# Essentials of Systems Analysis and Design
## Sixth Edition

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# Chapter 4
# Systems Planning and Selection

# Learning Objectives

- Describe the steps involved when **identifying** and selecting projects and initiating and **planning** projects
- Discuss the content of and need for a project **scope** statement and baseline project **plan**
- Describe various methods for accessing project **feasibility**

# Learning Objectives (continued)

- Explain intangible and **tangible costs** and **benefits**
- Explain **recurring** and **one-time costs**
- Describe various methods of **cost/benefit analysis**
- Describe a **structured** walkthrough

# Identifying and Selecting Projects

- Sources of Projects
  1. Managers and business units
     - to gain more information or provide new services
  2. Managers
     - to make a system more efficient, less costly, or want a new operating environment
  3. Formal planning groups
     - to improve an existing system in order to help the organization meet its corporate objectives

# Identifying and Selecting Projects (continued)

1. Projects are identified by
   - Top management
   - Steering committee
   - User departments
   - Development group or senior IS staff

# Identifying and Selecting Projects (continued)

- Top-Down identification
  - Senior management or steering committee
  - Focus is on global needs of organization
- Bottom-up identification
  - Business unit or IS group
  - Don't reflect overall goals of the organization

# Identifying and Selecting Projects (continued)

2. Classify and rank development projects
3. Select development projects
   - Factors:
     - Perceived needs of the organization
     - Existing systems and ongoing projects
     - Resource availability
     - Evaluation criteria
     - Current business conditions
     - Perspectives of the decision makers

