eXtreme Programming

(summary of Kent Beck's XP book)

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- The software development problem
- The XP solution
- The JUnit testing framework

The SW development problem

Four variables

Overview

- cost
- time
- quality
- scope

external forces (customers, management) pick the values of 3 v.

solution: make the four variables visible

interaction between the variables

- time: more time can improve quality and increase scope
  too much time will hurt it
- quality: short-term gains by deliberately sacrificing quality; but the cost (human, business, technical) is enormous
- less **scope** => better quality (as long as the business problem is still solved)

Four values

Overview

- communication
- simplicity
- feedback
- courage

short-term vs. long term thinking (I)

- communication: effect of pair programming, unit testing, task estimation: programmers, customers and managers have to communicate
- simplicity: it is better to do a simple thing today and pay a little more tomorrow to change it if it needs than to do a more complicated thing today that may never be used anyway

short-term vs. long term thinking (II)

- feedback: when customers write new „stories“ (description of features, simplified use cases), the programmers immediately estimate them; customers and testers write functional tests for all the stories
- courage: throwing parts of the code away and start over on the most promising design

Basic principles (derived from the four values)

Basic principles (I)

- rapid feedback
- assume simplicity
- incremental change
- embracing change
- quality work

Basic principles (II)

- small initial investment
- play to win
- concrete experiments
- open, honest communication
- work with people‘s instincts, not against them

Basic activities

Basic activities in the XP development process

- coding
- testing
- listening
- designing

The solution

XP practices

Practices (I)

- planning game: determine the scope of the next release; as reality overtakes the plan update the plan
- small releases: release new versions on a very short cycle after putting a simple system into production quickly
- metaphor: guide development with a simple shared story of how the whole system works

Practices (II)

- simple design: as simple as possible but not simpler (A. Einstein)
- testing: continually write unit tests
- refactoring: restructure the system to remove duplication (c.f. framelets, etc.)
- pair programming: two programmers at one machine
- collective ownership

Practices (III)

- continous integration: integrate the system many times a day, every time a task is complete
- 40-hour week
- on-site customer: include a real, live customer
- coding standards

Management strategy

Overview

- decentralized decision making based on
  - metrics
  - coaching
  - tracking
  - intervention
- using business basics: phased delivery, quick and concrete feedback, clear articulation of the business needs, specialists for special tasks

Metrics

- don‘t have too many metrics
- numbers are regarded as a way of gently and noncoercively communicating the need for change
- ratio between the estimated development time and calendar time is the basic measure for running the Planning Game

Coaching

- be available as a development partner
- see long-term refactoring goals
- explain the process to upper-level management

=> no lead programmer, system architect, etc.

Intervention

- when problems cannot be solved by the emergent brillance of the team, the manager has to step in, make decisions and see the consequences through to the end
- sample situations: changing the team‘s process, personnel changes, quitting a project

Planning strategy

Overview

- bring the team together
- decide on scope and priorities
- estimate cost and schedule
- give everyone confidence that the system can be done
- provide a benchmark for feedback

  put the most valuable functionality into production asap

Summary

What makes XP hard?

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It‘s hard to ...

- do simple things
- admit you don‘t know (eg, basics about computer/software science in the context of pair programming)
- to collaborate
- to break down emotional walls

XP & Kent Beck (I)

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Kent Beck is afraid of:

- **doing work that doesn‘t matter**
- **having projects canceled**
- **making business decisions badly**
- **doing work without being proud of it**

XP & Kent Beck (II)

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Kent Beck is not afraid of:

- **coding**
- **changing his mind**
- **proceeding without knowing everything about the future**
- **relying on other people**
- **changing the analysis and design of a running system**
- **writing tests**