An Introduction to Scrum

We’re losing the relay race

The ‘relay race’ approach to product development... may conflict with the goals of maximum speed and flexibility. Instead a holistic or ‘rugby’ approach—where a team tries to go the distance as a unit, passing the ball back and forth—may better serve today’s competitive requirements.”

Scrum in 100 words

• Scrum is an agile process that allows us to focus on delivering the highest business value in the shortest time.
• It allows us to rapidly and repeatedly inspect actual working software (every two weeks to one month).
• The business sets the priorities. Teams self-organize 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 it for another sprint.

Scrum has been used by:

• Microsoft
• Yahoo
• Google
• Electronic Arts
• High Moon Studios
• Lockheed Martin
• Philips
• Siemens
• Nokia
• Capital One
• BBC
• Intuit
• Nielsen Media
• First American Real Estate
• BMC Software
• Ipswitch
• John Deere
• Lexis Nexis
• Sabre
• Salesforce.com
• Time Warner
• Turner Broadcasting
• Oce
Scrum has been used for:

- Commercial software
- In-house development
- Contract development
- Fixed-price projects
- Financial applications
- ISO 9001-certified applications
- Embedded systems
- 24x7 systems with 99.999% uptime requirements
- the Joint Strike Fighter
- Video game development
- FDA-approved, life-critical systems
- Satellite-control software
- Websites
- Handheld software
- Mobile phones
- Network switching applications
- ISV applications
- Some of the largest applications in use

Characteristics

- Self-organizing teams
- Product progresses in a series of ~month-long “sprints”
- Requirements are captured as items in a list of “product backlog”
- No specific engineering practices prescribed
- Uses generative rules to create an agile environment for delivering projects
- One of the “agile processes”

Project noise level

Scrum

24 hours

Sprint goal

Cancel

Gift wrap

Return

2-4 weeks

Sprint backlog

Potentially shippable product increment

Sprint goal

Sprint backlog

Potentially shippable product increment

Source: Strategic Management and Organizational Dynamics by Ralph Stacey in Agile Software Development with Scrum by Ken Schwaber and Mike Beedle.
Sprints

- Scrum projects make progress in a series of "sprints"
- Analogous to Extreme Programming iterations
- Typical duration is 2–4 weeks or a calendar month at most
- A constant duration leads to a better rhythm
- Product is designed, coded, and tested during the sprint

Sequential vs. overlapping development

- Rather than doing all of one thing at a time...
- Scrum teams do a little of everything all the time

No changes during a sprint

- Plan sprint durations around how long you can commit to keeping change out of the sprint
Details of Scrum

Scrum framework

Roles
- Product owner
- ScrumMaster
- Team

Ceremonies
- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts

Product owner

- Define the features of the product
- Decide on release date and content
- Be responsible for the profitability of the product (ROI)
- Prioritize features according to market value
- Adjust features and priority every iteration, as needed
- Accept or reject work results
The ScrumMaster

- Represents management to the project
- Responsible for enacting Scrum values and practices
- Removes impediments
- Ensure that the team is fully functional and productive
- Enable close cooperation across all roles and functions
- Shield the team from external interferences

The team

- Typically 5-9 people
- Cross-functional:
  - Programmers, testers, user experience designers, etc.
- Members should be full-time
  - May be exceptions (e.g., database administrator)

The team

- Teams are self-organizing
- Ideally, no titles but rarely a possibility
- Membership should change only between sprints

Scrum framework

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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

Sprint goal

Sprint backlog

Business conditions

Team capacity

Technology

Current product

Product backlog

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)

The daily scrum

- Parameters
  - Daily
  - 15-minutes
  - Stand-up

- Not for problem solving
  - Whole world is invited
  - Only team members, ScrumMaster, product owner, can talk

- Helps avoid other unnecessary meetings

Everyone answers 3 questions

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
The sprint review

- 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

Sprint retrospective

- Periodically take a look at what is and is not working
- Typically 15–30 minutes
- Done after every sprint
- Whole team participates
  - ScrumMaster
  - Product owner
  - Team
  - Possibly customers and others

Start / Stop / Continue

- Whole team gathers and discusses what they’d like to:
  - Start doing
  - Stop doing
  - Continue doing

Scrum framework

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  - Sprint retrospective
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- Artifacts
  - Product backlog
  - Sprint backlog
  - Burndown charts
**Product backlog**

- The requirements
- A list of all desired work on the project
- Ideally expressed such that each item has value to the users or customers of the product
- Prioritized by the product owner
- Reprioritized at the start of each sprint

**A sample product backlog**

<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>

**The sprint goal**

- A short statement of what the work will be focused on during the sprint

**Managing the sprint backlog**

- Individuals sign up for work of their own choosing
- Work is never assigned
- Estimated work remaining is updated daily
Managing the sprint backlog

- Any team member can add, delete or change the sprint backlog
- Work for the sprint emerges
- If work is unclear, define a sprint backlog item with a larger amount of time and break it down later
- Update work remaining as more becomes known

A 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>7</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>12</td>
<td></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>8</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A sprint burndown chart
Scalability

- Typical individual team is $7 \pm 2$ people
- Scalability comes from teams of teams

Factors in scaling
- Type of application
- Team size
- Team dispersion
- Project duration
- Scrum has been used on multiple 500+ person projects

Scaling through the Scrum of scrums

Scrum of scrums of scrums

A Scrum reading list

- Agile and Iterative Development: A Manager’s Guide by Craig Larman
- Agile Estimating and Planning by Mike Cohn
- Agile Project Management with Scrum by Ken Schwaber
- Agile Retrospectives by Esther Derby and Diana Larsen
A Scrum reading list

- Agile Software Development Ecosystems by Jim Highsmith
- Agile Software Development with Scrum by Ken Schwaber and Mike Beedle
- Scrum and The Enterprise by Ken Schwaber
- Succeeding with Agile by Mike Cohn
- User Stories Applied for Agile Software Development by Mike Cohn

Scrum origins

- Jeff Sutherland
  - Initial scrums at Easel Corp in 1993
  - IDX and 500+ people doing Scrum
- Ken Schwaber
  - ADM
  - Scrum presented at OOPSLA 96 with Sutherland
  - Author of three books on Scrum
- Mike Beedle
  - Scrum patterns in PLOP4
- Ken Schwaber and Mike Cohn
  - Co-founded Scrum Alliance in 2002, initially within the Agile Alliance