Information System Development

Reading:

Laudon & Laudon

chapter 11

Additional Reading:

Brien & Marakas

chapter 10

Outline

- Problem Solving and System Development
  - System development and lifecycle
  - Prototyping
  - End user development
- Purchasing Software Solutions
- Outsourcing

New Ordering System for Girl Scout Cookies

- Manual Procedures
  - Inefficient
  - High Error Rates
- Solutions
  - Eliminate manual procedures,

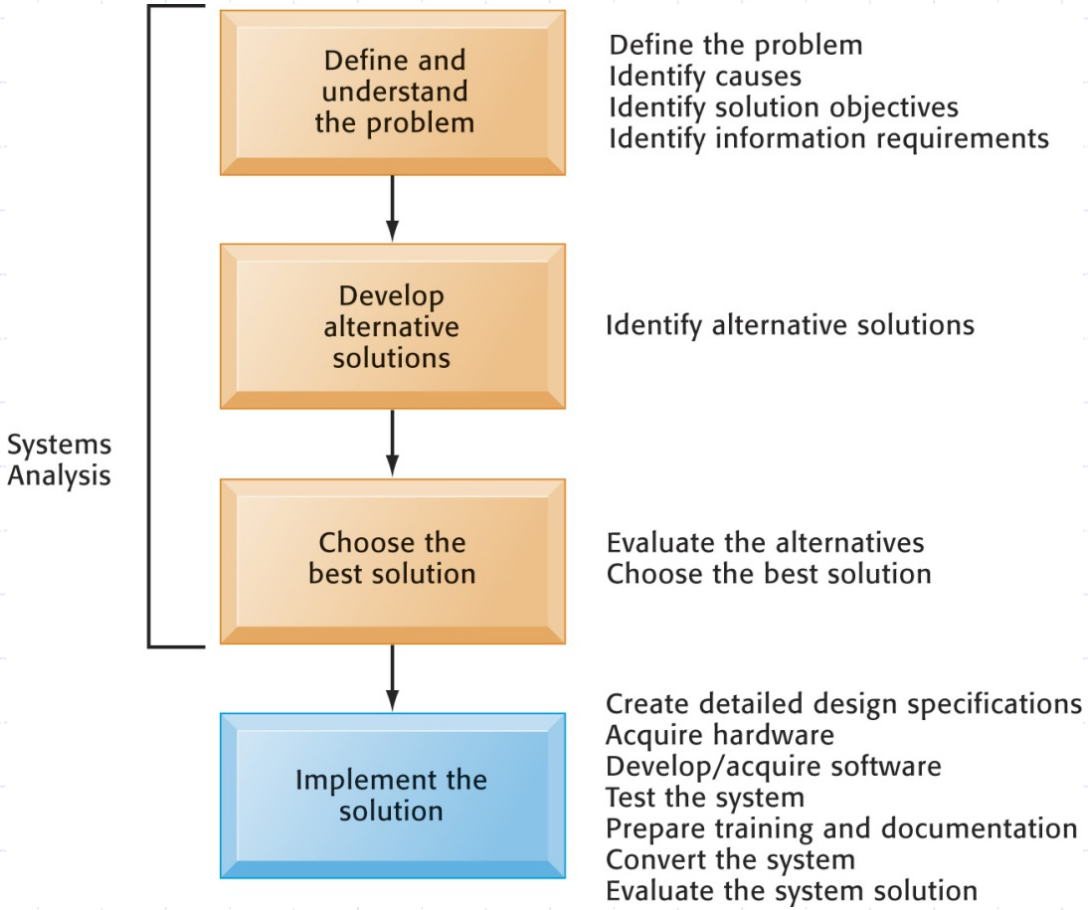
    design new ordering process, and implement database building software to batch and track orders automatically and schedule order pickups.
    - Microsoft Access Database Management → Time consuming, Complex, Expensive (25,000 + Server + Web Maintenance)
    - QuickBase (Insuit's) → 500 $/pm (100 Users), little training, prototype
  - QuickBase for Corporate Workgroups software service

    ↑ efficiency and ↓ errors; Paperwork ↓ 90%, Errors ~1%,

Problem Solving and System Development

➢ Problem Solving Process

- Four steps to building an information system



Problem Solving and System Development

➢ Problem Solving Process

- Four steps to building an information system
  - Define and understand the problem
  - Develop alternative solutions
  - Evaluate and choose a solution
  - Implement the solution
- First Three Steps → System Analysis

Problem Solving and System Development

➢ Defining and Understanding Problem

- What caused the problem?
- Why does it persist?
- Why hasn't it been solved?
- What are the objectives of a solution?
- Information requirements
  - *Who needs what Information, where, when, how*
  - *Ability to rapidly total and organize order trans., Track orders by…*

