Advise & recommend	Initiate, conduct
	Conduct "Early watch review" (conduct by SAP)*		Plan, support	Organize & participate
	Communication/training review*		Advise & recommend	Initiate, conduct
	Plan follow-up training*		Advise & recommend	Initiate, conduct
	Plan project review*		Initiate, conduct	Organize & participate
	Configuration Document	English	Provide template & sample, advise, review	Initiate, Develop & document
	Data cleansing and conversion*		Advise & review	Lead cleansing & convert data
	Improvement requirements/issues list and resolution document	Thai	Provide solution	Review & action
	User support procedure & structure	Thai	Advise & recommend	Develop & Action

Remark 1: * means non documentation deliverables

Remark 2: ** project internal use, for project control purpose

V. RESULT AND DISCUSSION

5.1 Result of Case Study

After go-live phase finished the client team has conclusion of evaluation after implement and work process with SAP system.

After ABC Company has implemented SAP system for 9 months, ABC Company has evaluation with SAP system. And we can summarize the benefits and completion of SAP system that ABC Company used SAP system for several departments such as Accountant, Finance, Equipment and Plant maintenance, Cost Engineering, PBAC, Cost Control, Spare Part control, Central Store, and job site online but the users separate benefits for each process. There are main processes that use SAP such as Customer management use SAP system to verify and manage company's customer data, Asset use SAP system for controlling company's asset, Supplier use SAP for verify and management company's supplier data, Profit center use SAP system for control and manage inventory and job site data, Ledger Account use SAP system for grouping and controlling company's account data, Inventory management use SAP system for management, transferring, and controlling company's inventory data, Cost control use SAP system for verifying and management company's cost data , Sale & Distribution use SAP system for verifying and controlling company's sale data, Project System use SAP system for analyzing and management company's product planning and controlling company's actual product, Equipment and Plant maintenance use SAP system for verify and management history of company's equipment and history of company's job site, Store use SAP system for verifying, management, controlling company's inventory data, Reimbursement user SAP system for verifying, management, controlling company's reimbursement data.

In this case study we found this company is separated to be 2 main groups that are Job online and Job offline.

In term Job online, we can explain that Job online is group that uses SAP system this system integrated data from all project in this group to be integration system which has benefits for management and analysis about plan and business process in company. The integration system helps collective database and easy to verify data so job online can verify data currently and directly and job online can share data and information in each job site too.

For Job offline, we can explain that job offline is group that doesn't use SAP system but they share data by uploading; they need program to upload data with batch input file this group uses this sharing because this group has less resource for connection the jobs in this group are short-term tasks so they don't need to invest a lot they lack resource; computer, lead line etc. and they lack staff or employer who have Information technology or computer knowledge they need the simple way to input data into system so they choose to send data to computer department at Head Office(HO.) users for uploading data for them.

For SAP system evaluation I can summarize benefits of SAP and issues that occurred after change from old system to be SAP system.

Benefit of SAP system.

Main benefits of SAP system are in the following:

1. SAP system is integration system this system integrates all of database and transactions modules to be one system. This system can relate all of database and transaction so all of modules have one database they can verify data and manage data so they have and know same data; it makes them able to

analyze data in the same way. And this system makes us clearly understand with data.

2. SAP system is real time system this system can automatically modify data if it has effect, so we can know data and information in real time processing, and we can see flow and status of data immediately.

3. SAP system has various features for viewing data; it provides report and analyzing for customer's need.

4. SAP system provides convenience, ease and depth to collect, verify and manage data.

5. SAP system allows modifying report by programmer, feasibility of report development for trained programmer.

6. SAP system does not allow incomplete data into database this provides complete data so users can trust data in SAP system that data into system is correct and complete data.

7. SAP system provides many transaction to task business process such as create Purchase Order, RFQ (Request for Quotation), Quotation, Delivery Order, etc. It doesn't provide only creating but it can collect history and detail data of task business process too.

8. SAP system can reduce redundant process of business process.

Issues from changing old system to be SAP system

SAP system has many benefits but it also has issues when operating with SAP system the main issues of SAP system are the following:

1.   SAP system needs more time to execute ABAP report because ABAP report has accessing data with integration database, it must verify and it checked validate data user when executing data for security from outsiders before the system runs to next step every time that has accessing to database.