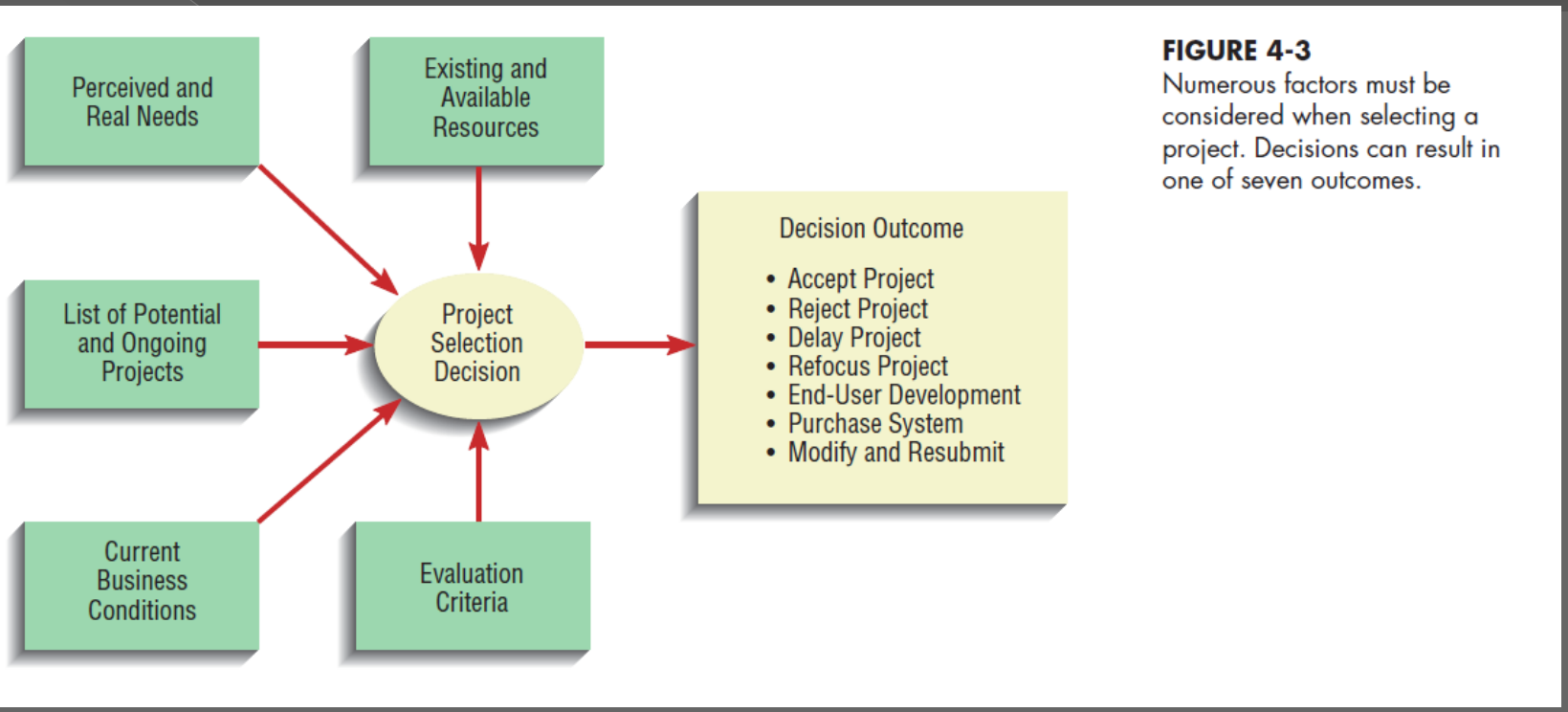



**FIGURE 4-3**
Numerous factors must be considered when selecting a project. Decisions can result in one of seven outcomes.

# Identifying and Selecting Projects (continued)

- Deliverables and Outcomes
  - Primary deliverable of this phase is a schedule of specific IS development projects
  - Incremental commitment
    - Continuous reassessment of project after each phase

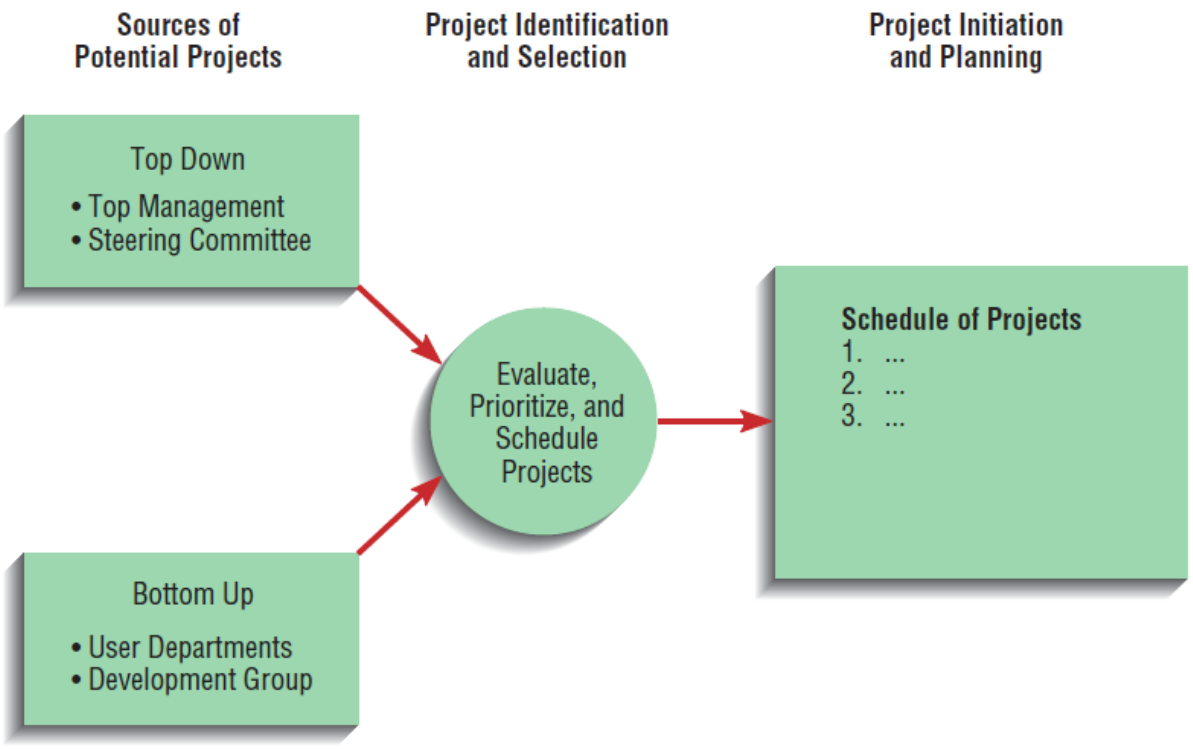



**FIGURE 4-4**
Information systems development projects come from both top-down and bottom-up initiatives.

# Initiating and Planning System Development Projects

- Objectives
  - Baseline Project Plan (BPP)
    - Internal document
  - Project Scope Statement
    - Prepared for external and internal stakeholders
    - Provides a high-level overview of the project

