Agile and Scrum 101 from the Trenches - Lessons Learned

PMI Pittsburgh Professional Development Day
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www.sapir-cs.com
Michael Nir

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- President @ Sapir Consulting US LLC
- M.Sc. Engineering, PMP®, SAFe™ accredited
- Author of 10 bestseller business books
- Global clients - telecoms, hi-tech, software development, R&D environments and petrochemical & infrastructure

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Survey – your background
Change is Upon Us

“The average lifespan of a company listed in the Standard & Poor 500 index of leading US companies has decreased from 67 years in the 1920s to just 15 years today”

– Richard Foster, Yale

In 8 years time, “more than 3/4 of the S&P 500 will be companies that we have not heard of yet”

http://som.yale.edu/richard-n-foster

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Change is Upon Us

Average company lifespan on S&P 500 Index (in years)

Year (each data point represents a rolling 7-year average of average lifespan)

DATA: INNOSIGHT/Richard N. Foster/Standard & Poor’s

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Rethink Our Delivery Model

The Four Steps to the Epiphany - Successful Strategies for Products that Win
- Steve Blank

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“Put something in users hand and get real feedback ASAP.”

Drew Houston, Dropbox
Agile Paradigm Shift
Agile Process Elements

Backlog → Items

Plan

Collaborate

Deliver

Daily Review

Iteration

Release

Feedback

Deliverable
Scrum Video
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 product (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 product and decide to release it as is or continue to enhance it for another sprint.
Scrum Overview

- 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”
Pain Points?
Coach View – Best Practices

- Agile mindset wins, be wrong early, think about scaling from day one;
- Focus on what counts: product owner, team dynamics, time boxing;
- It is all about fast feedback, all else is superfluous.
Avoid Anti Patterns

• Scrum zealots
• Discussing story points to death
• Going through the motions instead of being an Agile Jedi
• Skipping reviews and retrospectives
Putting it all Together

Product Backlog

Sprint Backlog

Daily Scrum Meeting

24 Hours

2-4 Weeks

Potentially Shippable Product Increment

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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
Agreement!
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
- Scrum Master
- Team

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

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

Roles
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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
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 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
• The secret of the Definition of Done!
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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

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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 Scrum Master
• 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)
Story Estimating – Discussion

• What do you know about Agile estimating – teams of three discussion
• If relevant to your experience:
  • Identify pros for story pointing
  • Identify challenges for story pointing
  • What are practices that make story pointing successful?
Survey

Share the previous slide discussion using the Survey –

*limit yourself to three items*
Story Estimating – Review

• Estimate Stories with relative Story points
• The team estimates together in a bias free approach
• Story points are relative; they are not connected to any specific unit of measure
• A Story point is a singular number that represents:
  • Volume: how much is there?
  • Complexity: how hard is it?
  • Knowledge: what do we know?
  • Uncertainty: what’s not known
Story Estimating

• Use Estimating Poker to relatively estimate the mass of a set of animals
• As a team at your table, identify the smallest animal and mark it as 1
• Estimate the remaining animals using values 1, 2, 3, 5, 8, 13, 20, 40, 100
The Daily Scrum

- Parameters
  - Daily
  - 15-minutes
  - Stand-up
- Not for problem solving
  - Whole world is invited
  - Only team members, Scrum Master, 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 Scrum Master
• 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
- Scrum Master
- 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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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>
</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
The Bare Essentials – Tomorrow!

- Train the teams!
- Create/Refine the product backlog!
- Estimate and commit to a fixed duration delivery
- Run retrospective
Create PBIs – Product Backlog Items

• In teams of three Identify:
  ➢ Product Owner
  ➢ Team member
  ➢ Business stakeholder

• The Business Stakeholder shares items from their work related backlog
  The product owner captures them, each item has value to the users or customers of the product (if relevant)

• The team member asks questions to clarify the stories

• As a team identify acceptance criteria

• Assign size as a team – relative sizing of all the items – Prioritize the backlog together

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## 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>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>8</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A Sprint Burndown Chart
<table>
<thead>
<tr>
<th>Tasks</th>
<th>Mon</th>
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</tr>
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<tbody>
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<td>10</td>
<td>7</td>
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<table>
<thead>
<tr>
<th>Hours</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
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<td>50</td>
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<td>40</td>
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<td>30</td>
<td>16</td>
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<td>20</td>
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<tr>
<td>10</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

- Tasks: Code the user interface, Code the middle tier, Test the middle tier, Write online help.
- Hours: 50, 40, 30, 20, 10, 0.
- Days: Mon, Tue, Wed, Thu, Fri.
Kanban Video
Kanban and Scrum

Next 2  Analysis 3  Development 3  Acceptance 2  Prod

- **Definition of Done:**
  - Goal is clear
  - First tasks defined

- **Definition of Done:**
  - Code clean & checked in on trunk
  - Integrated & regression tested

