JURUSAN TEKNOLOGI INFORMASI

Software Engineering Course

04. Traditional Methodology (Waterfall Part-1)

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Topics

- Traditional/Classic SDLC Models
- Waterfall Phase I – Feasibility Study
- Waterfall Phase II – Requirements Analysis

Topic #1: Traditional/Classic SDLC Models

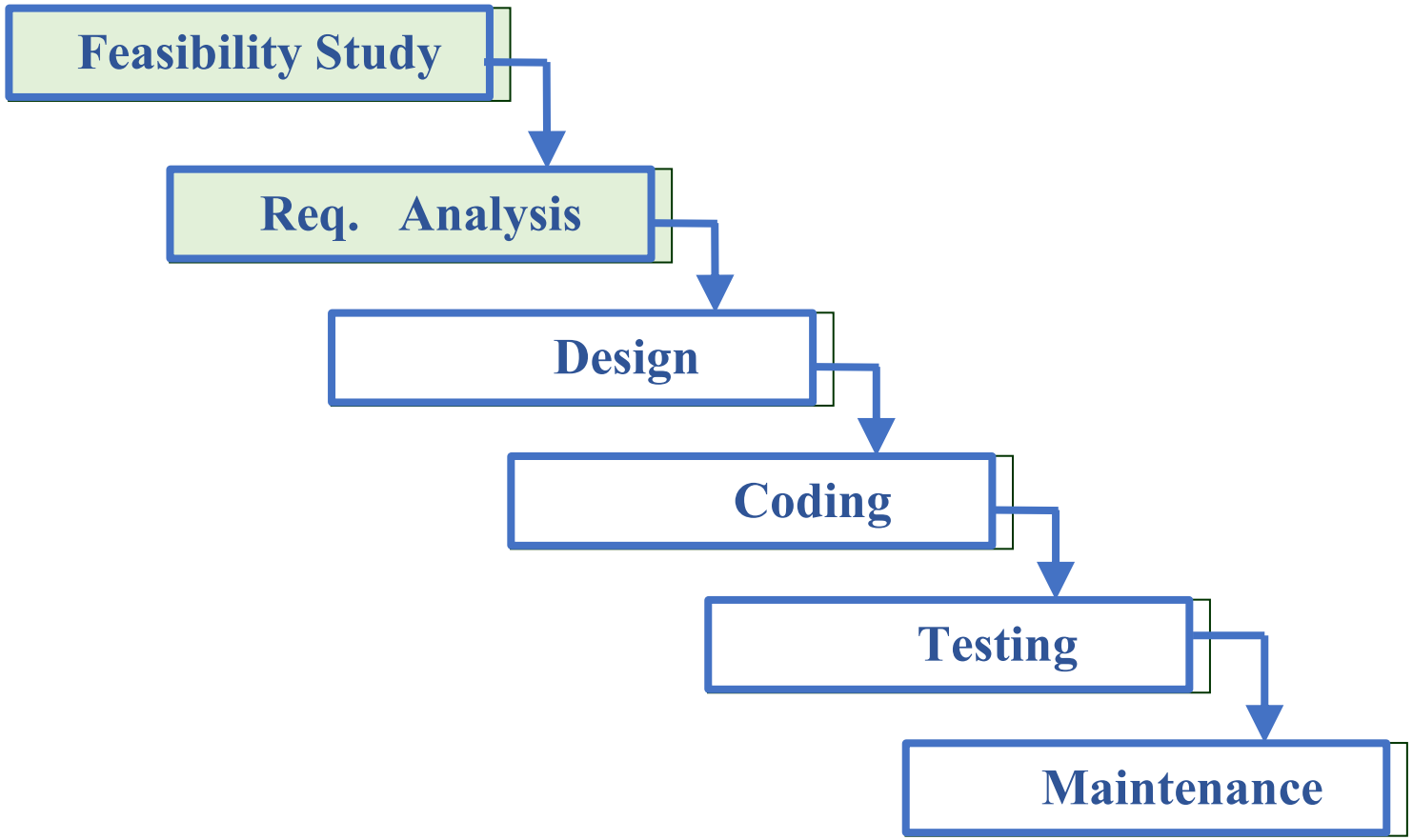
1. Traditional/Classic Models

- In general, SDLC models can be categorized into two:
  - Traditional/Classic
  - Agile

- One of the most popular classic methodology is the Waterfall Model.

