

# **System Development Methods**

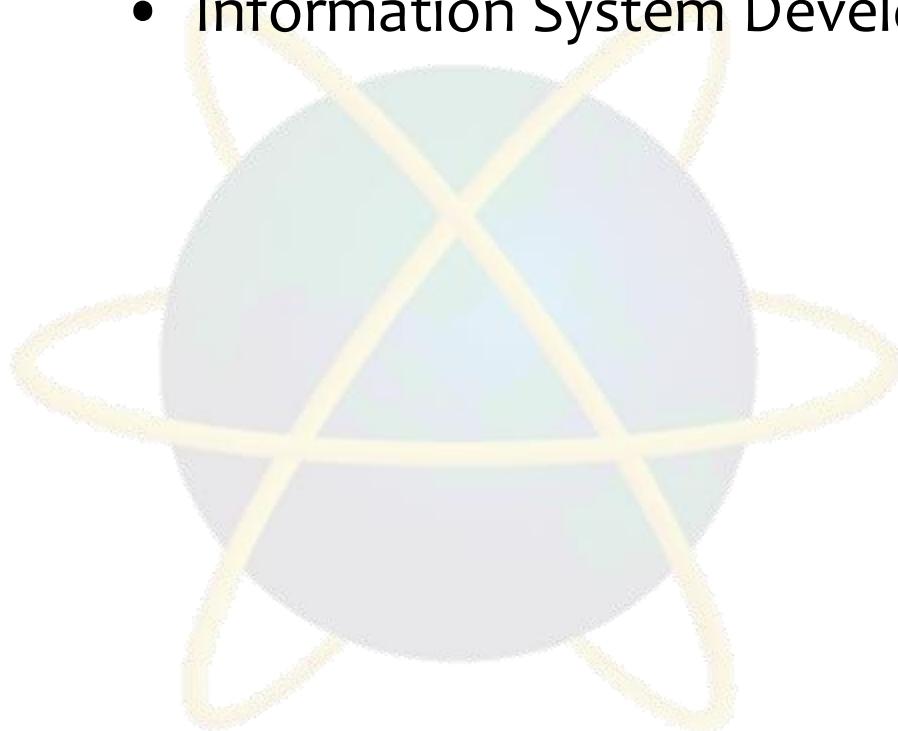
## **CT046-3-2**



**Information Systems  
Development Methods**

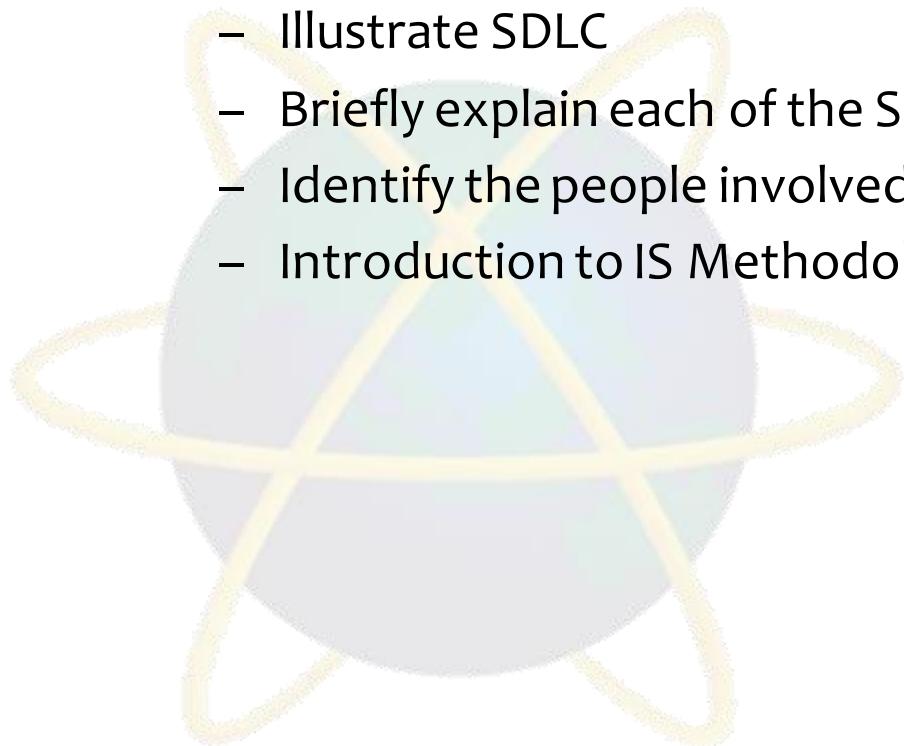
# Topic & Structure of the lesson

- 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)

