Plan-Driven Methodologies

Software Process

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Learning Objectives

By the end of this video, you will be able to

• List activities in the waterfall model and explain its advantages and disadvantages.

• List activities in the spiral model and explain its advantages and disadvantages.

• List phases in the Rational Unified Process (RUP).
Waterfall Process Activities

- Requirements – what software should do
- Design – structure code into modules
- Implementation – hack code
- Integration – put modules together
- Testing – check if code works
- Maintenance – keep making changes
Theoretical Waterfall Model
Modified Waterfall Model

- Requirements Analysis
- Design Checking
- Implementation
  - Unit Testing
- Integration
  - System Testing
- Maintenance
  - Regression Testing
Waterfall Conference – Revived Interest

“A conference dedicated to all aspects of the Waterfall Model of software development. Many companies are dropping Agile, Kanban and Lean to move back to the safe and sequential development process. As you know it is much easier to fix a requirements bug in the requirements phase than to fix that same bug in the implementation phase, as to fix a requirements bug in the implementation phase requires scrapping at least some implementation and design work which has already been completed. As you know the waterfall model provides a structured approach; the model itself progresses linearly through discrete, easily understandable and explainable phases and thus is easy to understand; it also provides easily identifiable milestones in the development process. It is for this reason that the Waterfall Conference is so popular in many software engineering companies.”

-- From http://waterfallconf.com/
Spiral Model

1. Determine objectives
2. Identify and resolve risks
3. Development and Test
4. Plan the next iteration

Cumulative cost
Progress

Review

Requirements plan
Concept of operation
Development plan
Test plan

Prototype 1
Prototype 2
Operational prototype
Detailed design
Code

Verification & Validation

Test

Implementation

Release

(Conny, 2004)
**Rational Unified Process (RUP)**

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- Inception – decide to build it
- Elaboration – make an initial version
- Construction – add features, quality
- Transition – put it into use

(Lewis, 2006)
Questions for Inception

• Should we build it?
• What will it cost?
• How much work will it take?
• How big will it be?
• What will it do? What are its parts?

• Inception requires analysis and design
  • Vision statement, requirements, design, plan

• Inception ends with the answer to the question: “Should we start the project?”
Internet Startup

• Reuse lots of web-specific software
• Build all business-specific software
• Get things going as soon as possible
  • To get revenue
  • To create market share
  • To impress investors
References


The End