

Luvai F. Motiwalla Jeff Thompson

SECOND EDITION

ENTERPRISE SYSTEMS FOR MANAGEMENT

CHAPTER 5

IMPLEMENTATION STRATEGIES

Learning Objectives

- Acquire a greater knowledge base of ERP components and how they work together to support business.
- Learn why third party products are needed to operationally round out ERP system functionality and the issues involved in using them.
- Appreciate the impact of an ERP implementation on platform components such as data security, system reliability, and sustainability.
- Understand implementation approaches, the differences between vanilla and chocolate implementations, and the short and long term impacts on the system and company.

Preview

- A start-up process involves assessing the business environment, culture, and skills of the staff and “readiness” of the company.
- Early in the project, open and honest assessments are critical to project planning
- It is often said that the ERP software is the inexpensive component of an implementation—other surrounding systems components and resources cost more.
- With any ERP implementation strategy, all the implementation components need to be identified and planned.

ERP Components

- Hardware
 - An ERP system will require a powerful set of servers for development, testing, and production environments.
- Key Resources
 - **Servers.** High-end multiprocessor systems, several gigabytes of main memory and several terabytes of secondary storage
 - **Clients.** People accessing ERP systems (e.g., end-users, IT support staff, and developers)
 - **Peripherals.** Print servers, printers, back-up power supply equipment, and networking hardware

ERP Components (Cont'd)

- Software
 - A set of operating instructions and logic called programs that control and direct the computer hardware to perform its functions.
- Key Components
 - **System Software.** Operating system platform (e.g., Microsoft Windows Server, Linux, and Sun Solaris)
 - **Database Management System (DBMS).** (SAP/R3 works with IBM-DB2, Oracle, Microsoft SQL)
 - **Application Software.** Project management software, development software, remote access software, and automated software for monitoring system traffic, virus protection, etc.

