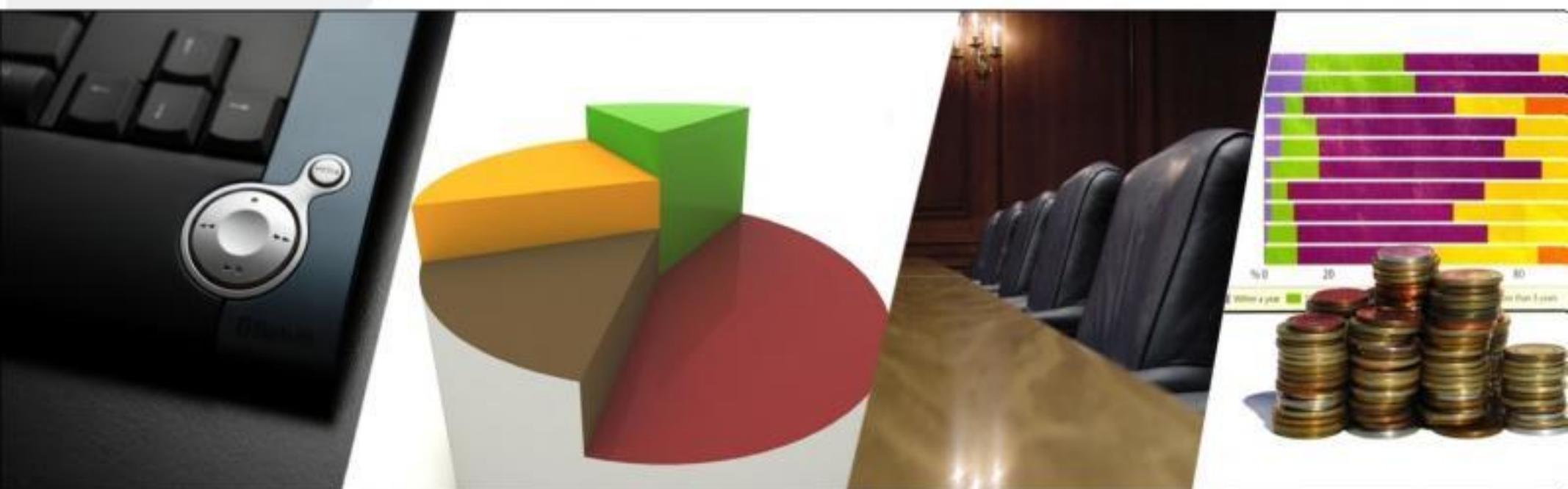


# MODERN ERP



SELECT, IMPLEMENT & USE  
TODAY'S ADVANCED BUSINESS SYSTEMS

SECOND EDITION

MARIANNE BRADFORD

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## Preface to the Second Edition

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In 2008 the first edition of *Modern ERP* was published with the formidable goal of bridging the gap between business education and the modern technologies firms deploy to seek competitive advantage. Based on the number of colleges and universities that adopted the text, that goal was achieved. In the time since the first edition was published, ERP systems have evolved in response to technological innovation and changing business conditions. Likewise, *Modern ERP* has evolved as well, ensuring that it remains current, relevant and valuable for students and practitioners alike.

Each chapter of the second edition has been updated with feedback we received from the first edition. You will find increased coverage of technologies, such as hosted solutions, that have become more prevalent since the first edition was published. Industry-specific information has been updated to reflect the latest trends as well. Finally, figures, tables, and screenshots have been updated and reworked to further aid in the learning process. The second edition of *Modern ERP* reflects the state of the industry as of 2010.

Dr. Marianne Bradford continues to focus on the fundamentals and remains impartial to any vendor's products. By concentrating on the core ideas and principles that form the basis of modern business systems, Bradford leaves the reader with the tools to master the business systems of today as well as tomorrow. As anyone that has ever implemented an ERP system can attest, the size and complexity of these systems are enormous. Mastering the twelve chapters in this book provides the reader with the knowledge to successfully take on that challenge.

Whether you are using this book as part of a university course, to further your career, or simply to increase your personal knowledge, we hope that the second edition of *Modern ERP* gives you what you need. In particular, if you are college or university student that will soon be entering the workforce as a new professional, we hope that *Modern ERP* provides the edge to get the job in today's competitive market.

## Preface to the First Edition

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For a moment, consider the gap between what you learned in college and what you needed to know when you began your first job. If you have yet to complete your education, or are still hoping to land your first job afterwards, maybe you have acquaintances that can help you measure that gap.

On one hand, our instruction in business academia covers the topics of management, accounting and finance in often vivid detail. On the other, our first weeks with a new employer will doubtlessly include system training. How can it be that we spend years studying business and are yet so poorly prepared to use our new knowledge to contribute to our new employer's mission?

We needn't focus our blame on our educators. The fact is that modern businesses run on modern business systems and those systems can be both sophisticated and complicated. Sophistication empowers the business system to bring more information to more employees exactly when and where it is needed to help the employee execute tasks in favorable ways. Complications allow the system to adapt to a company's unique and peculiar business needs allowing it to extend its competitive advantages further into the market.

Yet, while complication implies a need for custom training, this book seeks to close the gap between a traditional business education and the sophisticated and rapidly evolving technologies on which modern business systems rely. When we have mastered the topics covered in this book, we may still need an introduction to our employer's "system," but we need not be disadvantaged by a lack of understanding of the sophisticated technologies these systems employ.

In many ways, an evolving, dynamic company also needs its employees to "graduate" taking the knowledge gained from years of experience and embarking on a new endeavor that may include the introduction of new technologies. Perhaps you need a plan to rehabilitate a struggling firm. Perhaps, to gain some competitive advantage, your firm needs to improve efficiency in the way it interacts with customers and suppliers. Perhaps your company needs but one final boost to completely squash the competition. In each of these cases, embracing modern business systems and the accompanying benefits in business processes, business intelligence and accountability, is often the wisest move.

Whether you still anticipate your first encounter with business systems or you need to deploy, update or rework an existing system, Dr. Bradford has outlined the tasks ahead of you in reading this book:

**Buy it** - We will begin by studying the marketplace of modern business systems, how they work, and how to choose the best system for our needs today and in the future.

**Deploy it** - Next, we will map the effort to bring our system to life and ensure that our stakeholders quickly gain the advantages it offers.

**Use it** - Last, we will look at the advantages we gain when we've executed the first two steps appropriately and explore the new power we have over the valuable information that drives our success.

We believe our book includes the best, most current coverage of these topics. We want you to appreciate how the topics we cover will prepare you for your encounters with modern business systems that lie in your future. Whether you are currently situated in academia or in a company that relies on outdated technology, if you will work to gain a command of this subject matter, you will find that the gap between your current state and one that is more technologically empowered has closed considerably.

## Acknowledgements

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I would like to thank the following professionals and colleagues who contributed to my book and love ERP as much as I do. ☺

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## About the Author

---

Marianne Bradford is an Associate Professor at North Carolina State University, where she teaches graduate and undergraduate ERP systems in the College of Management. She holds a Ph.D. in Accounting with a concentration in Information Systems from The University of Tennessee and is also a CPA. Dr. Bradford has been published in numerous journals including:

- *Journal of Information Systems*
- *Issues in Accounting Education*
- *Communications of the Association of Information Systems*
- *Journal of Cost Management*
- *International Journal of Accounting Information Systems*
- *Strategic Finance*

Her research interests include ERP systems, IT outsourcing, systems diagramming methods, and business process reengineering. Her professional experience includes auditor with KPMG LLP and IT auditor with Ernst and Young LLP. Dr. Bradford was named as one of the Top 25 ERP Experts, Blogs, and Influencers to Track in 2010 by Focus Research.





## Introduction to Enterprise Resource Planning Systems

### Objectives

---

- Understand the essentials of ERP systems
- Be familiar with the various ways professionals interact with ERP systems
- Recognize the advantages and disadvantages of ERP systems
- Be aware of what tiers mean in the ERP marketplace

### Introduction

---

The introduction of personal computers to the business environment decades ago initially led to many information systems that were narrowly focused on serving a specific, single function. Thus, organizations had numerous systems to accommodate various functional areas. This, in turn, led to duplicate data across the enterprise and an emphasis on departmental boundaries as data was not being shared. In the mid to late 1990s many companies began implementing Enterprise Resource Planning (ERP) systems, which integrate data across the company and serve the needs of the entire enterprise. With ERP systems, there is one data store, one source of the truth, and a focus on process versus functional orientation. This book is about ERP systems, the information systems paradigm of organizational computing today. This chapter discusses essentials of ERP, the importance of learning about ERP systems, ERP advantages and disadvantages and the ERP marketplace.

### ERP Essentials

---

**Enterprise resource planning** is an industry term for the broad set of activities that managers use to run the important parts of an organization such as purchasing, human

resources, accounting, production, and sales. By serving the information requirements of more than one function, ERP systems are considered **cross-functional** in nature. And, by organizing around processes, ERP systems are considered **process-centered**; that is, the application is built around business processes. Business processes span across multiple departments, and in many cases traverse the boundaries of the organization, sharing information with partners, suppliers, and customers. With the goal of eliminating standalone, disparate systems, often referred to as **legacy systems**, an ERP system integrates all of the organization's data into a well-structured database.

ERP systems are sold in **modules**, or groups of related programs that perform a major function within an ERP system. Organizations do not have to purchase and implement all modules, but more modules leads to greater integration, which in turn, can lead to a greater return on investment (ROI). **Core ERP** includes financials, human resources and operations modules. Figure 1-1 shows the various business processes that ERP systems support. The “starred” processes represent core ERP. Table 1-1 presents typical modules in an ERP system.

**Figure 1-1:** ERP-Supported Business Processes



*Source: Deloitte & Touche*

An ERP implementation involves far more than just a simple installation of an off-the-shelf software program; it may well be the most expensive information technology (IT) investment an organization will ever make, costing in many cases millions of dollars and taking years to implement. Furthermore, once implemented, the systems and infrastructure needed to run the systems must be maintained and periodically upgraded. Employees may be quite comfortable with their existing legacy systems and the autonomy and control they have over them. Thus,

they often resist the ERP system. Management may oppose conforming to a common data structure for enterprise-wide use because of the additional training, process modifications, and organizational change that inevitably occurs. Successful implementations require that all employees from functional users to IT staff to top management be motivated to work closely together to advance the organization's mission. Thus, companies should not take the decision to implement an ERP system lightly.