# Assessing Project Feasibility

- Six Categories
  - Economic
  - Operational
  - Technical
  - Schedule
  - Legal and contractual
  - Political

# Assessing Economic Feasibility

- Cost–Benefit Analysis
- Determine Benefits
  - Tangible benefits
    - Can be measured easily
      - Examples
        - Cost reduction and avoidance
        - Error reduction
        - Increased flexibility
        - Increased speed of activity
        - Increased management planning and control

# Assessing Economic Feasibility (continued)

- Intangible Benefits
  - Cannot be measured easily
  - Examples
    - Increased organizational flexibility
    - Increased employee morale
    - Competitive necessity
    - More timely information
    - Promotion of organizational learning and understanding

**FIGURE 4-7**
**Tangible Benefits Worksheet for the Customer Tracking System at Pine Valley Furniture**

TANGIBLE BENEFITS WORKSHEET
*Customer Tracking System Project*

| | Year 1 through 5 |
|---|---|
| A. Cost reduction or avoidance | $ 4,500 |
| B. Error reduction | 2,500 |
| C. Increased flexibility | 7,500 |
| D. Increased speed of activity | 10,500 |
| E. Improvement in management planning or control | 25,000 |
| F. Other _____ | 0 |
| **TOTAL Tangible Benefits** | **$50,000** |

# Assessing Economic Feasibility (continued)

- Determine Costs
  - Tangible Costs
    - Can easily be measured in dollars
      - Example: Hardware
  - Intangible costs
    - Cannot be easily measured in dollars
    - Examples:
      - Loss of customer goodwill
      - Loss of employee morale

# Assessing Economic Feasibility (continued)

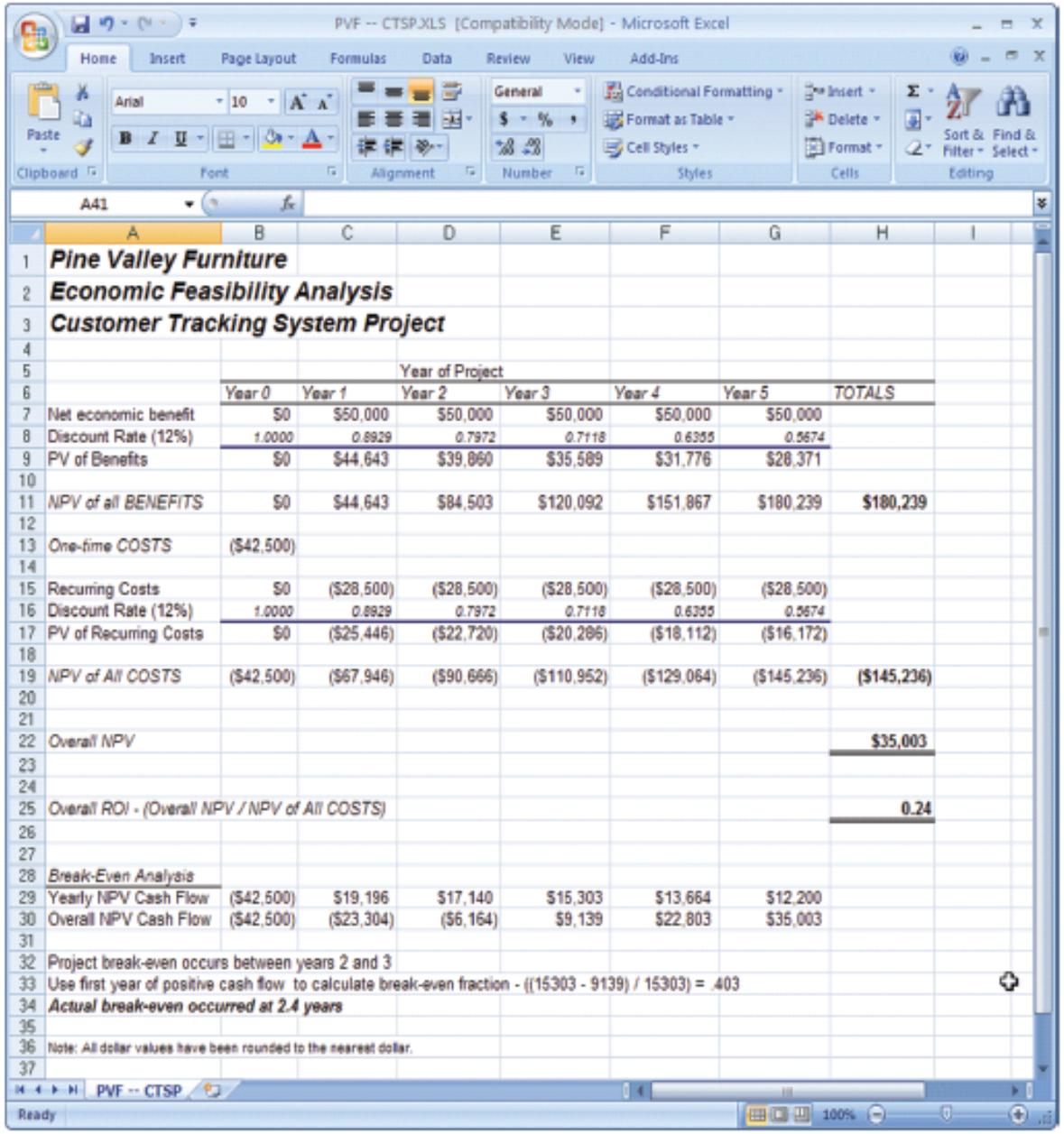
- One-Time Costs
  - Associated with project start-up, initiation and development
  - Includes
    - System development
    - New hardware and software purchases
    - User training
    - Site preparation
    - Data or system conversion