2.   SAP system needs users who have knowledge with SAP system but for ABC Company it has users who have less knowledge with computer. They need more training and need more time to feel familiar with SAP system, SAP system is integration system so it has complexity to input data to database. SAP system does not allow users to input incomplete data into SAP system and SAP system has validate users data because it needs security because users of all modules of company can verify in same data and they can modify data in SAP system too, so to keep correct and complete data SAP system must validate users first and SAP system must check data that the data are complete. And to change key data, SAP system does not allow to change key data such as create date, number code, etc. because SAP system is integration system, it needs complete data and correct data this way to keep correct and complete data. If users want to change key data they must create new one to keep history and correct data into database but this protection makes some users have confusion with SAP system and have negative feeling with SAP system. Some users feel that the system has more transaction work process so they aren't happy with SAP system.

3.   SAP system is integration system so some master data have complexity to input data into system. Some users that have responsibility to input master data such as account data master, material master, customer master, etc. they must collect data with validate data too and to collect data they must have detailing and complete data to input. This makes some users have more work load.

4.   In blue print phase, project implementing needs users who have strong business knowledge to collect user's requirements because this phase is so important for implement system if consultant cannot collect requirement cover for all problem it has errors occur when operating system in the future and some cases lose time and budget to modify and fix the system for noting, the project implement does not need only users who have strong business knowledge but it needs consultant who have strong knowledge with standard business process and SAP system too and consultant must be circumspect to collect requirement and make configurations business process and make specification of program to modify system.

5.   For ABC Company business, they separate their job site to be 2 groups, there are online job site and offline job site, this make users have mistake with data because online job site has SAP system to collect data in real time processing the data in system has modifying in immediate time but for job site offline does not have SAP system to collect data it needs input data by batch file input data so it does not know if system has changed data immediately. It has to upload and download data first, if job offline site has delay to send data to HO. for uploading and downloading data it makes different data between online job site and offline job site, in the same reason if online job site has modify data without notice to offline job site it occurs different data between online job site and offline job site too.

For information above we found that the issues occurred because ERP system need people who have strong knowledge to use the system

5.2   Discussion

By the way this way has issues because for process in site online it is real time processing, it can modify data and analyze data at current time but for site offline it is batch data file, it needs uploading data before analysis so this way makes different data

between site online and site offline, it has misunderstanding between site online users and site offline users occur.

To solve this problem, System needs to upload data regularly to update data to be new one. For uploading data offline users must have document form to ask online site users for uploading, by the way online site users must inform uploading for all offline site users to know data status too.

Second problem to implement ERP system is knowledge. For industrial business end users have less computer skill and less business process but they have responsibilities with transaction tasks which have to do this task regularly. If they still have problem with the process it makes complexities in processing. End users are tired to use the system and have negative feeling with system; they think the new system is difficult and complicated more than the old system and feel resistance with system change. This feeling is obstacle to implement new system so the consultants must try to let them clear with new system, and suggest end users for advantages from new system to make them feel positive with new project and want to learn more about the new system. To solve this problem is training. Training helps users feel familiar with the new system and make them feel easy to understand and use the new system. For training, consultants provide the way to train users to clearly understand that is the first step consultants provide training for key users who have responsibilities to support all users in the company and they must answer and solve the problems by themselves. After go-live phase they must be consultants for their company. After consultants train key users, key users must transfer their knowledge to end users in the company this way help them to practice and have more understanding with the new system because they must answer any questions for end users. To succeed this step, consults need key users who have strong business process knowledge and have skill with computer; it is better if

they know SAP system before or have English skill. For this case ABC Company assign computer team to be key user and define them for each module and assign supervisor of each department (module) to cooperate with computer team to help computer team has clear understand with business flow and real work processing of each module so for each module has at lest 3 peoples responsible to be leader of project one is consultant, one is key user who know real business work processing and another one is computer team who have computer skill.

After consultant train key users, key users must transfer their knowledge to end users this step can show how much key users understood for SAP system if they can train end users smoothly so that shows they understood but this step needs more time than first step because some end users have less knowledge about business process and computer and maybe they have less English skill too. They need time to familiarize with SAP system (new system) but when you evaluate how the training succeed do not forget that it is impossible that end users can clearly understand by training only they need time to learn more by themselves too.

There is one important problem left that requirements do not cover for all process, sometimes the system has issues occur when testing system or executing system and many times the errors did not occur because of Standard Programs or ABAP programs but they occurred because of specifications don't cover for all process and for all company's policies, to solve these problems are not easy, they need to revise specifications and user's requirements again. This problems make us lose more time for nothing and some cases client team have to spend more budget to solve these errors and these problems can make negative feeling with users for system because they have felt tired once in the first time and they will try for new modification or new creating again

and for worst case some clients start untrustworthy for implement project team that new system can help them ease to work process.

