

System Development Methods

CT046-3-2

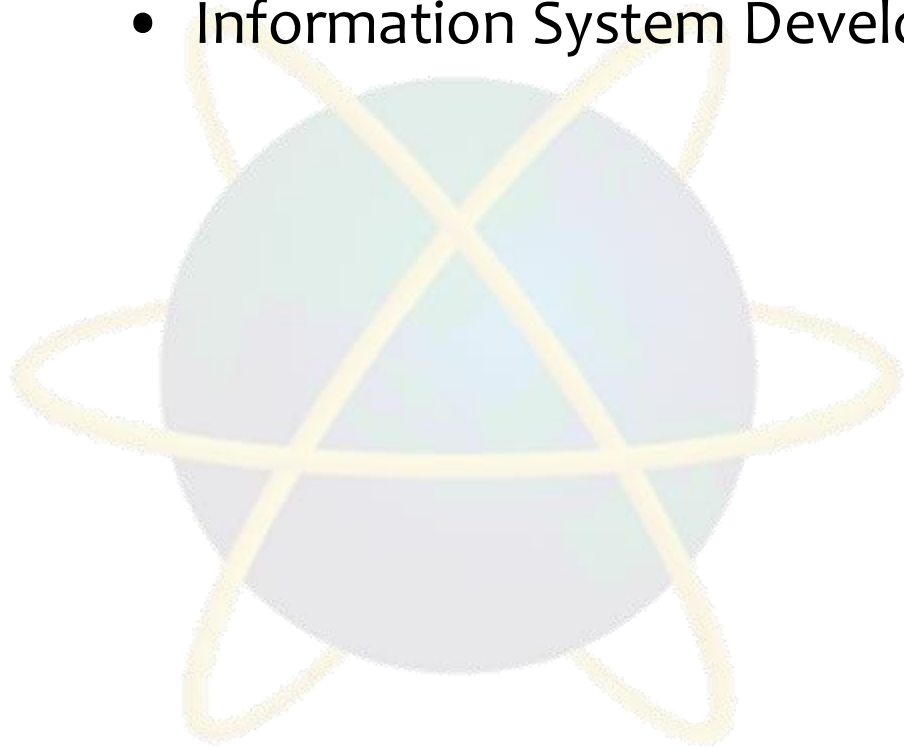


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Information Systems Development Methods