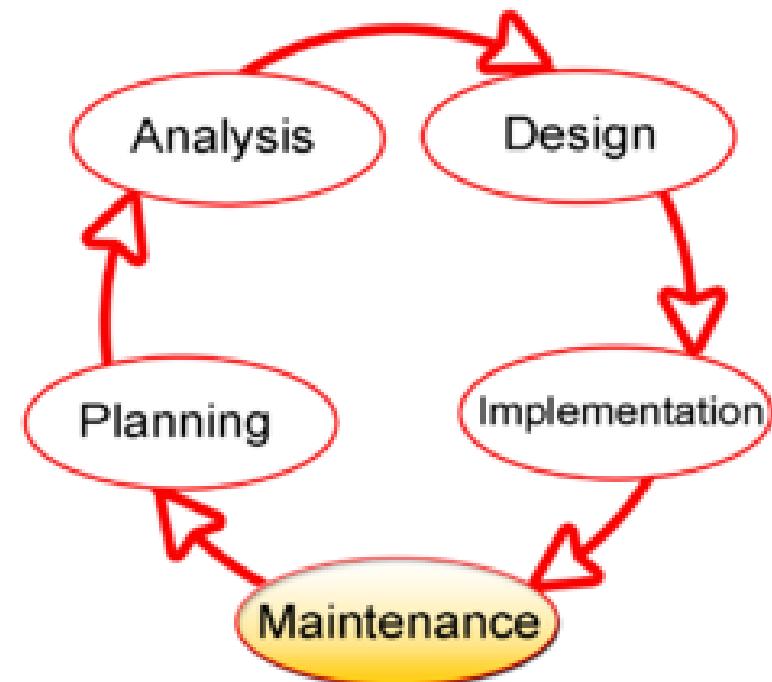
- Standard definition;
  - The Systems Development Life Cycle (SDLC) is a **conceptual model** used in **project management** that describes the **stages** involved in an **information system development project**, from an initial feasibility study through maintenance of the completed application.  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