At blue print phase consultant team must collect requirements from all users and clearly understand for business process of company but sometimes users forgot some cases that have effect for system so it is necessary that consultant team should remind users for clearly business process in every step and ask them to make evident to make sure the process plans are correct.

For implement blue print phase, consultant team needs users who have strong knowledge about company's policy and company's work process to give the requirements. ABC Company must assign people who use this system directly and know about reason of work process and policy to implement team. This helps the implement project team going to be successful.

You can understand that project implement is going to be successful that is not because of only consultant team but it must have cooperating from client team and consultant team, it is important to have discussion between consultant team and user team in every step on work process. They have to inform situation and progressive for all implement project term to know and understand to avoid misunderstanding and error occurs in implementation phase and after go live phase.

VI. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

SAP: System Application Production (Systems, Applications and Products in Data Processing) is an integrated management software package covering all the functions of a company. SAP also allows to optimize the information influx within the company and to regulate the information and their influx throughout the diverse functions of the company.

The Modularity of SAP

SAP R/3 is intended to optimize the processes of business management. It is composed of standard functions and covers 3 mains functional applications: Finances application, Logistics application and the Human resources application.

Methodology

SAP implement project provides ASAP (AcceleratedSAP) to be tool to implement SAP system. The ASAP methodology adheres to a specific road map that addresses the following five (5) general phases: 1. Project Preparation, 2. Blueprint, 3. Realization, 4. Final Preparation, 5. Go-live and Support.

Case Study

To study SAP implement project I choose SAP implementation of ABC Company to be example. ABC Company defines business scope to be functional and responsibility for each functional is following:

1. Construction job planning has responsibility with PS SAP module.

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2.   Equipment Control has responsibility with PM SAP module.

3.   General Purchase (includes finished goods, raw material, spare parts, consumable supplies, services and fixed asset) has responsibility with MM SAP module.

4   .Inventory control (includes finished goods, raw material, spare parts, consumable supplies, services and fixed asset) has responsibility with MM SAP module.

5.   Financial accounting – General Ledger has responsibility with FI SAP module.

6.   Financial accounting – Accounts Receivable has responsibility with FI SAP module.

7.   Financial accounting – Accounts Payable has responsibility with FI SAP module.

8.   Financial Accounting – Asset Accounting has responsibility with FI SAP module.

9.   Cost Control and Cost Engineer has responsibility with SD. FI, MM, and PS SAP module.

10.   Project Cash Management has responsibility with MM, FI and SD SAP module.

11.   Sales and Product Distribution (includes sales of finished goods and services) has responsibility with SD SAP module.

ABC Company project use ASAP to implement SAP system and ABC Company has defined job site to be 2 groups there are online job site and offline job site to operate business process.

Result and Discussion

After ABC Company project has implemented SAP system they found SAP system has various benefits

1. Simultaneous visibility across the whole enterprise.

2. Reporting and analyzing.

3. Offers a good understanding of the current situation of the company.

4. Consulting managers about how much value they can add to their firm by improving each department.

5. Supports databases, applications, operations systems and hardware from almost every major supplier.

6. Offers a high security and information consistency to manage the firm's production according to customers' demand.

7. To choose the best marketing strategy that fits best to the firm's customer database.

8. Coordinate across the company provides the managers a satisfying control in every phase and department.

9. Eliminates unnecessary use of effort.

10. Enables managers to focus their attention on the core process.

But SAP implement project of ABC Company has issues occur too:

1. Lack of users who have SAP system and computer knowledge.

2. Lack of users who have company's knowledge to give requirement.

3. Lack of communication when implement project team have changed data or plan in system.

Discussions to solve these issues are:

1. Project training team provide more training for users

2. Project team assigns users who have strong knowledge with business process to collect requirement and cooperate with consultant who have strong knowledge and who is circumspect to collect requirement.

3. Online job site users has notice and inform offline job site users every time when they have modified data in system and for both users must have more communications.

6.2 Recommendation

SAP products are considered excellent but not perfect. The main problem with software product is that it can never be perfect. The main advantage of using SAP as your company ERP system is that SAP has a very high level of integration among its individual applications which guarantee consistency of data throughout the system and the company itself. But sometime SAP implementation occurred errors, we can summarize that occurs because in the 2 main problems there are lack of knowledge and lack of communication For lack of knowledge we can solve this problem by training and making a familiarity with SAP system, this solution needs time to solve problem. For lack of communication, it occurs when consultant collect requirement or when system has modify data so to solve this problem we should have meeting to discuss all

about business process, what are the requirements and how to run business process and all about policies of company. This solution needs people who have strong knowledge about business process and company's policies and people who have strong knowledge about SAP system, how to use and how to configure for SAP system. For consultants who have responsibility to collect user requirements, he or she must have circumspection because this step is very important if this step has something missing it occurred errors and some errors cannot be fixed on process maybe we have to change system configuration again, this situation makes us lose more time and budget to fix errors

APPENDIX   A

EVALUATION TABLE FROM ABC COMPANY

This appendix shows evaluation from ABC Company that completion with implement SAP system in each department.

