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 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 PLOPD4

- Ken Schwaber and Mike Cohn
  - Co-founded Scrum Alliance in 2002, initially within the Agile Alliance
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:

<table>
<thead>
<tr>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Commercial software</td>
</tr>
<tr>
<td>• In-house development</td>
</tr>
<tr>
<td>• Contract development</td>
</tr>
<tr>
<td>• Fixed-price projects</td>
</tr>
<tr>
<td>• Financial applications</td>
</tr>
<tr>
<td>• ISO 9001-certified applications</td>
</tr>
<tr>
<td>• Embedded systems</td>
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<tr>
<td>• 24x7 systems with 99.999% uptime requirements</td>
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<tr>
<td>• the Joint Strike Fighter</td>
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<tr>
<td>• Video game development</td>
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<tr>
<td>• FDA-approved, life-critical systems</td>
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<tr>
<td>• Satellite-control software</td>
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<tr>
<td>• Websites</td>
</tr>
<tr>
<td>• Handheld software</td>
</tr>
<tr>
<td>• Mobile phones</td>
</tr>
<tr>
<td>• Network switching applications</td>
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<tr>
<td>• ISV applications</td>
</tr>
<tr>
<td>• Some of the largest applications in use</td>
</tr>
</tbody>
</table>
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”
The Agile Manifesto—a statement of values

- Individuals and interactions over Process and tools
- Working software over Comprehensive documentation
- Customer collaboration over Contract negotiation
- Responding to change over Following a plan

Source: www.agilemanifesto.org
Project noise level

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

Sprint goal
- Return
- Cancel
- Coupons
- Gift wrap
- Product backlog

Sprint backlog

Sprint 2-4 weeks

24 hours

Potentially shippable product increment
Putting it all together

Image available at
www.mountaingoatsoftware.com/scrum
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


Mountain Goat Software, LLC
No changes during a sprint

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

Roles
- Product owner
- ScrumMaster
- Team

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

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts
Scrum framework

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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

Team capacity
Product backlog
Business conditions
Current product
Technology
Sprint goal
Sprint backlog
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)
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

This is just one of many ways to do a sprint retrospective.
Scrum framework

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- 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

**Database Application**
- Make the application run on SQL Server in addition to Oracle.

**Life Sciences**
- Support features necessary for population genetics studies.

**Financial services**
- Support more technical indicators than company ABC with real-time, streaming data.
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>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></td>
<td></td>
<td></td>
<td>12</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>
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</table>
A sprint burndown chart
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<td></td>
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Scalability

- Typical individual team is 7 ± 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
Where to go next

- www.mountaingoatsoftware.com/scrum
- www.scrumalliance.org
- www.controlchaos.com
- scrumdevelopment@yahoogroups.com
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
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