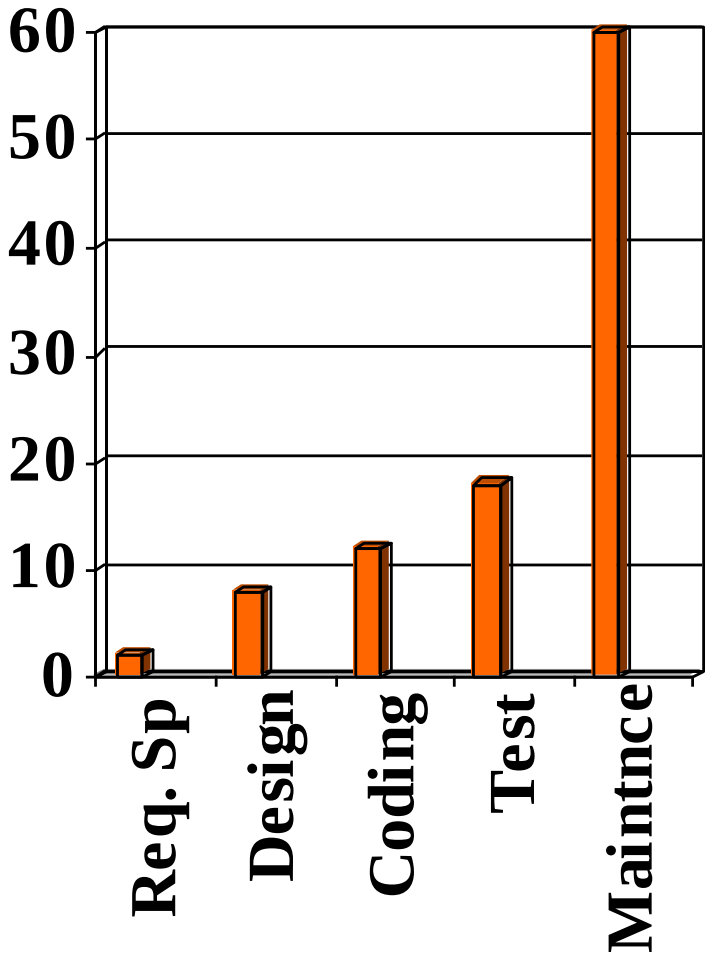
- Classical waterfall model divides life cycle into phases:
  - Feasibility study,
  - Requirements analysis and specification,
  - Design,
  - Coding and unit testing,
  - Integration and system testing,
  - Maintenance. [1]

Waterfall Model



Relative Effort for Phases

- Phases between feasibility study and testing
  - known as development phases.
- Among all life cycle phases
  - maintenance phase consumes maximum effort.
- Among development phases,
  - testing phase consumes the maximum effort.



Waterfall Model Characteristics

- Most organizations usually define:
  - Standards on the outputs (deliverables) produced at the end of every phase
  - Entry and exit criteria for every phase.

- They also prescribe specific methodologies for:
  - Specification,
  - Design,
  - Testing,
  - Project Management, etc.

- The guidelines and methodologies of an organization:
  - Called the organization's software development methodology.

- Software development organizations:
  - Expect fresh engineers to master the organization's software development methodology.

Topic #2: Phase I - Feasibility Study

2. Phase I - Feasibility Study

- Main goal of feasibility study: Determine whether developing the product is:
  - Financially worthwhile
  - Technically feasible.

- First roughly understand what the customer wants:
  - Different data which would be input to the system.
  - Processing needed on these data.
  - Output data to be produced by the system.
  - Various constraints on the behaviour of the system.

Activities

- Work out an overall understanding of the problem.
- Formulate different solution strategies.
- Examine alternate solution strategies in terms of:
  - Resources required,
  - Cost of development, and;
  - Development time.
- Perform a cost/benefit analysis to determine which solution is the best.
- We may determine that none of the solutions is feasible due to:
  - High cost.
  - Resource constraints.
  - Technical reasons.

Topic #3: Phase II – Requirement Analysis & Specification

3. Phase II – Requirements Analysis and Specifications

- Aim of this phase:
  - Understand the exact requirements of the customer.
  - Document them properly.

- Consists of two distinct activities:
  - Requirements gathering and analysis
  - Requirements specification.

Requirements Gathering & Analysis

- Main Goal: To collect all related data from the customer.

- How to **gather** the requirements?
  - Usually collected from the end-users through **interviews** and **discussions**.
  - For example, for a business accounting software:
    - Interview all the accountants of the organization to find out their requirements.

- How to do Requirements **Analysis**?
  - Analyze the collected data to clearly understand what the customer wants.
  - Find out any inconsistencies and incompleteness in the requirements.
  - Resolve all inconsistencies and incompleteness.

Incomplete Requirements

- The data you initially collect from the users:
  - Would usually contain several contradictions and ambiguities;
  - Each user typically has only a partial and incomplete view of the system.
- Ambiguities and contradictions:
  - Must be identified
  - Resolved by discussions with the customers.
- Next, requirements are organized:
  - into a Software Requirements Specification (SRS) document.
- Engineers doing requirements analysis and specification are designated as analysts.

Textual Analysis

- One of many way to gather and analyze requirements is by doing Textual Analysis.
- It is done by extracting the **key terms** from a formal case description recorded from interview/discussion session.
- Those key terms then can be put into a 'dictionary' of our project to be converted into needed diagrams and other.
- To be able to do a textual analysis we must have the formal case passage/description about the system.
- That's why, every discussion/interview session must be recorded.

