Scrum
SWI MM3
Agenda

• Scrum Origins
• Scrum Overview
• Team and Roles
• Sprints
• Daily Scrum
• Backlogs
Scrum origins

Takeuchi & Nonaka
Godfathers of Scrum:  
Hirotaka Takeuchi and Ikujiro Nonaka


Toyota synthesis of constraints

• Historical assumption is that high quality, product variety, and low cost cannot be achieved simultaneously.

• Toyota production system is based on totally different way of thinking.

• Through knowledge creation by synthesis of contradictions, Toyota pushes the envelope.

• High quality, high variety, and low cost all at once.

“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.”
Type A – Isolated cycles of work

Type B – Overlapping work

Type C – All at once

The overlapping of phases does away with traditional notions about division of labor.
Takeuchi and Nonaka (1986)
A small group is responsible for picking up the ball and moving it toward the goal.
Breaking down command and control

• Intended strategy is developed centrally. Emergent strategy self-organizes through local actions.
  – Distributed cognition and actions

• Scrum team must be allowed to self-organize
  – Autonomous
  – Transcendent
  – Cross-fertilization

• Team chooses own work
  – Individuals manage their own work
  – Management gets out of the way
Scrum Overview
Scrum has been used by:

- Microsoft
- Yahoo
- Google
- Electronic Arts
- High Moon Studios
- Lockheed Martin
- Philips
- Siemens
- Nokia
- Capital One
- BBC
- Intuit
- 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
Local action forces self-organization

- Individual self-organizes work
- Team self-organizes around goals
- Architecture self-organizes around working code
- Product emerges through iterative adaptation
- Requires participative approach as opposed to authoritative approach
- Flat organizational structure
Scrum Lifecycle

- **Product Backlog**: As prioritized by Product Owner
- **Sprint Backlog**: Expanded by team
- **Backlog tasks**: Expand for 24 hours
- **30 days**: Cycle completion

**Daily Scrum Meeting**

**Potentially Shippable Product Increment**
Environment

- Everyone in same location
- Open space without barriers
- Meeting facilities adjacent
- White boards
- Speaker phone
- Maximized communications
Breaking down the cube walls

When all the team members are located in one large room, someones information becomes yours, without even trying.” Fuji-Xerox in Takeuchi and Nonaka (1986).
Scrum framework

Roles
- Product owner
- Scrum Master
- Team

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

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts
Team and Roles
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 for every iteration, as needed
• Accept or reject work results
Product Owner

- One person in this role ensures that only one set of requirements drives development
- Can be influenced by committees, management, customers, sales people, but is the only person that prioritizes
- Works with others to estimate items on Product Backlog
- Eliminates confusion of multiple bosses, different opinions, and interference
The Scrum Master

- 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

• Cross-functional:
  • Programmers, testers, user experience designers, etc.

• Members should be full-time
  • May be exceptions (e.g., database administrator)

• Teams are self-organizing
  • Ideally, no titles but rarely a possibility

• Membership should change only between sprints
How Big is a Team?

- Typically 5-10 people
- Mike Cohn has led teams of 100+
- Ken Schwaber has led teams of 600+
- Obviously, very large teams are a very special case
- “Scrum of Scrums” technique
Scaling through the Scrum of scrums
Scrum of scrums of scrums
Sprints
Scrum framework

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Sprint

- A fixed period of 30 days to develop a deliverable product
- The Sprint includes design, coding, testing, and documentation
- Once a Sprint has started only the Scrum Team can add or remove items in Sprint backlog
- Abnormal termination of Sprint is called for when the Sprint Goal no longer makes sense
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
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.
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
Daily Scrum
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
Daily Scrum Taskboard

In advanced Scrums, these are automated.
Backlogs
Scrum framework

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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

This is the product backlog
## 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>
Managing the sprint backlog

• Individuals sign up for work of their own choosing
  – Work is never assigned

• Estimated work remaining is updated daily

• 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
<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>8</td>
<td>4</td>
<td></td>
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Mountain Goat Software, LLC
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**Hours**

- Mon: 50
- Tue: 40
- Wed: 30
- Thu: 20
- Fri: 10

*Mountain Goat Software, LLC*
A sprint burndown chart

Mountain Goat Software, LLC
Scrum and Innovation
Can we make Scrum innovative?

Ceremonies

Roles
- Product owner
- Scrum Master
- Team

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts

Scrum team must be self-organizing project teams
- Autonomy
- Self-transcendence
- Cross-fertilization
Acknowledgements

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• Slides marked by Jeff Sutherland

• are by Jeff Sutherland