**Table 1-1:** Typical Modules in an ERP System for Manufacturing

<b>Operations (Core)</b>		
· Engineering	· Bills of Material	· Scheduling
· Capacity	· Process Manu.	· Quality Control
· Cost Management	· Discrete Manu.	· Shop Floor Mgmt.
· Inventory	· Order Entry	· Purchasing
· Product Configuration	· Supply Chain Planning	· Supplier Scheduling
· Quality Control	· Demand Management	· Sourcing
<b>Financials (Core)</b>		
· General Ledger	· Cash Management	· Accounts Payable
· Accounts Receivable	· Fixed Assets	· Controlling
<b>Projects</b>		
· Project Costing	· Project Billing	· Time and Expense
· Activity Management	· Resource Availability	· Project Contracts
<b>Human Resources (Core)</b>		
· Human Resources	· Payroll	· Training
· Time & Attendance	· Benefits	· Recruiting
<b>Customer Relationship Management</b>		
· Sales and Marketing	· Commissions	· Service
· Customer Contact	· Call Center Support	· Analytics
<b>Plus:</b> Various Self-Service Interfaces for Customers, Suppliers, and Employees		

## Why Learn About ERP Systems?

Business professionals interact with ERP systems in many different contexts including end user, internal or external auditor, or consultant. End users operate ERP systems on a daily basis in their particular business context. For example, shipping personnel use ERP to view logistics information, purchasing personnel maintain vendor data, accounting staff journalize transactions and close the books at the end of the month, finance executives view cash requirements, and human resources staff maintain employee records. Even those employees whose jobs do not require them to enter business events may use the ERP system for self-service activities such as changing their exemption status for payroll, requesting time off, or signing up for training classes.

Financial statement auditors need to understand their clients' ERP systems for the annual audit. They will collect reports from the ERP system such as the Trial Balance and General Ledger, and other relevant data such as customer account balances used to substantiate accounts receivable (AR) on the Balance Sheet. IT auditors need to work with financial statement auditors to identify the ERP system's **application controls**. These are the programmed controls in the ERP software that maintain accuracy, reliability, completeness, security, and privacy of the data.

Given the widespread adoption of ERP systems, professionals with business and IT experience are highly sought after to be involved with the implementation of these systems on an internal project team or as an implementation partner. All of the Big 4 accounting firms and many other accounting and consulting firms employ consultants to assist organizations in implementing and maintaining ERP systems. In addition, these firms also offer business process analysis, software customization, maintenance contracts, project management, and hosting services, enabling their clients to enhance and upgrade their ERP system performance.

ERP has changed the basic nature of the IT function from that of analyst and designer to that of ERP system specialist. There is a huge demand for users or line-of-business personnel who also have IT skills. Because ERP systems are highly specialized and extremely structured to support information requirements throughout the enterprise, traditional software developers and programmers, who know mostly about technology and little about business, are not as valuable as they once were. Understanding a company's business operations is the most critical expertise necessary for a successful ERP implementation and life cycle support. While many are familiar with the statement "knowledge is power," understanding how to effectively use and leverage different aspects of an ERP system is essential for surviving in the information world of today.



## ERP Systems and Best Practices

As industries mature, certain techniques, processes, and methodologies become generally recognized as more effective and/or efficient and are known as industry **best practices**. ERP vendors enable enterprises to take advantage of industry best practices by building into their applications techniques, strategies, processes, actions, and methodologies that are proven most effective. When managers of a company select an ERP package to implement, they are "buying into" the ERP vendor's view of a certain industry's best practices and relying on the system to support their efforts to embrace these practices. Matching best practices to organizational needs is what differentiates one ERP package from others available and is a key contributor to the ultimate success of the implementation.

The larger ERP vendors, such as SAP and Oracle, have literally thousands of best practices programmed into their software. These vendors support enormous research and development

efforts to identify best practices for many different industries. As new best practices are recognized, they become available for inclusion in new versions and upgrades of ERP software. As a result, the cycle of finding best practices, codifying, and delivering those applications to customers, allows the ERP customer to maintain the advantages associated with these high value business methods. This commitment to best practice research and development has enabled ERP vendors to offer industry specific versions of their software called **vertical solutions**. Table 1-2 presents a more complete list of industries supported by Oracle's E-Business Suite.

**Table 1-2:** Oracle's Vertical Solutions

Industry	
Aerospace and Defense	Industrial Manufacturing
Automotive	Insurance
Chemicals	Media and Entertainment
Communications	Natural Resources
Consumer Goods	Oil and Gas
Education and Research	Professional Services
Engineering and Construction	Public Sector
Finance Services	Retail
Health Sciences	Travel and Transportation
High Technology	Utilities

*Source: Oracle.com*

## Other Advantages of ERP Systems

From the onset of heavy desktop computer use in business until the arrival of ERP systems, companies typically maintained various sets of the same data in different departmental databases. While these stand-alone systems obviously thwarted efforts to integrate and aggregate information, they also resulted in time lags as information moved from one system to another. Often, extracting data from one system and entering it into another system involved printing output from one system and handing it off to employees in another department who would enter the same data into their department's legacy system. The inability to keep information in sync between systems often resulted in multiple versions of the truth residing within the organization. These inconsistencies led to errors in decision-making. These issues are exacerbated in today's world since modern companies require instant access to information to maintain a competitive edge. With ERP systems, once data is entered, it is readily available on-line and real-time to users in all departments (with the authority to view/edit the data). For example, in a firm with an ERP system, suppose a member of the purchasing department processes a purchase order for raw material. Once that event is





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ERP systems are often quite complex in order to fit the varied needs of many different types of customers. Customers with more simplistic business requirements may find that the various features, options, and setup requirements add a level of complexity not previously experienced. By their very nature, ERP systems are integrated with critical components throughout the organization. While much of the integration is beneficial, the maintenance of the hardware and software needed to maintain stability and compatibility with a wide range of ever-changing hardware and software applications is enormous. Once implemented, the ERP system needs constant “care and feeding” to maintain the investment. Many ERP professionals liken this to being on an “ERP treadmill”; once on the treadmill, you must establish a pace that will keep up with constant change and evolution. Finally, ERP systems are often costly as mentioned earlier; the sheer magnitude of the cash outlay required for an ERP system is a major downside to implementation.

## Implementation Issues

---

Organizations can experience a wide-range of problems during an ERP implementation. Many of these issues are the “soft stuff” (people issues) as opposed to the technical problems. Employee resistance can be a major obstacle for a successful ERP implementation, particularly if employees have not been educated in the organization’s motivation for adoption. Resistance can also arise when employees do not receive sufficient training on the system. This can lead to employees developing counter-productive “work-arounds” in which they do not use the system as intended, perhaps reverting to their old practices. At times, frustrated or fearful of organizational change, they may even attempt to sabotage the implementation process, creating problems where none exist, intentionally injecting errors, or making excessively complicated demands of the system in order to hinder the system’s implementation or operation.

An example of sabotage during an ERP implementation was the SAP installation at FoxMeyer Drug Co. in the 1990s. Warehouse workers, threatened with a loss of their jobs due to the closing of warehouses, damaged inventory being transferred to the new inventory center. Because of the “debilitating morale problem among departing workers, a lot of merchandise was dumped into trucks and arrived at the Washington Court House center with packages damaged or broken open or otherwise unsalable as new product, [resulting in] a huge shrinkage in inventory.” Most such situations arise from inadequate communication and education of employees. Companies should not only educate their employees (the “why”) but also train their employees (the “how”) in order to ensure smooth transition when migrating from legacy systems to an ERP system.

Organizations that successfully implement and use ERP systems often employ change agents to assist in transformation. **Change agents** bring to the table skills in **change management**, or the systematic approach to dealing with change, both from the perspective of an organization and the individual. Change management will be discussed more in-depth in Chapter 6.

Further, the technical issues during implementation can be overwhelming. ERP systems are sophisticated and complex and implementing them requires, in many cases, hiring expensive



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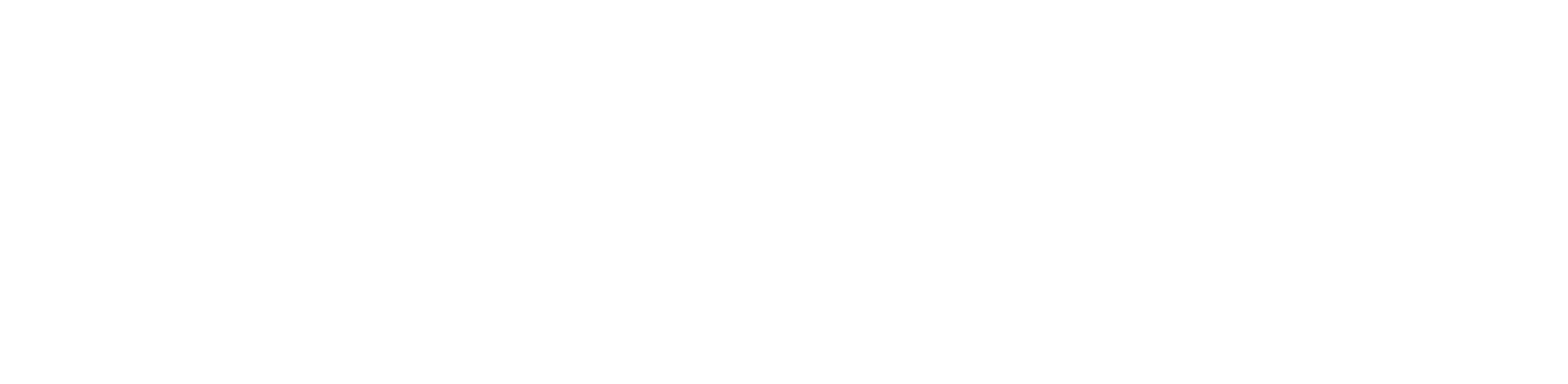
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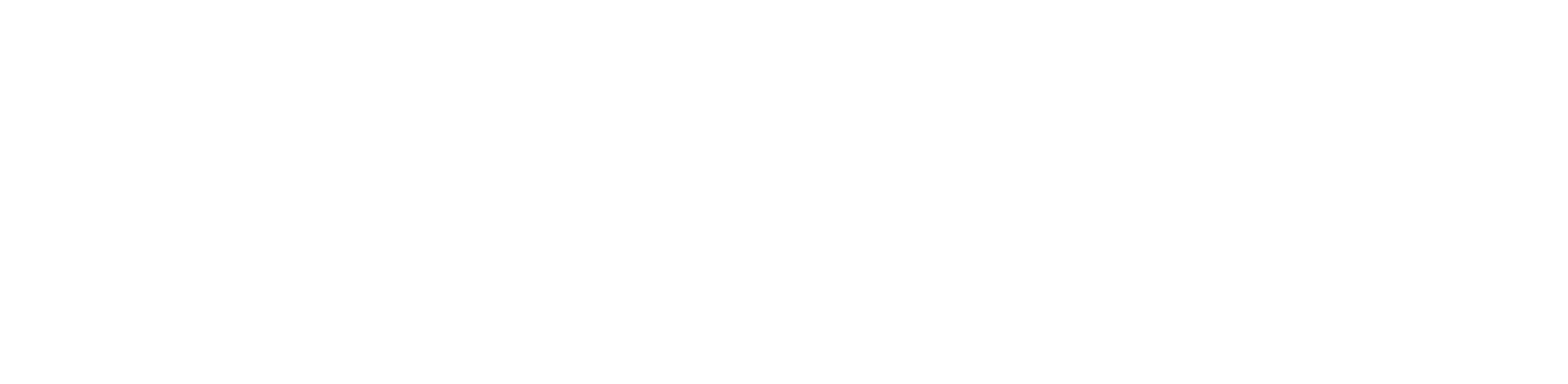
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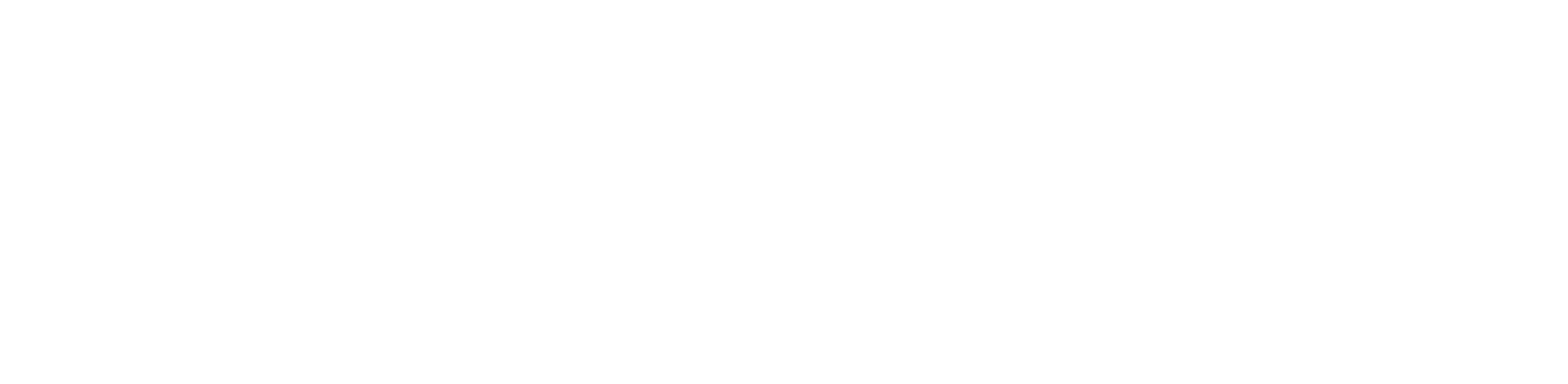
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technology to facilitate the reengineering process; the company's processes are reengineered to match best practices in ERP. Table 3-1 shows examples of real world technology-enabled reengineering projects.

