System Development Methodologies

System Analysis, Design, Development, and Maintenance

Presentation 1

Why do MOST System Development Projects *FAIL*?

Objectives:

- **Explain causes of system development failure, and list ways to overcome those causes**
- Explain each phase of the System Development Life Cycle
- Explain Prototyping and its use in developing systems
- Describe Joint Application Development (JAD) and discuss the role of the users in systems development.
- Discuss Rapid Application Development (RAD) and discuss the advantages and disadvantages of reusable components.

What makes a system Unsuccessful?

- The developed system did not support the business strategies and objectives
- Poor planning and poor project management
- Failure to understand user requirments
- Design defects / implementation errors/bugs
- Development of unstructured, unmaintainable software
- Acquisition of hardware or software that no one knows how to use (or is not needed)

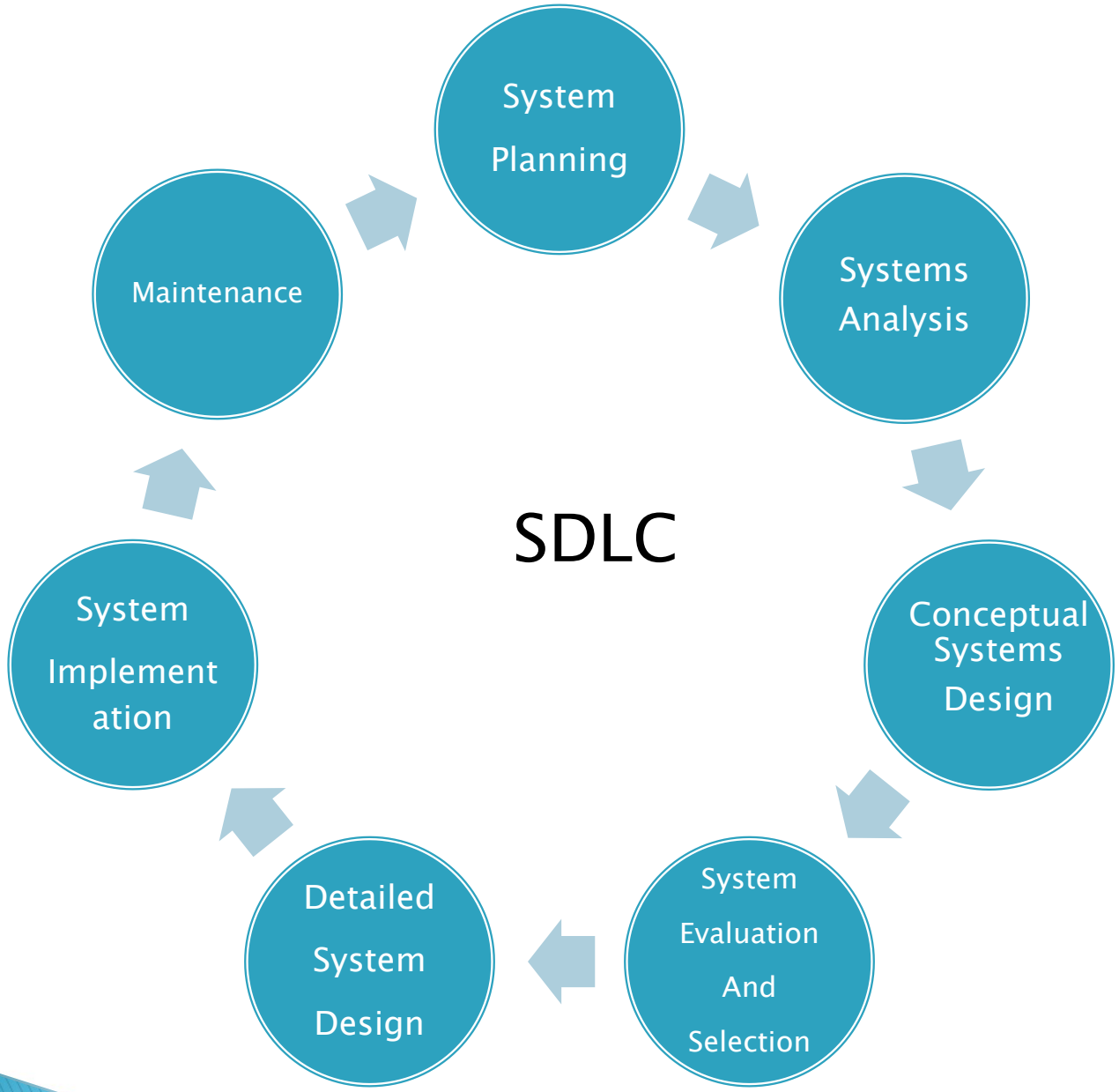
What makes a system Successful?