# Systems Development Life Cycle (SDLC)

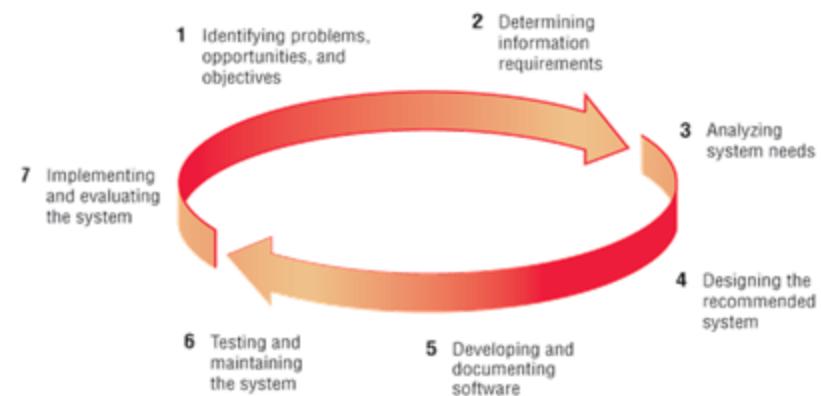
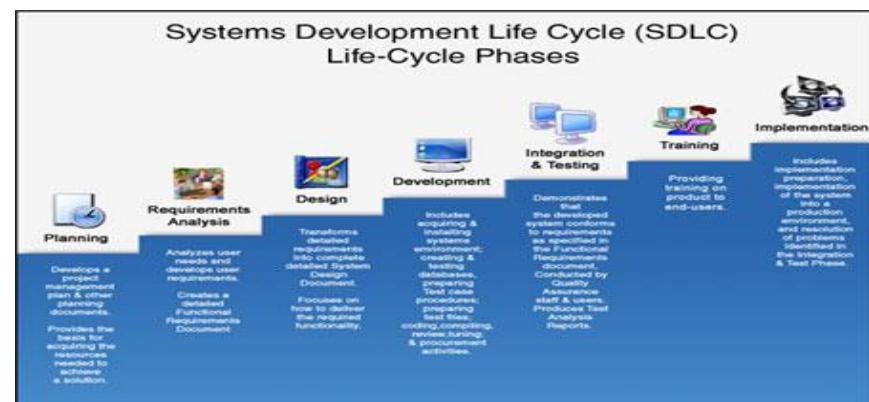
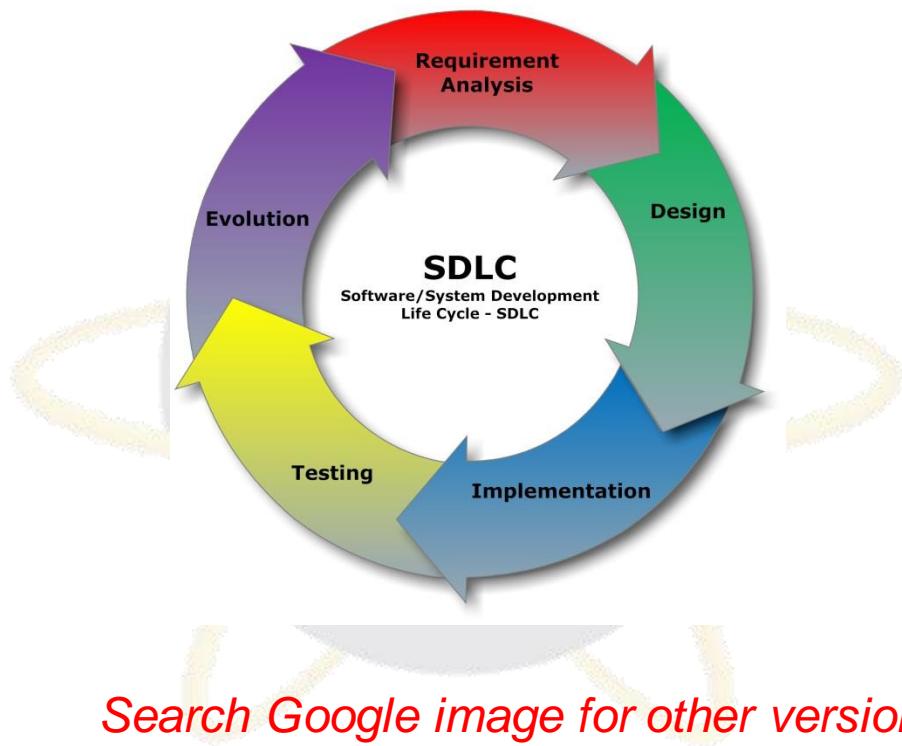
## Simplified Definition

