

**Study Of SAP For ERP Applications**

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Abstract:

The need for ERP software is detected when companies encounter business problems relating to the flow of information. Inability to gain instant access to information can considerably affect the decision process and lead to wrong management decisions. In this paper we present how SAP would be useful in making an ERP and how efficient it would be as compared to other technologies.

1.Introduction

Enterprise resource planning (ERP) systems integrate internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, customer relationship management, etc. ERP systems automate this activity with an integrated software application. The purpose of ERP is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders.ERP systems can run on a variety of computer hardware and network configurations, typically employing a database as a repository for information.[1]

1.1.Functional Areas

The following are common functional areas covered in an ERP System. In many ERP Systems these are called and grouped together as ERP Modules:

1.1.1.Financial Accounting

General Ledger, Fixed Asset, Payables, Receivables, Cash Management, Financial Consolidation[disambiguation needed]

1.1.2.Management Accounting

Budgeting, Costing, Cost Management, Activity Based Costing

1.1.3.Human Resources

Recruiting, Training, Payroll, Benefits, 401K, Diversity Management, Retirement, Separation

1.1.4.Manufacturing

Engineering, Bill of Materials, Work Orders, Scheduling, Capacity, Workflow Management, Quality Control, Manufacturing Process, Manufacturing Projects, Manufacturing Flow, Product Life Cycle Management

1.1.5.Supply Chain Management

Supply Chain Planning, Supplier Scheduling, Order to Cash, Purchasing, Inventory, Product Configurator, Claim Processing

1.1.6.Project Management

Project Planning, Resource Planning, Project Costing, Work Break Down Structure, Billing, Time and Expense, Performance Units, Activity Management

1.1.7.Customer Relationship Management

Sales and Marketing, Commissions, Service, Customer Contact, Call Center Support

1.1.8.Data Services

Various "self-service" interfaces for customers, suppliers and/or employees

2.System Application And Products (SAP)

The original SAP idea was to provide customers with the ability to interact with a common corporate database for a comprehensive range of applications. Gradually, the applications have been assembled and today many corporations, including IBM and Microsoft, are using SAP products to run their own businesses.

SAP applications, built around their latest R/3 system, provide the capability to manage financial, asset, and cost accounting, production operations and materials, personnel, plants, and archived documents. The R/3 system runs on a number of platforms including Windows 2000 and uses the client/server model. The latest version of R/3 includes a comprehensive Internet-enabled package.SAP has recently recast its product offerings under a comprehensive Web interface, called mySAP.com, and added new e-business applications, including customer relationship management (CRM) and supply chain management (SCM).

2.1.SAP Modules

A SAP system is divided into modules like MM, SD which maps business process of that particular department or business unit.

Following is the list of module available in SAP system.

- **SAP FI Module**- FI stands for Financial Accounting
- **SAP CO Module**- CO stands for Controlling
- **SAP PS Module** – and PS is Project Systems
- **SAP HR Module** – HR stands for Human Resources
- **SAP PM Module** – PM stands for Plant Maintenance
- **SAP MM Module** – MM is Materials Management -
- **SAP QM Module**-QM stands for Quality Management
- **SAP PP Module** – PP is Production Planning

- **SAP SD Module** – SD is Sales and Distribution
- **SAP BW Module** – where BW stands for Business Warehouse
- **SAP EC Module** – where EC stands for Enterprise Controlling
- **SAP TR Module** – TR stands for Treasury
- **SAP IM Module**– IM stands for Investment Management
- **SAP QM Module** – QM stands for Quality Management
- **SAP – IS** where IS stands for Industries specific solution
- **SAP – Basis**
- **SAP – ABAP**
- **SAP – Cross Application Components**
- **SAP – CRM** - CRM stands for Customer Relationship Management
- **SAP – SCM** - SCM stands for Supply Chain Management
- **SAP – PLM** - PLM stands for Product LifeCycle Management
- **SAP – SRM** - SRM stands for Supplier Relationship Management
- **SAP – CS** - CS stands for Customer Service
- **SAP – SEM** - SEM stands for STRATEGIC ENTERPRISE MANAGEMENT
- **SAP – RE** - RE stands for Real Estate[1]

