Software Development Processes

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Abstract

This article gives a brief explanation for Software development process. It will provide different kind of methodologies in this article. This article has been formatted.Software development organizations implement process methodologies to ease the process of development.

1 Introduction

In software engineering, a software development process is a splitting of software development work into distinct phases. It is really important in the software programming. It is often considered a subset of the systems development life cycle.

Common methodologies include Waterfall Model, V Model, Spiral Model, Prototyping Model, Incremental Model, Iterative Model, Transformational Model. Some people consider a life-cycle "model" a more general term for a category of methodologies. For example, there are many specific software development processes that fit the spiral life-cycle model.

- Waterfall model
- Spiral Model
- V-Model

2 Waterfall model

The waterfall model is a sequential design process, used in software development processes, originates in the manufacturing and construction industries: highly structured physical environments in which after-the-fact changes are prohibitively costly, if not impossible.The sequence of events for the waterfall model are analysis,design,coding,testing,maintenance. Waterfall model is not suitable for system of high uncertainty and has limited scope of iteration.

Waterfall Model contd

- classical
- one-shot approach
- effective control
- limited scope of iteration

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- long cycle time
- not suitable for system of high uncertainty

3 Spiral Model

The spiral model is a risk-driven process model generator for software projects. Based on the unique risk patterns of a given project, the spiral model guides a team to adopt elements of one or more process models, such as incremental, waterfall, or evolutionary prototyping.The most important feature of spiral model is risk management.

Spiral Model contd

- Evolutionary approach
- Iterative development combined with risk management
- Risk analysis results in go, re-do, no- go decision
- Four major activities:Planning,Risk analysis,Engineering,Evaluation

4 V-Model

The V-model is considered to be an extension of the Waterfall model. Instead of a downward linear path the process moves downward until it reaches the coding stage whereupon it begins moving upward until it passes user acceptance. Significant difference between V- and Waterfall models is that the former includes well-defined Verification and Validation phases.

V Model contd

- Additional validation process introduced
- Relate testing to analysis and design
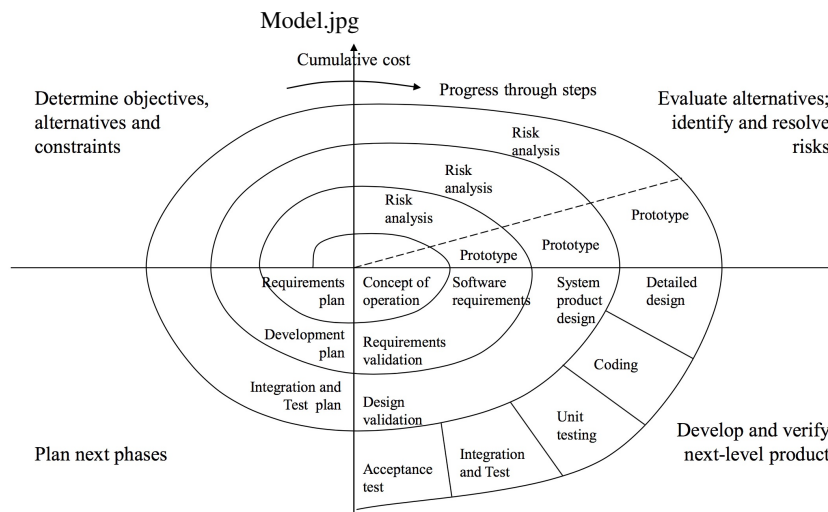- Loop back in case of discrepancy

5 Prototyping Model

Benefits of Prototyping

- Learning by doing
- Improved communication
- Improved user involvement
- Clarification of partially-known requirements

6 Overview

One software development methodology framework is not necessarily suitable for use by all projects. Process framework provided: establishes the ground rules for making software, enforces certain work practices and documents, allows lots of freedom for customization.

Model.jpg

Cumulative cost

Progress through steps

Determine objectives, alternatives and constraints

Evaluate alternatives; identify and resolve risks

Risk analysis

Risk analysis

Risk analysis

Risk analysis

Prototype

Prototype

Prototype

Prototype

Requirements plan

Concept of operation

Software requirements

System product design

Detailed design

Development plan

Requirements validation

Coding

Integration and Test plan

Design validation

Unit testing

Plan next phases

Acceptance test

Integration and Test

Develop and verify next-level product

Figure 1: *Spiral Model*

7 Summary

A software development process or life cycle is a structure imposed on the development of a software product. There are several models for such processes, each describing approaches to a variety of tasks or activities that take place during the process.

8 Reference

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