- A GENERAL RECEPIE 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**

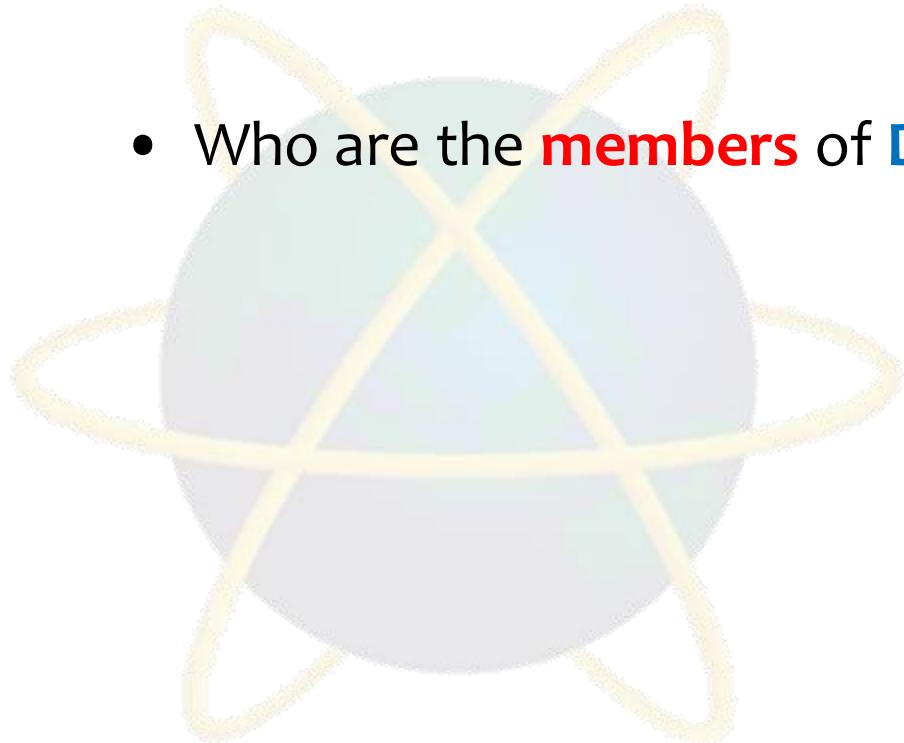
**DESIGN**

**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.



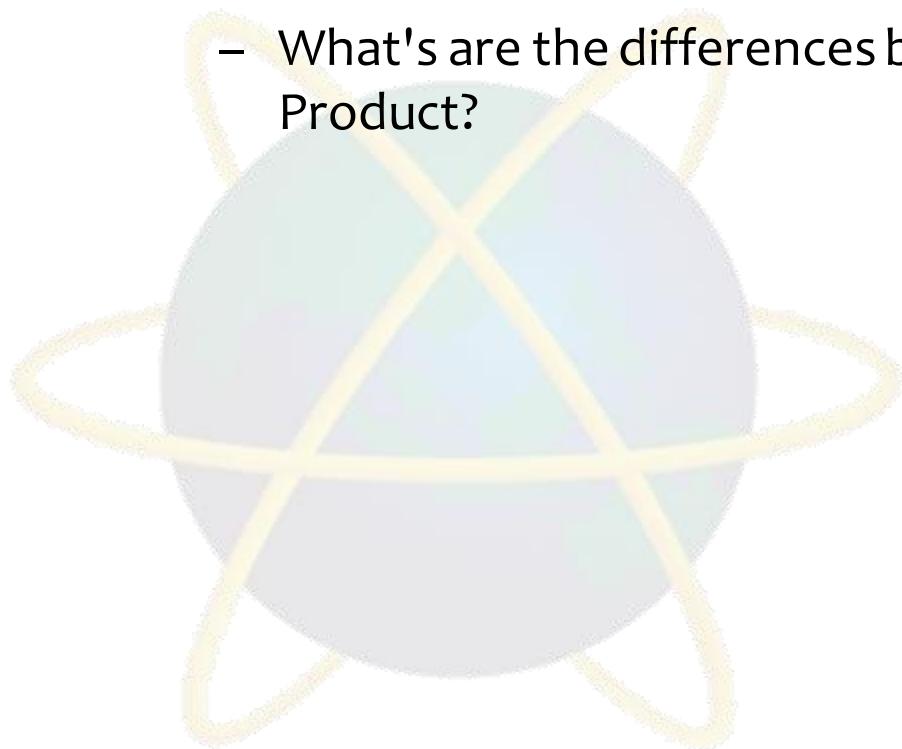
# PHASE-3 - Design

- **System Design**
  - Designing the new system
  - Design based on SRS (from Analysis Stage)
  - Output – **Design Specification**
- **Popular techniques used;**
  - Conceptual Design
  - Logical design
  - Data Design / Modeling
  - Physical Design



