Methodologies

Ron Burback
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CS446

References

- www-db.stanford.edu/~burback
- WaterSluice Thesis

Methodology

The body of methods, rules, postulates, procedures, and processes that are used to manage a software engineering project through many phases of analysis, design, implementation, and testing.

Four Fundamental Phases

- Define Goals → Analysis
- Establish Plan → Design
- Do the Work → Implementation
- Improve Quality → Testing

Every stage in the life cycle has these four phases.

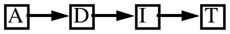
Phases in the Development Stage

- A Analysis:
  - requirements, domain ontology, things, actions, states, events, typical and atypical scenarios
- D Design:
  - architecture, implementation plan, performance analysis, test plan
- I Implementation:
  - the code
- T Testing:
  - quality improvements, regression test, internal testing, unit testing, application testing, stress testing

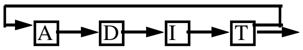
Methodologies

- Sequential
- Cyclical
- Boehm-Waterfall
- Boehm-Spiral
- Versions
- Rational Objectory
- WaterSluice

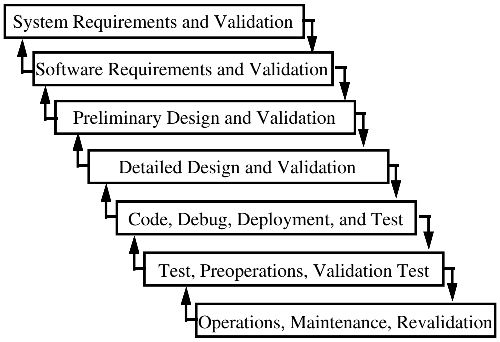
Sequential Methodology

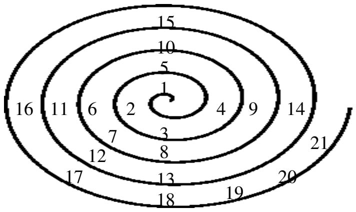


Cyclical Methodology



Boehm-Waterfall Methodology



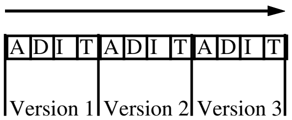


Boehm
Spiral
Methodology

1 Objectives, Alternatives, and Constraints
2 Risk Analysis and Prototype
3 Concept of Operation
4 Requirement and Life-cycle Plan
5 Objectives, Alternatives, and Constraints
6 Risk Analysis and Prototype
7 Simulation, Models, and Benchmarks
8 Software Requirements and Validation
9 Development Plan
10 Objectives, Alternatives, and Constraints
11 Risk Analysis and Prototype

12 Simulation, Models, and Benchmarks
13 Software Product Design, Validation, and Verification
14 Integration and Test Plan
15 Objectives, Alternatives, and Constraints
16 Risk Analysis and Operational Prototype
17 Simulation, Models, and Benchmarks
18 Detailed Design
19 Code
20 Unit, Integration, and Acceptance Testing
21 Implementation (Deployment)

Sequential with Versions



Rational Objectory