Chapter 15

Acquiring IT Applications and Infrastructure

Information Technology For Management 6th Edition
Turban, Leidner, McLean, Wetherbe
Lecture Slides by L. Beaubien, Providence College

John Wiley & Sons, Inc.

Learning Objectives

- Describe the process of IT acquisition
- Describe IT project identification, justification, and planning.
- List the major IT acquisition options and the criteria for option selection.
- Discuss various IT outsourcing options
- Describe the criteria for selecting a vendor

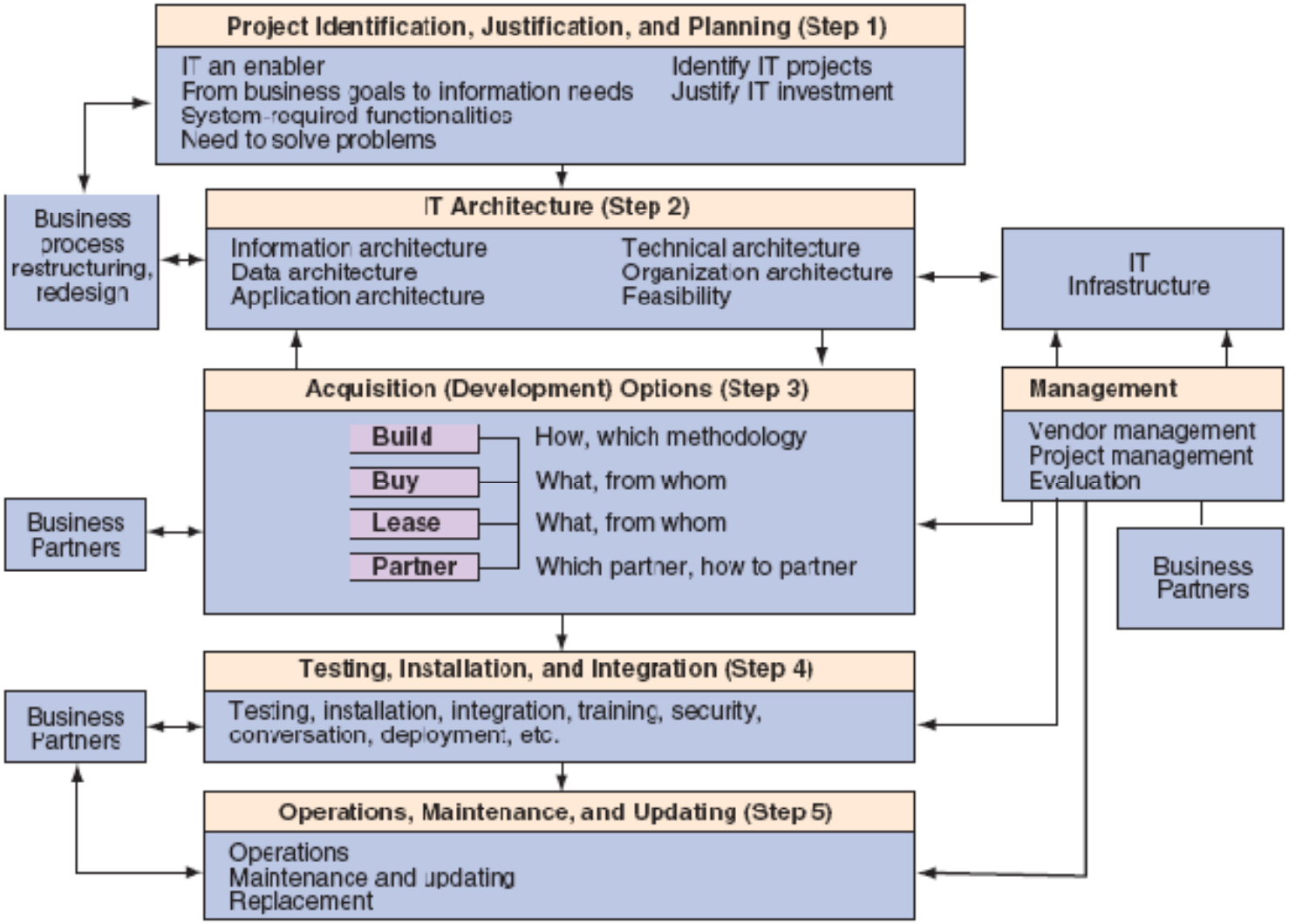
Learning Objectives (Continued)