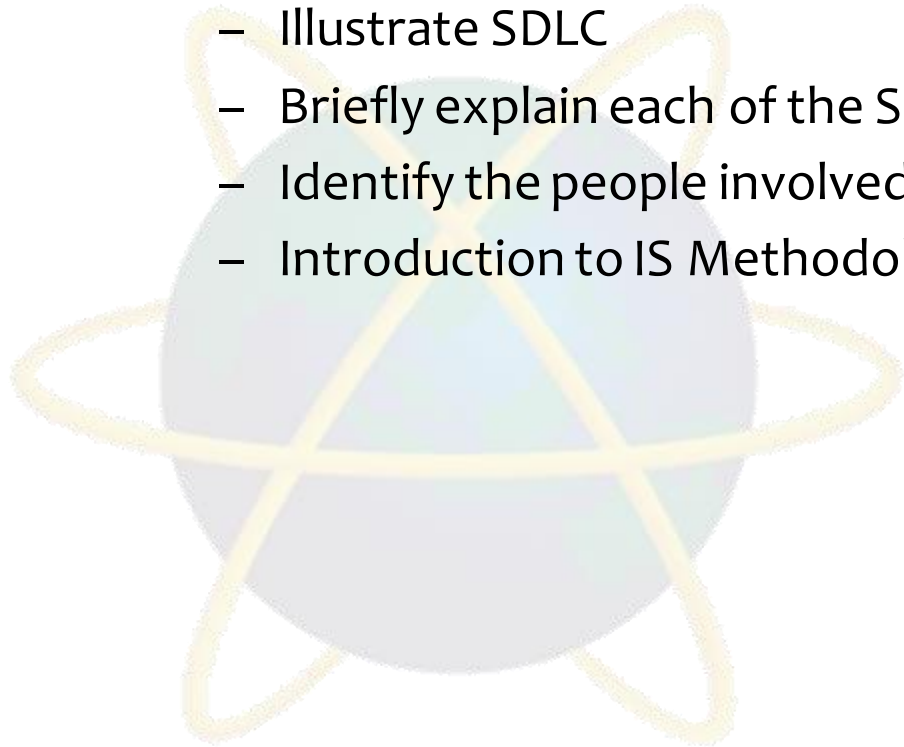
Topic & Structure of the lesson

- Revisiting System Development Lifecycle (SDLC)
 - Overview
 - Main Phases
- Information System Development Methodologies



Learning Outcomes

- By the end of this lecture, YOU should be able to :
 - Define SDLC
 - Illustrate SDLC
 - Briefly explain each of the SDLC phases
 - Identify the people involved in an IS project
 - Introduction to IS Methodologies



Key Terms you must be able to use

- If you have mastered this topic, you should be able to use the following terms correctly in your assignments and exams:
 - Systems Development Lifecycle (SDLC)
 - Benefits of using SDLC
 - Different versions of SDLC
 - General types of people involved in an IS project
 - Definition of IS Methodologies

Systems Development Life Cycle (SDLC)

- Standard definition;
 - The Systems Development Life Cycle (SDLC) is a **conceptual model** used in **project management** that describes the **stages** involved in an **information system development project**, from an initial feasibility study through maintenance of the completed application.
(wiki,2015)



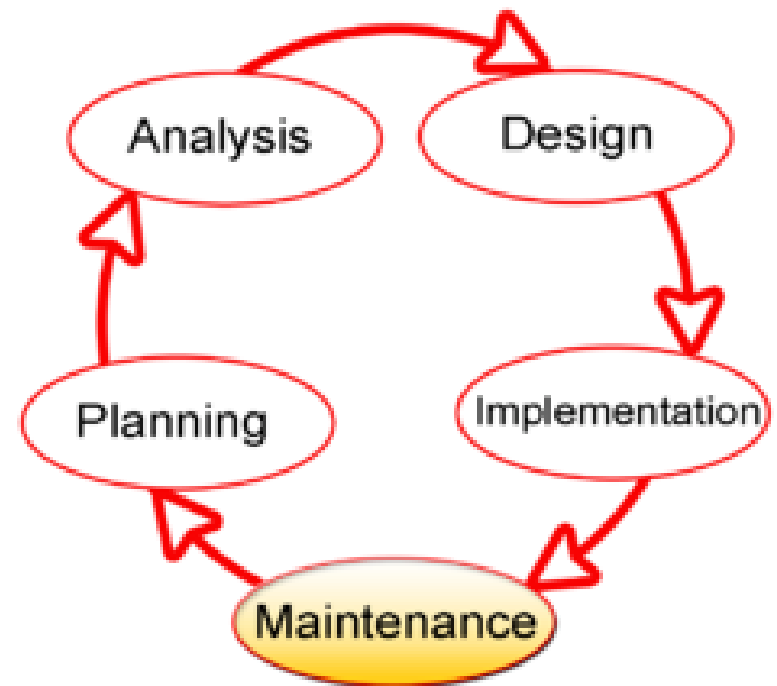
Systems Development Life Cycle (SDLC)

Simplified Definition

- A GENERAL RECIPE to 'cook-up' an Information System
- SDLC shows main stages:

