Scrum and Agile Development

Customer-driven project. Partially based on Henrik Kniberg: Scrum and XP from the Trenches - How we do Scrum

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Overview

- Agile methods
- Scrum
  - Product backlog
  - Sprint planning
  - Sprint backlog
  - Daily meetings
  - Sprint demo
  - Sprint retrospektive
- Extreme programming
- Summary
What is a software process?

A software process is a structured and measurable sequence of activities or steps to develop or maintain a software product.

“The quality of a software system is governed by the quality of the process used to develop it.”

- Watts Humphrey, *Managing the Software Process*
Agile software development

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

Manifesto for agile software development
## Alternative development processes

<table>
<thead>
<tr>
<th>Development strategy</th>
<th>Requirements first?</th>
<th>Several cycles</th>
<th>Distributed increments?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterfall</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Incremental</td>
<td>Yes</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>Evolutionary</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Lapper på veggen redder prosjektet


Av Espen Zachariassen

Publisert 24. januar 2008 kl. 12:18
Development Lifecycle and Agile Methods

Scrum

Product Backlog
As prioritized by Product Owner

Sprint Backlog

Daily Scrum Meeting

Backlog tasks expanded by team

24 hours

30 days

Potentially Shippable Product Increment

Source: www.controlchaos.com
The Elements of Scrum

Roles
- Product Owner
- Scrum Master
- Scrum Team (Stakeholders)

Processes
- Sprint
- Sprint Planning Meeting
- Daily Scrum Meeting
- Sprint Review Meeting
- Sprint Retrospective Meeting

Artefacts
- Product Backlog
- Sprint Backlog
- Burndown Chart
Scrum

Product Backlog
As prioritized by Product Owner

Sprint Backlog

Backlog tasks expanded by team

24 hours

Daily Scrum Meeting

30 days

Potentially Shippable Product Increment

Source: www.controlchaos.com
## Product backlog (produktkø)

<table>
<thead>
<tr>
<th>Backlog item</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow a guest to make a reservation</td>
<td>3</td>
</tr>
<tr>
<td>As a guest, I want to cancel a reservation.</td>
<td>5</td>
</tr>
<tr>
<td>As a guest, I want to change the dates of a reservation.</td>
<td>3</td>
</tr>
<tr>
<td>As a hotel employee, I can run RevPAR reports (revenue-per-available-room)</td>
<td>8</td>
</tr>
<tr>
<td>Improve exception handling</td>
<td>8</td>
</tr>
<tr>
<td>...</td>
<td>30</td>
</tr>
<tr>
<td>...</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: Mountain Goat Software
# Product backlog

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Imp</th>
<th>Est</th>
<th>How to demo</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Deposit</td>
<td>30</td>
<td>5</td>
<td>Log in, open deposit page, deposit €10, go to my balance page and check that it has increased by €10.</td>
<td>Need a UML sequence diagram. No need to worry about encryption for now.</td>
</tr>
<tr>
<td>2</td>
<td>See your own transaction history</td>
<td>10</td>
<td>8</td>
<td>Log in, click on “transactions”. Do a deposit. Go back to transactions, check that the new deposit shows up.</td>
<td>Use paging to avoid large DB queries. Design similar to view users page.</td>
</tr>
</tbody>
</table>
User story

As a user, I want to reserve a hotel room.

Estimate: 5  Actual: 7
Exercise

Imagine that you are to develop a new Intranet for the university

Individually:

Make 3-4 user stories on the form:
- As a <role>
- I want <goal/desire>
- so that <benefit>" 

In small groups:

Discuss the user stories. Is it clear what is to be developed?
What is the difference between a user story and a requirement?
Scrum

Daily Scrum Meeting

Backlog tasks expanded by team

Product Backlog As prioritized by Product Owner

Sprint Backlog

24 hours

30 days

Potentially Shippable Product Increment

Source: www.controlchaos.com
Sprint planning meeting

**Sprint prioritization**
- Analyze and evaluate product backlog
- Select sprint goal

**Sprint planning**
- Decide how to achieve sprint goal (design)
- Create sprint backlog (tasks) from product backlog items (user stories / features)
- Estimate sprint backlog in hours

Source: Mountain Goat Software
Sprint planning

- Team selects items from the product backlog they can commit to completing
- Sprint backlog is created
  - Tasks are identified and each is estimated (1-16 hours)
  - Collaboratively, not done alone by the ScrumMaster
- High-level design is considered

As a vacation planner, I want to see photos of the hotels.

Code the middle tier (8 hours)
Code the user interface (4)
Write test fixtures (4)
Code the foo class (6)
Update performance tests (4)
Estimation; Planning poker

Exercise

- How long does it take to make “Pasta Carbonara”?
- Make an individual estimate in minutes
Scrum

Daily Scrum Meeting

Backlog tasks expanded by team

Product Backlog
As prioritized by Product Owner

Potentially Shippable Product Increment

24 hours

30 days

Source: www.controlchaos.com
Spring backlog (sprintkø)

Physical artefacts

- Increases awareness within the team, and also for people outside of the team
- Physical artefacts represent tokens of responsibility
- Physically moving artefacts have been found to give more reflection than electronic manipulation
- Physical artefacts are easy to consult
- Physical artefacts are hard to ignore

## Sprint backlog

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thur</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code the user interface</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code the middle tier</td>
<td>16</td>
<td>12</td>
<td>10</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Test the middle tier</td>
<td>8</td>
<td>16</td>
<td>16</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Write online help</td>
<td></td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write the foo class</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Add error logging</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Mountain Goat Software
Scrum