- **Definition of Done:**
  - Customer accepted
  - Ready for production

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Agile Project Management With Scrum and Much More

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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
- Other Scaling models...SAFe®
Scaling through the Scrum of Scrums
Scaling through SAFe
Agile Project Management With Scrum and Much More

SAFe® 4.0 for Lean Software and Systems Engineering

Enterprise
- Strategic Themes
- Program Portfolio Mgmt
- Epic Owners
- Enterprise Architect

Coordination
- Value Streams
- Enabler
- Epic
- Enabler
- Epic

Economic Framework
- VSE
- Solution Mgmt
- Solution Arch/Eng
- Epics

Solution Demo
- Enabler
- PI Objectives
- Capability
- Solution Context

AGILE RELEASE TRAIN
- RTE
- System Arch/Eng
- Product Mgmt

Release Any Time
- Enablers
- Exploration
- Architecture
- Infrastructure

SW HW
- Agile Team
- Product Owner
- Scrum Master

Develop on Cadence
- Built-in Quality
- Core Values
- Lean Agile Mindset
- SAFe Principles
- System Development Life Cycle (SDLC)

Provided by Scaled Agile, Inc.

www.sapir-cs.com, Boston MA
sapir@sapir-cs.com
Agile Project Management With Scrum and Much More
SAFe 4.0 for Lean Software and Systems Engineering
Assessing the Culture Change

Agile and ‘traditional’ speak different languages

**Estimate:**
- Team: we were wrong…it’s a learning process…let’s retro
- Management: #$@!%^
It’s not the same language

Deadline:

• Management: our clients are looking for...

• Team: this is not part of the Agile Manifesto or Scrum handbook, Software is difficult to predict
It’s not the same language -

**Commitment:**

- Executive: You said it will be delivered in two weeks
- Team: I’ve committed to commit I didn’t commit to deliver
Let’s investigate further

Agile leadership and the shoe continuum

Business Portfolio  Extreme Agile

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Extreme Agile – the zealot
The Scrum Master
Product owner or coach
Agile in the cold
PMO comfortable
PMO portfolio level
Agile leadership and the shoe continuum

How do we make it work???
The Agile Manifesto
Agile Process

Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

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

That is, while there is value in the items on the right, we value the items on the left more.

Kent Beck  James Grenning  Robert C. Martin
Mike Beedle  Jim Highsmith  Steve Mellor
Arie van Bennekum  Andrew Hunt  Ken Schwaber
Alistair Cockburn  Ron Jeffries  Jeff Sutherland
Ward Cunningham  Jon Kern  Dave Thomas
Martin Fowler  Brian Marick

Source: http://agilemanifesto.org/

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Agile Principles 1-6

• Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
• Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
• Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
• Business people and developers must work together daily throughout the project.
• Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
• The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
Agile Principles 7-12

- Working software is the primary measure of progress.
- Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
- Continuous attention to technical excellence and good design enhances agility.
- Simplicity—the art of maximizing the amount of work not done—is essential.
- The best architectures, requirements, and designs emerge from self-organizing teams.
- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.
Culture Change

In teams of four discuss what is the cultural change required to embrace Agile Scrum values:

– Review the manifesto and principles
– Using the following slide of four Agile/Scrum values, capture what would the ideal look like
– Using the subsequent slide of four Agile/Scrum values, capture what the current state in your organization is
– How would you mitigate the gap?
<table>
<thead>
<tr>
<th>Collaboration</th>
<th>Empowerment</th>
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<tbody>
<tr>
<td><strong>Ideal:</strong></td>
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<table>
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<tr>
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<th>Servant Leadership</th>
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<tbody>
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<td><strong>Ideal:</strong></td>
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Culture Change
Summary:
Agile approach - Scrum process

The Agile: Scrum Framework at a glance

Inputs from Executives, Team, Stakeholders, Customers, Users

Product Owner

The Team

Sprint Backlog

Sprint Planning Meeting

Team selects starting at top as much as it can commit to deliver by end of Sprint

Sprint Backlog

Task Breakout

Sprint end date and team deliverable do not change

1-4 Week Sprint

Every 24 Hours

Burndown/up Charts

Scrum Master

Daily Scrum Meeting

Sprint Review

Finished Work

Sprint Retrospective

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Team Retro – One take away

The Agile PMO – great results NOW
A Scrum Reading List

- User Story Mapping by Jeff Patton
- Critical Chain Project Management by Eli Goldratt
- Silent Influencing by Michael Nir
- Scrum and XP from the Trenches by Henrik Kniberg
- Switch: How to Change Things When Change Is Hard by Heath
- The Lean Startup by Eric Ries
- Kanban and Scrum - Making the Most of Both by Henrik Kniberg
- Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation by Tim Brown
- Agile Retrospectives by Esther Derby and Diana Larsen
- Building Highly Effective Teams by Michael Nir

Portions of this presentation are from Mike Cohn

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You are ready to start Scrumming

Thank You