- **PLANNING**
- **ANALYSIS**
- **DESIGN**
- **IMPLEMENTATION**
- **MAINTENANCE**

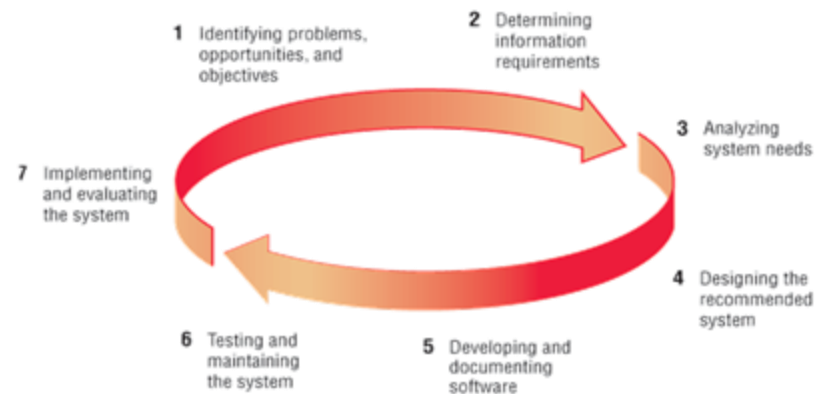
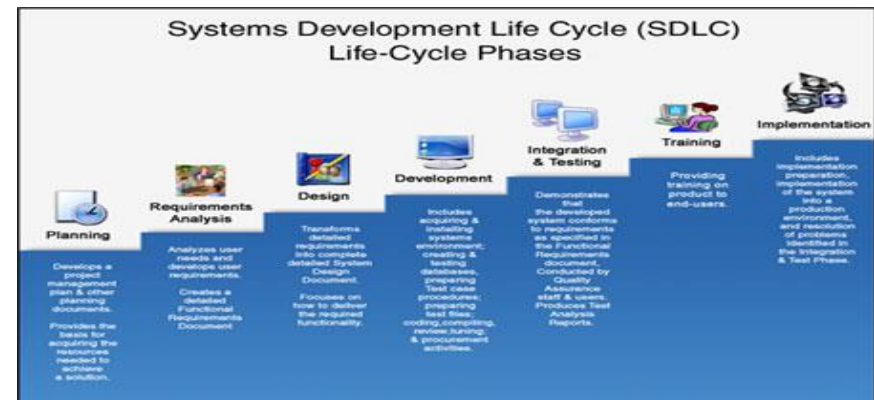
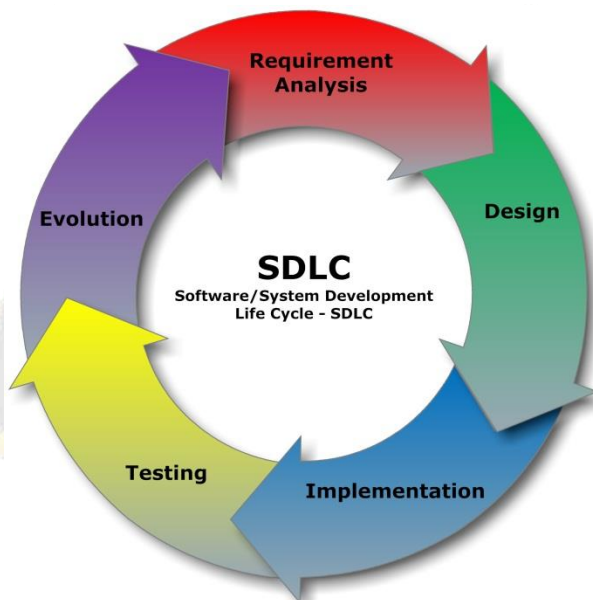
- (if any major problems, then back to planning)





Many views of SDLC

- SDLC has many version / diagrams / stages (from different authors), but generally all the same.



Search Google image for other versions

Facts about SDLC

- SDLC is considered a framework to develop an Information System
- SDLC acts as the basis for SYSTEM DEVELOPMENT METHODOLOGIES (covered in later chapters)
 - SDLC is not IS Development Methodology
- SDLC can be generally used to manage any IT based project.
- SDLC has Techniques to guide a developer to built an Information system efficiently.

