Summary

Lecture late

Software Engineering
TDDC88/TDDC93
autumn 2013

Kristian Sandahl, Aseel Berglund
Department of Computer and Information Science
Linköping University, Sweden
kristian.sandahl@ida.liu.se
Requirements

- Elicitation
- Analysis
- Stakeholders
- Specification
- IEEE Std 830
- Formalization
- Validation & verification

- User scenario
- Use-case
- Actor
- Use-case diagrams (x2)
- Functional requirements
- Non-functional requirements
Software life cycle and process

- Process definition
- Software life cycle
  - Requirements gathering
  - Design
  - Implementation
  - Testing
  - Integration
  - Deployment
  - Support
- Life cycle models
  - Waterfall
  - V-model
  - Iterative development
  - Incremental model
- RUP
- Lean
- Agile software development
  - Extreme programming (XP)
  - Scrum
  - Kanban
- Lean startup (guest lecture)
Project management

- Project definition
- Project stakeholders
- Project planning
  - SMART goals
  - GANTT chart, Critical path
  - Effort estimation: COCOMO, Delphi,
  - Time-boxing
  - Activity, Milestone, Tollgate
  - Customer value vs. effort
- Visualization
- Risk management
- Managing people
- Teamwork
Design and Architecture

- Communication, Early Decisions, Reuse
- Prototyping (2x)
- Box-and-line diagram
- Views
  - Implementation View
  - Execution View
  - Deployment View
- Coupling – Cohesion
- Architecture styles
  - Client-server (x3)
  - Layered
  - Pipe-and-filter
  - SOA

- Design patterns
  - Strategy
  - Observer
  - Façade
- UML: sketching, blueprinting, programming language
  - class diagram: attributes, association, composition, generalization
  - sequence diagram
  - state machine diagrams
  - packages
  - (activity diagrams)
Testing and SCM

- Error, Fault. Failure
- Black-box testing
- White-box testing
- Oracle
- Equivalence class testing
- Boundary value testing
- Control graph testing coverage

- Unit testing
- Regression testing
- Integration testing
  - Bottom – up, top-down, Sandwich, big-bang
  - Stubs, Drivers
- System testing
- Performance Testing
- Acceptance testing
  - Pilot testing
  - alpha test
  - beta test
  - Installation testing
  - Parallel testing
- Revision control
  - Versions
  - Trunk
  - Branch
- Centralized (SVN)
- Distributed (Git)
- Continuous Integration
Quality Quality

- Usability engineering
  - Relevance
  - Efficiency
  - Attitude
  - Learnability

- Reliability engineering, Failure intensity

- Safety, Security, Maintainability, Availability, Performance, Testability, Reusability, Portability

- Inspection
  - Roles
  - Process

- Other s/w reviews

- Software metrics

- CMMI selected PA’s levels 2 and 3

- ISO 9000-3 (Principles)

- Total Quality Management (Principles)