**Table 3-1: Real World Reengineering Projects**

<b>John Deere</b>	The company reengineered various parts of the business including the insurance and the leadership processes. The effort gained its biggest success when the engineering, supply, management, and manufacturing departments were unified into a single "product delivery" process
<b>Duke Power</b>	Duke turned to reengineering to solidify its position as an established leader in their industry. With a great attitude and intense training, Duke successfully reengineered customer operations in the electric utility industry.
<b>Cisco Systems</b>	Cisco used five disparate systems in various locations to support their currency exchange operation. Adopting Fxall, a currency transaction platform, this technology-enabled reengineering effort completely automated the firm's currency exchange processes, eliminated re-keying, and provided real-time information to any location.
<b>IBM</b>	Starting with a charismatic leader, IBM reengineered both its customer relationship management and product development process, making them more customer-focused and integrated.
<b>Kamaz</b>	This heavy-duty truck manufacturer undertook a large reengineering project to improve logistics, free under-utilized production space, and renovate a range of products. As the project is completed, the company expects a six-fold increase in labor, a significant reduction in required production facilities, and substantial reductions in energy use.

In these cases, because the technology imposes constraints on the resulting business operations, this type of reengineering is also known as **constrained reengineering**. This means that the system's design “constrains” the available process designs the company has to choose from. The software drives the reengineering effort and gives companies the roadmap to get there. The process design is bounded by the software chosen, thereby eliminating many difficult decisions and allowing quicker implementation than a clean slate design where decisions regarding process design are often complicated. Since BPR will only deliver value if actually implemented and executed, the use of proven technology platforms significantly reduces the risk in achieving both. Also, process designs previously may have been adopted by other organizations, which decreases the uncertainty of adopting new processes. Finally, process designs can be more focused on those specific processes addressed by the technology, and therefore may be more cost effective than clean slate designs.

Occasionally, innovative clean-slate processes end up in ERP software if ERP vendor and customer work together to fill known best practice gaps for an industry. This is beneficial to both parties because the ERP vendor embeds the new processes into their software and, in turn, the company will save on the cost of the system and implementation as discussed earlier. Although not always true, ERP customers are less likely to become obsolescent in either practice or technology. Figure 3-1 illustrates the differences between clean slate and technology-enabled reengineering.



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efforts targeting customer service or quality management. Often, these efforts include a set of **key performance indicators (KPIs)** that allow the company to compare its performance to industry best practices and standards. This measuring process is known as **benchmarking**, which is a continuous improvement tool and process that an enterprise uses to measure and compare all its functions, systems, and practices against strong competitors, identifying quality gaps in the organization, and striving to achieve competitive advantage locally and globally. With these measurements in hand, a company can determine which processes and practices it can change in order to realize the greatest return.

### High Volume, Low Margin Activities

High volume, low margin activities are usually a symptom of operating in a highly competitive market with substantial price pressure. Usually suppliers in these markets are poorly differentiated, offering a commodity product. Commodity processing might include these characteristics:

- High revenue - The high volume generates substantial revenue and therefore is extremely important to the company's cash flow. This revenue does not, however, necessarily translate to profit and certainly not large profit margins.
- Efficient and controlled - The low profit margin increases the need for efficiency and magnifies the detrimental impact of defects.
- Capital intensive - The need for efficiency generally requires dedicated fixed assets such as automated processing equipment or sophisticated production facilities. Likewise, inventory costs might be big because of the high volume and the need to maintain production levels.

Together, these characteristics combine to drive up operational leverage; with sufficient volume, BPR needs to generate only tiny improvements to result in remarkable gains. An example of a high volume, low margin activity is manufacturing potato chips. Manufacturers must attain sufficient scale to turn train-car loads of potatoes into chips and deliver them fresh to stores. A moldy potato, a defect in a cooking batch, or a faulty packaging system may ruin literally tons of products.

### High Defect, High Reward Activities

Each time a process incurs an error or defect, costly material and labor are wasted or are consumed reworking the defect. Material and labor that would otherwise be committed to other revenue-generating activities must go toward this activity. **Quality controls** can be implemented to reduce this error rate, but controls can be costly too, such as when they slow production to allow time for quality checks, or when a form must be filled out noting some activity has been completed successfully. The challenge is balancing the costs of implementing these controls with the value saved reducing the defects. A company could conceivably eliminate all errors, but the costs of doing so would far outweigh the benefits. Quality impacts revenue and expense in several ways:



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- Look at other companies for similar solutions to similar processes - The technical communities that support ERP implementations are often eager to share knowledge about various deployment experiences. With outsourced implementations commonplace, a firm may gladly provide case histories with their marketing material, often with references. This way a potential customer can get a first-hand account of the implementation. Lessons learned from other companies could save time and money and help with setting budgets, plans, and expectations. While companies should not expect that they can copy another company's process and get identical results, proven processes often eliminate a number of risks and uncertainties. Many have tried to copy Dell and Toyota, with varying results.
- Recognize that a process is just one aspect of success - Other influences include culture (both corporate and geographic), incentives, people and their capabilities, experience, adaptability, motivation, values, and marketplace realities and perceptions.
- Deliver sooner rather than later - Too many times companies have attempted BPR implementations that have taken years to complete. Despite delivering on time and within budget, people have lost their jobs because the market had changed and made the enhancements irrelevant. Second, it is rare to get 100% support for any project; "fence sitters" will wait to see how things turn out before giving their support. Others will object, or worse, try to undermine the project's credibility and success. Setting and meeting more short-term goals helps to overcome this behavior by providing more visibility for early successes. Each delivery builds credibility and momentum, converting "fence sitters" and making it harder for those who oppose the changes or seek to undermine success. Finally, interim deliverables provide a great opportunity for feedback and refinement.

## Constituents for Reengineering

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Businesses operate for the sake of stakeholders. From the minimum invested stockholder to the last customer and out to the ends of the supply chain, these stakeholders each have an interest in BPR. Listed below are typical constituents to reengineering.

### Customers

Customers are the main constituent to BPR. Customers not only gain similar benefits of improved visibility and efficiencies, which can lead to lower costs, but the most impressive improvements are typically those that arise from improved customer relationship management techniques. Reengineered processes that focus on this relationship are great for customer retention and profitability. Most companies think they already know what the customer really wants and needs – and are very surprised if and when they actually suggest anything. The most frequently repeated BPR mistake is failure to directly involve customers in BPR efforts.



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## Keywords

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Benchmarking	Core competencies
Business process improvement (BPI)	Key performance indicator (KPI)
Business process reengineering (BPR)	Quality controls
Clean slate reengineering	Restructuring
Constrained reengineering	Shared services
	Technology-enabled reengineering

## Quick Review

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1. True/False: Business process reengineering can be defined as incremental improvement in business processes.
2. True/False: Technology-enabled reengineering is more cost effective than clean slate reengineering.
3. True/False: A drawback to clean-slate reengineering is it can inhibit innovation and creativity.
4. \_\_\_\_\_ means using KPIs to compare the firm's processes and performance to industry best practices and standards.
5. The Three Cs include \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

## Questions to Consider

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1. What is the definition of business process reengineering?
2. How does reengineering relate to ERP?
3. What are the two types of reengineering? What are the disadvantages or advantages of each approach?
4. List and explain five reengineering principles.
5. What are some issues to consider when selecting a process to reengineer?