- Describe the criteria for selecting a vendor
- Describe the process of vendor and software selection.
- Understand some major implementation issues.
- Understand the issue of connecting IT applications to databases, other applications, networks, and business partners.
- Describe the need for business process redesign and the methodologies for doing it.

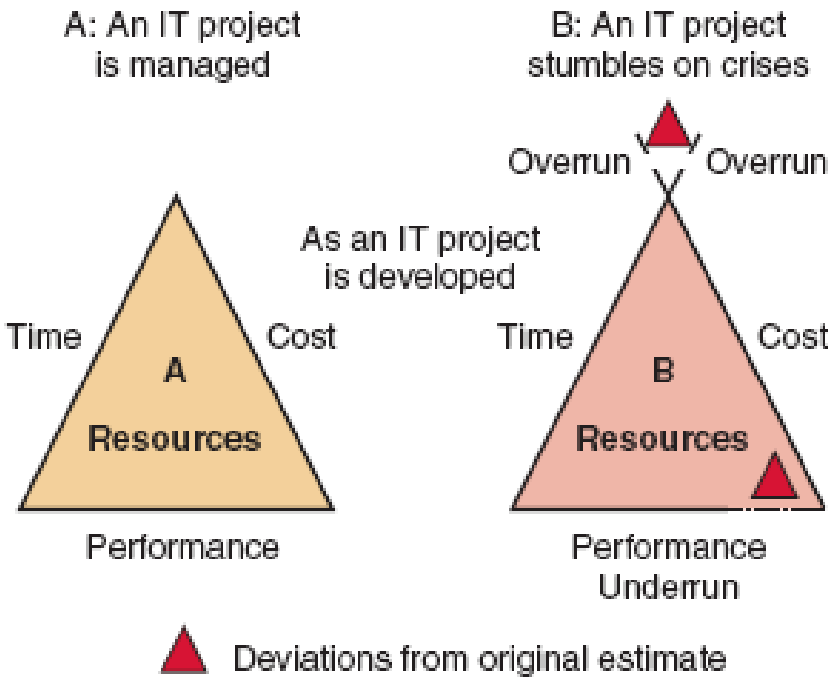
Strategies for Acquiring IT Applications

- Buy the applications (off-the-shelf approach)
- Lease the applications
- Developing the applications in-house (Insourcing)

The Five Major Steps of Acquisition



Constraints in Planning and Acquisition



Acquiring IT Applications Option 1 - Buy

TABLE 15.1 Advantages and Limitations of the "Buy" Option

Advantages of the "Buy" Option	Disadvantages of the "Buy" Option
• Many different types of off the shelf software are available. • Much time can be saved by buying rather than building. • The company can know what it is getting before it invests in the software. • The company is not the first and only user. • Purchased software may avoid the need to hire personnel specifically dedicated to a project. • The vendor updates the software frequently. • The price is usually much lower for a buy option.	• Software may not exactly meet the company's needs. • Software may be difficult or impossible to modify, or it may require huge business process changes to implement. • The company will not have control over software improvements and new versions. (Usually it may only recommend.) • Purchased software can be difficult to integrate with existing systems. • Vendors may drop a product or go out of business.

Acquiring IT Applications Option 2- Lease

- TYPES OF LEASING VENDORS Leasing can be done in one of two ways.
  - The first way is to lease the application from an outsourcer and install it on the company's premises. The vendor can help with the installation and frequently will offer to also contract for the operation and maintenance of the system. Many conventional applications are leased this way.
  - The second way, using an application system provider (ASP), is becoming more popular.