PHASE-1 – Planning

Planning Sub Phases;

- A. Problems Statement**
- B. Initial Study**
- C. Feasibility Study**
- D. Requirement Gathering**

Input – **Problem Statements**

Output – **Feasibility Study Report, Initial Study Report / Project Proposal**

PLANNING

ANALYSIS

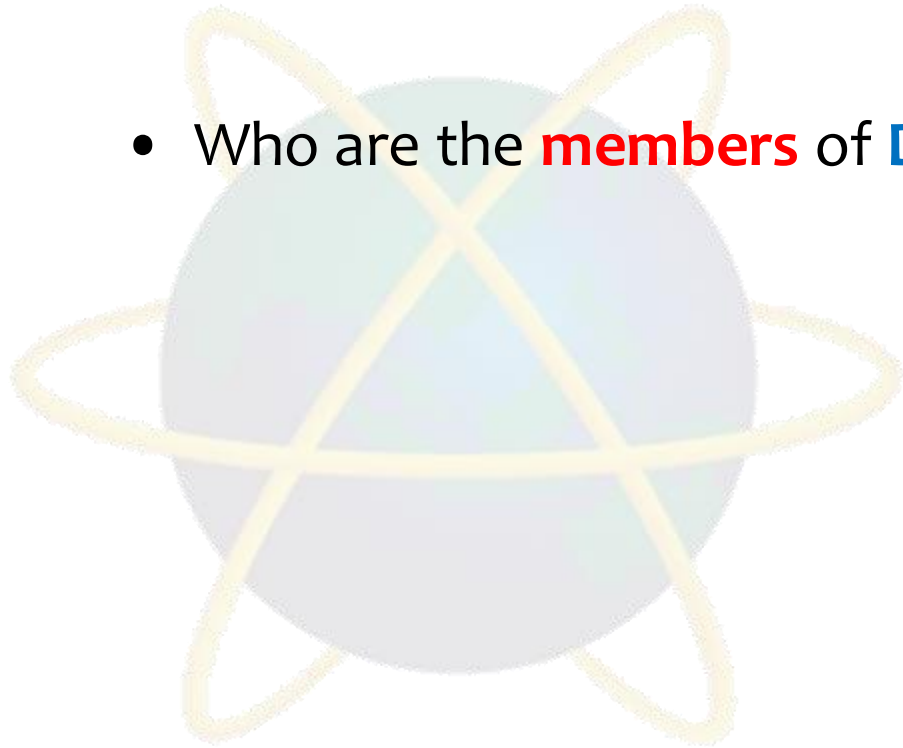
DESIGN

IMPLEMENTATION

MAINTENANCE

Quick Quiz

- Who are the **members** of **DEVELOPERS** in an IT project?



PHASE-2 – Analysis

- **Requirement Analysis**
 - Analyzing ‘**Compiled Requirement**’
 - Use several ‘**Analysis Techniques**’ to get best result.
 - Output – **System Requirement Specification (SRS)**
- **Popular Analysis Techniques;**
 - Data Mining
 - Data visualization
 - Statistical Analysis
 - Data modeling
 - Filtering, sorting, clustering, etc.



PLANNING

ANALYSIS

DESIGN

IMPLEMENTATION

MAINTENANCE

PHASE-3 - Design

- **System Design**

- Designing the new system
- Design based on SRS (*from Analysis Stage*)
- Output – **Design Specification**