Figure 5-1 Typical ERP Architecture

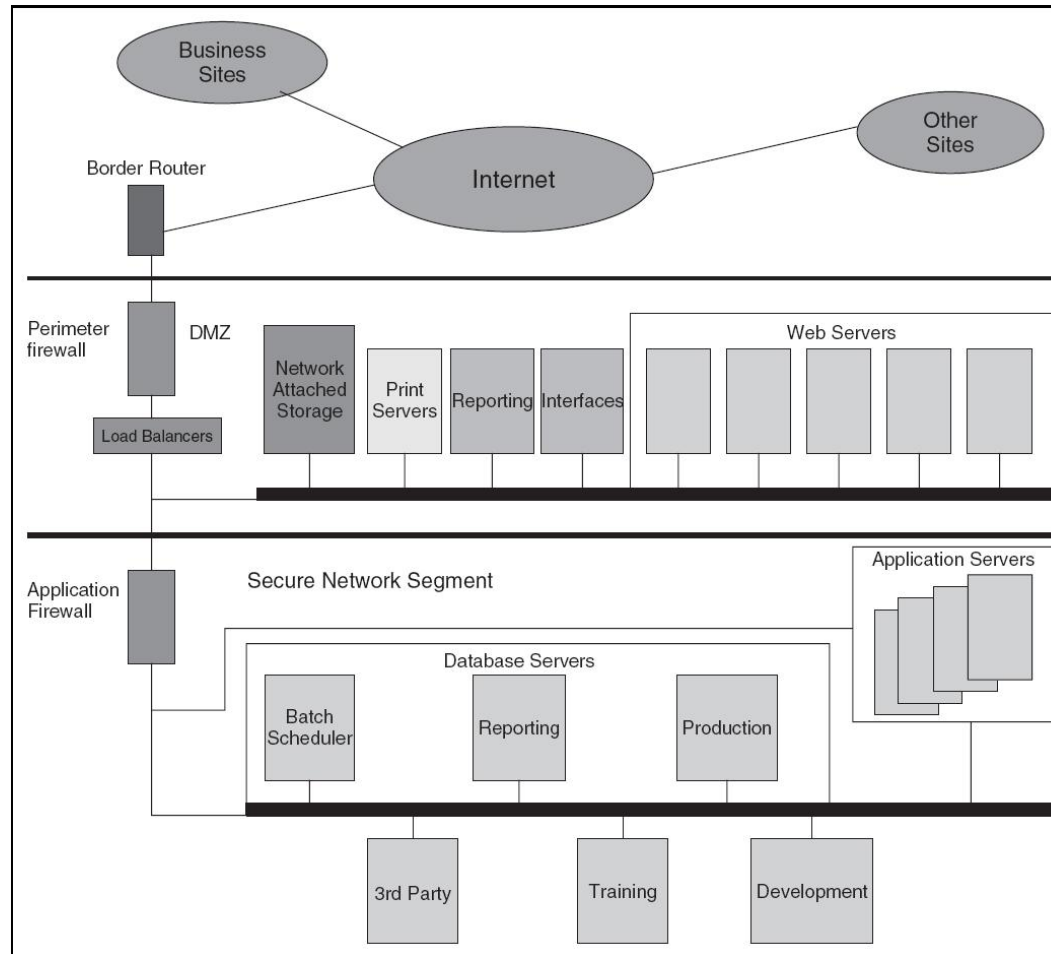


Table 5-1 Software Components with Oracle/PeopleSoft ERP

Vendor	Software
Oracle	Database management
BMC Control-M	Batch run control
Cobol, C++, Java	Software compilers
Informatica PowerCenter	Extract, translate, load tool for creation of reporting database
Oracle Advanced Security Option (ASO)	Data and network encryption
BEA WebLogic Express	Web software
Quest—Stat	Software control system
Quest—Toad	SQL development tool
McAfee PGP	Security
SMTP	E-mail communications
Adobe Output Designer	Letter development and generation
Merkur Fax Software	Faxing documents

ERP Components (Cont'd)

- **People Resources**

- **End-users.** Employees, clients, vendors, and others who will ultimately use the system
- **IT specialists.** Database administrators, IT operations support, developers, change management, trainers, and others in IT
- **The project manager.** Puts together a harmonious team, works with top management in getting support and resources for the project, and champion the system and its benefits to the end-users

- ERP implementation team includes various sub-teams from business or functional areas, change management, development, data migration, and system support.

ERP and Virtualization

- A virtual machine (VM) server technology can be described as providing a “technique to run multiple and isolated virtual servers on a single physical device, thus optimizing hardware usage.”
- Each virtual server that is installed in the same physical server operates under its own OS independently of the other VMs present
- The two more common models used for mission critical application are known as
 - Hardware virtualization
 - Paravirtualization

ERP Vendors and Virtualization

- **Microsoft:** The two virtualization choices available are Microsoft Virtual Server and Microsoft Virtual PC.
“Microsoft does not test or support its software running together with non-Microsoft virtualization software”
- **Oracle:** Same as Microsoft. Oracle VM uses para-virtualization architecture based on the Xen open-source technology that brings with it both Linux and Windows support
- **SAP:** Strategy does not dictate what software customers can use to virtualize applications. They provide customers with tools, code tweaks, and support needed to make sure their SAP virtualization projects go smoothly.

Benefits of Virtualization

- Enhanced hardware utilization allowing an organization to consolidate underutilized servers
- Makes provisioning and deploying more agile.
- Through consolidation, virtualization can lower total cost of operations TCO at the data center by the following:
 - Deferred purchase of new servers
 - Smaller data center footprint
 - Lower maintenance costs
 - Lower power, ventilation, cooling, rack, and cabling requirements
 - Lower disaster recovery costs
 - Reduced server deployment costs
- Enhances business continuity and availability

Drawbacks of Virtualization

- Tendency to try to squeeze more performance out of a physical server by creating too many virtual machines leading to significant concerns when the server is operating at peak loads
- Security- If a hacker compromises the security of the hypervisor, he or she might get access to all virtual machines running on the host server

