Scrum: The Next Generation

Presenter: Jeff Sutherland
Agenda

• The Origins of Scrum
  • A Dilemma at Easel Corporation
  • Takeuchi and Nonaka
  • Cross-Disciplinary Inspiration
  • Scrum as a Martial Art and “Pattern of Movement”
• The Evolution of Scrum
• Scrum and Lean
• Scrum as We Now Understand It
• A Critical Tipping Point in the History of Scrum
• Leading instead of Managing
• Enterprise Scrum: The Organization of Tomorrow
Scrum Inc. is the Agile leadership company of Dr. Jeff Sutherland, co-creator of Scrum. We are based in Cambridge, MA.

We maintain the Scrum methodology by:
- Capturing and codifying evolving best practices,
- Conducting original research on organizational behavior
- Adapting the methodology to an ever-expanding set of industries, processes and business challenges

We also help companies achieve the full benefits of Scrum through our full suite of support services:
- Training (Scrum Master, Product Owner, Agile Leadership, webinars, etc.)
- Consulting (linking Scrum and business strategy, customizing Scrum)
- Coaching (hands-on support to Scrum teams)
- Publishing and new content development

We run our services company using Scrum as the primary management framework, making us a living laboratory on the cutting edge of “Enterprise Scrum”

Find out more at [www.scruminc.com](http://www.scruminc.com).
In 1993 at Easel Corporation we decided: **Radical Change Required**

- Making the world a better place
  - Japanese manufacturing - W. Edwards Deming
  - Team process – Silicon Valley entrepreneurs (Creative Initiative)
  - Micro enterprise development – Accion and Grameen Bank

- Process innovation and productivity research
  - Alan Kay and Xerox Parc
  - Takeuchi and Nonaka - knowledge generation/lean
  - IBM Surgical Team (Mythical Man Month)
  - Jim Coplien - ATT Bell Labs Pasteur Project
  - Complex adaptive systems and iRobot subsumption architecture
How we invented Scrum:
Learning about innovation from Xerox Parc
Complex Adaptive Systems

- Self organization
- No single point of control
- Interdisciplinary teams
- Emergent behavior
- Outcomes emerge with high dependence on relationship and context
- Team performance far greater than sum of individuals

Rod Brooks, Colin Angle and Helen Greiner founded iRobot in 1990

Rodney Brooks with Baxter

Rethink Robotics - New York Times 18 Sep 2012
Grandfather of Scrum: Ikujiro Nonaka

The Japanese view Scrum as:
• A way of doing
• A way of being
• A way of life
Scrum team characteristics

- Scrum formation
  - Autonomy
  - Transcendence
  - Cross-fertilization

- Moving the Scrum downfield
  - Built-in instability
  - Self-organizing project teams
  - Overlapping development phases
  - “Multilearning”
  - Subtle control
  - Organizational transfer of learning
Theory: Scrum Origins

Project Management Styles

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)
Lean Enterprise Institute - Steve Bell
For Product Creation (Scrum = Lean)

- When Takeuchi and Nonaka studied high performing companies like Toyota and Honda they see cross-functional teams that:
  - are autonomous
  - are motivated by transcendent purpose
  - achieve mastery through cross fertilization

- Allan Ward looking at the same teams saw:
  - Entrepreneurial System Designer (ESD) - the Scrum Product Owner
  - Teams of Responsible Experts - the Scrum team
  - Set Based Concurrent Engineering - used by the first Scrum team and companies like Apple
  - Cadence, Pull, and Flow - Scrum sprint, self-management of work, and velocity
W. Edwards Deming taught the Japanese the PDCA cycle.

- **PLAN:** In Scrum, the Product Owner has a business plan and needs to execute it in a way that maximizes stakeholder value.
- **DO:** The ScrumMaster owns the process and facilitates the team that executes the plan.
- **CHECK:** The Product Owner inspects the results of team work in short cycles.
- **ACT:** The ScrumMaster facilitates a retrospective where the team discovers how to produce better results in the next cycle.