# Assessing Economic Feasibility (continued)

- Recurring Costs
  - Associated with on-going use of the system
  - Includes:
    - Application software maintenance
    - Incremental data storage expense
    - Incremental communications
    - New software and hardware releases
    - Consumable supplies
- Time value of money (TVM)
  - The process of comparing present cash outlays to future expected returns

**FIGURE 4-10**
**Worksheet Reflecting the Present Value Calculations of All Benefits and Costs for the Customer Tracking System at Pine Valley Furniture**

This worksheet indicates that benefits from the project over five years exceed its costs by $35,003.



PVF -- CTSP.XLS [Compatibility Mode] - Microsoft Excel

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | ***Pine Valley Furniture*** | | | | | | | |
| 2 | ***Economic Feasibility Analysis*** | | | | | | | |
| 3 | ***Customer Tracking System Project*** | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | Year of Project | | | | |
| 6 | | *Year 0* | *Year 1* | *Year 2* | *Year 3* | *Year 4* | *Year 5* | *TOTALS* |
| 7 | Net economic benefit | $0 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | |
| 8 | Discount Rate (12%) | *1.0000* | *0.8929* | *0.7972* | *0.7118* | *0.6355* | *0.5674* | |
| 9 | PV of Benefits | $0 | $44,643 | $39,860 | $35,589 | $31,776 | $28,371 | |
| 10 | | | | | | | | |
| 11 | *NPV of all BENEFITS* | $0 | $44,643 | $84,503 | $120,092 | $151,867 | $180,239 | **$180,239** |
| 12 | | | | | | | | |
| 13 | *One-time COSTS* | ($42,500) | | | | | | |
| 14 | | | | | | | | |
| 15 | Recurring Costs | $0 | ($28,500) | ($28,500) | ($28,500) | ($28,500) | ($28,500) | |
| 16 | Discount Rate (12%) | *1.0000* | *0.8929* | *0.7972* | *0.7118* | *0.6355* | *0.5674* | |
| 17 | PV of Recurring Costs | $0 | ($25,446) | ($22,720) | ($20,286) | ($18,112) | ($16,172) | |
| 18 | | | | | | | | |
| 19 | *NPV of All COSTS* | ($42,500) | ($67,946) | ($90,666) | ($110,952) | ($129,064) | ($145,236) | **($145,236)** |
| 20 | | | | | | | | |
| 21 | | | | | | | | |
| 22 | *Overall NPV* | | | | | | | **$35,003** |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | *Overall ROI - (Overall NPV / NPV of All COSTS)* | | | | | | | **0.24** |
| 26 | | | | | | | | |
| 27 | | | | | | | | |
| 28 | *Break-Even Analysis* | | | | | | | |
| 29 | Yearly NPV Cash Flow | ($42,500) | $19,196 | $17,140 | $15,303 | $13,664 | $12,200 | |
| 30 | Overall NPV Cash Flow | ($42,500) | ($23,304) | ($6,164) | $9,139 | $22,803 | $35,003 | |
| 31 | | | | | | | | |
| 32 | Project break-even occurs between years 2 and 3 | | | | | | | |
| 33 | Use first year of positive cash flow to calculate break-even fraction - ((15303 - 9139) / 15303) = .403 | | | | | | | |
| 34 | ***Actual break-even occurred at 2.4 years*** | | | | | | | |
| 35 | | | | | | | | |
| 36 | Note: All dollar values have been rounded to the nearest dollar. | | | | | | | |
| 37 | | | | | | | | |