Acquiring IT Applications More Options ..

Type	Benefits	Potential Risks
Business	Reduces the need to attract and retain skilled IT professionals Enables companies to concentrate on strategic use of IT Enables small-and medium-sized companies to use tier-1 applications (e.g., BI, ERP, SCM, and CRM) Application scalability enables rapid growth of companies	Loss of control and high level of dependence on ASP Inability of ASP to deliver quality of service; lack of skills and experience
Technical	Fast and easy application deployment Higher degree of application standardization Access to wide range of applications Application maintenance simplified and performed by ASP Simplified user support and training	Level of customization and legacy application integration offered by ASP is insufficient Low reliability and speed of delivery due to bandwidth limitations Low capability of ASP to deal with security and confidentiality issues
Economic	Low total cost of ownership Low up-front investments in hardware and software Improved cost control as result of predictable subscription costs	Pricing changes by ASP unpredictable for application updates and services
Maintenance	Maintenance is done by vendor to many customers Can select another application from the ASP to meet changing needs Not to further invest in upgrading the existing one	Modification may not fit your needs exactly Becoming the victim of pass-the-buck syndrome when you call for technical support; ASP may not control all these processes of a system failure

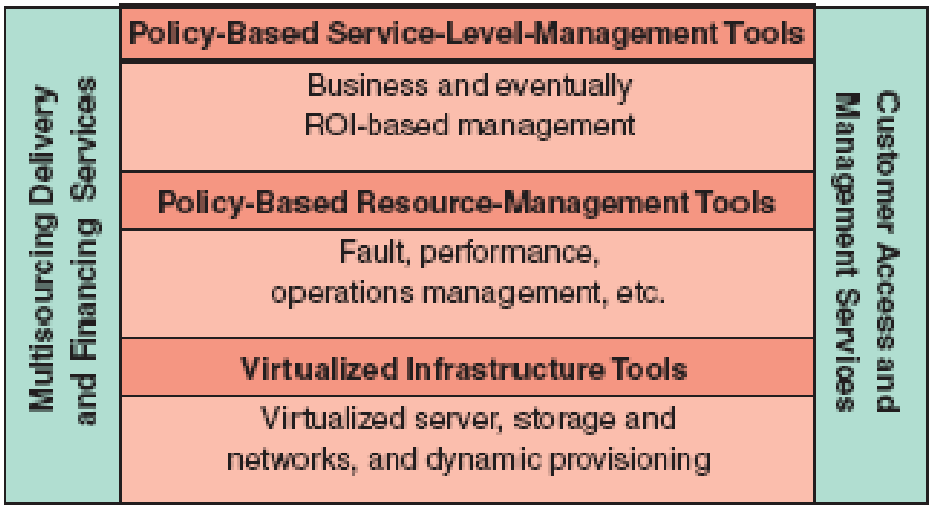
Acquiring IT Applications More Options …

- IN-HOUSE DEVELOPMENT APPROACHES. There are two major approaches to in-house development: building from scratch or building from components.
  - Build from scratch. This option should be considered only for specialized applications for which components are not available. It is an expensive and slow process, but it will provide the best fit.
  - Build from components. Companies with experienced IT staff can use standard components (e.g., a secure Web server), some software languages (e.g., Java, Visual Basic, or Perl), and third-party subroutines to create and maintain applications on their own. (Or, companies can outsource the entire development process to an integrator that assembles the components.) From a software standpoint, using components offers the greatest flexibility and can be the least expensive option in the long run. However, it can also result in a number of false starts and wasted experimentations. For this reason, even those companies with experienced staff are frequently better off modifying and customizing one of the packaged solutions as part of the “buy” option.