- **PLAN** means to avoid MURI, or unreasonableness
- **DO** means to avoid MURA, or to control inconsistencies
- **CHECK** means to avoid MUDA, or to find waste in outcomes
- **ACTION** indicates the will, motivation, and determination of the Management
# Taiichi Ohno’s Taxonomy of Waste

<table>
<thead>
<tr>
<th>Muda 無駄</th>
<th>In-Process Inventory</th>
<th>Partially implemented user stories, bug debt and incomplete work carried forward. Requires multiple handling, creates overhead and stress.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overproduction</td>
<td></td>
<td>Teams create low-priority features and make them self-justifying. This work squeezes capacity from the high-priority work.</td>
</tr>
<tr>
<td>Extra Processing</td>
<td></td>
<td>Bug debt, reactivations, triage, redundant testing, relearning of others’ code, handling broken dependencies.</td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td>Handoffs across roles, teams, divisions, and so on.</td>
</tr>
<tr>
<td>Motion</td>
<td></td>
<td>Managing tools, access rights, data transfer, lab setup, parallel release work.</td>
</tr>
<tr>
<td>Waiting</td>
<td></td>
<td>Delays, blocking bugs, incomplete incoming components or dependencies.</td>
</tr>
<tr>
<td>Correction</td>
<td></td>
<td>Scrap and rework of code.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Mura 斑</th>
<th>Unevenness</th>
<th>Varying granularity of work, creating unpredictability in the flow.</th>
</tr>
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<tbody>
<tr>
<td>Inconsistency</td>
<td></td>
<td>Different definitions of done, process variations that make assessment of “potentially shippable” impossible.</td>
</tr>
</tbody>
</table>

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<tr>
<th>Muri 無理</th>
<th>Absurdity</th>
<th>Stress due to excessive scope.</th>
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<tbody>
<tr>
<td>Unreasonableness</td>
<td></td>
<td>Expectations of heroic actions and commitments to perform heroic actions.</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
<td>Stress due to excessive overhead.</td>
</tr>
</tbody>
</table>
Chaos Theory - Attractor States

Trance State

Blue Pill
Not READY
Not DONE
Invisible blocks
Hard and painful

pain

Red Pill
Always READY
Always DONE
Blocks removed
Fun and easy

exhileration

Awake State

Your focus determines your reality! Jedi Master
Scrum Dynamic Model

Daily Meeting

Sprint

Value

READY

IMPEDIMENTS

DONE

KAIZEN

Velocity
Additional Lessons: Impediments

- Data driven removal of impediments using control charts from 11/2007

Examples on causes:
- Special competences
- Disk full
- Setup misunderstood
- COTS failed

Root cause analysis of time to fix automatically generates ScrumMaster’s impediment list.
Next Step: Story Process Efficiency

- When work allocated to sprint is READY, flow and stability is achieved

**Flow**

Objective: 60%

**Actual effort**

Objective: 50h
“Core Scrum” Exists Within an Environment of Supporting “Patterns”
Scrum Starter Kit

Patterns that will prevent common problems
published at scrumplop.org

1. How do you get started? (Stable Teams)
2. How do you successfully pull backlog into a sprint? (Yesterday’s Weather)
3. How do get defect free at the end of the sprint? (Daily Clean Code)
4. How do you get stuff done? (First Things First)
5. How do you deal with interruptions during the sprint? (Illigitimus non Interruptus)
6. How do you deal with emergencies? (Scrum Emergency Procedure)?
7. How do you ensure you continuously improve? (Scrumming the Scrum) (Happiness metric)
8. How do you get hyperproductive? (Teams that Finish Early Accelerate Faster)
Scrum or Scrum variants continue to make up more than two-thirds of the methodologies being used, while Kanban has entered the scene this year as a meager player. The only category that saw growth this year was Custom Hybrids (9% up from 5%).

- Scrum
- Scrum/XP Hybrid
- Custom Hybrid
- Don’t Know
- Kanban
- Scrumban
- Feature-Driven Development
- Extreme Programming XP
- Lean
- Other
- Agile Unified Process (AgileUP)
- Agile Modeling
- Dynamic Systems Development Method
Proven Track Record of Driving Breakthrough Business Results

Example: Revenue Growth at PatientKeeper

Revenue (millions USD)

PatientKeeper

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Effect of Enterprise Scrum on Time to Market
Citrix Online

![Graph showing the effect of Enterprise Scrum on time to market for Citrix Online.](image)
Effect of Enterprise Scrum on Market Share

Citrix Online

Web Conferencing Market Shares (World), 2009
- Adobe: 15%
- Cisco: 50%
- InterCall: 5%
- Microsoft: 13%
- Citrix Online: 13%

Total Market Size: $1.09 Billion

Web Conferencing Market Shares (World), 2010
- Adobe: 5%
- InterCall: 5%
- Cisco: 48%
- Microsoft: 12%
- Citrix Online: 14%

Total Market Size: $1.21 Billion
We are at a Tipping Point for Scrum


• Gladwell defines a tipping point as "the moment of critical mass, the threshold, the boiling point."[1] The book seeks to explain and describe the "mysterious" sociological changes that mark everyday life. As Gladwell states, "Ideas and products and messages and behaviors spread like viruses do."