- 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

Problem Solving and System Development

Evaluating and Choosing Solutions

- Feasibility issues {financial, technical, organizational}
- Costs and benefits
- Advantages and disadvantages {Patriot trait Girls Scout had 3 alternatives}
- Business value of systems
- Change management

Implementing the Solution

- Systems design {Create detailed design spec}
- Completing implementation
  - Hardware selection and acquisition
  - Software development and programming
  - Testing – *Unit, System, Acceptance*
  - Training, documentation – *End-user and Technical* {Online practice, step-by-step ins}
  - Conversion – *Changing from Old to New System* {Parallel, Direct Cutover, Phased}
  - Production & maintenance – *Completing Conversion* {Review, Objectives, Modificat.}
- Managing the change {Introduce in orderly and effective manner, training, answering questions}

Alternative Systems – Building Approaches

➢ Sample Test Plan for Girl Scout Cookie System

Test Case Number: GS02-010

Prepared by: A. Nelson | Date: February 15, 2008

Objective: This subtest checks for accessing an existing troop record

Specific Environment: QuickBase for WorkGroups

Procedure Description:
Click on My Troop Summary link.
Enter Troop Number

Expected Result:
When user clicks on My Troop Summary, the Troop Summary screen appears.
When user enters the correct Troop Number, the Troop record appears.
When user enters the wrong Troop Number, the error message "Wrong Troop Number" appears.

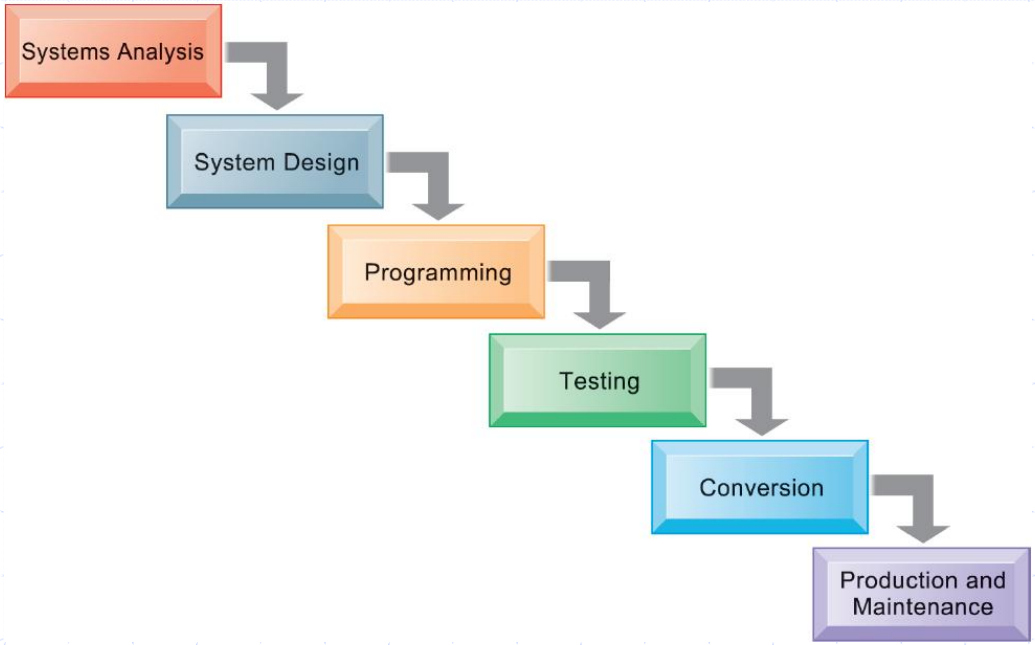
Test Results:
All OK.

When developing a test plan, it is imperative to include the various conditions to be tested, the requirements for each condition tested, and the expected results. Test plans require input from both end users and information systems specialists.