# 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

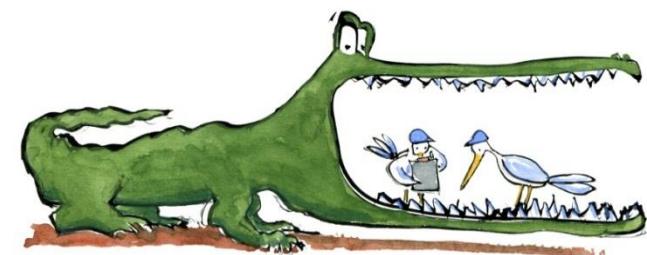
DESIGN

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

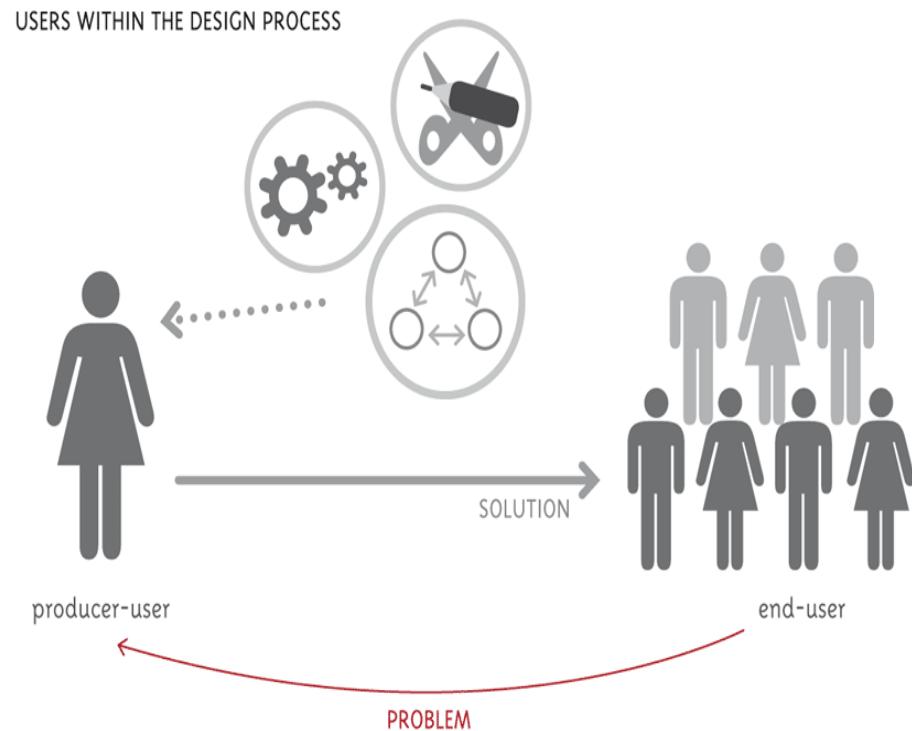
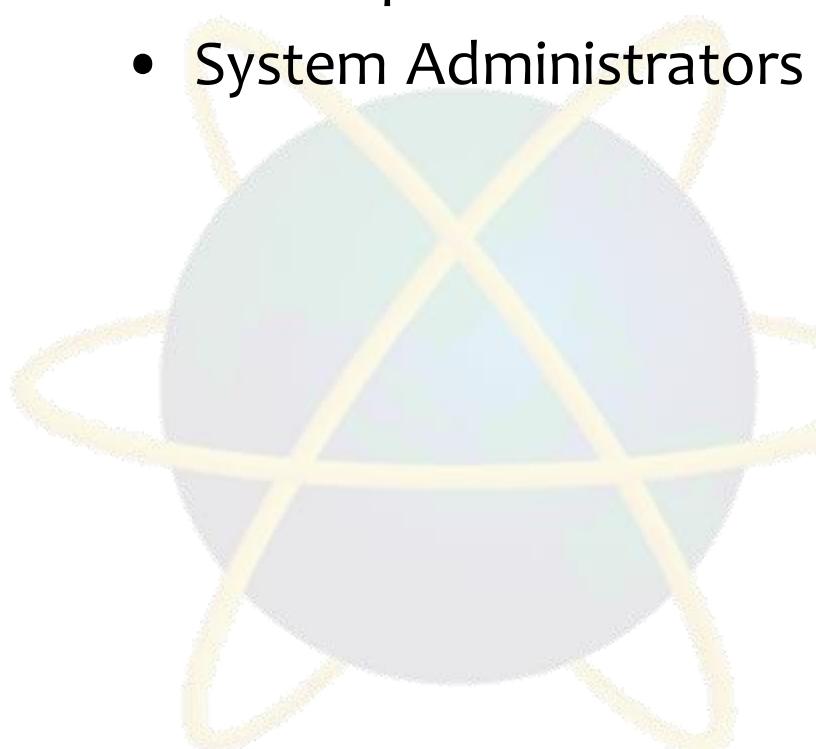


