Agile SW Development Framework - Scrum

PA017 SW Engineering II → Aspects of SW Development Management

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Main Approaches to SW Development

Predictive

- More rigid
- Focus on processes
- Fixed requirements
- Thorough upfront planning
- Example: **Unified Process**

Agile

- Flexible and adaptable
- Focus on people
- Regularly updated requirements
- Minimal upfront planning
- Example: **SCRUM**

SCRUM Overview

- Most common agile framework for developing software
- Simple to understand, difficult to master
- Iterative and incremental
- Theory of SCRUM: „**The SCRUM Guide**" (19 pages)
    - Very short definition with strict rules that make the SCRUM what it is
        - *„Without following the rules, you don't have SCRUM"*
    - It is expected that other methods, techniques and tools are added to make the process complete

SCRUM Structure

5 Events

Sprint
Sprint Planning
Daily SCRUM
Sprint Review
Retrospective

3 Roles

Product Owner
SCRUM Master
Team of Developers

3 Artifacts

Product Backlog
Sprint Backlog
Product Increment

SCRUM Roles

Product Owner

Represents stakeholders
Maintains **Product Backlog**
Core responsibility: **communication**

SCRUM Master

Focus on process
Removes impediments
Core responsibility: **managing the SCRUM process**

Team of Developers

Team of 3 to 9 developers
Cross-functional and self-organized team
Analysts, Designers, Programmers, Testers, UI
Designers ...
Maintain **Sprint Backlog**
Core responsibility: **delivering the product**

SCRUM Artifacts – Product Backlog

WHAT
Scope of the product.
Independent items (functions) in the form of **User Stories.**

WHO
The whole SCRUM team creates it.
Product Owner is responsible for it.

HOW
Usually physical board with sticky notes.
Each user story has **Story Points** assigned to it.

Planning Poker

Planning Poker

Way of **estimating the amount of work** needed on a **Product Backlog** feature. The feature is described in the form of a user story. Each estimator (Development team) gives it a value card (e.g. 5 story points). All cards are revealed at the same time, points are discussed until consensus is reached and the feature is given a work estimate.

SCRUM Artifacts – Sprint Backlog

WHAT
Subset of items from the Product Backlog.
Plan of **work to be done** in current Sprint.

WHO
Maintained by the Team of Developers.

HOW
Physical board with prioritized items (User Stories) that have definition of „Done".
Chosen user stories are changed into tasks and given work estimation in hours.
Tasks are divided in to-do/in progress/complete categories.

RULES
Order of items can be changed.
Items cannot be removed or added
(if items need adding or cancelling, Product Owner will cancel the Sprint).

SCRUM Artifacts – Product Increment

WHAT
Sum of all the Product Backlog items completed during a Sprint, plus previous Increments.

WHO
Created by the Team of Developers.
Tested by customer.
Can be released by Product Owner.

HOW
All tasks from the Sprint Backlog are performed.

RULES
Increment has to be in useable condition and meet the Scrum Team's definition of „Done".

SCRUM Events – Sprint Planning

WHAT — 8 hrs meeting at the beginning of each Sprint.

WHO — Entire SCRUM team.

WHY — Setting a goal (coherent function of the system).
Picking Product Backlog items and assigning tasks to them.
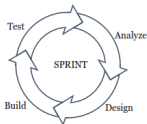
SCRUM Events – Sprint

WHAT
Iteration focusing on developing subset of Product Backlog items.
Ends in **usable and potentially releasable** product increment

WHO
Entire SCRUM team.
Project Owner communicates, Developers develop, Scrum Master manages process.

HOW
Analyze-Design-Build-Test
Maximum duration 1 month, all sprints have same duration.

SCRUM Events – Daily SCRUM

WHAT Everyday 15 min meeting.

WHO Team of Developers, possibly Scrum Master.

HOW Each member of the team answers questions:
„What did I do yesterday?", „What will I do today?", „Did I see any impediments?"

SCRUM Events – Sprint Review

WHAT
4 hrs meeting

WHO
Entire SCRUM team and key stakeholders (e.g. customer).

WHY
Inspect Increment.
Review Product Backlog.
Recalculate progress of the project and completion date.

SCRUM Events – Sprint Retrospective
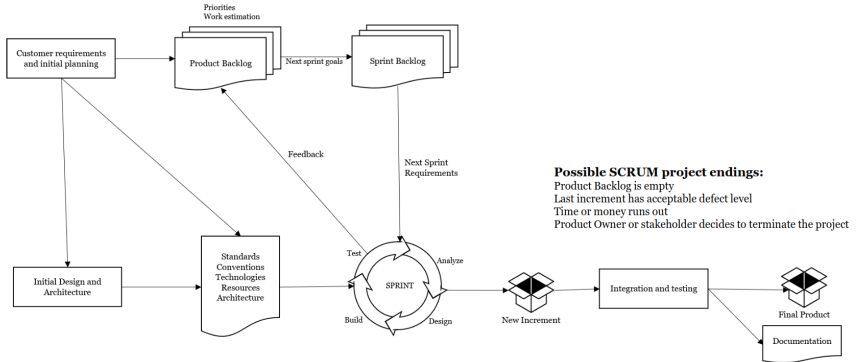
WHAT 3 hrs meeting

WHO Entire SCRUM team.

WHY Inspect the last Sprint's **people relationships**, **processes** and **tools**:
„What went well?" „What can we improve?"
Come up with **one process improvement** for the next Sprint

SCRUM Events – Sprint Lifecycle

Possible SCRUM project endings:
Product Backlog is empty
Last increment has acceptable defect level
Time or money runs out
Product Owner or stakeholder decides to terminate the project

Contracting in Agile Development

Time & Material Contract

Agreement to pay time and resources used. Contract usually states how many people, for what hourly rate.

Advantages

- Flexible contract
- Scope is not known upfront, we can easily **add features** and fulfil change requests
- Frequent customer supervision improves trust

Disadvantages

- Constant customer involvement requires extra time
- Difficult to predict final budget and deadline
- Managing the triple constraint becomes a continuous mission

When to use SCRUM

- Exact requirements are not available upfront
- Your team is strong at communication and collaboration
- Customer wants to use some form of the product as soon as possible

SCRUM Certification

Professional SCRUM Master

- PSM 1 for fundamental level
- 60 minutes/80 questions
- No course required
- $ 150
- PSM 2 and 3 for advanced and complex level also available

Professional SCRUM Product Owner

- PSP 1 for fundamental level
- 60 minutes/80 questions
- No course required
- $ 200
- PSM 2 for advanced level also available

Professional SCRUM Developer

- 60 minutes/80 questions
- No course required
- $ 200

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