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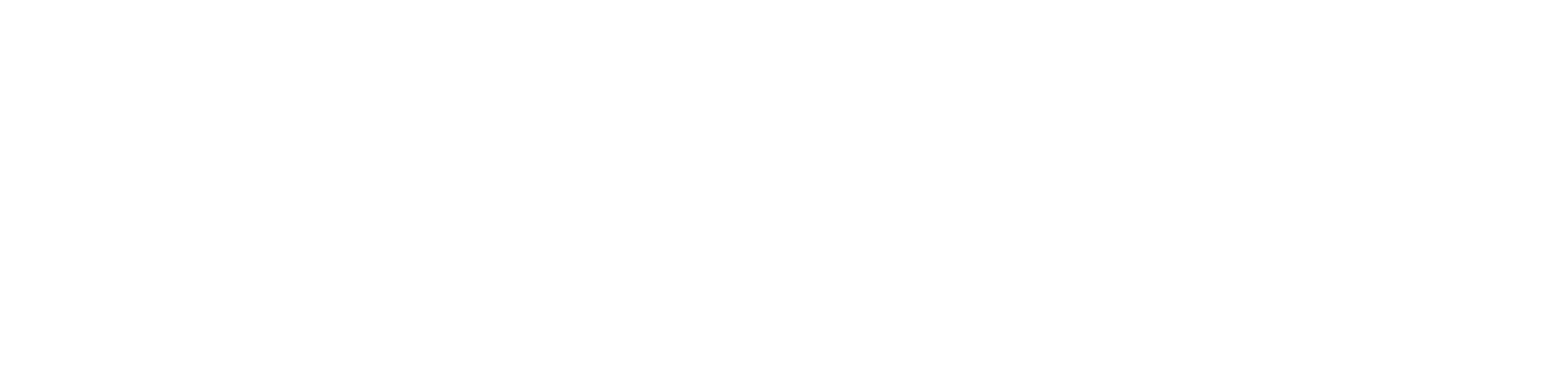
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While these symbols are simple enough to be sketched out, users can create more professional process maps with flowcharting packages such as Microsoft Visio, which provide functionality to support process maps and other flowcharting techniques.

## Steps to Drawing Process Maps

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Process maps can easily become complex as the number of events and roles increase. Gathering information to create the process map can be an arduous task. Generally, the **group interview method**, in which all people involved in the process are interviewed as a group, is the more effective than the **one-on-one interview method**, in which each person involved in the process is interviewed separately. When everyone has to agree on the way the process works, the outcome is more accurate. Typically, it is helpful to employ a **skilled facilitator**, whether external or internal to the company, to promote and focus the discussions, questioning conventional wisdom and providing an unbiased, objective point of view. Also, a walkthrough is helpful in developing a process map. A **walkthrough** is the act of physically reviewing a process in scope. The purpose is to confirm if a documented process is accurately reflecting current workflow. The guidelines below should be used to develop process maps.

- Have a defined purpose for mapping a process and explain it to those that are participating in the exercise.
- Identify the scope of the process. One common mistake is to make the scope too broad, which complicates the exercise. Label the name of the process being mapped at the top of the page (e.g., Recruiting New Employee Process).
- Determine the roles participating in the process. These roles become horizontal (or vertical) bands, called **swim lanes**, across (or down) the page. Horizontal swim lanes visually highlight the process and vertical swim lanes visually highlight the functional units performing the process.
- Determine the **trigger**, which is the activity when the customer to the process makes the process begin. Something must occur to get the process started (e.g., customer calls a customer service representative, potential employee fills out an application). The trigger event should be in the first swim lane.
- Events should move left to right or top to bottom to indicate the passage of time. Activity descriptors should begin with an active verb such as “Enter” “Inspect” or “Input.” Passive activities such as “Receive” can generally be excluded because these activities are represented by the flow lines, (i.e. the flow of data into a rectangle means that the data has been received by the recipient).
- The information being exchanged is entered on the process flow lines.
- Decision descriptors should end with a question mark, and the process flow lines coming out of the decision are labeled with outcomes (e.g., yes/no).



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## ERP Life Cycle: Planning and Package Selection

### Objectives

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- Know why organizations change their information systems
- Describe activities that take place in the planning stage of the ERP life cycle
- Identify rationales used by companies for investing in ERP
- Recognize the cost components of an ERP system
- Describe activities that take place in the package selection stage of the ERP life cycle

### Introduction

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An organization's relationship with its information systems is a long one, especially if it involves an ERP system. A company will continually find itself in one stage or another in this relationship. The stages that an organization goes through with respect to ERP can be thought of as a life cycle, from the early stages of planning to the much longer stage of maintenance and eventual consideration of future upgrades or replacement. At this point the life cycle will start all over again. Though experts vary on their names and definitions for the life cycle stages, we classify them as:

- Planning
- Package Selection
- Implementation
- Maintenance

A solid understanding of the decisions and tasks involved in each stage of the life cycle is critical for managing an ERP implementation. Without knowledge of what should happen during each stage, project leaders could either dedicate insufficient resources, the wrong



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the divisions or business units that will be included in the roll-out, and 4) the technical infrastructures that will be replaced.

To prevent **scope creep**, or changes to the extent of the project, the team should draft a project charter or mission statement. The project requirements should be solidified, documented, and signed by all members of the project team as well as executive sponsorship. Any changes to the scope during the implementation must go through a rigorous change control process that also must be documented. The goal of the implementation is to finish on time and on budget with good outcomes and this cannot happen if the team is constantly trying to hit a moving target.

## Project Team

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Before the planning stage begins or gets too far, a project team and project team leader should be appointed by the project champion. This team will play a vital role in the success of the initiative and should be given wide discretion to make all important decisions regarding the implementation. The project team should consist of key process owners, end users, managers, IT staff, and executives who span functional boundaries, business units, and organizational levels of the company. With this optimum mix of personnel, all areas and management layers affected by the implementation will have a voice in the process and feel a sense of ownership.

ERP system implementations require a significant human resource cost. Smart companies dedicate their most valuable and knowledgeable employees to the ERP project for a significant period of time. Each team member will need to educate other members on their respective functional area. Commitment to the team will undoubtedly conflict with employees' normal job functions, particularly when they are considered indispensable. Their participation in the implementation may adversely impact their department's performance in the short term, but also allows those in the succession plan to step up and demonstrate their capabilities. Creating the optimum team often requires backfilling key personnel to allow those chosen on the team to be fully dedicated to the implementation.

The size of the implementation will determine the size of the project team. Larger teams are more difficult to manage, take longer to agree on issues, can reach premature consensus, and provide greater cover for participants that are not contributing sufficient effort toward team goals. Smaller teams may exclude key functional areas and lack the breadth of knowledge and input necessary. Perhaps the most important decision the project team will face is the selection of the ERP system, which is discussed next. However, before beginning this stage, the project team should formally sign-off that planning is complete. This should also be done after every stage to emphasize the importance of alignment and commitment throughout the implementation.

## Project Manager

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The project manager is by far the most important factor in the success or failure of the ERP implementation. He or she must understand both technology and business processes. This

person should have deep knowledge of the effect of ERP on the business and be able to work with business professionals and consultants to organize a smooth transition from the “as is” state to the “to be” state. The project manager must be both disciplined, able to envision the end result and make tough decisions, and flexible, which means not coming undone when unexpected problems arise. This person is responsible for making sure the project stays on time and within budget. This person must be able to get along and work with nearly all people in the organization, especially the project team. He or she must be a fast learner, able quickly come up to speed with unfamiliar areas of the company. Table 5-1 presents 10 characteristics of a successful project manager.

**Table 5-1: 10 Characteristics of a Successful Project Manager**

A Successful ERP Project Manager...
is flexible
is disciplined
is a quick learner
is a good decision maker
has ERP experience
has business experience
has political clout
has a good formal education
is well liked
motivates staff

*Source: Gartner Institute*

- Transaction volume - The ERP system should support the transaction volume and allow for growth.
- Number of users - More users means more information management power and access to more input/output devices.
- Functionality - The depth and breadth of functionality to be supported by the system is usually defined by the number of modules and bolt-ons deployed.

Cost components of an ERP system typically include software and database licenses, servers, network infrastructure, implementation services (consulting), internal HR costs, and ongoing maintenance. One recent study found that software licenses, implementation services, and maintenance are the costs most often considered when evaluating enterprise software or measuring ROI. Database licenses, internal HR costs, and hardware costs, on the other hand, are considered less important because these resources are shared with other business needs and tend to be relatively constant among system alternatives. Some of these costs (e.g., database license) may not be applicable if the ERP system is hosted by a service provider or the vendor. In the following sections, each of the ERP cost components is discussed further.

## Application License

Purchasing ERP software involves licensing expenses that govern the software’s use. Generally, the price for the software depends on the number of end users and the number of modules implemented. For instance, if a company implements Core ERP plus SCM and CRM

bolt-ons and has thousands of employees, software license costs will be higher than if it implemented Core ERP and had hundreds of users. Several ways to license users include named, concurrent, site license, and heavy versus casual users. With **named users**, the company identifies the total number of users who will access the system. Each individual user has a user license. A blanket contract covering the use of the ERP system at a particular location is known as a **site license**. **Concurrent users** are the maximum number of users who would potentially access the system at a given time. This number can be calculated based on heavy and casual users. For example, **heavy users**, those who use more of the systems functionality, may be charged a higher license fee than **casual users**, who may only view reports or run occasional queries. During software license negotiations, vendors will provide volume discounts if the company purchases multiple modules packaged as a “suite” of software. As well, timing plays into the prices of the licenses. Software purchased at the end of a financial quarter or end of the year near deadlines for vendor sales representatives will also influence potential discounts.

## Database License

ERP vendors will provide the infrastructure specifications for the type of database needed. The database license cost is usually based on the number of simultaneous users that will log into the system or the number/type of database servers required. Operating system software may also need to be purchased as well as identity management software for administering rights and attributes for those using enterprise systems, including ERP. The identity management system provides the tools and services that ensure employees have the appropriate access for each system.

## Hardware

ERP system operations rely on IT infrastructures supporting the system such as database and application servers, storage systems, network components, wiring, power, user workstations, and redundancy. The cost of hardware varies depending on the scope of implementation and platforms. Costs range from about \$500M and up for mid-sized organizations. Again, some of these costs may be reduced by using a hosted ERP system since the software will be running on the service provider’s servers. Vendors offering hosted solutions spread their hardware costs across multiple customers since the infrastructure is not dedicated to a single instance of the ERP software.

## Implementation Services

One of the main culprits of budget overruns is implementation services. To minimize the cost, it is important to be prepared when consultants arrive in order to maximize their productivity. Consultants can be brought in during any stage of the ERP life cycle to do any task the project team deems necessary or cannot be accomplished in-house. Consultants can be implementation specialists, subject matter experts, project managers, or testing or training specialists. These expenses can be difficult to estimate, but often a multiplier of the software license costs is used. For instance, a certain software product might have a 2:1 implementation ratio, meaning for every \$1 spent on software, a customer can plan to spend \$2 on

implementation services. Also, an upper and lower value and the expected value should be sought to give a fairer reflection of the potential cost exposure. Very often the ratio of services to software costs provides an indication of a system's ease of implementation (level of out-of-the-box fit to current processes), or support for more advanced or custom functionality. It is important to recognize that implementation costs have more to do with the number and complexity of business processes being implemented than the number of licensed users. The number of users only impacts end user training.