Under maintenance



# People involved in SDLC

- System Owners
- Users
- Developers
- System Administrators



# 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)



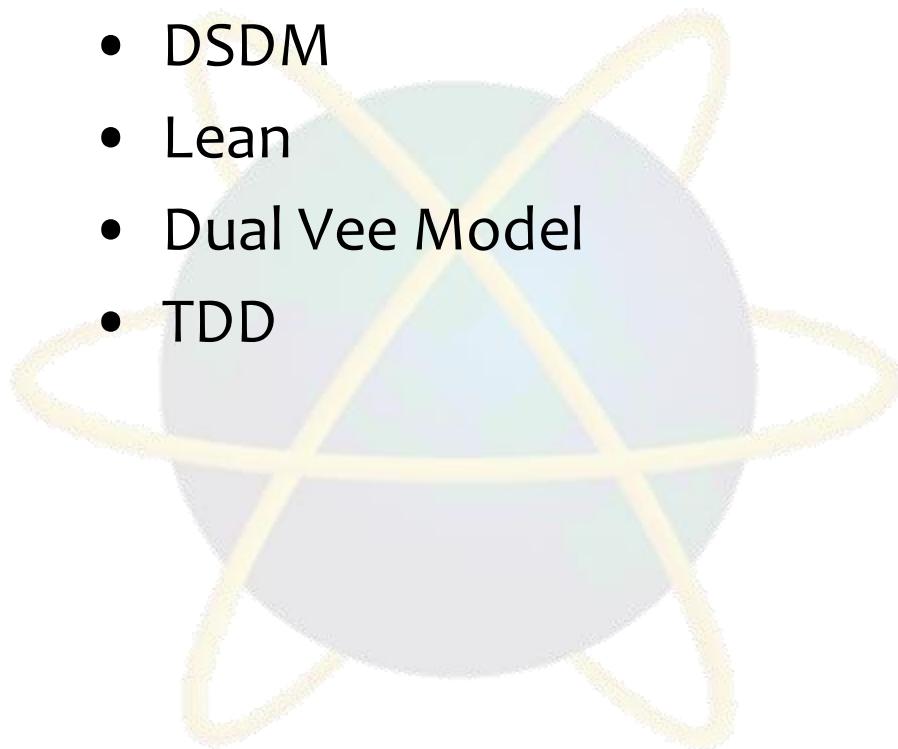
# What is Systems Development Methodology ?

- 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



# Other popular IS Methodologies

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



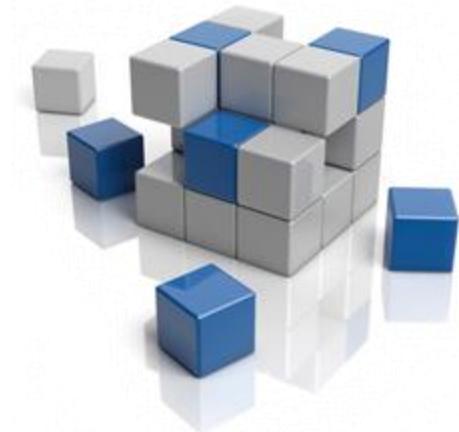
# What makes up a Systems Development Methodology ?

