Software Development Methodologies

Lecture 04

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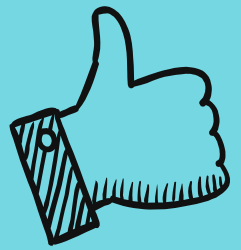
Learning Outcomes

- ✗ End of this lecture you will be able to learn ,

LO1 : What is a project and how project Management involves in the software development.

LO2 : Ability to understand how to apply SDLC for different software development approaches.



What is a Project?

- Temporary,
- Unique and
- Progressive attempt to produce some kind of a tangible or intangible result.
- The result can be a unique product or service.

Key Characteristics of Project

1. Temporary
2. Unique
3. Deliverable(s)
4. Progressive Elaboration

Key Characteristics of Project...

1. Temporary :
    - Every project has a finite start and a finite end.
    - The start is the time when the project is initiated, and its concept is developed.
    - The end is reached when all the objectives of the project have been met.

Key Characteristics of Project...

2. Uniqueness :
   - Every project are unique.
   - No two projects are the same.
   - Some degree of customization is there.

3. Deliverable(s) :
   - Deliverable(s) which can be a product, service, or some other result.
   - Should address a problem or need analyzed before project start.

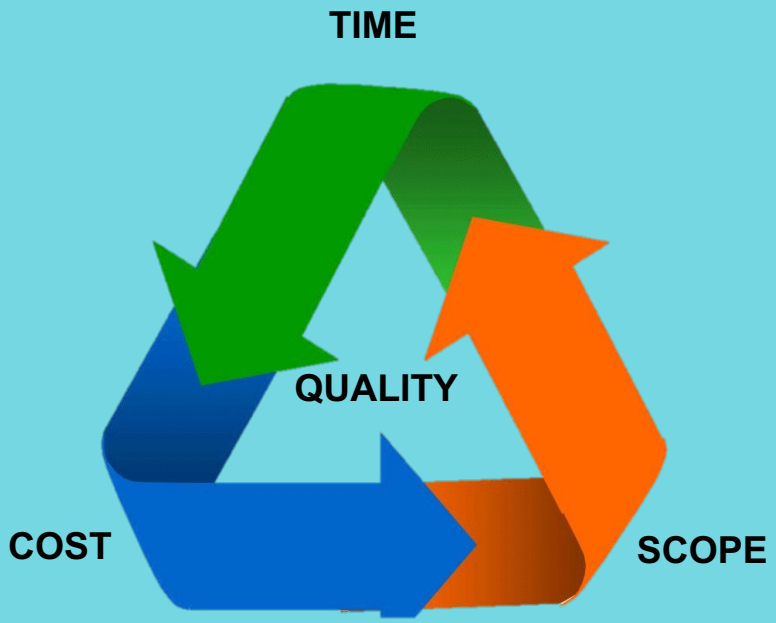
Key Characteristics of Project...

4. Progressive Elaboration :

- Continuous investigation and improvement become important with the progress of a project.

- Successive iterations of planning processes result in developing more effective solutions to progress and develop projects.

Three Constraints of a Project



1. Time

2. Cost

3. Scope

Project's Constraints...

- Time

  An agreed date where the project has to be delivered on.

- Cost

  The amount of money or resources available to be expended on the project.

- Scope

  Defines the needs and requirements expressed or implied by customer.

- Quality

  The standard of the project delivered. All the above 3 constraints would affect the quality of a project.

Software Project Management

- Concerned with activities involved in ensuring that software is delivered
  - on time
  - within the budget
  - in accordance with the requirements
  - Along with the quality


The trick to project management is balancing three constraints in spite of upper management meddling.
QUALITY
KIIIAAA
TIME
SCOPE
COST