- Getting users involved with systems development
- Using formal system planning and project management techniques
- Developing alternative system designs for evaluation before making commitments to final design, technology, and software development.
- Using the detailed functional design as a guide for software design, coding, and testing.

The System Development Life Cycle

- A set of prescribed phases and tasks of the development of an information system.
- Each phase could be modeled has having a set of defined inputs and outputs.




SDLC
System Planning
Systems Analysis
Conceptual Systems Design
System Evaluation And Selection
Detailed System Design
System Implement ation
Maintenance

Front-End Phases

The early phases of the System Development Life Cycle:

- System Planning
- Systems Analysis
- General (conceptual) Systems Design
- System Evaluation and Selection

Back-End Phases

The development and implementation phases also involving functional design:

- Detailed System Design
- System Implementation
- System Maintenance

The Systems Planning Phase

- Identify the need for a system, a broad vision for the system, and conduct formal systems planning sessions enough for the project to get approval to move forward.
- Ensure that the project **meets feasibility factors**
- Ensure that the project meets **productivity factors.**

Feasibility Factors

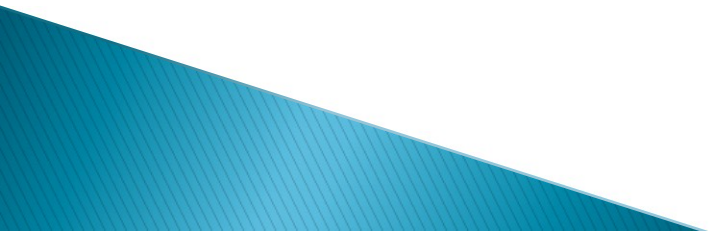
T	Technical Feasibility
E	Economical Feasibility
L	Legal Feasibility
O	Operational Feasibility
S	Schedule Feasibility

PDF Strategic Factors

A project must meet some *strategic* need. The strategic factors to consider include:

- **Productivity** – measures the output compared to the inputs; The goal is to reduce or eliminate nonvalue-added costs.
- **Differentiation** – measures how well an organization can offer a product or service significantly unlike a competitor's
- **Management** – how can the information system facilitate better planning, controlling, and decision makeing

Methods and Tools for Development



Prototyping

Building a model of the actual system, that will look like the final system is as much as:

- The concepts are able to be described
- People are able to describe the shortcomings of the current system (if there is one)
- Customers are able to describe the features they would like (or need) include in the new system.

Joint Application Development (JAD)

Benefits of JAD

- Accelerates design
- Enhances quality
- Promotes teamwork with the customer
- Creates a design from the customer's perspective
- Lowers development and maintenance costs

Joint Application Development (JAD)

How JAD Benefits are achieved:

- The decision makers are all present.
- The facilitator keeps the group focused on the goals.
- Differing views are handled immediately.
- Most errors are caught in the Analysis and Design stages.
- The system design reflects the user's desires.
- Issues are resolved quickly.
- Assumptions are documented and understood.
- The process tends to gain momentum, not lose it.

Joint Application Development (JAD)

How JAD Benefits are achieved:

- When participants believe that they have had control over a project's effort and content, they believe in the results as well. This sense of ownership is critical for the next step, whether that step is implementing the results or selling them to others.(4)

http://www.umsl.edu/~sauterv/analysis/488_f01_papers/rottman.htm

Rapid Application Development (RAD)

- A methodology that combines joint application development with specialist with advanced tools (SWAT) teams, computer-aided systems and software engineering tools, and prototyping
- Enables major parts of the system to be developed quickly.

- Future topics: CASE tools, Agile development, SCRUM