Alternative Systems – Building Approaches

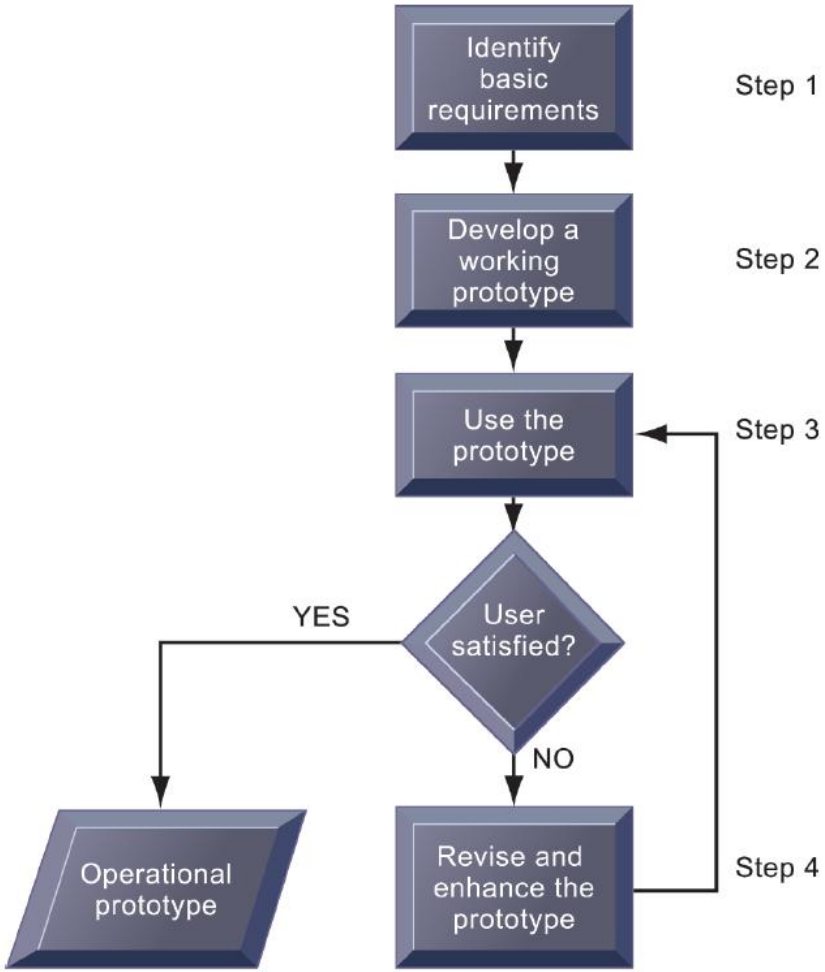
➢ Traditional System Development Lifecycle (SDLC)

- Oldest method for building information systems
- Phased approach with series formal stages
- Waterfall approach
- Formal division of labor
  - System Specialist & Programmers → System Analysis, Design, Implementation
  - End User → Limited to providing Info Requirements, Review Technical Staff's work
- Used for building large, complex systems
- Time consuming and expensive to use



Alternative Systems – Building Approaches

➢ Prototyping Process



Alternative Systems – Building Approaches

➢ Prototyping

- Preliminary model built rapidly and inexpensively
- Refining prototype multiple times → User Interaction
- Four-step process
  - **Identify the user's basic requirements**
  - **Develop an initial prototype** {using tools for rapidly generating software}
  - **Use the prototype**
  - **Revise and enhance the prototype** {until user is satisfied}
- Useful for designing information system's user interface
  - Encourages end user involvement
  - More likely to develop system that fulfills user requirement
- Missing essential steps → Through testing/documentation
  - May not be able to accommodate large data/user requirements later

Alternative Systems – Building Approaches

➢ 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, Higher user involvement/satisfaction
- Organizational risks
  - Without formal development methodology → testing, documentation

Purchasing Solutions – Software Packages

- Request for Proposal (RFP)
  - Detailed list of questions to external vendors
- Application Software Packages
  - Generalized systems for universal functions with standard processes
  - Customization
- Outsourcing
  - Leasing Software/Hardware {*QuickBase*}
  - Application service providers (ASPs)
  - Offshore outsourcing

Purchasing Solutions – Outsourcing

➢ Total Cost of Offshore Outsourcing

TOTAL COST OF OFFSHORE OUTSOURCING

Cost of outsourcing contract **$10,000,000**

Hidden Costs	Best Case	Additional Cost ($)	Worst Case	Additional Cost ($)
1. Vendor selection	0.2%	20,000	2%	200,000
2. Transition costs	2%	200,000	3%	300,000
3. Layoffs & retention	3%	300,000	5%	500,000
4. Lost productivity/cultural issues	3%	300,000	27%	2,700,000
5. Improving development processes	1%	100,000	10%	1,000,000
6. Managing the contract	6%	600,000	10%	1,000,000
Total additional costs		**1,520,000**		**5,700,000**

	Outstanding Contract ($)	Additional Cost ($)	Total Cost ($)	Additional Cost
Total cost of outsourcing (TCO) best case	10,000,000	1,520,000	11,520,000	15.2%
Total cost of outsourcing (TCO) worst case	10,000,000	5,700,000	15,700,000	57.0%

If a firm spends $10 million on offshore outsourcing contracts, that company will actually spend 15.2 percent in extra costs even under the best-case scenario. In the worst-case scenario, where there is a dramatic drop in productivity along with exceptionally high transition and layoff costs, a firm can expect to pay up to 57 percent in extra costs on top of the $10 million outlay for an offshore contract.