- **Popular technics used;**

- Conceptual Design
- Logical design
- Data Design / Modeling
- Physical Design



PLANNING

ANALYSIS

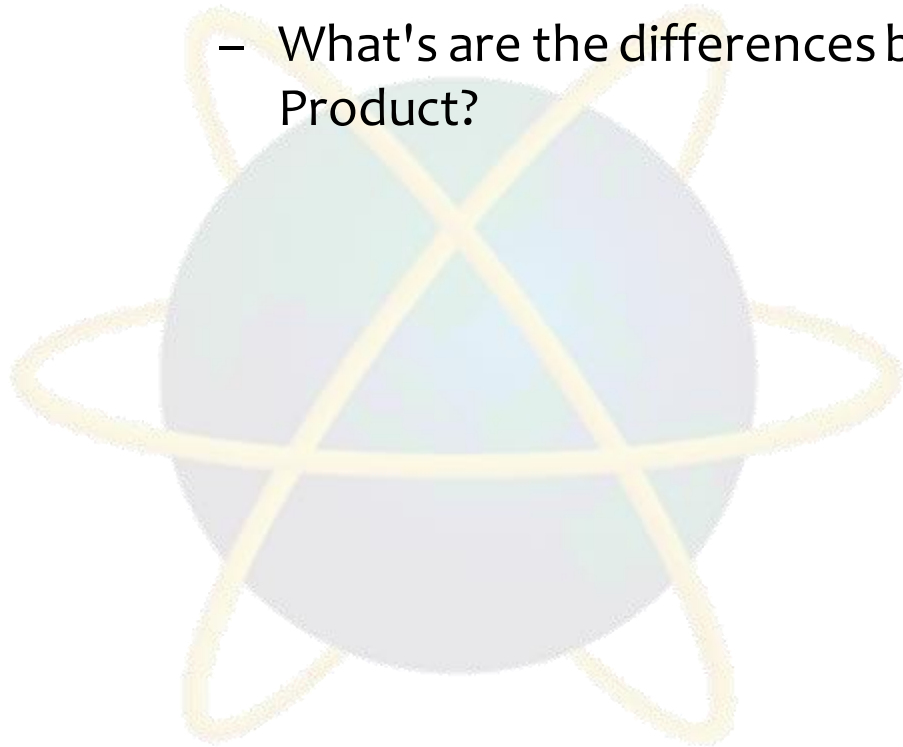
DESIGN

IMPLEMENTATION

MAINTENANCE

Quick Quiz

- One of the popular type of ‘Physical Design’ is PROTOTYPE
- What is a Software PROTOTYPE?
 - What's are the differences between a Prototype and a ACTUAL Product?



PHASE 4 – Implementation

- Start building the actual components of the systems
 - Based on **Design Specification**
- Output - Fully functional system
- **Main Activities :**
 - A. Construction / Building the system
 - B. Perform various testing
 - C. Deploy new system



PLANNING

ANALYSIS

DESIGN

IMPLEMENTATION

MAINTENANCE

PHASE 5 – Review and Maintenance

- Developer perform review of system after deployment
- Problems are fixed / prevented through Maintenance Process
 - Project Owner may hire different company to do this.

