LEARNING GOALS

- Describe alternative systems development methodologies
  - Prototyping
  - JAD
  - RAD
  - (OOAD)
- Explain when a company should use alternative SDM

Problems with Traditional SDLC

- SDLC is time consuming
- SDLC is not flexible (sequential process)
- SDLC gets users’ inputs **ONLY** during Systems analysis.
- Design is frozen at end of System Design
Question 1

- Which of the following is true about SDLC?
  a) It might take years to develop and implement a working information system
  b) Multiple teams could work simultaneously on different phases
  c) It is the best methodology for situations where the needs and requirements are likely to change during the development process
  d) All of the above

Prototyping

- A SDM that addresses:
  - Time consuming issue associated with SDLC
  - SDLC's inability to take care of new requirements
- A SDM in which the Development team uses limited set of users requirements to quickly build a working model of the proposed system - *a prototype.*

Prototyping

<table>
<thead>
<tr>
<th>Actors</th>
<th>Activities</th>
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<tbody>
<tr>
<td></td>
<td>Identify basic requirements</td>
</tr>
<tr>
<td></td>
<td>Develop a prototype</td>
</tr>
<tr>
<td></td>
<td>Use the prototype</td>
</tr>
<tr>
<td>Users</td>
<td>Is User satisfied?</td>
</tr>
<tr>
<td></td>
<td>Operational prototype</td>
</tr>
<tr>
<td>NO</td>
<td>Revise the prototype</td>
</tr>
<tr>
<td>YES</td>
<td>Develop final system (improved prototype)</td>
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</table>
Prototyping

- Advantages
  - Working model ready quickly
  - Works in situation where requirements are changing
  - Works in situations where users cannot explicitly express their requirements

- Disadvantage
  - Only a limited number of users involved. So, subject to potential implementation problem.

Joint Application Development (JAD)

- A SDM that addresses:
  - The limited scale of users involvement problem of Prototyping
  - Potential implementation problem due to limited users involvement

- A SDM that brings together the Development team and a significant number of users to define system requirements and develop a prototype.

Joint Application Development (JAD)

Objectives

- Identify a valid sample of users
- Set a JAD team (Users, IS professionals, scribe)
- Run the 1st JAD session (JAD team + Facilitator)
- Develop system prototype (based on agreed requirements)
- Run the 2nd JAD session (JAD team + Facilitator)
- Improve system prototype (based on JAD session results)
- Identify agreed upon systems requirements
- Test the system and identify agreed changes
Question 2

- Which of the following is true about a JAD facilitator? (Choose all that apply)
  a) Could be an outside consultant
  b) Is the scribe who takes notes
  c) Is responsible for coordinating the JAD sessions
  d) Is responsible for developing the system based on the agreed upon requirements
  e) All of the above

Joint Application Development (JAD)

- Advantages:
  - Helps alleviate conflicting requirements
  - Greater user involvement leads to greater user acceptance of final system
- Disadvantages
  - Could be expensive and time consuming

Rapid Application Development (RAD)

- Combines JAD, Prototyping, and use of Integrated CASE (ICASE) tools to decrease the time for systems development
- ICASE tools provide code generating capability
  - ICASE tools can produce a completed program based on the diagrams developed by systems analysts
  - ICASE tools can generate tables for a database based on detailed system specifications
Rapid Application Development (RAD)

Typical use of RAD

- Define requirements through JAD session
- Use ICASE to produce DFD and detailed Data storages' specifications
- Use ICASE to generate tables for Data storages
- Use ICASE to generate programs

Object-Oriented Analysis and Design (OOAD)

- Uses same phases as SDLC
- System Analysis and System Design view system
  - In terms of objects (e.g. customers, employees, products)
  - NOT in terms of processes
- OOAD identifies each object in the system and
  - its properties (e.g. SSN, Name, address, etc. for Student)
  - Its procedures (e.g. A student registers for a class)
- Advantages
  - Reduces time to develop system (objects' reuse)
  - Can lead to high-quality systems (reuse of tested objects and procedures)

Summary Questions

<table>
<thead>
<tr>
<th>Malaga</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>1) What are the main problems associated with SDLC?</td>
<td></td>
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<tr>
<td>2) What is Prototyping? What are the steps of Prototyping? In what kind of situations Prototyping might be the best SDM to use?</td>
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<tr>
<td>3) What is JAD? Typically, who could be a member of a JAD team? Usually, what is the main objective of the 1st JAD session? What is the main problem associated with JAD?</td>
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<tr>
<td>4) What is RAD? What is an ICASE tool?</td>
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<tr>
<td>5) What is the difference between OOAD and SDLC? What is an object's property? What is a procedure? What are the main advantages of OOAD?</td>
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## SDLC: Recap

<table>
<thead>
<tr>
<th>Steps</th>
<th>Key actors</th>
<th>Tools/Techniques</th>
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<tbody>
<tr>
<td>1. Planning</td>
<td>Project Manager</td>
<td>TCO, Project Management software</td>
</tr>
<tr>
<td>2. System Analysis</td>
<td>System Analyst, Users.</td>
<td>Interviews, observing users at work, SFD</td>
</tr>
<tr>
<td>3. System Design</td>
<td>System analyst (or system designer)</td>
<td>System Flowchart, Structure chart</td>
</tr>
<tr>
<td>4. Development</td>
<td>Programmers, database developers, network engineers</td>
<td>Program Flowchart, Pseudo code, programming languages</td>
</tr>
<tr>
<td>5. Testing</td>
<td>Development team, Users</td>
<td>Verification, Validation</td>
</tr>
<tr>
<td>6. Implementation</td>
<td>Development team, Users</td>
<td>Direct cutover, parallel conversion, pilot testing, staged conversion</td>
</tr>
<tr>
<td>7. Maintenance</td>
<td>Internal IS staff, external consultant</td>
<td>programming languages</td>
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