### Internal HR Costs

Internal HR costs associated with employees working on the project (and thus not doing their day-to-day jobs) varies among companies and projects, so this component is also difficult to estimate. The largest part of the internal cost factor is lost productivity for project team members who are pulled off their regular duties to work on the implementation. Smart companies will dedicate team members to the ERP implementation 100% of their time at least during the intense parts of implementation such as design, configuration, testing, and training. To estimate internal cost, project planners can calculate the number of **full time equivalents (FTE)** the project will require both during implementation and post go live support. FTEs are calculated by multiplying the percentage of the team members' time dedicated to the project, the length of their commitment to the project, and the team headcount. FTEs can be associated with an expected cost depending on skill level and market labor rates to arrive at a reasonably accurate internal cost calculation.

### Ongoing Maintenance

ERP spending is not over after go live. Ongoing maintenance to keep the ERP system up-to-date and running smoothly can run 20-30% of the software license cost per year. The cost includes updates, patches, routine consulting, technical support, and minor upgrades. The ERP vendor may base these charges on a percentage of the current list price of the software or net of discounts. Maintenance costs can be negotiated as well.

## Hidden Costs of ERP

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Research has shown that many companies dramatically underestimate their ERP system's TCO. Scope creep is one hidden cost and can occur as a result of new business requirements springing up from the end-users while system implementation is already started. Oftentimes this is a fallout of poor business requirement definition up front and if not properly managed can result in a failed ERP implementation. The end product, of course, is an ERP implementation that never finishes. Client non-readiness could also be a cause for scope creep as can unavailability of infrastructure at the client site. Infrastructure includes, but is not limited to hardware and remote connectivity.

Another hidden cost is training, which is oftentimes severely under budgeted for. To reduce the cost of ERP training and to ease the transitions from old processes to new, organizations often seek help from firms that specialize in training users on particular ERP software.

Another hidden cost is that of customization. Oftentimes, companies do not adequately examine the selected software against their requirements and realize during the implementation that the standard program code must be changed. Changing code is expensive because programming experts must be employed to assure the changes do not negatively affect ease of future upgrades.

Data conversion costs can also add up. Prior to converting data from one or more legacy systems to the ERP system, the data must be cleansed. This can be done manually, but most companies purchase software products that help “scrub” the data by removing duplicates, typographical errors, or validating and correcting values against a known list of entities. This process takes time and resources but is critical especially since all the data will now be integrated.

ERP systems are often interfaced with legacy systems retained or other ERP vendor modules. Developing interfaces between the ERP system and other systems is also a hidden cost. Finally, writing custom reports for users is an ongoing process, but the important ones should be done by go live so that employees can get the information they need without delay. Oftentimes, organizations purchase report generation bolt-on software to make this easier.

## ERP Benefits

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### Quantifying Benefits

ERP costs are easier to quantify than benefits. For one reason, auditable cash outlays occur, so hard numbers are evident. A reason that benefits are difficult to estimate is that many of them are intangibles, such as better data integration. Against these costs, one must measure and weigh the benefits of undertaking an ERP implementation. Often, companies choose to limit the scope of their ERP project and address a handful of objectives such as lowering inventory costs or faster time to close the books. Beyond that, objectives increase in scope, limited only by the size of the company undertaking the project. Business cases supporting the benefit calculations should be defensible and clearly stated. Organizations should strive to measure benefits not only to justify the purchase of the ERP system, but to continue to get benefits down the road. Organizations should also try to employ measurement methods that are not too difficult and time-consuming; the measurement process should not be a burden.

Despite the complexities that arise in benefit calculations, the basic methodology is simply comparing baselines “as is” measurements to projected “to be” measurements and calculating the difference. After deployment, this process can include an ongoing comparison between measurements post go live and at set intervals thereafter. The need for baseline measures (such as inventory turnover or order to cash cycle time) should be addressed early on in the project, so companies can begin measuring processes prior to implementation. An example of a baseline measure for order fulfillment compared to estimated time with an ERP system is shown in Figure 5-1.

**Figure 5 – 1:** Estimated Cost Savings for Purchasing

Purchasing	Current Hours	New ERP Hours
Sales order arrival and data entry	0.50	0.25
Sales order review for accuracy	1.00	0.25
Phone and check prices with suppliers	0.25	0.25
Negotiate prices and delivery	0.25	0.25
Create PO	0.50	0.25
Issue quote	0.50	0.25
Conclude transaction	0.25	0.00
Confirm delivery	0.25	0.00
<b>Total time taken to conduct process</b>	<b>3.50</b>	<b>1.50</b>
<hr/>		
Average annual salary of purchasing agents	\$40,000	
Multiplier to convert salary to cost of employment and overhead	2.00	
Total annual employee cost	\$80,000	
Days of operation/year	240	
Average hourly rate (8 Hours/day)	\$41.67	
<b>Total cost per purchase transaction:</b>	<b>\$145.83</b>	<b>\$62.50</b>
<hr/>		
Total purchase transactions/day	5	5
Transactions/year	1200	1200
<b>Total annual cost of transactions</b>	<b>\$175,000</b>	<b>\$75,000</b>
<b>Cost savings</b>	<b>\$100,000</b>	

## Typical ERP Benefits

There is no better time for a company to consider making changes to their processes than when implementing a new ERP system. Performance gains attained through improved and globally consistent business processes often provide the greatest measurable benefit. According to CIO Magazine, companies embrace ERP solutions, seeking performance improvements in five areas:

- Integrate financial information - Before ERP, the finance department may have its own revenue numbers, the sales department another version, and different business units yet another. ERP creates one version of the truth, which cannot be questioned because everyone uses the same system. Integrating financial information also reduces the lead time to close financials at the end a period.

- Integrate customer order information - In ERP systems, a customer order travels from the salesperson through credit, picking, packing, shipping, invoicing and cash receipt. Before ERP, an order could get stuck in an in-box or lost in the shuffle because of a lack of coordination among departments, creating excessive hand-offs and duplicate data entry. By having this information in one system, companies can keep track of orders more easily, improve percent on-time and complete shipments, and reduce order to cash process cycle time
- Standardize and speed up manufacturing processes - Manufacturing companies often find that multiple business units make the same product using different methods. ERP systems come with standard methods for automating many of the manufacturing processes. Standardizing those processes can improve inventory accuracy, manufacturing schedule compliance, and manufacturing rework.
- Reduce inventory - ERP systems help the manufacturing process flow more smoothly, improving the visibility of the order fulfillment process. This can lead to reductions in raw materials and work-in-progress. A smooth-flowing manufacturing facility can also help with planning deliveries to customers, thereby reducing finished goods inventories at the warehouses and shipping docks. Supply chain functionality further helps in the management of inventory with suppliers.
- Standardize human resource information - Especially in companies with multiple business units spread across multiple geographic areas, HR may not have a unified, simple method for recruiting, training, tracking employees' time, and compensation. ERP can fix this by consolidating employee information into a single system and providing self-service accessibility to managers and employees.

## ERP Life Cycle: Package Selection

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This step of the ERP life cycle presumes that the Board of Directors or other high-level organizational group has approved funding based on the business case outlined by the project team. The package selection phase involves choosing the ERP package (or modules of various packages) that best meets the company's needs. The "best" application for a company is based on many factors such as functionality, affordability, user-friendliness, customizability, and vendor support. These factors and their relative importance will generally vary from company to company.

The following outlines some of the key steps in selecting an ERP system. While due diligence should be performed during package selection, it is worth mentioning that time is money. It takes thousands of dollars of internal resource time just to evaluate one vendor. Some companies get so engrossed in the process of package selection they can't see the "forest for the trees." The ultimate goal is to make sure your company is successful with the new system. Remember that if you fail to implement, who cares what the software does?

## Market Survey

Before choosing an ERP package, firms should perform their due diligence by doing a market survey to determine which vendors' systems might be potential alternatives. Appropriate vendors can be identified from any number of sources including websites, industry magazines, and trade exhibits. Vendors may also be identified through suppliers, customers, competitors, or user groups at regional or national levels such as America's SAP User Group (ASUG) or Microsoft's Dynamics User Group.

## Request for Information

The next step in the decision process could be to issue a request for information to the vendors identified in the market survey. The **request for information (RFI)** is a common process in which vendors supply written information about the capabilities of their solutions and the skills they offer. The RFI is not a request for a vendor to bid on the project; it only serves to gather information the firm can use to narrow the field of potential suppliers.

## Requirements Analysis

The detailed analysis companies go through to determine all the functionalities they need and desire is known as **requirements analysis**. During requirements analysis, the project team should identify all the current functionality, the processes targeted for improvement, and how the ERP system will improve them. Certain functionality will never change – a company will always have to issue purchase orders, approve invoices for payment, receive a sales order, pay salaries and wages, and book journal entries. However, packages can also provide additional functionality the company never contemplated such as advanced planning and scheduling, business intelligence, or governance and compliance bolt-ons. These additional items may surface during demos with the ERP vendors.

## Request for Proposal

A **request for proposal (RFP)** is a formal document developed by the potential buyer that details requirements in order to seek vendor offerings. The RFP enables the requestor to evaluate and compare various proposals fairly. It is an efficient tool to gather solution capabilities which are then used to select the solution with the best fits and requirements. The document details the scope of the project and specific requirements. For instance, the RFP might state that the buyer's project scope is HR and Financials and state specifically what functionality within those modules is needed. Besides requirements, the RFP would outline due dates for proposals, selection process (e.g., timeline, evaluation method, criteria and weights (see Figure 5-2)), the estimated award date, and who to contact regarding the project, the contract, and the selection and award processes.

## Narrowing Down the Choices

From the responses of prospective vendors, the project team should narrow down the ERP vendor candidates based on criteria important to them. This short list should generally include no more than two or three vendors due to the time it takes to evaluate each one. When



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hours or days depending on the scope of the project and complexity of the business. A site survey should begin with a brief operational tour and a meeting with the executive sponsor to discuss the strategic objectives of the project. The ERP vendor should then meet with the functional area managers to ask questions or get clarification. This process may help the vendor uncover additional value their solution might provide that the team did not think about.

## Demo Days

A demo day is when the vendor must “walk the walk” and “talk the talk”. The demo must be detailed, showing how key business processes work using the prospective customer’s own data. Planning for effective demonstrations is important. Prior to the demo the vendor should provide a document or have a discussion to validate what they are planning to show and confirm with the potential customer that it meets expectations. The project team should take time to review the vendor’s observations and interpretations from the site survey and agree with the coverage of the demo. What must be avoided is an incomplete demonstration that requires a follow up. This is costly for both parties as it takes up valuable employee time. The vendor should organize the demo around the company’s requirements and use the potential customer’s own data in the demo. The intention is to present the system as if it were live at the company’s facility. Demo content should also include a company (vendor) overview, security, menus, navigation, customization capabilities, report writer, and support. Table 5-2 presents 10 rules to make an ERP demo as smooth as possible.