- 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



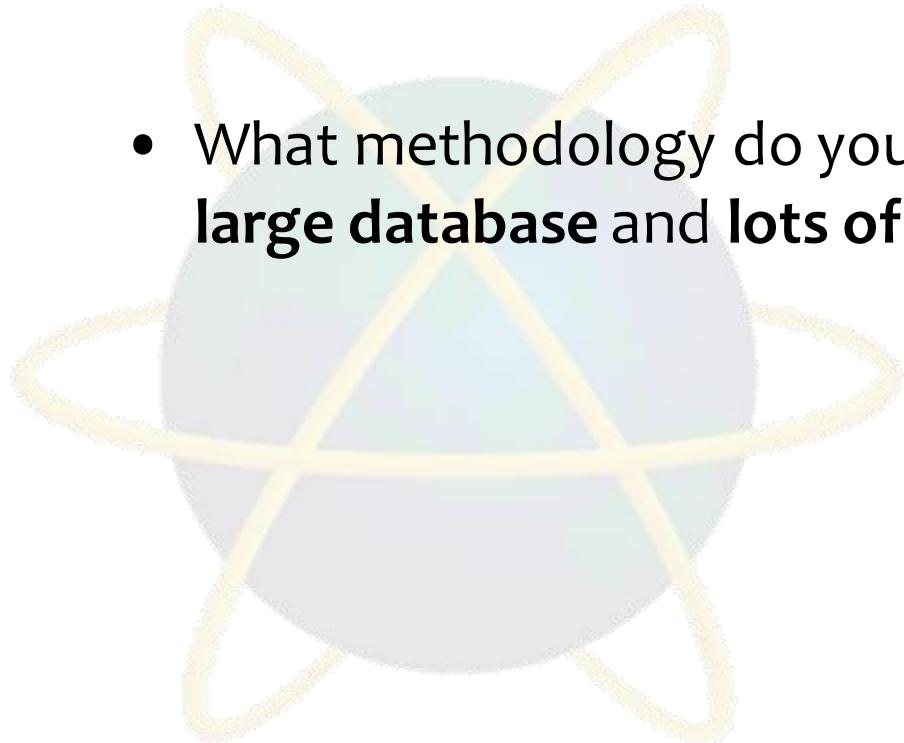
# Importance of using IS Methodologies

- 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

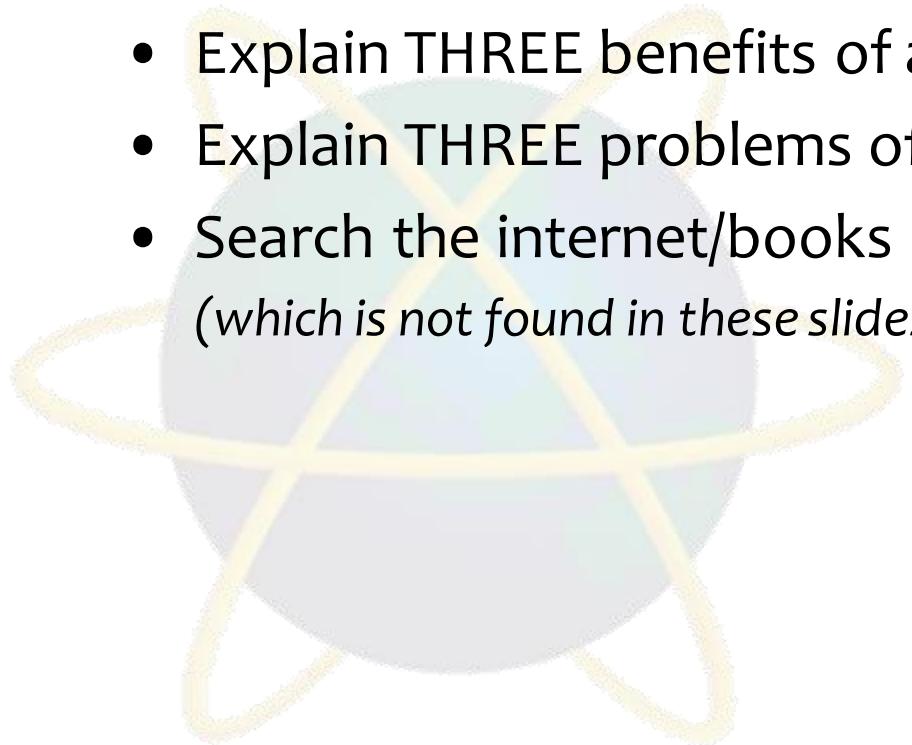
(Group Work)

- 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