Third Party Products

- Add-on software components either to make the system operational or to add missing functionality.
- Integration with ERP
 - Integration defined as the sharing of data and data elements directly with the ERP system without data redundancy.
- Strategic Partners
 - Assist in addressing integration and interface issues with third party products
- Middleware
 - Assists with the development of reporting databases that use extract translate and load tools
- Support- Third party product support

Database Requirements

- For an ERP system to perform up to expectations, the update or transactional component and the reporting component must respond in a timely fashion.
- Large ERP system implementations require a robust relational database system (Oracle, DB2, Sybase, Microsoft SQL).
- Selecting a relational database
 - Availability of software applications
 - Availability of skilled, trained technical staff
 - Overall functionality of the database itself
- Staffing and database Administration
 - Options include the use of full time staff and consultants.

ERP Approaches

- Governance
 - Governance should outline and define committees and workgroups that are responsible for the different components of the implementation, their interaction and decision making.
 - Components
 - Technical development
 - Hardware and software installation
 - Functional components
 - Communications and reporting
 - Change management
 - Project management
 - Project owners and sponsors
 - Budget management
 - Issue escalation process

Roles and Responsibilities

- **Owners** (Consisting of Senior Management)—Determine overall policy, budget, and scope of the project.
- **Project Executive**—Oversees project activities, provides broad project oversight, resolves policy level issues, and ensures that the project stays within scope.
- **Steering Committee**—Oversee the project's efforts and ensure appropriate leadership.
- **Application Steward**—Works with the other business owners to develop an overall business direction of the system, developing consensus, and resolving functional issues raised to the steering committee.

Roles and Responsibilities (Cont'd)

- **Chairperson**—Oversee the activities of the steering committee, ensuring that the committee functions in accordance with the overall project oversight. This includes budget, resources, deliverables, risk, and expectations management.
- **Project Management Office**—Consists of the project executive, business and technical project manager(s), and the implementation partner. Manage the day-to-day aspects of the project.

Roles and Responsibilities (Cont'd)

- **Project Teams**—Provide direction and ERP application knowledge with respect to business process design, configuration, conversion, testing, training, reporting, and implementation. The following teams will exist:
 - Cross-functional component team
 - Functional component teams
 - Technical Infrastructure team
 - Development team
 - Change management team
 - Conversion team
 - Reporting team

Roles and Responsibilities (Cont'd)

- **Project Team Leads**—Provide leadership and overall direction for the implementation, ensuring the quality of deliverables and adherence to the project plan and milestones.
 - The project team leads will inform the project managers of any and all issues that are identified by their respective project team.
- **Cross Functional Team**—The integration team will consist of the module or project team leads from the business modules and the development leads.
 - This group will meet as needed to discuss and resolve cross-module issues.