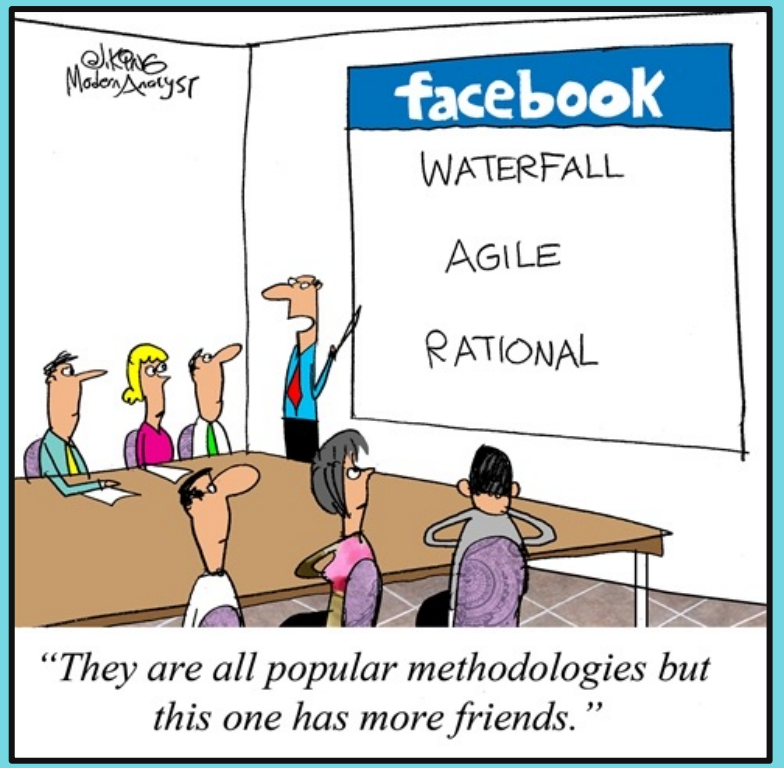
What is a Methodology?

- A methodology **is a formalized approach to implementing the System Development Life Cycle.**
- Methodology Sources
    - Internally developed by organizations
    - Consulting firms
    - Software vendors
    - Government agencies

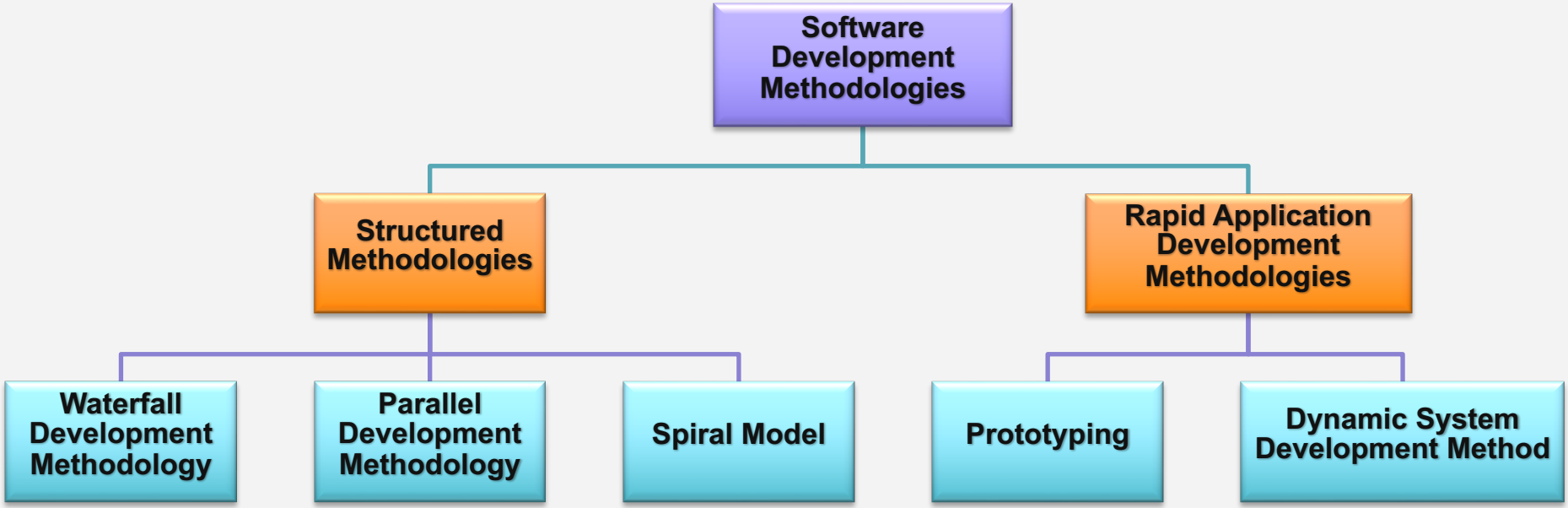
Different Types of Software Development Methodologies

- There are many different systems development methodologies

- They vary in terms of the progression that is followed through the phases of the SDLC