Accountable dept

Use for: Customer

Benefits:
1. Reduce time to check the information
2. Reduce repetition process of work to record invoice data
3. Ability to relate data for whole module.
4. Ability to set format of report for customer's needs.
5. Ability to separate job groups, customer groups.

Problem/Issues:
1. System doesn't allow changing key data, if users want to change key data they must create new ones.
2. For clearly Cash in transit, System doesn't allow to create invoice if users have incomplete data.
3. System has more work load because creating account data is importance,
4. For clearing cash in transit System cannot calculate total amount

Solutions:

As integration system, it needs detailed and correct data for all modules so it's not support for incomplete data.

% of Completion: 85%

Use for: Asset

Benefits:

    1.   System has more ability to control asset data.

    2.   Ability to relate data for all modules

Problem/Issues:

    1.   Standard system cannot support to create PO in case, 1 PO has more than 1 asset, it must be transferred to each asset.

Solution:

    2.   It is defined when Blue print phase, so to solve this problem it must be modified configuration

% of Completion: 85%

Use for: Supplier

Benefits: 1.   Ability to verify database

    2.   Clearly processing of business

    3.   Various feature of viewing report

Problem/Issues: 1.   It is importance to input data it's made detailed and hard to collect data, the system needs users who have knowledge of business and ERP system to analyst and collect data.

    2.   As integration system has effect for all modules, it needs correct and detailed data so it has more complicated to collect data.

    3.   System spent more time to run report.

Solution: 1.   Integration system has effect for all modules so it needs correct and detailed data. Users should have clearly understood before.

2. For ABAP program, it must be tuned program to modify.

% of Completion: 90%

Use for: Profit Center

Benefits: 1. Ability to verify database.

2. Ability to relate database

3. Various features of viewing report

Problem/Issues: 1. Users need more knowledge to use this system.

2. Users have misunderstood for process in modules.

Solution: 1.More training.

% of Completion: 90%

Use for: Ledger Account

Benefits: 1.   Ability to verify database.

2.   Ability to relate database

3.   System can automatically convert exchange rate

Problem/Issues: 1. User has misunderstood for business processing and For GL concept needs users who have strong knowledge to analyst and verify data.

2.   Now, some modules have a lag time so it has delay to balance account.

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Solution:	1.	More training for business process and How to use SAP
	2.	Have more communication to clear misunderstood and make schedule.
% of Completion:	70%	

Cost control dept

Use for:	Inventory management and Cost control.	
Benefits:	1.	Ability to verify database.
	2.	Capability of checking, viewing, and running report by user.
	3.	Various features of viewing report.
	4.	Able to find faults when occurred.
	5.	Convenience in filling in data.
	6.	Feasibility of report development for trained programmer.
Problem/Issues:	1.	Problem of production transfer being delayed in site offline process.
	2.	Users have less knowledge to use system.
	3.	At present there is still issue of SAP's report which affects the GL margin
	4.	As a result of production transfer delay, producing report will have a lag time
Solution:	1.	Better training for Operations.

2.   More knowledge transfer for operators.

3.   System supporting "Site Offline" for stock movement in

SAP.

4.   Understanding of "Offline" system.

5.   Able to resolve the issue back to its original working stat

% of Completion: 95 %

Finance dept

Use for: Sale & distribution system and Cash basis system.

Benefits: 1.   Real time processing flow, able to check invoice data

currently.

Problem/Issues: 1.   Site Operation is used to use old processing.

2.   System needs users who have strong knowledge for

business process and how to use SAP.

Solution: 1.   Have more training to use system and understand business

process.

% of Completion: 80 %

PBAC dept

Use for: Project system.

Benefits: 1.   Ability to verify database.

2.   Various features of viewing report.

Problem/Issues: 1.   System use a lot of time to execute ABAP report.

2.   System do not allow to upload incomplete data into database

3.   HO users don't inform to job site users when they have changed data in system so system has actual data different between HO data and job site.

4.   Specification of ABAP program doesn't cover for business process.

5.   Standard report in SAP,

Solution: 1.   Modification ABAP Program for accessing database

2.   Modification upload ABAP program to screen data before upload to database.

3.   More communications to inform when they have change data.

4.   In phase Blue print and collective requirement needs people who have strong knowledge and clearly understand about business process.

