SDLC and alternative methodologies

1/14/2015

Learning Objectives

- ✓ Describe the information systems development life cycle (SDLC).
- ✓ Discuss alternatives to the systems development life cycle, including a description of the role of computer aided software engineering (CASE) tools in systems development.

Systems Development Methodology

- ❑ A standard process followed in an organization to conduct all the steps necessary to analyze, design, implement, and maintain information systems
- ❑ Two categories:
  - Systems Development Life Cycle - SDLC
  - Alternative methodologies

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Systems Development Life Cycle

Systems Development Life Cycle

Phase 1: System Planning and Selection

1.1. Study/Analyze the need for a new or enhanced IS

The need may result from …

- Requests to deal with problems in current system
- Desire to perform additional tasks
- Desire to use IS to capitalize on existing opportunity

1.2. Investigate and propose a baseline plan

- Estimate project's scope
- Estimate time and resources needed
- Estimate cost and benefits
- Submit baseline plan (which is the output of the System Planning & Selection phase) for management's approval

Systems Development Life Cycle

Phase 2: Systems Analysis

Phase consists in …

- Determining what users are doing in the current system
- Determining what users want from the proposed system
- Generating alternative initial solutions
- Comparing alternative solutions to choose the one that best fit requirements

Phase 3: Systems Design

Phase consists in converting recommended alternative solution into logical and physical specifications

- Logical design: design of the system independent of any computer platform (i.e. any hardware or systems software)
- Physical design: technical specifications including diagrams, inputs, processing, reports, programming languages to use, DBMS to use, etc.
- Logical and physical designs are turned over to programmers and other system builders.

Systems Development Life Cycle

Phase 4: Systems Implementation and Operation

Phase consists in turning logical and physical designs into working system. It includes …

- Coding (i.e. programming)
- Testing
- Documentation
- Hardware and software installation
- User training

Systems Development Life Cycle

- Series of steps to manage development/maintenance of a system
- Phases are not necessarily sequential.
- Each phase has a specific outcome and deliverable.
- Individual companies use customized life cycle.

Alternative methodologies

- Prototyping
  - Building a scaled-down working version of the system (i.e. a prototype)
  - Advantages:
    - Users are involved in design
    - Captures requirements in concrete form

Note: The final system is built based on a good prototype.

Alternative methodologies

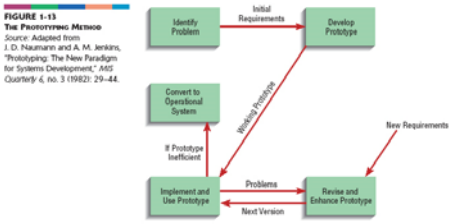

FIGURE 1-13
THE PROTOTYPING METHOD
Source: Adapted from J. D. Naumann and A. M. Jenkins, "Prototyping: The New Paradigm for Systems Development," *MIS Quarterly* 6, no. 3 (1982): 29–44.

Alternative methodologies (cont.)

- Joint Application Design (JAD)
  - Users, Managers and Analysts work together for several days
  - System requirements are reviewed
  - Structured meetings
- Rapid Application Development (RAD)
  - Uses JAD and Prototyping to define. requirements and radically decrease the time needed to design and implement information systems.
  - Key point: delay producing system design until after user requirements are clear.

Alternative methodologies (cont.)

- Participatory Design (PD)
  - Emphasizes role of the user
  - Entire user community can be involved in design
- Agile Methodologies
  - Focuses on
    - Adaptive methodologies
    - People instead of roles
    - Self-adaptive development process

Alternative methodologies (cont.)

- Computer-Assisted Software Engineering (CASE) Tools
  - Automated software tools used by systems analysts to develop information systems
  - Used in alternative methodologies
  - Can be used throughout SDLC
- General types of CASE tools
  - Diagramming tools
  - Analysis tools
  - Documentation generators
  - Code generators
  - Computer display and report generator

What You Should Know so Far

- See SysExercise_01 given in class.