Software Engineering

CS305, Autumn 2020

Week 9

Class Progress…

- Two weeks ago
  - Design patterns, Design principles, Rational Unified Process (RUP)
- Last class
  - Overview of RUP

Class Progress…

- This week:
  - RUP phases, Software Construction, Testing

- Some Topics for Next Assignment (due two weeks from now):
  - Facebook API
  - Ajax, HTML5
  - Google Web Toolkit
  - Google Docs API
  - Webservices: REST API
  - Junit
  - Maven
  - Selenium
  - Android SDK
  - Dart

Inception Phase

- **What:** from idea to vision of the end product
  - Identify scope
  - Worth doing? What are the success criteria? Risks? Resources needed?
- **Output:**
  1. Vision document
  2. Simplified initial use-case (who are the actors?)
  3. Draft architecture (what could be the architecture?)
  4. Project Plan and Risks document (How much will it cost? What is the plan?)
  5. Prototype *(optional)*

Inception Phase – Milestone #1

- **When should we stop and consequences:**
  - Stakeholder agrees on scope, cost/schedule estimates
  - Fidelity of the use cases
  - Credibility of cost/schedule estimates, priorities, risks, development process
  - Depth and breadth of prototype if produced

Project may be cancelled or considerably re-thought if it fails to pass this milestone

Elaboration Phase

- **What:** four main activities
  - Analyze problem domain (for better understanding)
  - Establish architectural foundation
  - Eliminate highest risk elements (identify most critical use cases)
  - Refine project plan and estimates
- **Output:**
  - Almost complete use-case model (all actors and use cases identified and most use cases described)
  - Supplementary requirements (functional and non-functional)
    - All those requirements not directly associated with use cases
  - Software Architecture

Elaboration Phase

- Lower-level design model, test cases, *executable prototype*
- Preliminary user manual
- Revised project plan and risk assessment doc

- **When should we stop and consequences (milestone #2):**
  - Are vision and architecture stable?
  - Are major risks addressed and resolved in the prototype?
  - Thoroughness of the plan:
    - Sufficiently accurate / detailed?
    - Stakeholders agree that the vision can be achieved with the current plan?
    - Actual vs. Planned resource expenditure acceptable?

Project may be cancelled or considerably re-thought if it fails to pass this milestone

Construction Phase

- **What:** transition from intellectual property (IP) development to Product
  - All features developed
  - All features thoroughly tested
- **Output:**
  - All use cases realized, with traceability information – which part of design and code realize a particular use case? Which test cases derived from which use case?
  - Software Product integrated on required platforms
  - Complete system test results
  - User manual

Construction Phase

  - Beta release: design, code, test cases etc.
- **When should we stop and consequences (milestone #3):**
  - Product stable enough to be deployed?
  - Are stakeholders ready for the transition into the user community?
  - Are actual vs. planned resource expenditures still acceptable?

Transition to post-Beta release may be postponed if it fails to pass this milestone

Transition Phase

- **What:** mostly about deployment and maintenance
  - Users might report bugs, suggest improvements
  - Training customer service and providing help-line assistance
  - Beginning of a new cycle
- **Output:**
  - Complete project
  - Project in use
  - Lessons learnt
    - What should we do in the next cycle?
    - What went well? What did not go well?
    - Plan for the next release

Transition Phase

- **When should we stop and consequences (milestone #4):**
  - Users satisfied?
  - Are actual vs. planned resource expenditures still acceptable?

consequences?