% of Completion: 70 %

Cost engineering dept

Use for: Project System

Benefits: 1.   Various features of viewing report.

2.   Ability to verify database

Problem/Issues: 1.   System needs people who have strong knowledge to analyst report.

2. As PS is system that needs information from other modules so it needs configuration in clearly concept.

Solution: 1. More training.

2. Revise BPP and modification configuration.

% of Completion: 70%

Equipment Management and Plant Maintenance dept

Use for: Equipment Management and Plant Maintenance.

Benefits: 1. Ability of verify database.

Problem/Issues: 1. System spent more time to execute Report.

Solution: 1. Run Background Report at night.

% of Completion: 90 %

Central Store dept

Use for: 1. Store

2. Reimbursement

3. Cost control

4. Engineering

Benefits: 1. Ability of manage documents.

2. Ability of verify and management and collective data and history process.

3. Reduce repeating process.

4. Real time processing, system can verify data currently and immediately.

5. Ease to analysis stock and planning inventory.

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Problem/Issues: 1.   Users need time to learn more about SAP system.

Solution: 1.   More training.

% of Completion: 90 %

J0343 Job site online

Use for: 1.   Store

2.   Reimbursement

3.   Cost control

4.   Engineering

Benefits: 1.   Ease to manage document.

2.   Ability to verify data immediately and deeply.

3.   Ease and convenience to record or manage data

4.   Ease to analyst process and task of each site.

Problem/Issues: 1.   System has lag time to execute program

2.   Users need time to learn system

Solution: 1.   Run background report.

% of Completion: 90%

J0675 Job site online

Use for: 1.   Store

2.   Reimbursement

3.   Cost control

4.   Engineering

Benefits:	1.	Reduce time to create PR.
	2.	Ability to verify data.
	3.	Ease to review and revise data.
	4.	Reduce work time to manage data
	5.	Ability to manage data immediately and deeply.
	6.	Ability to relate data for all modules.
	7.	Ease to analyst data and ability to modify data
	8.	Efficiency management data.
Problem/Issues:	1.	Users have less SAP knowledge.
	2.	ABAP program need more time to execute program.
Solution:	1.	More training
	2.	Tuning and modification ABAP program.
% of Completion:	90 %	

J1260 Job site online

Use for:	1.	Store.
	2.	Reimbursement
	3.	Cost control.
	4.	Engineering
Benefits:	1.	Ability to verify data.
	2.	Ease and convenient to manage data.
	3.	Reduce work time of process

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4.   Ability to relate data for all modules.

5.   More capability to collect, control, manages data and equipments.

Problem/Issues: 1.   Standard report cannot cover for requirement of users.

Solution: 1.   Create ABAP report.

% of Completion: 90 %

J1362, J1436, J1473 Job site online

Use for: 1.   Store

2.   Reimbursement

3.   Cost control

4.   Engineering

Benefits: 1.   Reduce process to manage documents

2.   Ability to versify database.

3.   Ability to relate data for all modules.

4.   Real time processing, it has ability to verify data at current.

5.   Ease to analyst and control database and work process.

Problem/Issues: 1.   Program upload data need more time to execute.

2.   System need more program to upload data conversion.

Solution: 1.   Create new ABAP program to upload data.

2.   Tuning ABAP program and modify program to reduce accessing database.

% of Completion: 70 %

J1373, J1424 Job site online

Use for:	1.	Store
	2.	Reimbursement
	3.	Cost Control
	4.	Engineering
Benefits:	1.	Ability to verify database
	2.	Real time processing, it can verify data at current.
	3.	Ability to manage database and process.
	4.	Convenience for analysis plan and actual cost.
Problem/Issues:	1.	HO. Users have modified database with out notice, making misunderstood for Job site users.
	2.	Lack of knowledge for SAP system.
Solution:	1.	More communication to inform all users in case they have modified.
	2.	More training.
% of Completion:	90 %	

J1423 Job site online

Use for:	1.	Inventory
	2.	Reimbursement
	3.	Cost control
	4.	Engineering .
Benefits:	1.	Ability to verify database.

	2.	Convenience for analysis plan and actual cost.
	3.	Ease to upload data into system.
	4.	Ease to understand of process flow.
Problem/Issues:	1.	Lack of communication when HO users have modified data with out notice so Job site users have misunderstood for data at current.
Solution:	1.	More meetings.
	2.	Notice information to inform all users when users have modified database.
	3.	Configuration for system that system doesn't allow to modify data which they didn't create.
% of Completion:	90 %	

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