# Assessing Other Feasibility Concerns

- Operational Feasibility
  - Assessment of how a proposed system solves business problems or takes advantage of opportunities
- Technical Feasibility
  - Assessment of the development organization's ability to construct a proposed system

# Assessing Other Feasibility Concerns (continued)

- Schedule Feasibility
  - Assessment of time-frame and project completion dates with respect to organization constraints for affecting change
- Legal and Contractual Feasibility
  - Assessment of legal and contractual ramifications of new system

# Assessing Other Feasibility Concerns (continued)

- Political Feasibility
  - Assessment of key stakeholders' view in organization toward proposed system

# Building the Baseline Project Plan

- Objectives
  - Assures that customer and development group have a complete understanding of the proposed system and requirements
  - Provides sponsoring organization with a clear idea of scope, benefits and duration of project

# Building the Baseline Project Plan (continued)

- Four Sections of a Baseline Project Plan:
  - Introduction
  - System description
  - Feasibility assessment
  - Management issues

# Building the Baseline Project Plan (continued)

- Introduction
  - Brief overview
  - Recommended course of action
  - Project scope defined
    - Units affected
    - Interaction with other systems
    - Range of system capabilities

# Building the Baseline Project Plan (continued)

- System Description
  - Outline of possible alternative solutions
  - Narrative format
- Feasibility Assessment
  - Project costs and benefits
  - Technical difficulties
  - High-level project schedule

# Building the Baseline Project Plan (continued)

- Management Issues
  - Outlines concerns that management may have about the project
  - Team composition
  - Communication plan
  - Project standards and procedures

**BASELINE PROJECT PLAN REPORT**

*1.0 Introduction*

A. Project Overview—Provides an executive summary that specifies the project's scope, feasibility, justification, resource requirements, and schedules. Additionally, a brief statement of the problem, the environment in which the system is to be implemented, and constraints that affect the project are provided.

B. Recommendation—Provides a summary of important findings from the planning process and recommendations for subsequent activities.

*2.0 System Description*

A. Alternatives—Provides a brief presentation of alternative system configurations.

B. System Description—Provides a description of the selected configuration and a narrative of input information, tasks performed, and resultant information.

*3.0 Feasibility Assessment*

A. Economic Analysis—Provides an economic justification for the system using cost-benefit analysis.

B. Technical Analysis—Provides a discussion of relevant technical risk factors and an overall risk rating of the project.

C. Operational Analysis—Provides an analysis of how the proposed system solves business problems or takes advantage of business opportunities in addition to an assessment of how current day-to-day activities will be changed by the system.

D. Legal and Contractual Analysis—Provides a description of any legal or contractual risks related to the project (e.g., copyright or nondisclosure issues, data capture or transferring, and so on).

E. Political Analysis—Provides a description of how key stakeholders within the organization view the proposed system.

F. Schedules, Timeline, and Resource Analysis—Provides a description of potential time frame and completion-date scenarios using various resource allocation schemes.

*4.0 Management Issues*

A. Team Configuration and Management—Provides a description of the team member roles and reporting relationships.

B. Communication Plan—Provides a description of the communication procedures to be followed by management, team members, and the customer.

C. Project Standards and Procedures—Provides a description of how deliverables will be evaluated and accepted by the customer.

D. Other Project-Specific Topics—Provides a description of any other relevant issues related to the project uncovered during planning.

