SWEN90016

Software Processes & Project Management

Marion Zalk
Department of Computing and Information Systems
The University of Melbourne
mzalk@unimelb.edu.au

2021 – Semester 1
Lecture 3

Lecture 3 – Intended Learning Objectives

Module 7 – Software Development Lifecycles - Formal.

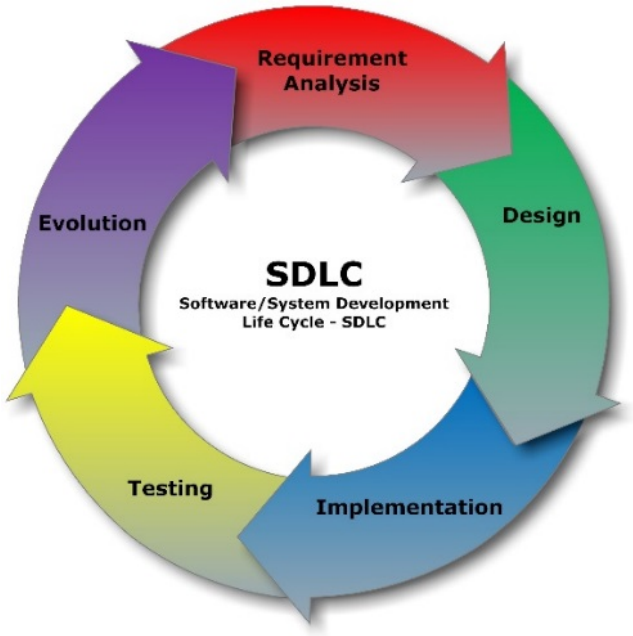
Module 8 – Software Development Lifecycles - Agile.

Module 7.1 – Software Development Life Cycle (SDLC)

The systems development life cycle (SDLC), also referred to as the application development life-cycle, is a term used in systems engineering, information systems and software engineering to describe a ***process*** for planning, creating, testing and deploying an information system.

Activities in SDLC:

- Requirements gathering
- Systems / Architectural Design
- Implementation / coding / Integration
- Testing
- Evolution:
  - Delivery and Release - Deployment
  - Maintenance

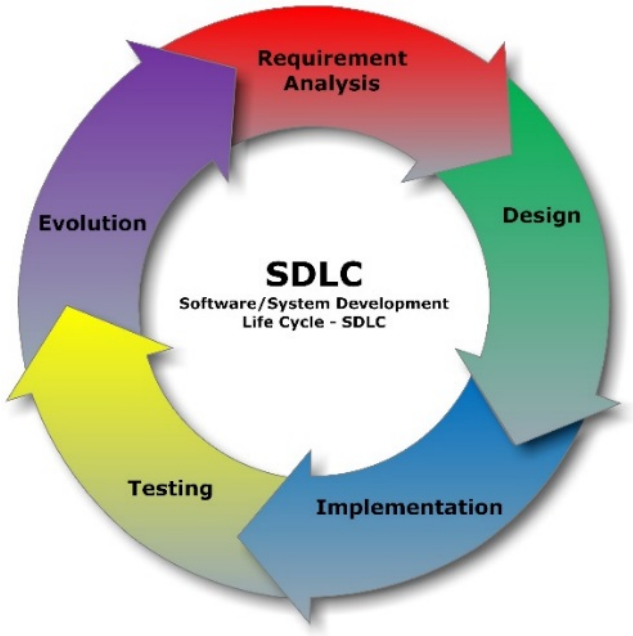


Module 7.1 – SDLCs

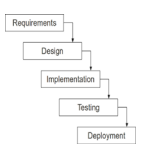
There are many SDLCs around with organisations typically favouring a blend of Formal and Agile approaches.

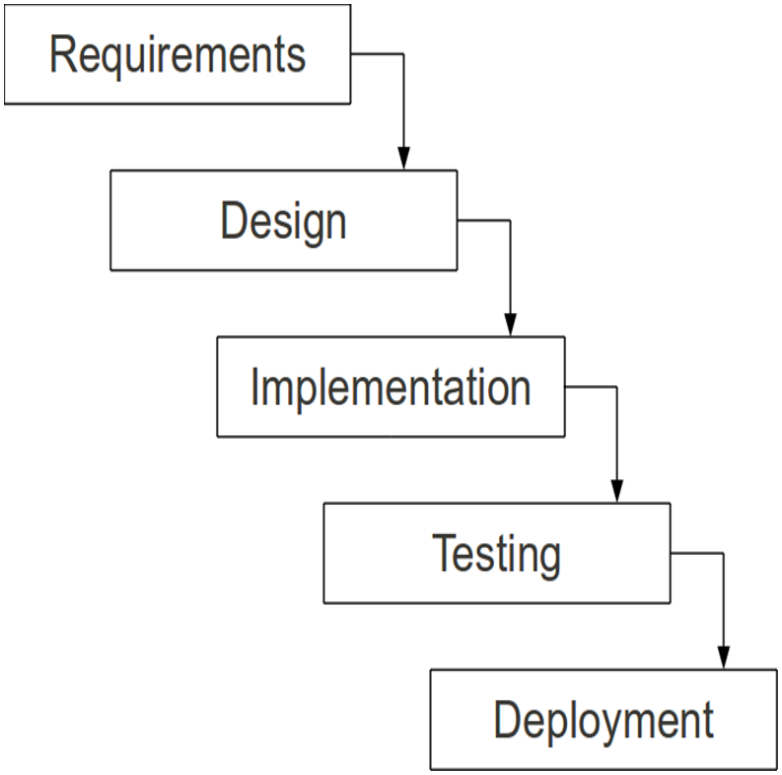
1. Formal
   - Waterfall
   - Incremental
   - V-Model

