STUDENT OBJECTIVES

- Identify and describe the core problem-solving steps for developing new information systems.
- Evaluate models for assessing the business value of information systems.
- Assess the requirements for successfully managing change created by new systems.
- Evaluate alternative methods for building information systems.
- Compare alternative methodologies for modeling and designing systems.
• **Problem:** Inefficient manual procedures, high error rate.

• **Solutions:** Eliminate manual procedures, design new ordering process, and implement database building **software** to batch and track orders automatically and schedule order pickups.

• **QuickBase for Corporate Workgroups software service** increased efficiency and reduced errors.

• Demonstrates IT’s role in updating traditional business processes.

• Illustrates digital technology as the focus of designing and building new information systems.
Interactive Session: Girl Scout Cookies

- Think of a time when you were charged with the task of selling a product
- How did you keep track of your orders?
- How did you keep track of your inventory?
- What were some of the weaknesses of your methods?
- How could information systems have improved your transaction and supply chain processes?
• New information systems are built as solutions to problems

• Four steps to building an information system
  • Define and understand the problem
  • Develop alternative solutions
  • Choose the best solution
  • Implement the solution

• The first three steps are called systems analysis
Developing an information system solution is based on the problem-solving process.

**Figure 11-1**

1. Define and understand the problem
   - Define the problem
   - Identify causes
   - Identify solution objectives
   - Identify information requirements

2. Develop alternative solutions
   - Identify alternative solutions

3. Choose the best solution
   - Evaluate the alternatives
   - Choose the best solution

4. Implement the solution
   - Create detailed design specifications
   - Acquire hardware
   - Develop/acquire software
   - Test the system
   - Prepare training and documentation
   - Convert the system
   - Evaluate the system solution
Defining and Understanding the Problem

- What caused the problem?
- Why does it persist?
- Why hasn’t it been solved?
- What are the objectives of a solution?
- Information requirements
Developing Alternative Solutions

- Paths to a solution determined by systems analysis
- Some solutions do not require an information system
- Some solutions require modification of existing systems
- Some solutions require new systems
Evaluating and Choosing Solutions

- Feasibility issues
- Costs and benefits
- Advantages and disadvantages
- Business value of systems
- Change management
Implementing the Solution

• Systems design

• Completing implementation
  • Hardware selection and acquisition
  • Software development and programming
  • Testing
  • Training and documentation
  • Conversion
  • Production and maintenance

• Managing the change
Interactive Session: Problem Solving

- Think of a problem you recently attempted to solve
- How did you define the problem?
- What solutions were available to you?
- Which solution did you choose? Why?
- How did you implement the solution?
- What changes resulted from implementing the solution? How did you manage these changes?
Making the Business Case for a New System

- Financial issues
  - Tangible benefits
  - Intangible benefits
  - Capital budgeting methods

- Nonfinancial issues
  - Strategic advantages
  - Information systems plan
  - Portfolio analysis
  - Scoring model
Companies should examine their portfolio of projects in terms of potential benefits and likely risks. Certain kinds of projects should be avoided altogether and others developed rapidly. There is no ideal mix. Companies in different industries have different information systems needs.

Figure 11-3
New System Challenges

- User interface design
- Costs to implement or run
- User involvement and influence
  - User-designer communications gap
- Management support and commitment
- Level of complexity and risk
- Quality of project management
Managing Change Successfully

- Outsourcing and external consultants
- Formal planning and control tools
- User education and training
- Ergonomics
- Organizational impact analysis
Change Management Delivers for Australian Social Services

- Read the Focus on People and then discuss the following questions:
  - What problems were Australia’s social welfare systems facing?
  - How did Centrelink attempt to solve these problems?
  - What other solutions might have worked?
  - What people, organization, and technology factors impacted this problem and its solution?
  - Describe the role that Jane Treadwell played in the development of Centrelink. What choices and techniques contributed to her success as an executive?
Traditional Systems Development Lifecycle

• Oldest method for building information systems
• Phased approach with formal stages
• Waterfall approach
• Formal division of labor
• Used for building large, complex systems
• Time consuming and expensive to use
The systems development lifecycle partitions systems development into formal stages, with each stage requiring completion before the next stage can begin.

**Figure 11-5**

The Traditional Systems Development Lifecycle
Prototyping

• Preliminary model built rapidly and inexpensive
• Four-step process
  • Identify the user’s basic requirements
  • Develop an initial prototype
  • Use the prototype
  • Revise and enhance the prototype
• Especially useful in designing a user interface
Marriott’s New Revenue Management System Yields Success

• Read the Focus on Organizations and then discuss the following questions:
  • What problem did Marriott face?
  • What business goals was the company trying to achieve?
  • What alternatives were available for solving Marriott’s problem?
  • Did Marriott select the best solution?
  • How did prototyping help Marriott come up with its solution?
  • What people, organization, and technology factors were involved in the solution that the company chose?
End-User Development

- End users create simple information systems with little or no assistance from technical specialists.
- Use fourth-generation languages, graphics languages, and PC software tools to access data, create reports, and develop information systems.
- Completed more rapidly than systems developed with conventional tools.
- Organizational risks.
Purchasing Solutions: Application Software Packages and Outsourcing

- Request for Proposal (RFP)
- Application software packages
  - Generalized systems for universal functions with standard processes
  - Customization
- Outsourcing
  - Application service providers (ASPs)
  - Offshore outsourcing
Rapid Application Development for E-Business

• Agility and scalability

• Rapid application development (RAD)
  • Creating workable systems in a very short period of time

• Joint application design (JAD)
  • End users and information systems specialists working together on design
Structured methodologies
  - Data flow diagram
  - Process specifications
  - Structure chart

Object-oriented development
  - Based on concepts of class and inheritance
  - Component-based development and Web services

Computer-aided software engineering (CASE)
This figure illustrates how classes inherit the common features of their superclass.

Figure 11-11