2.2.SAP R/3 Architecture

The SAP R/3 System has a three-tier client/server architecture. All data is stored in a database, and the data is processed in the application layer on the application servers. The SAPgui frontend (presentation layer) is the interface to the user. All three layers are connected to each other with networks. The following graphic depicts the client/server architecture of the R/3 System, and the communication requirements between the presentation and application layers and between the application and database layers:

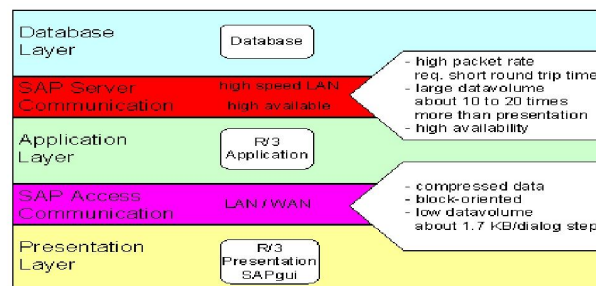


Figure 1

Depending on your requirements, you can distribute the services to different hosts. Smaller applications keep the database and the R/3 application on the same host. The large volume of data that passes between the R/3 application and the database (SAP server communication) is processed locally and not through a network. The presentation layer is usually made up of PCs on which the SAPgui frontend is installed. The SAPgui is not a terminal emulation but an application program that displays R/3 application data graphically. This means that there are no great demands placed on the connection between the SAPgui frontend PCs and the R/3 application (access communication).

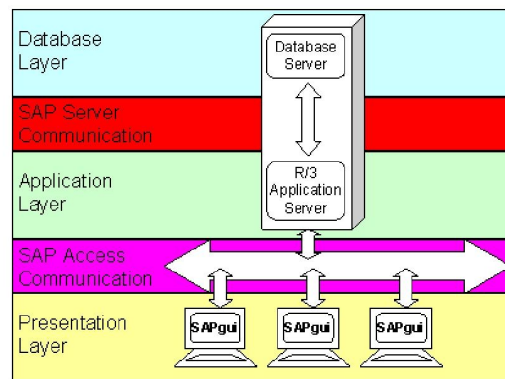


Figure 2

Higher processing demands on the R/3 application can be realized by additional application servers (application servers are hosts on which the R/3 application runs). Very high demands are made on bandwidth and delay time between the application servers and the database server. You need to set up a suitable network connection to meet these demands.

You can speed up and secure data throughput to the database by placing the database on a separate host. The database server host then communicates only with the R/3 application servers. By isolating the database completely from the rest of the corporate network, you prevent unauthorized access to sensitive data and ensure high performance. For data backup purposes you may need to connect the database server to a dedicated network (SAN = Storage Area Network).

2.2.1. Access Communication

Access communication covers all access to the R/3 System. This includes user access through the SAPgui, and also links to other R/3 Systems and external applications. An

access network is not a dedicated network segment, but includes all network segments through which the R/3 System is accessed.

2.2.2.Important Design Criteria for the Access Network

- Block-oriented data traffic delay times in the network are relatively non-critical for the SAPgui
- Bandwidth must be determined separately for each location, depending on the number of users and their activities
- The availability of the network must also be specified according to the user group or location

2.2.3.Server Communication

Server communication covers all communication between the application servers and the database server, and is of great importance for the R/3 System. In each individual case you must decide whether you want to process the server communication through its own physical network (server network), or whether you want access and server communication to share a physical network. You must remember that any worsening in server communication also has a negative effect on the performance of the R/3 System. A server network is the network connection between the servers (application servers and database servers) of an R/3 System.