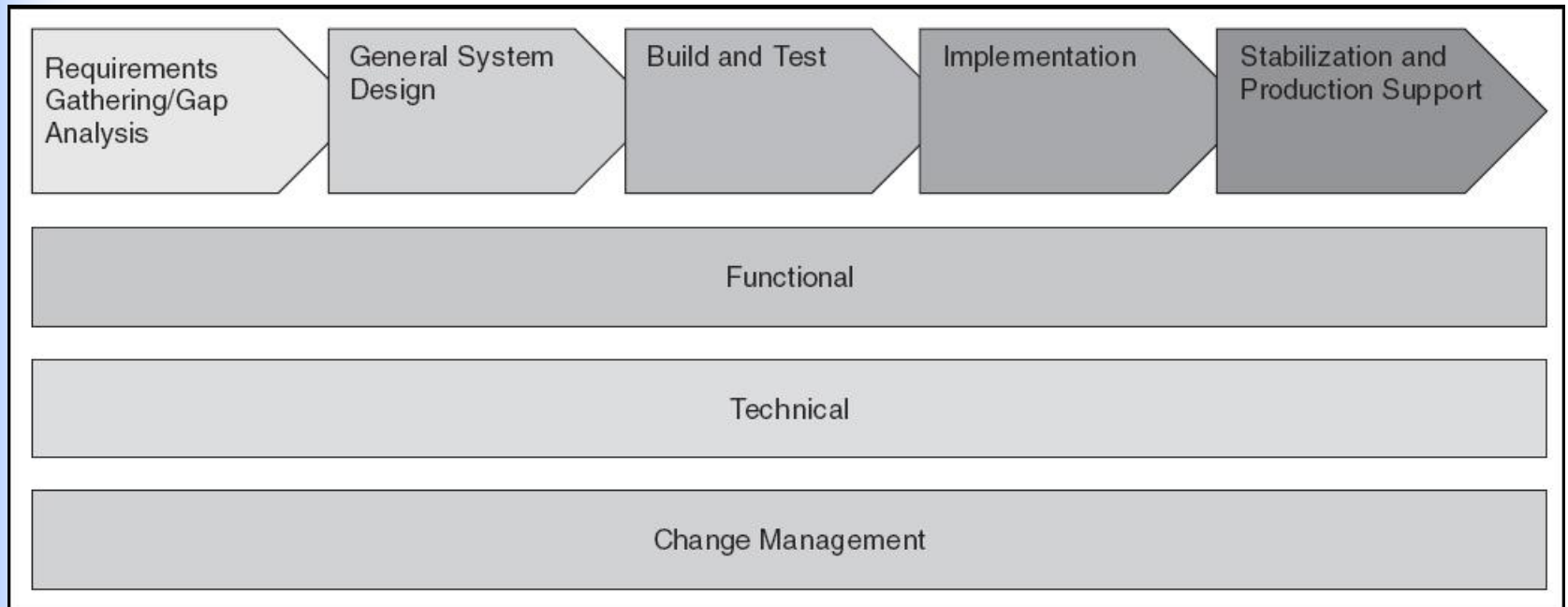
Sample Set of Meetings

- Project Sponsors Meeting
- Steering Committee Meeting
- Project Management Office Meeting
- Module or Project Leads Meeting
- Module or Project Team Status Meeting
- Issues Meeting
- Cross-Functional Module Meeting
- Database Planning Meeting

Implementation Methodology

- When a system implementation does not have a well-defined methodology, deadlines will likely be missed, budgets overspent, and the functionality may not meet the client's requirements.
- ERP system implementations are very risky, but a well-defined project methodology will assist in managing those risks.
- The selected methodology should be able to address all components for the entire project including project start-up through system stabilization

Figure 5-2 Sample Project Methodology



Vanilla Implementation

- A vanilla implementation is when the company chooses not to modify or customize the system, but instead to change business practices to fit the system.
- Reasons to consider Vanilla Implementation.
 - Businesses with relatively straightforward business practices that are not unique
 - Businesses that are not skilled or experienced at building or changing systems
 - For a company using a purchased ERP system where the financial component is critical for reporting
 - All of a company's branches are running the same system in a single instance, and entering and retrieving data in a similar fashion
 - For a competitive advantage, it is important to know the ability of what and where things are around the world with the business.

Modifying an ERP

- Businesses that have highly skilled IT developers and a proven process for managing modifications can choose to change the system to match their processes
- Benefits
 - A single-system instance is easier to maintain and support.
 - Assessing organizational change along with modifying the system to meet the needs of the business will help to minimize risk.
- Drawbacks
 - If a system is modified, each modification will need to be analyzed in light of the upgrade to see if it needs to be incorporated in the upgrade or removed.
 - An upgrade can sometimes turn into a re-implementation, which requires more resources and time.

Platform Issues

- Servers
 - Servers that make up the infrastructure will need to grow as the system grows and expands with enough storage to ensure data is quickly retrievable.
- Network
 - Businesses need a reliable and secure network in place.
- Security
 - Several components must be installed and implemented to ensure that the ERP system is secure from unauthorized access.
- Disaster Recovery and Business Continuity
 - Planning for a disaster and providing business continuity is a part of every ERP implementation.

Implications for Management

- An implemented ERP system can create opportunities for a business to grow and change for the better.
- Decisions around the hardware, software, governance, methodology, and level of modifications need to be based on the goals set out for the purchase of the ERP system.
- Two initial management decisions
 - Use of an implementation methodology
 - Whether or not to modify the system
- Management must decide on whether or not to customize prior to the start of the implementation process and it must be communicated to all on the project.