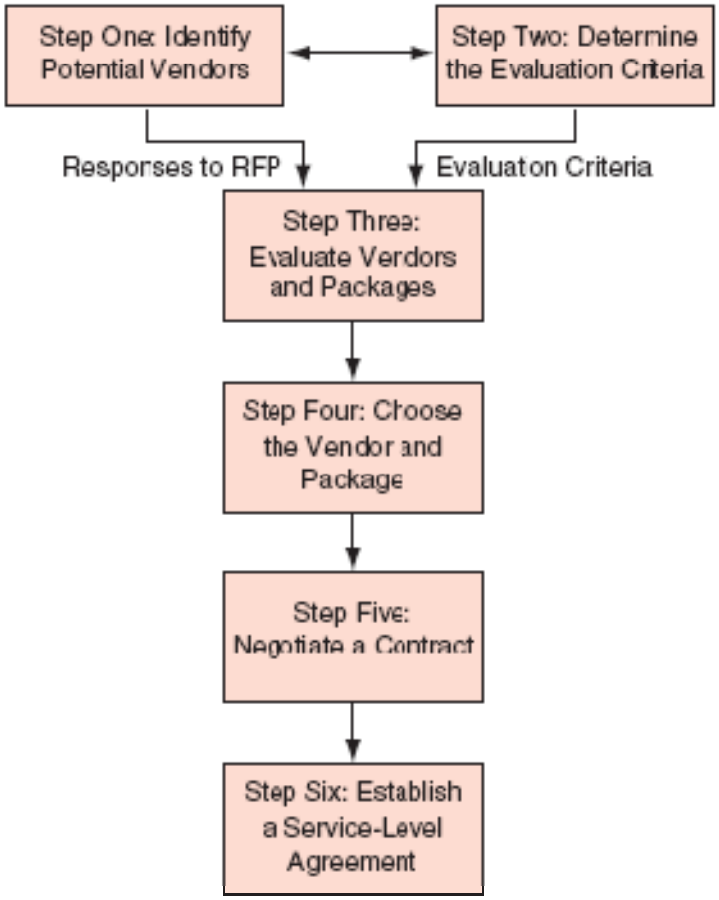
Traditional Systems Development Life Cycle

- **Software development life cycle** is the traditional systems development method that organizations use for large-scale IT projects.
- **SDLC** processes are systems investigation, systems analysis, systems design, programming, testing, implementation, operation and maintenance.
- **Waterfall approach** is when tasks in one phase are completed before the work proceeds to the next stage.