- **Daily Scrum Meeting**: 24 hours
- **Backlog tasks expanded by team**: 30 days
- **Sprint Backlog**
  - Product Backlog
    - As prioritized by Product Owner
  - As expanded by team

**Potentially Shippable Product Increment**

Source: [www.controlchaos.com](http://www.controlchaos.com)
Daily meetings

1. What did you do yesterday?
2. What will you do today?
3. Is anything in your way?

- These are not status for the ScrumMaster
- They are commitments in front of peers

Source: Mountain Goat Software
Scrum

- Daily Scrum Meeting: 24 hours
- 30 days
- Backlog tasks expanded by team
- Sprint Backlog
- Product Backlog: As prioritized by Product Owner
- Potentially Shippable Product Increment

Source: www.controlchaos.com
The sprint demo

- Team presents what it accomplished during the sprint
- Typically takes the form of a demo of new features or underlying architecture
- Informal
  - 2-hour prep time rule
  - No slides
- Whole team participates
- Invite the world

Source: Mountain Goat Software
Postmortem reviews / Retrospectives

- Performed after a project or a project milestone
- Sums up the good and bad experiences
- A group process lasting approximately half a day
- As many people as possible are gathered
- Everyone get to say their opinion
- Everything is exposed and discussed in the group
- The experiences is documented for later use (externalisation)
Sprint retrospektiv

Hva gikk bra?

Hva gikk ikke så bra?

Erfaringer

Årsaksanalyse

Suksess

Problem

Årsak 1
Årsak 2
Årsak 3
Årsak 4
Årsak 5
Årsak 6

Årsak 1
Årsak 1.1
Årsak 1.2
Årsak 1.3
Årsak 1.4

Årsak 2
Årsak 2.1
Årsak 2.2

Årsak 3
Årsak 3.1
Årsak 3.2

Årsak 4
Årsak 4.1
Årsak 4.2

Årsak 5
Årsak 5.1
Årsak 5.2

Årsak 6
Årsak 6.1
Årsak 6.2

Idemyldring

KJ/Affinitetsdiagram

Samarbeid

- Bra samarbeid på avdelingen
- Fagfora
- Samarbeid i team
- Samarbeid på tvers av team
- Samarbeid med releasekoordinator

Planlegging

- Release notes i rute
- Planlagt funksjonalitet implementert i tide
- Milepøler ble overholdt
- Visste tidlig hva vi skulle gjøre

Produkt

- Forbødet installasjon
- Forbødet ytelse

Test

- Løpende funksjonstest
- Oversikt over tester og feil
- Fikk god tid til systemtesten
- Test av brukergrensesnitt

Ansvar

- Alle tok ansvar for gjennomføring
- ANSVARSFØLELSE FOR PRODUKT
- Stabilt program

Fishbone diagram
Timeline

Project events

- Discussing Technology and Architecture
- Lots of meetings
- Summer vacation
- Celebrate with cake
- Backlog improved
- Rewriting DB module
- New developer hired
- Waiting for sub-contractor
- Developers move into open office
- One developer leaves the project
- Two developers leave the project
- Deliverable from sub-contractor
- User documentation finished

Project satisfaction

May 2006 - January 2007

Extreme programming

- Whole Team
- Planning Game
- Small Releases
- Customer Tests
- Simple Design
- Pair Programming
- Test-Driven Development
- Design Improvement
- Continuous Integration
- Collective Code Ownership
- Coding Standard
- Metaphor
- Sustainable Pace
Summary: Scrum in a nutshell

Scrum Development Process

Roles

- **PO**
  - Product Owner: Set priorities

- **SM**
  - ScrumMaster: Manage process, remove blocks

- **T**
  - Team: Develop product

- **SH**
  - Stakeholders: observe & advise

Key Artifacts

- **Product Backlog**
  - List of requirements & issues
  - Owned by Product Owner
  - Anybody can add to it
  - Only Product Owner prioritizes

- **Sprint Goal**
  - One-sentence summary
  - Declared by Product Owner
  - Accepted by team

- **Sprint Backlog**
  - List of tasks
  - Owned by team
  - Only team modifies it

- **Blocks List**
  - List of blocks & unmade decisions
  - Owned by ScrumMaster
  - Updated daily

- **Increment**
  - Version of the product
  - Shippable functionality (tested, documented, etc.)

Key Meetings

- **Sprint Planning Meeting**
  - Hosted by ScrumMaster, ½-1 day
  - In: Product Backlog, existing product, business & technology conditions
  - 1. Select highest priority items in Product Backlog, declare Sprint Goal
  - 2. Team turns selected items into Sprint Backlog
     - Out: Sprint Goal, Sprint Backlog

- **Daily Scrum**
  - Hosted by ScrumMaster
  - Attended by all, but Stakeholders don’t speak
  - Same time every day
  - Team updates Sprint Backlog; ScrumMaster updates Blocks List

- **Sprint Review Meeting**
  - Hosted by ScrumMaster
  - Attended by all
  - Informal, 4-hour, informational
  - Team demos Increment
  - All discuss
  - Hold retrospective
  - Announce next Sprint Planning Meeting

Development Process

Sprint 30 days each

- **Product Backlog**
- **Sprint Goal**
- **Sprint Backlog**
- **Blocks List**
- **Product**
- **Increment**

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