**Table 5-2: 10 Rules to Make an ERP Demo as Smooth as Possible**

Use the same team to view all vendor demonstrations
Agree the agenda with vendor well in advance and stick to it
Confirm the “must haves” first and then the “nice to haves” and lastly the “bells and whistles”
Compare fits and identify gaps
Focus on the system’s operation avoiding the influence of freebies, a flashy appearance, and slick suits
Notice their culture
Allow the vendors to share their new ideas
Leave enough time for a post-demo Q&A
Use a weighted score sheet for scoring and ranking vendors
Cover implementation and support/maintenance separately

A weighted score sheet such as the one presented in Figure 5-2 is especially important. Each vendor will structure their demo somewhat differently, so it is helpful to use a score sheet so that the team can make a more objective decision. The score sheet serves as a checklist of what the customer deems as important; it focuses the team on comparing “apples with apples”. As the project team views the software demos, they should consider how well the vendor applies their solution to the company’s business processes. In addition to the obvious selection criteria – functionality, flexibility, requirements fit, ease of use, comfort with the vendor, and price - customization should also be discussed. The team should determine how

easy (or hard) it is to customize the software, how much it costs, and who will do it. Of particular concern is how maintenance and future upgrades will impact customizations. Generally, these customizations will be written over with new releases and must be coded again unless the vendor has established “user-exits” to jump out to custom code and then return back to the vendor’s standard application. These user-exits will not be impacted by upgrades.

This is also the time to evaluate each vendor’s technology strategy. Solutions typically rely on a small number of underlying technology frameworks, and each will present advantages and disadvantages when interacting with existing or future solutions the organization may employ. A vendor’s suitability depends on its technical or corporate direction and the steps they take to drive down total cost of ownership. A critical element of a vendor’s suitability is their commitment to a successful implementation and post go live support. Their ongoing commitment to their system’s effectiveness is essential.

The outcome of all this intense scrutiny is selecting a winner. Sometimes this choice comes down to "chemistry," or how well the potential customer and the vendor relate. Culture seems like a frivolous factor, but since an implementation can take months or years, confidence in a working relationship is important.

## Reference Visits

A **reference visit** is a visit to a “like” customer site of the final short-listed vendors. Before making a decision, the project team should visit one or more of the vendor’s customer sites to observe how the ERP system works in real life from the user perspective. Vendors usually have a list of references that they would prefer to give out. These are generally the ones that are very happy with the vendor’s software and implementation expertise. However, the more objective the reference, the better. Therefore, the team should seek out reference installations in companies comparable in size, industry, and geographic location using the same software version and hardware platform. These commonalities will boost the relevance of the reference site to the selection process. Companies may also request lists of short-term customers (implementation in progress or within the last six months), mid-term customers (one to three years after implementation), and long-term customers (four to six years after implementation). The team should be able to confirm if the ERP system is right sized, if it fits their industry, how good the local technical support is, and how the current version runs. Special notice should be taken of different software versions, particularly when the versions are markedly different; comparisons with dissimilar versions may have minimal value. Issues to discuss with “like” customer sites include:

- Overall satisfaction with functionality and performance
- Overall satisfaction with look and feel of system
- Implementation time and cost - did they go over the original budget? If it took longer and cost more than was estimated, how accurate was the vendor’s quote?
- Impression of the vendor as an implementation partner

- Local vendor support – it can get costly flying consultants in every week!
- Lessons learned from issues that were not anticipated, but arose after the implementation began

## Fit-Gap Analysis

A methodology used to compare the company's requirements with what the ERP systems under consideration offer is known as **fit-gap analysis**. A fit-gap should be performed on every ERP package that is on the short list. The more functionality "gaps" the less attractive a system is to the customer. However, process "gaps" could be an opportunity to reengineer to best practices. Requirements gaps must be closed by customization or bolt-ons. The ways that systems fit business requirements can support comparisons between the systems. These differences can pose troublesome problems, unexpected costs and delays. For instance, if package A has 50 major gaps and package B has 15 major gaps, package A will likely create more problems implementing. The project team should provide an unbiased analysis of the alignment of the software to the organization.

## Implementation Methodology Discussion

Before a winner can be finalized, a clear understanding of the implementation needs to be discussed. Will the vendor or a third party (or both) be helping with the implementation? The project team and the implementation team should agree on project scope, roles and responsibilities of customer and implementation team, implementation methodology and defined deliverables that will be used to guide the project and gauge its success. Also, the actual team composition should be agreed upon to avoid the "bait and switch". Training and customization should also be discussed. Once the implementation methodology is fleshed out, a services estimate can be completed along with a statement of work that clearly defines the project and mutually agreed upon roles and responsibilities of the implementation team and the customer.

## Proposal

The vendor's proposal should include the recommended modules for the defined scope. The company may consider purchasing more modules as part of the initial purchase if they expect to expand their scope in the near future. Typically, software providers are more generous with incentives or discounts early on in an effort to gain the customer. The proposal should also include any annual fees for support and software assurance that provides rights to future releases of the system at little or no cost. The company may wish to inquire about a reduced annual fee in exchange for agreeing to a multiple-year contract. The proposal should include a high level project plan with the identified implementation services time and cost and should describe how these relate to the various phases of the plan. Often, the vendor and implementation partner (if different than the vendor) travel, and these expenses become significant, so the company may want to establish limits or provide for a way to control them. Lastly, the customer may need coaching on upgrades to hardware, network resources, or supporting software such as operating systems, database capacity, or connectivity.



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achieved through market surveys, reference visits, project demonstrations, implementation methodology discussions, requirements analysis, fit-gap analysis and more. The end result is a proposal that is jointly agreeable and a partnership that is mutually beneficial.



## Keywords

Business case rationale	Request for information (RFI)
Business process rationale	Request for proposal (RFP)
Casual user	Requirements analysis
Concurrent user	Scope creep
Competitive rationale	Scope management
Fit-gap analysis	Site license
Full time equivalent (FTE)	Strategic rationale
Heavy user	Technology rationale
Named users	Total cost of ownership (TCO)
Reference visit	

## Quick Review

1. True/False: Implementing an ERP system to drive firm growth is an example of a strategic rationale.
2. True/False: The total cost of ownership (TCO) should be assessed during the package selection stage of the ERP life cycle.
3. \_\_\_\_\_ is a way to measure internal HR cost and is calculated by multiplying the percentage of the team members' time dedicated to the project, the length of their commitment to the project, and the team headcount.
4. A \_\_\_\_\_ should include key process owners and decision makers from different business units and organizational levels of the company.
5. A methodology used to quantify the comparison of ERP package functionality to the customer's ERP system requirements is the \_\_\_\_\_ analysis.

## Questions to Consider

1. What are the four stages in the ERP life cycle?
2. What are the four major rationales used by companies when deciding to invest in ERP?

3. List key cost components of ERP software.
4. What steps are involved in choosing an ERP package?
5. How can you make sure that an ERP software demo runs as smooth as possible?

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## Chapter 5: ERP Life Cycle: Planning and Package Selection

Trepper, C. (1999). *ERP Project Management is Key to a Successful Implementation*. Retrieved February 22, 2010 from  
<http://itmanagement.earthweb.com/entdev/article.php/614681>



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- How many legal entities are reflected in the system
- What the default currency will be

SAP has over 3,000 configuration tables and there are approximately 8,000 configuration decisions to make when implementing it. Navigating through them can be a formidable task. For example, when Dell Computers implemented SAP, the configurations alone took over a year to decide upon. As ERP software vendors attempt to gain market share, they continue to provide configuration options to address an increasing number of system requirements, thereby broadening their target customer base.

So what happens when the options the system allows don't exactly fit business requirements? At this point the organization can change what they do, which is called reengineering to best practices (the optimal route), or they can supplement some of the ERP programming code, known as customization.

## Customization

At some point, the project team must decide whether to implement a standard, vanilla solution or to customize their ERP system. With a **vanilla implementation**, the organization uses only the default options in the ERP system (configuration choices) and the best practices built into the software. So while these projects introduce very little "flavor" or differentiation among various company installations, these implementations usually run on time and under budget.

However, often ERP software will be customized to support a business process that may be unique or provide them with a competitive advantage. Additionally, companies may need custom functionality due to a compliance, regulatory, reporting, or legislative requirement that the software does not meet. **Customization** requires programming, which must be performed by a programmer/developer, whether in-house (if expertise exists within the company), or external by a consultant. The project team should also consider approaching the software vendor for consultation and support. Often the vendor may assist by internalizing efforts to provide unique solutions that would otherwise require customization and instead make them configurable options. This approach may be advantageous to both parties. The company gets what they want more easily, and the vendor may expand their target customer base to attract more companies that may also need this option.

Customization is generally done in order to fill gaps found in requirements analysis or to extend functionality. In either case, organizations get exactly what they require. There are two main types of customization:

- **Enhancement:** If a customer (meaning a user) wanted to add a field, change the look of a screen, or add an extra step to a process, then an **enhancement** would be developed. Analysts develop a functional specification and a technical specification, and then the developers code the enhancement. In an SAP environment, this type of change would not create a core software change but makes use of **user exits**, which are pre-defined breaks in the core ERP code where custom programming can be

inserted or “called” without fundamentally altering the way the ERP transaction works. The majority of implementations make some use of these user-exits.

- **Modification:** This is typically a rare and very special type of change. When a customer decides to make a modification to the core code, it is because the software does not have the capability to address the requirement and the software has to be changed in the way it works. A modification needs to be registered with the software vendor, and is not supported by future upgrades.

Many times purchasing a third party software package, referred to as a **bolt-on**, is the better course of action as opposed to customization. While customizing ERP software may have its advantages, there are more disadvantages. Table 6-1 shows that customization is one of the main reasons why implementations take longer than expected.

**Table 6-1: Why ERP Projects Take Longer than Expected**

<b>Unrealistic expectations</b> - When an ERP project team underestimates the time it will take to complete the implementation, they tend to skip important activities such as organizational change management or process design, which then creates more risk and delays as the project progresses.
<b>Not adequately accounting for business-oriented activities</b> - While it is relatively straightforward for an ERP software vendor to estimate how long it will take to install and configure software, it is much more difficult to predict activities that are not directly related to software such as defining business process and making decision how the software should be configured.
<b>Lack of resources</b> - There are many companies that agree to a project plan with their vendor, only to find that the two parties have differing expectations of how many and what types of people will support the project.
<b>Software customization</b> - Once implementation begins, project teams will inevitably find at least a handful of functionality gaps that they would like to address by changing the software. It is important to prioritize and limit the amount of customization to help contain costs.