Summary

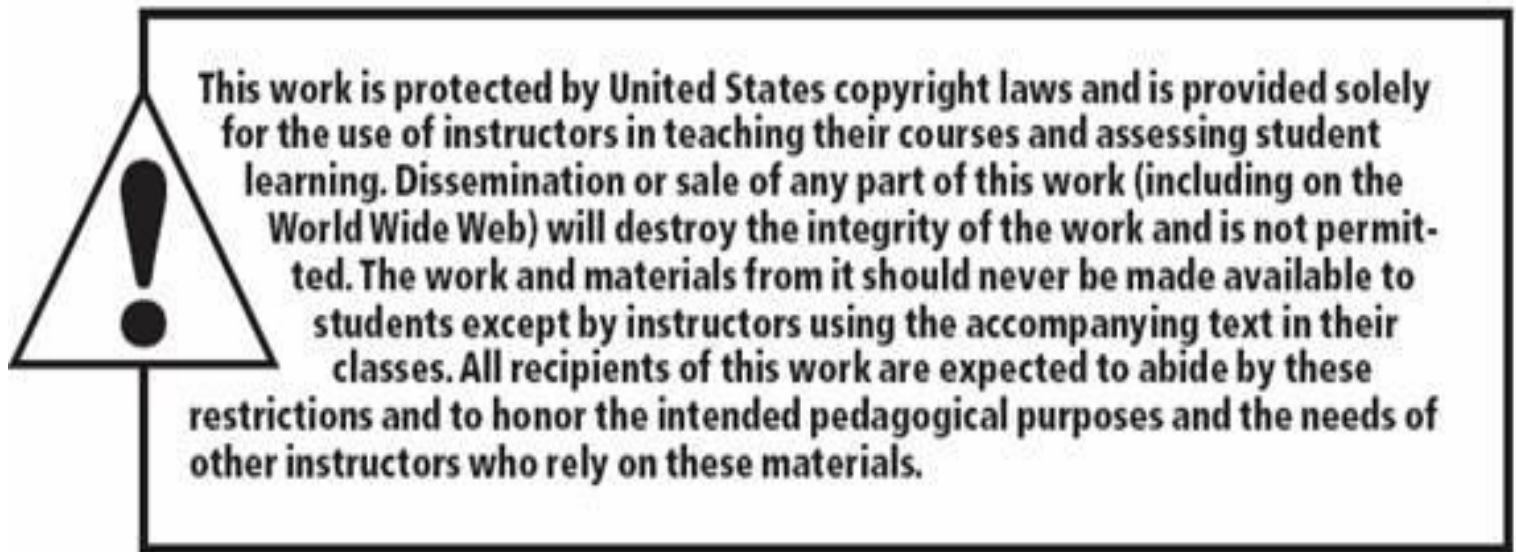
- Many components make up an ERP system. The software, as well as the surrounding operational software and third party software are needed to ensure that the business can accomplish its goals.
- ERPs are all about change, both to business flows and, more importantly, to employees making it very high risk.
- Managing the risk throughout the project with a proven implementation methodology is key to being successful.
- One key decision to make before the implementation is whether or not to modify the system, change business processes, or use some combination of modification and business change.

Summary (Cont'd)

Hardware	Software
<ul style="list-style-type: none">•Application servers•Database servers•Web servers•Personal computers•Storage devices•Printers•Networking equipment•Uninterruptible power supply	<ul style="list-style-type: none">•Operating system•Database management system•ERP system•Software development•System performance•Virus protection•Report distribution•Batch run control•Software version control

Review Questions

1. What are the components of an ERP system?
2. Why would a company choose to implement an ERP?
3. What are third-party products and why are they needed?
4. What is an implementation methodology and why is it important in ERP implementations?
5. What are the pros and cons of implementing a system without customization?
6. Why are there differences between a transactional and reporting database?



All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. Printed in the United States of America.

**Copyright © 2012 Pearson Education, Inc.
Publishing as Prentice Hall**