- **Types of Maintenance:**

- Corrective
- Preventive
- Adoptive
- Perfective



Under maintenance

PLANNING

ANALYSIS

DESIGN

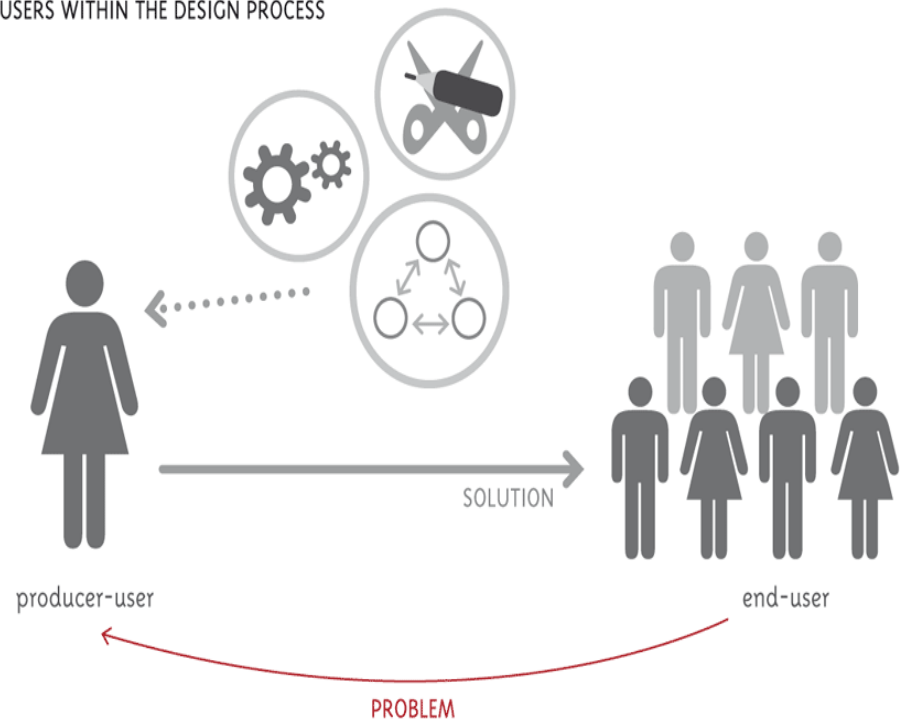
IMPLEMENTATION

MAINTENANCE

People involved in SDLC

- System Owners
- Users
- Developers
- System Administrators

USERS WITHIN THE DESIGN PROCESS



People involved in SDLC

Quick Quiz

- If you are suppose to build new website for APU, who are the People involved?
- (Ex; USERS would include Lecturers and ...)
- System Owners?
- Users?
- Developers?
- System Administrators?

NOTE

- **System Owners**
 - People who pay and own the system
- **User**
 - People who directly/indirectly use the new system
- **Developers**
 - People who do research and create a new system
- **System Administrators**
 - People who ‘take-care’ of the system after it is done

What is Systems Development Methodology ?

- Official definition
 - “A software development methodology or system development methodology in software engineering is a framework that is used to structure, plan, and control the process of developing an information system”
- Simplified Definition
 - A **Specific Recipe** to ‘cook-up’ an **specific** type of Information System
 - (In comparison to SDLC which viewed as **GENERAL** recipe)



What is Systems Development Methodology ?

- Contains **detailed steps** to be carried out at **specific situations / specific type of project**
- Some popular IS Development Methodologies
 - **Waterfall Model** – most basic methodology close to SDLC
 - **SSADM** – used for large database projects
 - **WISDM** – used for web based projects
 - **Spiral** – used for project which has many sections but need to be linked later.
 - **RAD** – used for small and fast projects
 - **XP** – For advance / heavy coding projects



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Other popular IS Methodologies

- V-Model
- Scrum
- Cleanroom
- DSDM
- Lean
- Dual Vee Model
- TDD



What makes up a Systems Development Methodology ?

- Methodologies uses **TOOLS** and **TECHNIQUES** to carry out tasks.
- **TOOLS** – often CASE TOOLS; software used within the project
 - Testing Tool – Software used to test other software.
 - Code Generator – Software used to generate programming codes from design.
- **TECHNIQUES** - different ways of doing things.
 - Prototyping – A model of the system developed to get feedback
 - JAD- Meeting session used to review project



Importance of using IS Methodologies

- To ensure consistency in management of projects
- To ensure the best techniques applied to carry out a project.
- Reduce time & cost
- To improve the quality of work & system
- Meet user requirement



Quick Quiz

- 
- What methodology do you use for a project which involves **large database** and **lots of coding**?

Tutorial 1

(Group Work)

- Use a large paper to draw SDLC
- Make a summary of SDLC Main Phases and sub-phases.
- Under each Main Phases, shows it's:
 - Sub-phases
 - Who are involved
 - Input document
 - Output documents
 - Popular Techniques used within the phase (if any)

Tutorial 2

(Individual Work)

- What is SDLC?
- Explain THREE benefits of applying SDLC for a IS project.
- Explain THREE problems of applying SDLC for a IS project.
- Search the internet/books and draw a diagram for SDLC
(*which is not found in these slides*).

Next Session

- Structured Methodologies