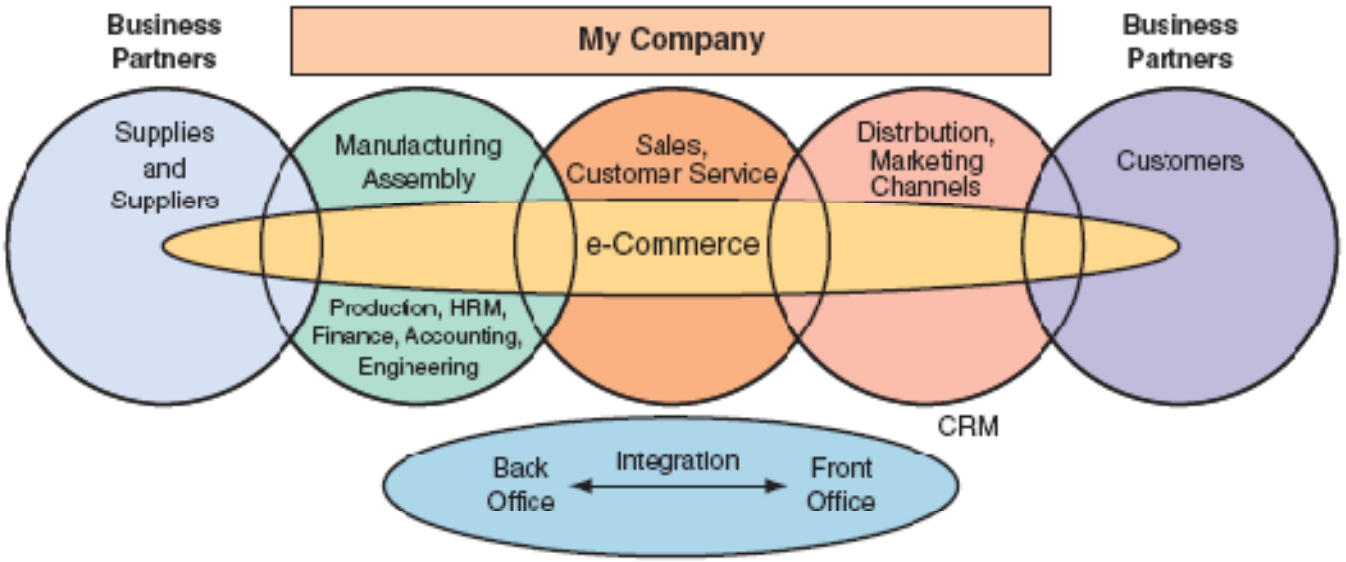
Applications and INFRASTRUCTURE



Selection of Vendors



Partner Connections



System Development Teams

- **Users** are employees from all functional areas and levels of the organization who interact with the system, either directly or indirectly.
- **System analysts** are IS professionals who specializing in analyzing and designing ISs.
- **Programmers** are IS professionals who modify existing computer programs or write new computer programs to satisfy user requirements.

System Development Teams (Continued)

- **Technical specialists** are experts on a certain type of technology, such as databases or telecommunications.
- **System stakeholders** are all people affected by changes in the information systems.

SDLC

- Major advantages
  - Control
  - Accountability
  - Error detection
- Major drawbacks
  - Relatively inflexible
  - Time-consuming and expensive
  - Discourages changes once user requirements are done

SDLC – Systems Investigation

- Begins with the business problem (or opportunity) followed by the feasibility analysis.
- Feasibility study
  - Technical
  - Economic
  - Behavioral
  - Organizational
- Go/No-Go Decision

SDLC – Systems Analysis

- Is the examination of the business problem that the organization plans to solve with an information system.
- Main purpose is to gather information about existing system to determine requirements for the new or improved system.
- Deliverable is a set of ***system requirements***.

SDLC – Systems Design

- Describes how the system will accomplish this task.
- Deliverable is the ***technical design*** that specifies:
  - System outputs, inputs, user interfaces;
  - Hardware, software, databases, telecommunications, personnel & procedures;
  - Blueprint of how these components are integrated.

SDLC – Systems Design (Continued)

- **Logical system design** states *what* the system will do, using abstract specifications.
- **Physical system design** states *how* the system will perform its functions, with actual physical specifications.
- **Scope creep** is caused by adding functions after the project has been initiated.

SDLC – Programming & Testing

- **Programming** involves the translation of a system's design specification into computer code.
- **Testing** check to see if the computer code will produce the expected and desired results under certain conditions.
- **Testing** is designed to delete errors (bugs) in the computer code. These errors are of two types . ***Syntax errors*** (e.g., misspelled word or a misplaced comma) and ***logic errors*** that permit the program to run but result in incorrect output.

SDLC – Systems Implementation

- **Implementation** or deployment is the process of converting from the old system to the new system. Organizations use four major conversion strategies ; parallel , direct , pilot and phased.
- **Parallel conversion**. Implementation process in which the old system and the new system operate simultaneously for a period of time.
- **Direct conversion**. Implementation process in which the old system is cut off and the new system turned on at a certain point in time.

SDLC – Systems Implementation (Continued)

- **Pilot conversion**. Implementation process that introduces the new system in one part of the organization on a trial basis, when new system is working property, it is introduced in other parts of the organization.
- **Phased conversion**. Implementation process that introduces components of the new system in stages, until the entire new system is operational.

SDLC – Operation & Maintenance

- **Audits** are performed to assess the system's capabilities and to determine if it is being used correctly.
- Systems need several types of maintenance.
  - **Debugging**: A process that continues throughout the life of the system.
  - **Updating**: Updating the system to accommodate changes in business conditions.
  - **Maintenance**: That adds new functionally to the system –adding new features to the existing system without disturbing its operation.

