Information Systems Concepts

Unified Process

Roman Kontchakov

Birkbeck, University of London

Based on Chapter 3, 5 and 21 of Bennett, McRobb and Farmer:
Outline

- RUP / USDP
  - Section 3.4.1 (pp. 77 – 79)
  - Section 5.4 (pp. 128 – 135)
  - Section 21.3 (pp. 614 – 618)
Unified Process

- Unified Software Development Process (USDP)
  - A public domain development methodology originally proposed by the same team (in Rational Software, 1999) who created UML
    - brought the Booch method, OMT and Objectory together
  - Large and complex
    - significant learning curve involved, or tailor to fit

- Rational Unified Process (RUP)
  - Proprietary methodology owned by IBM (since 2003)
  - The most mature OO methodology to date
    - USDP has been largely superseded by RUP (though they are very similar in their main aspects)
Underlying Principles

- Iterative
- Incremental
- Requirements (use case) driven
- Component based
- Architecture centric
- Visual modelling techniques
A use case is a single interaction between user and system.
## Phases and Workflows

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<tr>
<td>Implementation</td>
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<td>Test</td>
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### Iterations within each phase

- Size of square relative to the time spent on a workflow

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Phases

- Phases are organized along time
  Each phase consists of a number of iterations

- Inception Phase
  - Determining the scope and purpose of the project

- Elaboration Phase
  - Capturing the requirements
  - Determining the structure of the system

- Construction Phase
  - Building the system

- Transition Phase
  - Product installation and roll-out
- Phases matter to project managers
  - Phases are sequential and delineated by milestones
  - Manager’s focus shifts from one phase to the next

Each *milestone* is a decision point – begin next phase or stop now?
Workflows

- Workflows are organized along content
  - Each workflow consists of a group of activities
- 5 main workflows
  - Requirements
  - Analysis
  - Design
  - Implementation
  - Test
- Workflows matter to developers
Main Activities

- Requirements capture and modelling (use case model, requirements list, prototypes)
- Requirements analysis (identify objects, communication diagrams)
- System design (system architecture)
- Class design (sequence and state diagrams, design class diagrams)
- Interface design (interface specification, prototypes)
- Data management design (database specification)
- Construction
- Testing
- Implementation (installation)
Phases v Workflows

- Within each phase, activities iterate.
  - No set rule for the number of iterations.
  - Workflows within a phase are the same.

- The balance of effort spent in each workflow varies from phase to phase
  - All phases run from requirements to testing, but emphasis changes.
    - At first, main effort is on capture, modeling, analysis of requirements.
    - Later phases emphasise implementation and testing.
2D v 1D

In a TLC project the phases and the workflows/activities are linked together

- For example, in the Requirements phase only Requirements workflow activities are carried out; all Requirements work should be completed before work starts on Analysis.

In a Unified Process project the phases and the workflows/activities are independent with each other

- For example, some Requirements work may be happening alongside Analysis work.
Another view of TLC
Take Home Messages

- Unified Process
  - Phases and Workflows
  - 2D Structure