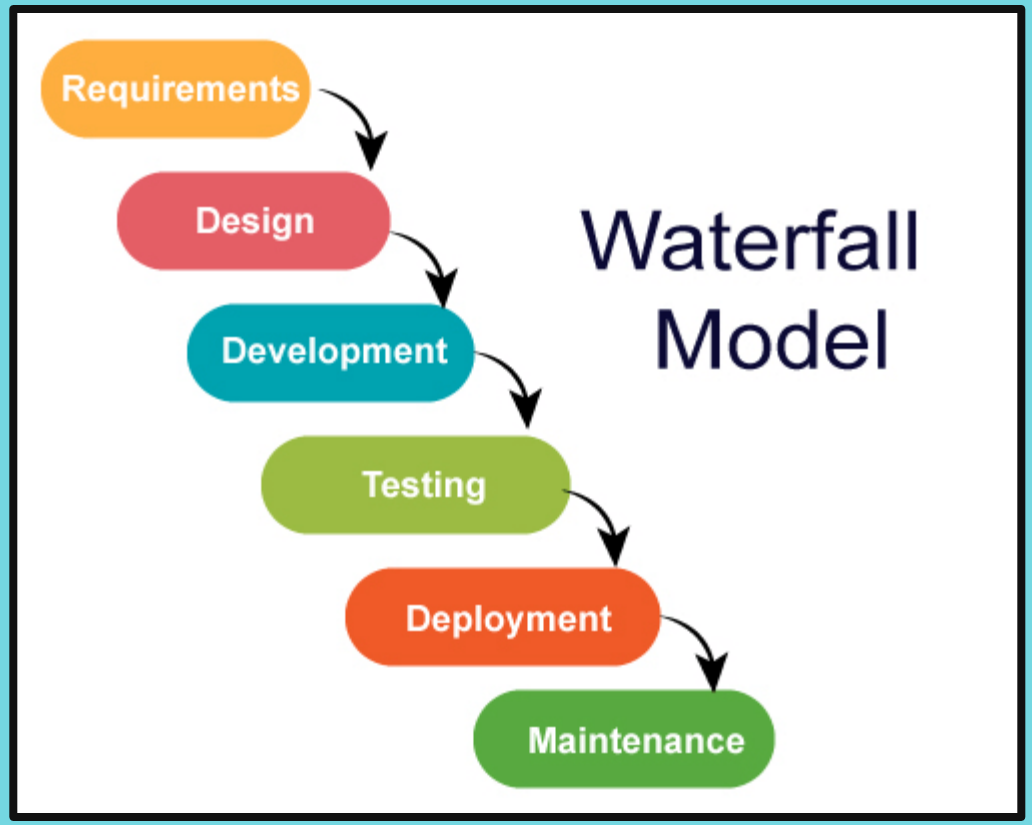
Types of Software Development Methodologies



Structured Methodologies Vs. Rapid Application Development Methodologies

Structured Methodologies	Rapid Application Development Methodologies
Adopt a formal step-by-step approach to the SDLC	Adjust the SDLC phases to get some part of system developed quickly
Moves logically from one phase to the next	Incorporate special techniques and tools : • CASE Tools • JAD sessions • Visual programming languages • Code generators
Goal is to complete each phase thoroughly before moving forward	
Ensures correct and high-quality outcomes	

Waterfall Methodology



What is Waterfall Methodology?

- A systematic, sequential and liner approach.
- A traditional methodology.
- Originated in the manufacturing and construction industries.
- Follows the SDLC phases in a sequence and each phase of development has distinct goals.
- Each stage begins only after the previous phase has finished.
- Making changes after completing one phase is costly or sometimes impossible.

Features of Waterfall Methodology

- Easy flow
- Every stage has to be done separately at the right time because stages cannot be jumped
- Documentation is produced at every stage to understand what has happened

When to use ?

- When the requirements are very well known, clear and fixed.
- Product definition is stable.
- Technology is understood.
- There are no ambiguous requirements.
- Sufficient resources with required expertise are available freely.
- The project is short.

Advantages of Waterfall Model

- System **requirements** can be **identified long before** construction begins.
- Simple and **easy to understand and use**.
- **Easy to manage** due to the rigidity of the model.
- Each phase has **specific deliverables** and a **review process**.
- Phases are processed and **completed one at a time**.
- **Works well for smaller projects**
- Clearly **defined stages**.
- Well, understood **milestones**.
- Process and results are **well documented**.

Disadvantages of Waterfall Model

- Once an application is in the testing stage, it is very **difficult to go back and change** something that was not well-thought out in the concept stage.
- **No working software** is produced **until late** during the life cycle.
- High amounts of **risk and uncertainty**.
- **Not** a good model **for complex projects.**
- **Poor model for long and ongoing** projects.
- **Not suitable** for the projects where **requirements are not very clear.**

SUMMARY

- What is a project?
- Key characteristics of a project
- Constraints for a project
- What is a Methodology?
- Types of Methodologies
- Waterfall Methodology