**FIGURE 4-12**
An outline of a Baseline Project Plan contains four major sections: introduction, system description, feasibility assessment, and management issues.

# Reviewing the Baseline Project Plan

- Objectives
  - Assure conformity to organizational standards
  - All parties agree to continue with project

# Reviewing the Baseline Project Plan (continued)

- Walkthrough
  - Peer group review
  - Participants
    - Coordinator
    - Presenter
    - User
    - Secretary
    - Standard Bearer
    - Maintenance Oracle
  - Activities
    - Walkthrough review form
    - Individuals polled
    - Walkthrough action list
  - Advantages
    - Assures that review occurs during project

**Pine Valley Furniture**
*Walkthrough Review Form*

*Session Coordinator:*

*Project/Segment:*

*Coordinator's Checklist:*

1. Confirmation with producer(s) that material is ready and stable: _____
2. Issue invitations, assign responsibilities, distribute materials: [ ] Y [ ] N
3. Set date, time, and location for meeting:

Date: ____ /____ /____ Time: _____ A.M. / P.M. (circle one)

Location: _____

| *Responsibilities* | *Participants* | *Can Attend* | *Received Materials* |
|---|---|---|---|
| Coordinator | _____ | [ ] Y [ ] N | [ ] Y [ ] N |
| Presenter | _____ | [ ] Y [ ] N | [ ] Y [ ] N |
| User | _____ | [ ] Y [ ] N | [ ] Y [ ] N |
| Secretary | _____ | [ ] Y [ ] N | [ ] Y [ ] N |
| Standards | _____ | [ ] Y [ ] N | [ ] Y [ ] N |
| Maintenance | _____ | [ ] Y [ ] N | [ ] Y [ ] N |

*Agenda:*

_____ 1. All participants agree to follow PVF's Rules of a Walkthrough
_____ 2. New material: Walkthrough of all material
_____ 3. Old material: Item-by-item checkoff of previous action list
_____ 4. Creation of new action list (contribution by each participant)
_____ 5. Group decision (see below)
_____ 6. Deliver copy of this form to the project control manager

*Group Decision:*

_____ Accept product as-is
_____ Revise (no further walkthrough)
_____ Review and schedule another walkthrough

| Signatures | | |
|---|---|---|
| | | |

**FIGURE 4-17**
**Walkthrough Review Form for the Customer Tracking System at Pine Valley Furniture**

**Pine Valley Furniture**
*Walkthrough Action List*

*Session Coordinator:*

*Project/Segment:*

*Date and Time of Walkthrough:*

Date: ____ /____ /____ Time: _____ A.M. / P.M. (circle one)

| *Fixed (✓)* | *Issues raised in review:* |
|---|---|
| | |

**FIGURE 4-18**
**Walkthrough Action List for Pine Valley Furniture**

# Electronic Commerce Application

- Development process for Internet projects is no different than other projects
- Special issues need to be taken into account

# Electronic Commerce Application (continued)

- Internet
  - Worldwide network comprised of individual networks used for global computing and electronic commerce
- Intranet
  - Internet-based communication to support business activities within a single organization
- Extranet
  - Internet-based communication to support business-to-business activities

# Electronic Commerce Application (continued)

- Electronic Data Interchange (EDI)
  - The use of telecommunications technologies to transfer business documents directly between organizations
- Internet vs. Intranet/Extranet Apps
  - Intranet/Extranet: Developer knows how application will be run and used
  - Internet: Developer faces various unknowns

# Summary

- Project Identification and Selection involves:
  - Identifying potential projects
  - Classifying and ranking of projects
  - Selecting projects
- Baseline Project Plan (BPP)
  - Created during project initiation and planning

# Summary (continued)

- Contains:
  - Introduction
  - High-level description of system
  - Outline of feasibility
  - Overview of management issues
- Project Scope Statement
  - Describes what project will deliver

# Summary (continued)

- Feasibility
  - Economic
  - Operational
  - Technical
  - Schedule
  - Legal
  - Contractual
  - Political

# Summary (continued)

- Benefits
  - Tangible vs. Intangible
- Costs
  - Tangible vs. Intangible
  - One-time vs. Recurring
- Internet Applications
  - Internet
  - Intranet
  - Extranet