2.2.4.Important Design Criteria for the Server

- High throughput of data or high bandwidth
- Minimum delay time (round trip time)
- Includes the servers of the R/3 System only
- High availability
- No non-SAP data traffic (for example, data backup over the network)
- Direct server connection no expensive cabling
- Greatest possible security against unauthorized access to the database server if the server network is set up as a separate segment from the rest of the corporate network

2.3. Why SAP

SAP AG company is a market leader in Enterprise Applications software. Use of this software for ERP implementations provides unparalleled benefits to the organization. There is tremendous growth and research in this area.[2]

2.3.1. Market Share

Market share. As the diagram below shows, the report indicates that SAP holds the largest market share of three vendors, with 22% share. The market share difference between SAP and everyone else is quite large.

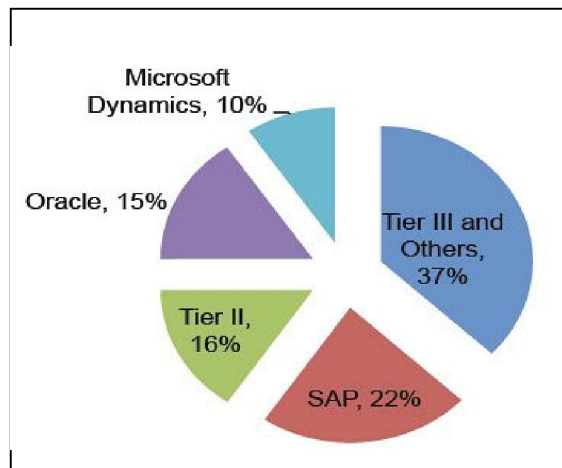


Figure 3

2.3.1.1. Selection Rates

Given SAP's market share, it is no surprise the company often appears on procurement short lists, as indicated in this chart:

Although SAP achieves the top spot in short lists, both Oracle and Microsoft are more frequently chosen than SAP. As the survey report states: the study suggests that after "assessing the available information, organizations are not easily convinced that SAP is the best option." It is possible that SAP's reputation for being expensive and complicated to implement scares potential buyers.

2.3.1.2. Implementation Duration

According to the survey, Oracle projects show the largest gap between planned and actual implementation durations, as the graph shows:

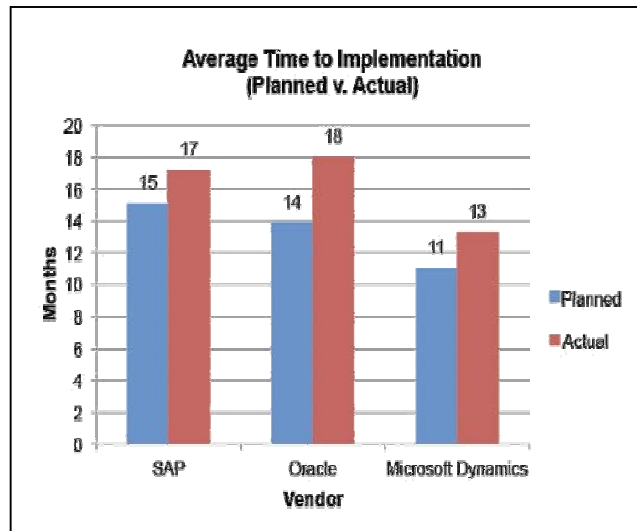


Figure 4

In general, Microsoft has the smallest implementations, relative to Oracle and SAP. Overall, 61% of all implementations reported in the survey run late. This number is not surprising because it is consistent with data from other research.

2.3.2. Average ERP Solution Satisfaction

According to survey carried out over thousands of companies which use ERP tools.