*Source: IT Toolbox*

The following lists the downsides to customizing ERP software:

- Creating custom code can be a time consuming process and involves inherent risks that can only be eliminated with exhaustive testing. Too often, quality assurance is undercut in order for the project to come in on time, creating risks associated with “buggy” software. This, in turn, leads to a less stable and reliable system. The focus on heavy customization efforts may also detract attention away from other, more critical, aspects of the ERP implementation.
- Ironically, customizations don’t add value by default. By default they *subtract value*, at least in the short run, through costs associated with analysis, design, and development time and in the long run, through upgrade, maintenance, and support. Firms should ensure that the net result is value added through increased productivity, higher profitability, reduced error, or another measurable benefit. Each time a customization is contemplated, the impact of these issues on the system’s ROI should be quantified and supported with an accurate and detailed business case.
- Customizations can limit the company’s ability to upgrade the ERP system. Since customizations extend and/or change the behavior of the ERP system in a way the

vendor does not support, there is no guarantee that the customization will work with a future version of the ERP system. The new code may need to be rewritten each time the customer wants to upgrade. This process of rewriting customization into new versions is known as a **retro-fit**.

- The ERP vendor most likely will not support code it did not provide.
- Customized systems may be difficult to integrate with other systems, particularly those used by external partners.

## Testing

Once the system has been installed, configured and perhaps customized, it must be tested prior to deployment. Testing confirms that the software behaves as expected and customer expectations are met. If testing is done well, the software can be operated with limited business interruption or detrimental impact to customer satisfaction. During testing the project team fine-tunes the configuration of the software and refines the models for new business processes. They confirm the software can meet the previously specified requirements, identifying gaps not found during the package selection phase. The team confirms data definitions by answering the question “Will the system interpret the data codes devised and be able to use them?” They also verify data conversion rules by seeking answers to the question “Will the new system use the data converted from the previous system properly?”

A dedicated development instance is used for testing. Another instance is set up for cutover to be the **production instance** that will run the firm’s operations. Companies can use **conference room pilot (CRP)** sessions where conference rooms are designated as temporary locations to support development and testing, and employees can execute transactions with the proposed system configurations. As transactions are executed, expected results can be compared to actual results. Differences between the two will identify areas where the system or the expectations might need to be tweaked. A number of CRPs may be warranted to address different business units, system modules, or geographical locations. Specific types of testing include:

- **Unit testing** - Testing small increments of functionality as discrete steps in a business process or testing a single development object to the requirements in a functional specification.
- **Integration testing** - Testing end-to-end business processes including any customizations, enhancements, or interfaces to external systems.
- **Customer acceptance testing** - Usually a final round of integration testing in which key users develop realistic business scenarios that represent how the system will need to work after go-live. The users are tasked with testing the system to their approval or acceptance. This milestone is critical to proceeding with go-live cut-over activities.
- **Security testing** - Testing all of the user roles and authorizations that are being set up in the system. These tests include both positive and negative tests to demonstrate

that allowed functionality can be accessed or that unauthorized access is appropriately denied.

- **Performance load testing** - Business transaction volumes and concurrent user activities are tested with expected peak load (and then some) to confirm that response times are acceptable. These stress tests must pass predetermined acceptance criteria or performance thresholds.

## Change Management

One of the main advantages of an ERP system is that the organization takes advantage of best practices. However, changes in processes can disrupt an organization. The implementation of an ERP system requires a paradigm shift in the way employees do their jobs, and people are naturally hesitant to change. This hesitancy must be anticipated and managed. Employees should be encouraged to provide input into the implementation process and to have their input considered. They should also be educated in the system's objectives and the business case that supports its selection. **Change management** is the body of knowledge that has evolved to address change within the context of an organization. Some additional definitions of change management include:

- A systematic approach to dealing with change, both from the perspective of an organization and on the individual level.
- A structured approach to managing change in individuals, teams, organizations, and societies that enables the transition from a current state to a desired future state.
- Getting employees from Point A, prior to change, to Point B, where all employees are fully trained and new processes are in operation.
- Unfreezing, transitioning, and refreezing. The *unfreeze* step gets employees from “unready to change” to “being ready to take the first step towards change”. The *transition* step keeps the change moving through incremental steps, employee/management involvement, and open door policies by management. The *refreeze* step establishes roots so that the new point stays permanent and employees do not resort back to old methods or systems.

Without change, performance would never improve. Successful companies have a culture that keeps moving and changing proactively. But changes need to be properly managed and orchestrated so that the results meet expectations. Organizational changes should be managed with a formal process that:

1. Defines the objectives of the change
2. States the business case supporting the change
3. Identifies the actors or agents responsible for the change
4. Defines the schedule of the events that will result in the change
5. Lists specific steps involved in implementing the change

6. Defines the results confirming each step's success or failure
7. Identifies risks and potential points of failure in the change
8. Incorporates mechanisms for feedback and plans for continuous improvement

There are many practices used to manage change; with these, executives can understand what to expect, how to manage their own personal change, and how to engage the entire organization in the process. In major transformations of organizations, executives usually focus their attention on devising the best strategic and tactical plans. To succeed and encourage the desired results, they must have an understanding of the human side of change management - the alignment of the company's culture, values, people, and behaviors. As changes take place, employees should be coached on why the change is important. This appreciation will require education; not just *how* to execute the new processes, but also *why* the new processes are important to the company and the employee. This understanding of why promotes feelings of ownership and enthusiasm for the change. Table 6-2 lists ten best practices for change management. Many of these address the human side of the change (what is termed the "soft stuff").



Guiding, nurturing, and shepherding human capital are the skills needed most to ensure organizational change is accepted enthusiastically, rather than with suspicion and fear. The degree to which leaders are able to manage change, develop consensus, and sustain commitment will determine the success or failure of any initiative. Oftentimes a person is designated to lead change in the organization. This person can be a consultant, implementation partner, or someone from within the company. This person is known as the **change agent** and is someone with the clout, conviction, and charisma to make things happen and to keep employees engaged. In essence, they must bring order out of chaos.

Change agents employ a number of skills such as:

- Understand how to navigate organizational politics to influence positive results
- Be able to deconstruct an organization or process and put it back together in original, innovative ways
- Be a keen analyzer who can clearly and persuasively defend his or her analyses to the organization
- Speak many organizational languages such as sales, finance, IT, and manufacturing
- Understand the financial impacts of change, whether brought on by BPR or incremental continuous improvements

**Table 6-2:** Ten Principles of Change Management

<b>Address the “human side” systematically:</b> People are innately resistant to change. Reengineering will change job positions and job descriptions for many employees and management needs to be prepared to alleviate potential struggles.
<b>Start at the top:</b> High-level executives need to set the tone at the top. If management has an optimistic attitude towards change, this will “trickle down” through every level of the company from executives to entry-level employees. Leaders should clearly define the new roles for employees as a result of the change, taking care to promote inclusion and ownership.
<b>Involve every layer:</b> A leader should be designated from every layer of the company to participate in training but also to provide input as a representative of their layer. This leader is responsible for bringing back all the training they received and the overall message of change to their individual layer.
<b>Make the formal case:</b> Management should present a formal case as to why change is absolutely necessary in anticipation of resistance and questioning. Include in this case the process in which change will occur to help employees see the big picture.
<b>Create ownership:</b> Management needs to take ownership of this change; they cannot be indifferent because it will reflect on their employees. They need to project enthusiasm and take responsibility for the changes.
<b>Communicate the message:</b> Employees need to be reminded of the purpose of the change process throughout. They can lose focus as to why they are changing, so from time to time a little clarity and inspiration may be necessary. This appreciation will require education; not just “how” to execute the new processes, but also “why” the new processes are important to the company and the employee. This understanding of “why” promotes feelings of ownership and enthusiasm for the change.
<b>Assess the cultural landscape:</b> Some company cultures are more amendable to change. The cultural landscape of a company needs to be evaluated to foresee problems and predict the motivation needed at each layer of the company. A culture not open to change or a workforce set in narrow, rigidly defined responsibilities will present greater challenges and may take longer, requiring more communication, training or call for a more patient strategy.
<b>Address culture explicitly:</b> Once the culture is mapped, management should come up with the culture that is best suited to accept the change process and the end product. Management should then direct changes in the current culture to create a culture that can use the end product the best.
<b>Prepare for the unexpected:</b> Companies need to realize that every phase of change is not going to be perfect. A strong change leader should be ready to deflate these situations and provide encouragement that everything will still turn out in the end.
<b>Speak to the individual:</b> Each employee needs to know what is expected out of them individually. Time should be spent with individuals, providing clarity and also definite rewards for achieving attainable changes.

*Source: Aguirre, Calderone, & Jones*

## Interfacing with Other Systems

Often, an ERP system becomes the "center of the universe" for an organization, but because of time and cost constraints, gaps in functionality, and political issues, there are usually interfaces to other systems that must be developed and maintained. The ERP system may exchange data with other client server systems as well as legacy systems. These interfaces must have the ability to handle complex data sources and legacy data types and may involve connections to mainframes and systems using a variety of technologies such as Linux or

Windows. Also, the ERP system may interface with external business partners through electronic data interchange and electronic funds transfer protocols. ERP systems must also be able to send and receive data over the Web. Managing the discovery, analysis, design, and implementation of interfaces to other systems adds time and cost to the implementation, but is essential to integration of data.

## Training

According to research, training is the most overlooked and under-budgeted ERP cost component. Training expenses are high because employees almost invariably have to learn a new set of processes, not just a new software interface. Professional training companies may not always be the best resource to help because they are focused on teaching users how to use the software versus educating users about the particular ways the company does business. Thus, the project team should be prepared to develop some curriculum on its own. However training occurs, more often than not the initial budget may need to be doubled or tripled. Money spent training is the best investment a company can make to ensure a smooth cutover.

**Table 6-3: Six Keys to Effective ERP Implementation Training for Employees**

<b>Focus on business processes, not transactions:</b> Running a business entails much more than merely completing transactions in a system. ERP training courses must not only teach employees how to complete transactions, but also how to do it in the context of how they perform their day-to-day jobs.
<b>Relate new business processes to the existing environment:</b> Employees better understand the old business processes. It is more effective to map new processes to current ones to help them migrate to the to-be environment. In addition, relating back to as-is processes helps highlight the most significant changes affecting employees.
<b>Leverage a multitude of tools for ERP training:</b> Different people learn in different ways, so the best learning outcome can be reached by combining classroom training, web-based tutorials, hands-on simulations, and other effective learning tools. It is necessary to include a variety of formal and informal training tools to make sure the changes stick.
<b>Train the trainer:</b> It is very important to have super-users or subject-matter experts conduct the broad end-user training. Such in-house resources are much more knowledgeable than external consultants about internal business processes and will be more effective at relating changes to employees. In addition, these internal trainers can be leveraged to provide functional support during and after go-live.
<b>Allocate plenty of time for ERP implementation training:</b> An ERP deployment may be the most intense IT project your company ever undergoes, and at times it can be overwhelming. Rushing the training process will jeopardize the success of the new system's implementation.
<b>Reinforce training with more comprehensive organizational change management activities:</b> This is perhaps the most overlooked, yet important, of the six keys outlined here. Discussions about change, targeted departmental communications, well-defined roles and responsibilities, and other key organizational change activities are critical to the success of an ERP project.