• In July of 2012 there were 20,000 Scrum jobs open in the U.S.
• Today, there are 420,000 Scrum jobs open in the U.S.
Gartner Tipping Point
2012 Planning Guide: Application Delivery Strategies

- Business users are losing patience with old-school IT culture. Relationships are tense and resentful. Legacy systems and practices impede agility. Bottom line - GET AGILE
- Adopt a product perspective.
- Say goodbye to waterfall.
- Improve cross-competency collaboration.
- Launch a deep usability discipline.
- Start a technical debt management program.

An executive-only program, designed to explore critical business, technology and leadership strategies.

27-28 February, Dubai | 5-7 March, London | 25-27 March, Scottsdale
Market Tipping Point: Scrum Increasingly Used Outside of Software Development

GE Healthcare and Niko Group are using Scrum in both Software and Hardware sides of the business.

Tesla and SpaceX are manufacturing firms using Scrum in their product development groups.

ThoughtForms and SGH use Scrum teams to manage building design and construction.

Agile Schools helps elementary schools in the US apply Scrum principles to early learning.

OpenView Venture Partners uses Scrum to manage their VC fund’s portfolio group.

CWS-Boco is exploring ways to use Scrum across their laundry services business.
U.S. Dept of Defense Tipping Point

- 2010 Defense Acquisition Bill. These are the rules that the Department must follow when purchasing anything. Here’s the relevant section 804: IMPLEMENTATION OF NEW ACQUISITION PROCESS FOR INFORMATION TECHNOLOGY SYSTEMS.

- The key language is this:
  - (2) be designed to include—
  - (A) early and continual involvement of the user;
  - (B) multiple, rapidly executed increments or releases of capability;
  - (C) early, successive prototyping to support an evolutionary approach; and
  - (D) a modular, open-systems approach.

- Basically, for the DoD, Agile became the law.
POTUS: “DoD Will Be Agile”

“The United States is going to maintain our military superiority with armed forces that are **agile**, flexible and ready for the full range of contingencies and threats.”

- President Obama

“The US joint force will be smaller and leaner. But its great strength will be that it will be **more agile**, more flexible, ready to deploy quickly, innovative, and technologically advanced. That is the force for the future.”

- Secretary Panetta
Scrum’s Strengths Allow us to Rethink the Organization of Tomorrow

- Unlike traditional organizations, Scrum Scales linearly, without loss of output.

- Scrum breaks down command and control structures and enables self-organization as a means of unleashing employee potential.

- Scrum requires “Leadership” rather than “Management” leading to a different organizational model.

### Comparison of Organizational Models

<table>
<thead>
<tr>
<th>Bureaucracy</th>
<th>Leadership</th>
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<tbody>
<tr>
<td>Rigid rule enforcement</td>
<td></td>
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<tr>
<td>Extensive written rules and procedures</td>
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<tr>
<td>Hierarchy controls</td>
<td></td>
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<tr>
<td>Empowered employees</td>
<td></td>
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<tr>
<td>Rules and procedures as enabling tools</td>
<td></td>
</tr>
<tr>
<td>Hierarchy supports organizational learning</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Autocracy</th>
<th>Organic</th>
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</thead>
<tbody>
<tr>
<td>Top down control</td>
<td></td>
</tr>
<tr>
<td>Minimum rules and procedures</td>
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<td>Hierarchy controls</td>
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<td>Empowered employees</td>
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<tr>
<td>Minimum rules and procedures</td>
<td></td>
</tr>
<tr>
<td>Little hierarchy</td>
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</table>

**Disciplined**

- Organic
- Empowering

**Whimsical**

- Bureaucracy
- Autocracy
- Coercive
Breaking Down Command and Control

- 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
Scaling Agile @ Spotify
with Tribes, Squads, Chapters & Guilds

Henrik Kniberg & Anders Ivarsson
Oct 2012
Valve Corporation
A Sneak Peak at the Future of Scrum

California-based gaming company that has moved to an entirely agile org. structure
• No managers or performance reviews
• Work done by self-organizing “Cabals” composed of team members interested in a given project
• Any team member can propose a new project, but must convince others of its merits to get them to join the team

“Over time, we have learned that our collective ability to meet challenges, take advantage of opportunity, and respond to threats is far greater when the responsibility for doing so is distributed as widely as possible. Namely, to every individual at the company. We are all stewards of our long-term relationship with our customers.”
- Valve employee handbook

Valve is extremely successful, with revenues estimated at $1-2B, and profit per employee higher than either Google or Apple
Questions?