Traditional Information Technology Planning in Larger Organizations

The Traditional Systems Development Life Cycle (SDLC)

Often called “The Waterfall Method”

(This material adapted from Hoffer, George and Valacich, 1998. Modern Systems Analysis and Design, Chapter 7)
The Traditional Systems Development Life Cycle (SDLC)

IT Project Identification & Selection

Requirements Analysis
The Traditional Systems Development Life Cycle (SDLC)

- IT Project Identification & Selection
- Requirements Analysis
- Logical Design
- Physical Design

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The Traditional Systems Development Life Cycle (SDLC)

IT Project Identification & Selection

Requirements Analysis

Logical Design

Physical Design

Implementation

Maintenance
The Traditional Systems Development Life Cycle (SDLC)

1. Strategic Planning
2. IT Project Identification & Selection
3. Requirements Analysis
4. Logical Design
5. Physical Design
6. Implementation
7. Maintenance
8. Evaluation and back to strategic planning process

Strategic Planning → IT Project Identification & Selection → Requirements Analysis → Logical Design → Physical Design → Implementation → Maintenance → Evaluation and back to strategic planning process
The Strategic Planning Process
(Adapted from Denise Wells, et al. Strategic Management: Using the Strategic Plan to Build Organizational Budgets, 1995.)

Pre-planning activities → Organizational Assessment → Mission
Future Vision → Gap Analysis → Strategic Goals
Guiding Principles → Strategies → Actions
Strategic Foundations

Evaluate Progress → Take Action → The Plan

The Traditional Systems Development Life Cycle (SDLC)
Choose the IT project(s) to undertake. For example, in advance of our database project, it will be looking at a private school’s office processes.
The Traditional Systems Development Life Cycle (SDLC)

Strategic Planning

IT Project Identification & Selection

Requirements Analysis

Logical Design

Physical Design

Implementation

Maintenance

Evaluation and back to strategic planning process

This is part of the job of a “systems analyst”.

This is what the relational database management system portion of this class is about
The Traditional Systems Development Life Cycle (SDLC)

But let’s go back to this phase…

Agile Systems Development

http://agilemanifesto.org/principles.html
The three components of the requirements analysis phase

Analysis Phase – Three Steps

1. Requirements Gathering

• Fact Finding Activity
• Requirements documentation

Project Documentation
Analysis Phase – Three Steps

1. Requirements Gathering
   • Fact Finding Activity
   • Requirements documentation

2. Requirements Structuring
   • Requirements documentation
   Structured requirements document.
   A clear and thorough description of business operations and new IT services.

3. Alternative Generation And Selection
   What technical options are there?
   Alternative approaches to meet requirements?
   Select best alternative.
Analysis Phase – Three Steps

- Requirements Gathering
  - Fact Finding Activity
  - Requirements documentation

- Requirements Structuring
  - Structured requirements document

- Alternative Generation And Selection
  - What technical options are there?
  - Alternative approaches to meet requirements?
  - Select best alternative.

- Project Documentation

Characteristics of a good systems analyst

- **Ability to question everything**

- **Impartial** – your role is to find the best solution possible to a business problem

- **Ability to assume that anything is possible**

- **Pays attention to details**

- **Ability to reframe situation** – challenge yourself to look at the organization in new ways
Goals of Requirements Gathering -
To understand:

• …the **business objectives** that drive how work is done

• ... the **information** people need to do their jobs

• … the **data** (definition, volume, size, etc.) handled in the organization

• … **when, how, and by whom or what data are moved, transformed and stored**

• … the **rules governing how data are handled** and processed

• … the **policies and guidelines** that describe the nature of the business and the environment in which it operates

Deliverables of Requirements Gathering

• Information collected from conversations or observations of users: interview transcripts, questionnaire responses, notes, meeting minutes

• Existing written information (e.g., business forms, procedure manuals, etc.)

• Summary documentation
Traditional methods for gathering IT requirements

1. Interviews with individuals who know the business processes

2. Interviews with a group of people

3. Survey people using questionnaires

4. Observe workers at selected times

5. Study business documents to understand issues, policies, rules, and the concrete use of data and information in the organization

MPPA students – some of these skills you cover in Research Methods

Other methods used to collect systems requirements

1. Joint Application Design (JAD) sessions

2. Prototyping
   MS Access and web development often use this

3. Group support systems to allow requirements gathering over computer networks
Analysis Phase – Three Steps

How do you “structure” requirements? Some methods:

- Data Flow Diagrams (DFDs)
- “Use Cases”
- Next generation?

Process modeling languages

We’ll talk about DFDs next…
Analysis Phase – Three Steps

Three Typical Options for IT Development

1. Fix existing system

2. Develop new system from scratch
   - In-depth systems analysis, design and implementation
   - Larger systems – prototyping not as easily done
   - Traditional Systems Development Life Cycle
   - Develop in-house or outsource

3. Purchase “off-the-shelf” package
Choosing Between Options:
Has Anyone Ever Used a Decision-Matrix?

The decision-matrix process:
Step 1: Set up matrix and weights

<table>
<thead>
<tr>
<th>CRITERIA &amp; WGT</th>
<th>IT PROJECT A</th>
<th>IT PROJECT B</th>
<th>IT PROJECT C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Alignment</td>
<td>10</td>
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<tr>
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<tr>
<td>Total</td>
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The decision-matrix process:
Step 2: Hide weights and rank projects

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<tr>
<td>Total</td>
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The decision-matrix process:
Step 3: Calculate Totals and Compare

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Analysis is what we went over today…

Next few topics
- “Wired for Good” book
- Process modeling with DFD