2. Agile
   - Scrum
   - Kanban
   - Extreme Programming



Module 7.1 – Waterfall





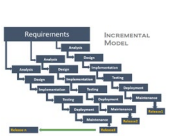
Advantages

- Simple and easy to understand and use
- Easy to manage due to the rigidity of the model
- Phases are processed and completed one at a time
- Documentation available at the end of each phase
- Works well for projects where requirements are very well understood and remain stable

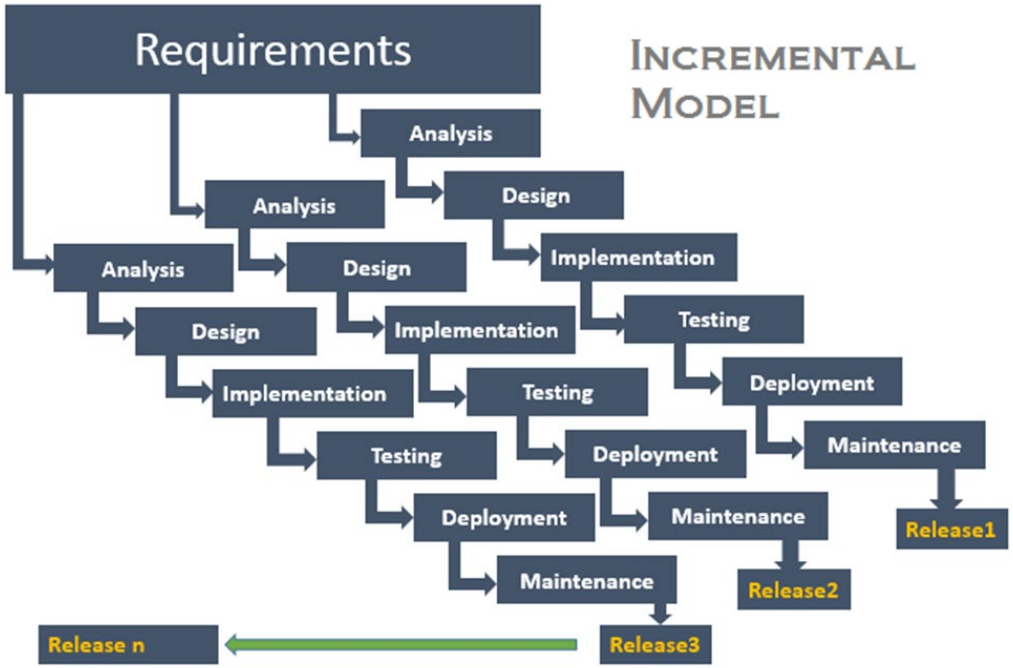
Disadvantages

- Difficult to accommodate change after the process in underway
- One phase must be completed before moving on to the next
- Unclear requirements lead to confusion
- Clients approval is in the final stage
- Difficult to integrate risk management due to uncertainty

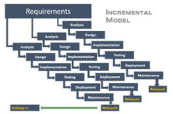
Module 7.1 – Incremental Model



In incremental model the ***whole requirement*** is divided into various releases. Multiple cycles take place, making the life cycle a ***multi-waterfall*** cycle. Cycles are divided up into smaller, more easily managed modules.



Module 7.1 – Incremental Model



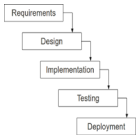
Advantages – compared to standard waterfall

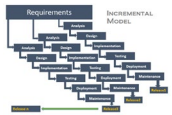
- Each release delivers an operational product
- Less costly to change the scope/requirements
- Customers can respond to each build
- Initial product delivery is faster
- Customers get important functionality early
- Easier to test and debug during smaller iterations

Disadvantages – compared to standard waterfall

- More resources may be required
- More management attention is required
- Defining / partitioning the increments is difficult and often not clear
- Each phase of an iteration is rigid with no overlaps
- Problems may occur at the time of final integration

Module 7.1 – Formal Models





Characteristics where "Formal" Models make sense:

- Projects where the customer has a very clear view of what they want
- Projects that will require little or no change to requirements
- Software requirements are clearly defined and documented
- Software development technologies and tools are well-known
- Large scale applications and systems developments