SOFTWARE DEVELOPMENT PARADIGMS –AGILE METHODS

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Agile software development

□ What is agile software development?

    ◻ Scrum – Software Project Management Methodology

    ◻ XP – Software Development Methodology

Software Development Lifecycle

- The software lifecycle is an abstract representation of a software process. It defines the steps, methods, tools, activities and deliverables of a software development project. The following **lifecycle phases** are considered:
  - 1. requirements analysis
  - 2. system design
  - 3. implementation
  - 4. integration and deployment
  - 5. operation and maintenance

SDLC Limitations

- Classical project planning methods have a lot of disadvantages
  - Huge efforts during the planning phase {Requirements + Design}
  - Poor requirements conversion in a rapidly changing environment
  - Treatment of staff as a factor of production

Agile Man

Agile Motivations

☐ Agile proponents argue:

- ◻ Software development processes relying on lifecycle models are too heavyweight or cumbersome
- ◻ Too many things are done that are not directly related to the software product being produced, i.e. design, models, requirements docs, documentation that isn't shipped as part of the product
- ◻ Difficulty with incomplete or changing requirements
- ◻ Short development cycles (Mobile Apps)
- ◻ More active customer involvement needed

What is Agile?

- ❑ Agile methods focus on
  - ❑ Individuals and interactions over processes and tools
  - ❑ Working software over comprehensive documentation
  - ❑ Customer collaboration over contract negotiation
  - ❑ Responding to change over following a plan
- ❑ Several agile methods
  - ❑ No single agile method
  - ❑ Scrum
  - ❑ XP
- ❑ No single definition
- ❑ Agile Manifesto closest to a definition
  - ❑ Set of principles
  - ❑ Developed by Agile Alliance (http://www.agilealliance.org/)

Agile methods

- Agile methods:
  - Scrum
  - Extreme Programming (XP)
    - Continuous Integration
    - Test Driven Development (TDD)
    - …

- Agile Alliance (www.**agilealliance**.org)
  - A non-profit organization promotes agile development

Scrum in 100 words

- Scrum is an agile project management methodology for managing product development.

- It allows us to rapidly and repeatedly inspect actual working software (every two weeks to one month).

- The business sets the priorities. The teams self-manage to determine the best way to deliver the highest priority features.

- Every two weeks to a month anyone can see real working software and decide to release it as is or continue to enhance for another iteration.

History of Scrum

- 1995:
    - Analysis of common software development processes found that they are not suitable for unpredictable and non-repeatable processes
    - Design of a new method: Scrum by Jeff Sutherland & Ken Schwaber
    - Enhancement of Scrum by Mike Beedle & combination of Scrum with Extreme Programming

- 1996:
    - Introduction of Scrum at the (Object-Oriented Programming, Systems, Languages & Applications) OOPSLA conference

- 2001:
    - Publication "Agile Software Development with Scrum" by Ken Schwaber & Mike Beedle
    - Gained in popularity steadily ever since

- Founders are members in the Agile Alliance

Characteristics of Scrum

- Self-organizing teams
  - No need for project manager (in-theory)
- Product progresses in a series of month-long "sprints"…could be biweekly also
- Assumes that the software cannot be well defined and requirements will change frequently
- Requirements are captured as items in a list of "product backlog"
- No specific engineering practices prescribed
  - XP, TDD, FDD…
- Best approach is to start with Scrum and then invent your own version using XP, TDD, FDD

Daily Scrum/Standup

□ Parameters

- Daily
- 15-minutes
- Stand-up
- Not for problem solving
- Only team members, ScrumMaster, Product Owners should talk
- Should help to avoid additional unnecessary meetings
- Commitment in front of peers to complete tasks

Answer three questions

1 What did you do yesterday?

2 What will you do today?

3 Is anything in your way?

Daily SCRUM/Standup

- ☐ Is NOT a problem solving session

- ☐ Is NOT a way to collect information about WHO is behind the schedule

- ☐ Is a meeting in which team members make commitments to each other and to the Scrum Master

- ☐ Is a good way for a Scrum Master to track the progress of the team