Formal Case Description Example

OTV (Online Television) is a company which delivers both paid and free online television broadcasting services to all TV fans. Members can watch both live and archived TV programs on OTV's website, anytime and anywhere. There are two kinds of memberships - general and premium. It is free of charge for visitors to register as a general member to watch any archived TV programs. On the other hand, they can register as a premium member to watch both archived and live programs, for US $30 per month. A general member can upgrade himself to a premium member anytime he wants to. However, premium member is not allowed to change himself back to a general member. Members can remove his/her account permanently by mailing us an account removal form. Besides watching TV programs, premium members can share their opinions of the TV programs with each other, by posting their opinion under the video panel. Prizes will be given to the member who raises the most active discussion each month. Premium members will also receive monthly newsletter, which lists the recommended programs in the coming month. In order to maintain the system, administrators should have the rights to update the program schedule, update the program as well as to archive programs. Administrator should also help to monitor the delivery of newsletter to premium members. [2]

Textual Analysis Tool

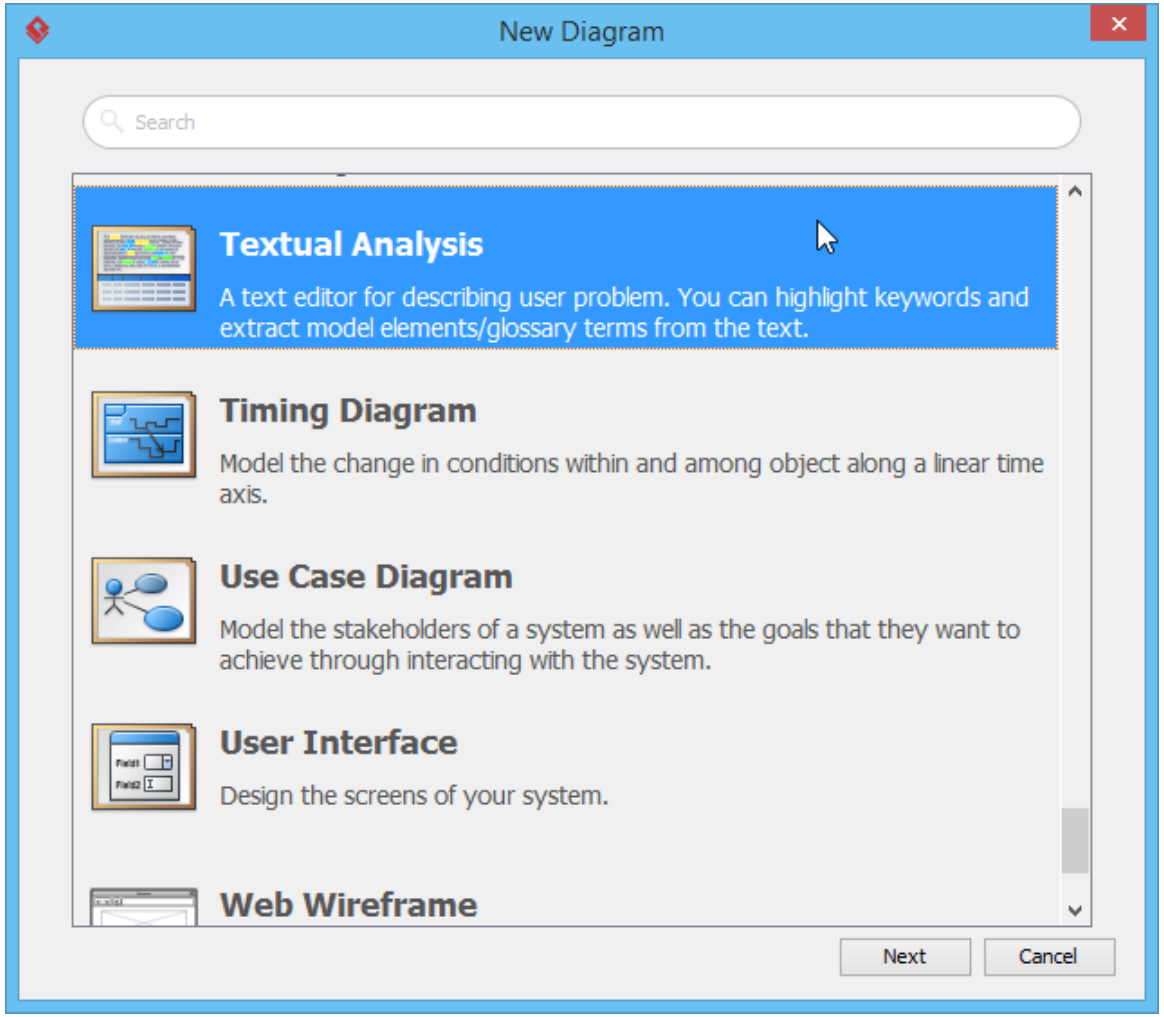


Figure: Visual Paradigm Textual Analysis Tool. [2]

Questions?

Thank You

Task

- Take a look at the case study example of “Car Paint Workshop System” in the Google Classroom.
- Create a formal case passage/description based on the example. You can use English or Bahasa Indonesia.
- List the Main System Requirements!
- Classroom Code: 6axztdt

References

[1] https://vijaysamyal.tripod.com/LECT2.ppt

[2] https://www.visual-paradigm.com/tutorials/how-to-use-textual-analysis.jsp