Alternative Methods & Tools for Systems Development

- **Prototyping**. Approach that defines an initial list of user requirements, builds a prototype system and then improves the system in several iterations based on users' feedback.
- **Joint application design (JAD).** A group – based tool for collecting user requirements and creating system designs.

Business Process Redesign (BPR)

BPR

Business process redesign was preceded by business process reengineering, a methodology in which an organization *fundamentally* and *radically* redesigned its business processes to achieve dramatic improvement. Today, BPR can focus on anything from the redesign of an individual process, to redesign of a group of processes, to redesign of the entire enterprise.

BPM

A new method for restructuring, Business process management (BPM), combines workflow systems and redesign methods. This emerging methodology covers three process categories: *people-to-people, systems-to-systems*, and *systems-to-people* interactions. It is a blending of workflow, process management, and applications integration.

Outsourcing & Application Service Providers

- **Outsourcing** is when an organization acquires IT applications or services from outside contractors or external organizations.
- **Application service provider (ASP)** is an agent or vendor who assembles the software needed by enterprises and packages the software with services such as development, operations and maintenance.
  - **ASP** manages application servers from a centrally controlled location rather than at a customer's site.

Evaluating & Justifying IT Investment: Benefits, Costs & Issues

- Assessing the costs
  - **Fixed costs**: are those costs that remain the same regardless of change in the activity level. For IT, fixed costs include *infrastructure cost*, cost of IT services, and IT management cost
  - **Total cost of ownership (TCO):** Formula for calculating cost of acquiring, operating and controlling an IT system.
- Assessing the benefits (Values)
  - **Intangible benefits.** Benefits from IT that may be very desirable but difficult to place an accurate monetary value on.
- Comparing the two

Conducting the Cost-Benefit Analysis

- Using **NPV** in cost-benefit Analysis. Using the NPV method, analysts convert future values of benefits to their present-value equivalent by discounting them at the organization's cost of funds.
- **Return on investment**. It measure the effectiveness of management in generating profits with its available assets.
- The **business case approach**. A business case is one or more specific applications or projects. Its major emphasis is the justification for a specific required investment, but it also provides the bridge between the initial plan and its execution.

Cost-Benefit Analysis Methods

Method	Description
Benchmarks	Focuses on objective measures of performance. Metric benchmarks provide numeric measures of performance, best-practice benchmarks focus on how IS activities are actually performed by successful organization.
Management by maxim	Brings together corporate executives, business-unit managers, and IT executives to identify IT infrastructure investments that correspond to organizational strategies and objectives.
Real-option valuation	Stems form the field of finance. Looks for projects that create additional opportunities in the future, even if current costs exceed current benefits.
Balanced scorecard method	Evaluates the overall health of organizations and projects, by looking at the organization's short- and long-term financial metrics, customers, internal business processes and learning and growth (Kaplan and Norton, 1996).
Activity- based costing approach	Applies principles of activity-based costing (ABC)(which allocates costs based on each product's use of company activities in making the product) to IT investment analysis.
EIAC model	Methodology for implementing IT payoff initiatives, composed of 9 phases, divided into four categories: exploration (E), involvement (I), analysis (A) and communication (C).

Managerial Issues

- Global and Cultural Issues
- Ethical and legal issues.
- User involvement.
- Change Management
- Risk Management

Chapter 15

Copyright © 2008 John Wiley & Sons, Inc. All rights reserved. Reproduction or translation of this work beyond that permitted in Section 117 of the 1976 United States Copyright Act without the express written permission of the copyright owner is unlawful. Request for further information should be addressed to the Permissions Department, John Wiley & Sons, Inc. The purchaser may make back-up copies for his/her own use only and not for distribution or resale. The Publisher assumes no responsibility for errors, omissions, or damages, caused by the use of these programs or from the use of the information contained herein.