- Sap Gives:75%
- Oracle Gives:60%
- Microsoft Gives:58
- Other ERP vendors give:60% of customer satisfaction
-

2.3.3. Average Implementation Time Duration

- SAP:15 months
- Oracle: 13 months
- Others:11 months

2.4. *Web Dynpro*

Web Dynpro is the SAP NetWeaver programming model for user interfaces and provides support when developing the Web representation of business applications. The Web Dynpro model is based on the Model View Controller paradigm, and has the following features that build on the classic dynpro model:

- Clear separation of business logic and display logic
- Uniform metamodel for all types of user interfaces
- Execution on a number of client platforms.
- Extensive platform independence of interfaces

2.4.1. Web Dynpro Architecture

2.4.1.1. Definition

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2.4.1.2. Structure

In Web Dynpro, each user interface is always made up of the same basic elements (such as UI elements or events triggered by the user). These basic elements are declared using Web Dynpro tools. The event handling is programmed in separate source code areas which are executed automatically at runtime when the event is triggered.[3]

2.4.1.3. Metamodel Concept

When creating a Web Dynpro application, you use the Web Dynpro tools to describe the properties and functions of the application. The data created in this way is stored in tables as metadata. At a later time, the necessary source code, which is executed at runtime, is created from this metadata. Therefore, the metadata itself is independent of the rendering technique used at runtime.[3]

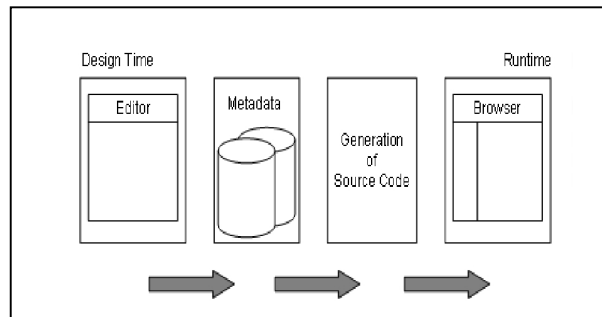


Figure 5

2.4.1.4. Graphical Development Tools

To support this declarative concept, the SAP NetWeaver Developer Studio contains a range of Web Dynpro tools. You can therefore generate a large proportion of a Web Dynpro application using the tools provided, without having to create your own source code. This applies to the following parts of the application:

- Data flow between the front end and back end
- Layout of the user interface
- Properties of user interface elements

2.4.1.5. Separation Of Business Logic And Display Logic

Implementing Web Dynpro enables you to clearly separate business logic and display logic. A Web Dynpro application runs on the front end and has local or remote access to the back end system via a service. This means that the display logic is contained in the Web Dynpro application, while the business logic and the persistence of the business objects run in the back end system. The following options are currently available for connecting Web Dynpro applications and the back end system:

- An interface generated using adaptive RFC, through which BAPIs of an SAP system can be called
- An interface for calling Web services
- A self-generated interface

The source code required for connecting the Web Dynpro application can be generated from a UML definition of the Web Dynpro interface. A UML definition can be imported into the Web Dynpro tools as an XML file.[3]

2.4.1.6.Implementation Of The Model View Controller

Every Web Dynpro application is structured according to the Model View Controller paradigm:

- The model forms the interface to the back end system and thus enables the Web Dynpro application access to data.
- The view is responsible for the representation of the data in the browser.
- The controller lies between the view and the model. The controller formats the model data to be displayed in the view, processes the user entries made by the user, and returns them to the model.[2]

3.Conclusion

Thus the above given information gives an idea of how SAP would be efficient for developing an ERP system as compared to the existing systems of other technologies and is evident from the customer satisfaction rate as well.However the initial cost and time required to develop would be on the higher side.Web Dyn Pro a programming model of SAP used for making the ERP web based would be very beneficial for any enterprise as it would allow the system to be accessed from any remote place and hence would make it very dynamic.

4.Reference

1. Implementing SAP R/3 Sales and Distribution by Glynn C. Williams
2. ALE, EDI, & IDoc Technologies for SAP, 2nd Edition (Prima Tech's SAP Book Series) by Gareth De Bruyn
3. Configuring SAP R/3 FI/CO: The Essential Resource for Configuring the Financial and Controlling Modules by David Nowak
4. Sams Teach Yourself ABAP/4 in 21 Days by Ken Greenwood