*Source: Panorama Consulting Group*

There are various ways to train employees such as on-site or off-site instructor-led training classes, computer-based training, or train-the-trainer. A **train-the-trainer** technique is where an employee in a functional area becomes a **super user** by attending in-depth training conducted by the vendor, implementation partner, or project team members and then trains their coworkers. Train-the-trainer can combine the benefits of face-to-face training and

computer-based training at less cost than sending all employees to expensive training. This approach also positions super users as a first line of support after go-live.

## Consultants

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Throughout the ERP life cycle, consultants and subject matter experts can assist the project team with various activities including developing a business case, package selection, process documentation, change management, training, project management and functional knowledge. While hiring consultants significantly adds to the project's cost, they bring critically important skills to the project not available in-house.

Consultants should be knowledgeable, experienced professionals who can provide top-level management and the project team with analyses that support important decisions with clear articulation of the associated issues, relevant evidence and a candid discussion of alternatives. As outsiders, their unbiased recommendations can be invaluable in an ERP implementation. Yet, while their expertise may be substantial, teams should refrain from allowing consultants too much decision-making authority; ultimate responsibility and authority belongs to the company and should be exercised by the project team and the executive sponsor. Under no circumstances should a company hand over decision-making to consultants; rather, decisions should be made by the team with advice from consultants. Good consultants empower their clients to make the best decisions by effectively transferring knowledge throughout the project life cycle to the project team. Table 6-4 summarizes benefits and risks of using consultants in an ERP system implementation. Before choosing a consultant, or integration partner, the project team should consider these questions:

- Do they have experience in the company's particular industry? This can be described as vertical expertise since it implies greater knowledge in a narrowly focused industry segment.
- How many successful implementations have they completed? What are the sizes of those companies? Are those companies in the same industry?
- Do they provide ongoing service and support?
- Do we need consultants to train us to continue rolling out the software without their help after the first implementation, or do we just need a single implementation configured for our use?

## Implementation Methodologies

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There are various ways to implement an ERP system. Criteria used to determine which approach is most suited to an organization include size of company, urgency, risk tolerance level, and amount of resources applied to the project. Below is a discussion of the main ERP implementation methods used by organizations.

**Table 6-4:** Benefits and Risks of Using Consultants

Benefits	Risks
<b>Unbiased and objective</b> - Fixed contracts tend to reduce bias	<b>Biased</b> - Association with particular software vendors and participation in technical communities may result in bias toward favorite packages
<b>Knowledge of vendors</b> - Consultants can offer valuable knowledge regarding suitable software providers and their relative strengths and weaknesses	<b>Lack of knowledge of the client's business processes and culture</b> - Consultants must get up to speed and learn on company time
<b>Knowledge of best practices</b> - Consultants can provide expertise designing processes to address best practices and to include them in implementation plans	<b>Advocacy of best practices</b> - This may threaten company differentiators and competitive advantage
<b>Implementation experience</b> - Familiarity with technical details eliminates many potential points of failure	<b>Expensive</b> - Consultants with proven track records command market power
<b>Big picture focus</b>	<b>Unaware of process details</b>
<b>Innovative</b> - Able to envision valuable opportunities to integrate company processes with software functionality	<b>Knowledge may not be transferred to company employees</b> - Inadvertently handing over project ownership to consultants
<b>Senior management endorsement</b>	<b>May hesitate to offer legitimate criticism of management actions and decisions</b>

Source: [strategy+business.com](http://strategy-business.com)

## Phased Implementation

The **phased implementation** is a slower method for deployment in which the ERP system is rolled out by functionality (by module), division, or geographical area. The appeal of the phased (also known as **incremental** or **waved**) approach to deployment is that the project team can focus on certain functional areas of the company while the remaining areas continue with their normal operations. The phased approach is frequently less risky than the big bang approach (discussed next), as phases of the project are completed one at a time leading to successive wins that can be used to encourage the project team and company employees for the remainder of the project.

The luxury of time can also be a downside to the phased approach as the lack of urgency can lead to “change fatigue” causing employees to become burned out by lingering and constant change. Instead of completing the project in a shorter time period, phased projects involve change over longer periods, which can be draining to employees. This can ultimately lead to resentment, complacency and doubt that the project will ever end. Finally, another problem with phased implementations is each module relies on information from other modules during the phasing in of the new system; therefore, technology “bridges” must be built in the form of code capable of talking to the old system and new ERP module. These bridges were discussed in Chapter 2 as middleware, or Enterprise Application Integration. If more than one business

unit is involved, one option would be to first implement the system in a relatively easy, but not atypical, business unit and then begin rolling out the system to other units.

## Big Bang Implementation

A **big bang** (or **direct cutover**) **implementation** is the more ambitious and difficult approach to ERP implementation. Companies that use the big bang implementation method are generally smaller and less complex than those using other approaches, making it easier to go live with the ERP system all at once. Using this method, the company replaces entire business processes and/or legacy systems all at one time. Though this method dominated early ERP implementations, few organizations dare to try it anymore because it calls for the entire company to mobilize and change at once. Most of the ERP horror stories from the late 1990s warn us about this strategy. During that decade, companies faced with Y2K felt a sense of urgency and were compelled to deliver the solution as soon as possible.

This approach focuses the organization for an intense, but shorter, period of time compared to a phased approach and as a result, requires the dedication of substantially more resources and planning earlier in the project. Often, the big bang is often rushed and important details can be overlooked due to the hectic nature of this approach. Furthermore, ERP projects using the aggressive big bang method are more risky because these implementations require too much change for an organization to accept at once. However, there may be a greater benefit either through optimizing business processes or leveraging best practices to gain a quicker ROI than using a phased solution requiring temporary solutions or work-arounds.

## Franchising Implementation

A **franchising implementation** is similar to the phased and suits large or diverse companies that do not share many common processes across business units. Independent ERP systems are installed in each business unit, while common processes, such as financials or HR, are linked across the organization. In many cases, each business unit has its own instance of ERP. The systems link together only to share information necessary for the corporation to get a big picture across all business units or to share processes that do not vary much from unit to unit. Just like the phased implementation, the project team gets the system up and running in a particularly open-minded and patient business unit where the core business of the organization will not be disrupted if something goes wrong. Once the system is up and running, the team “sells” other units on ERP using the first implementation as an in-house customer reference.

## On-Demand Implementation

The **on-demand implementation** strategy using the hosted Software as a Service (SaaS) model is used primarily by SME organizations. Generally these implementations are faster because there is no software to install on-premise, which can reduce the implementation by months. Upgrading is often performed easier and more frequently because it happens automatically by the vendor. Additionally, SaaS implementations entail cheaper up-front costs as the pricing is on a subscription per user, per month basis. One of the concerns with SaaS

implementations is that many companies still have concerns about storing their mission-critical and highly sensitive data on a third party's servers. To reduce concern, SaaS vendors should advertise and communicate their redundancy procedures and privacy standards.

### Which Strategy is better?

Each implementation strategy has its pros and cons and works best in certain types of companies and contexts. Large, complex enterprises with differing business models, perhaps multiple languages, currencies, subsidiaries, and differing rules and regulations, will find big bang too difficult to pull off. In some situations, one method will obviously be preferable to the other. In cases where the choice is not so obvious, other issues need to be considered such as executive leadership, change management skills, and centralized versus decentralized operations. For example, a company with weak executive leadership and support for the project, no internal change management skills, and decentralized operations will find it difficult, if not impossible, implementing an ERP system big bang. The project team should focus on these and other issues as they work to choose an implementation method. Typically, the best solution is one that strikes a balance between the two approaches. Implementation schedules should be aggressive, but not so much that they cause the team to overlook important details or make sub-par decisions. Breaking the implementation into multiple but aggressive phases can help focus the organization and create a valuable sense of urgency.

### Risks to a Successful Implementation

Risk must be carefully monitored through the implementation. While many people think that technical issues are the main reason why ERP projects fail or are not completely successful, the real reason is because of people, or the "soft stuff". Top management may have failed because they did not successfully share the vision and "rally the troops". There was no impetus to drive transformation, thus the project lurched to a halt, or even worse began a slow and steady demise. Implementation partners can contribute to a failed implementation if part of their job is to enable change management or project management, and both efforts were subpar. Inadequate training on the ERP system or lay-offs during or after the implementation can negatively impact employees. This, in turn, may lead to employees using "work arounds", sabotaging the system, or delaying accepting the new system and the accompanying new processes.

Earlier we discussed that an ERP system is often the most expensive investment a company may ever make, costing in many cases millions of dollars. The scale of this effort and the intricate nature of these systems introduce a multitude of risks that must be managed. In general, it is important to note that risk is an ongoing process that affects every level of the organization. Risks to the implementation must be aggressively identified and managed so that it falls within the company's risk appetite, specifically in regard to both costs and benefits. Table 6-5 presents various implementation approaches and the risk that each brings. These approaches differ in terms of implementation time, internal and external costs incurred, amount of change required, and ROI.

**Table 6-5:** Comparison of Different ERP Implementation Approaches

<b>Approach</b>	<b>Time</b>	<b>Internal Cost</b>	<b>External Cost</b>	<b>Amt of Change</b>	<b>ROI</b>
<b>Balanced</b> - A cooperative approach between the company and vendor providing a shared effort for all implementation aspects.	Med	Med	Med	High	High
<b>Risk:</b> Internal resource capacity					
<b>Turnkey</b> - An accelerated, delivered solution, reducing internal investment by minimizing customer contribution.	Low	Low	High	Med	Med
<b>Risks:</b> User acceptance, change management					
<b>Customer Driven</b> - An approach that maximizes the customer's involvement and minimizes involvement from consultants.	High	High	Low	Low	Med
<b>Risks:</b> Missed opportunities, maintaining momentum over time, internal resource capacity					
<b>A la carte</b> - Customer owns the process, with consultant involved as requested.	High	High	Low	Low	Med
<b>Risks:</b> Implementation success, lack of control & guidance, missed opportunities, maintaining momentum over time, internal resource capacity					

Source: mcaConnect

## ERP Life Cycle – Operation and Maintenance

Post go-live, companies enter the operation and maintenance stage, which starts with a period of stabilization. According to Deloitte Consulting, the time period for stabilization is normally between three and nine months, and during this time many companies will experience a dip in performance due to continued training needs and fine-tuning of “to be” processes. Also during this time, while memories are still fresh, the project team should conduct a “postmortem session” to ascertain what went right, what went wrong, and lessons learned.

Most likely the project team will not return to their regular jobs full-time even after go live because there is still so much to do. Writing and customizing reports to pull information out of the ERP system is one task that will certainly be going on past go live. Fine-tuning the processes, help desk support, and training are other activities that go on well beyond go live. Most ERP systems do not reveal their value until after organizations have had them running for some time. Although many companies will put this task off indefinitely, team members



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