Using Scrum to Manage the Testing Effort

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Outline

- Primer on the SCRUM agile methodology
  - Pulling out core SCRUM practices that may be applied to testing efforts
- Within a testing context:
  - Backlogs
  - Sprints and goals
  - Daily SCRUM – dynamics
  - Tracking progress
  - Retrospective
  - Conclusions / Q&A

Introduction & Goals

This presentation is less about Scrum the methodology and more about applying Scrum practices within your testing teams and efforts. In essence, wrapping Scrum around your existing efforts.

Key goals for the talk include:

1. Expose you to the Scrum methodology
2. Spur your thinking about possible application of Scrum attributes to your testing projects
3. Sensitize you to the power of self-directed teams
4. No silver bullets, but motivate you to try it

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.

Principles behind the Agile Manifesto

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.

Principles behind the Agile Manifesto

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.

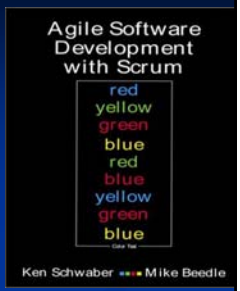
The best architectures, requirements, and designs emerge from self-organizing teams.

At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

Scrum Primer

Scrum Introduction

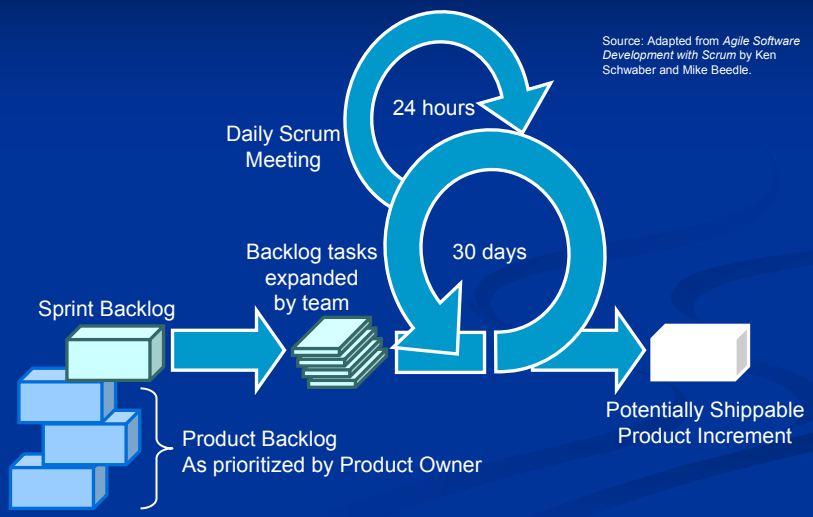
- Jeff Sutherland – first implemented Scrum at Easel Corp. in 1993
- Ken Schwaber provided initial formal definitions in 1995 paper and at OOPSLA 96
- ASD w/Scrum book published in 2001 by Schwaber and Mike Beedle
- APM w/Scrum published in 2004
- Applied to hundreds of projects
- View it as an "Agile Project Management wrapper" for software projects



Scrum Characteristics

- One of the Agile Methodologies, a Project Management "Wrapper"
- Fosters self-organizing teams
- Product progresses or iterates in a series of month-long "sprints"
- Requirements are captured as items in a "product backlog" list
- No specific engineering practices prescribed
- Uses generative rules to create an agile environment for delivering projects

Scrum Overview



Scrum
Roles & Responsibilities

- ScrumMaster
  - SCRUM PM, filled by PM or Team leader
  - Responsible for enacting Scrum values and practices
  - Main job is to remove impediments
- Product Owner
  - Contributes to the Product Backlog and Sprint Goals
  - Prioritizes the Backlog
  - Typically a Product Manager, Marketing, Internal Customer, Real Customer, etc.

Scrum
The Team

- Typically 5-10 people
- Cross-functional
  - QA, Programmers, Analysts, UI Designers, etc.
- Members should be full-time
  - May be exceptions (e.g., System Admin, etc.)
- Teams are self-organizing
  - What to do if a team self-organizes someone off the team??
  - Ideally, no titles but rarely a possibility
- Focused teams – membership can change only between sprints

Scrum Sprints

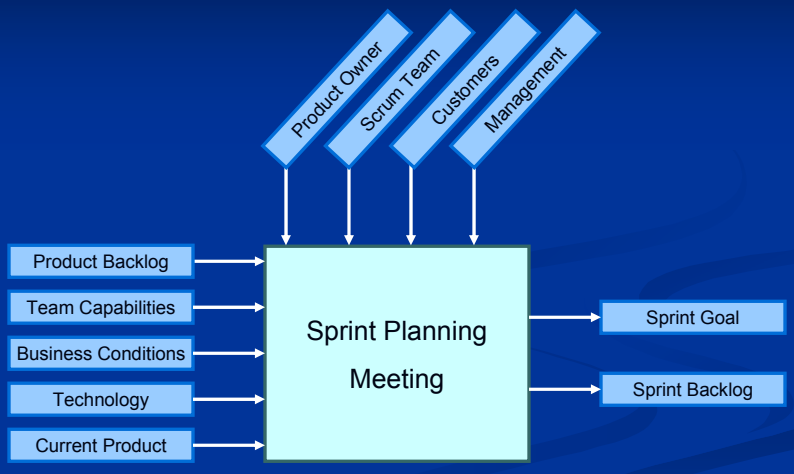
- Scrum projects make progress in a series of "sprints"
  - Analogous to XP iterations
- Target duration is one month
  - +/- a week or two, but a constant duration leads to a better rhythm
- Product is designed, coded, and tested during the sprint
  - As in XP, target is working, production level code
- No changes are allowed during the sprint

Scrum Product Backlog

- A list of all desired work on the project, usually a combination of
  - story-based work ("let user search and replace")
  - task-based work ("improve exception handling")
- List is prioritized by the Product Owner
  - Typically a Product Manager, Marketing, Internal Customer, etc.

	Item #	Description	Est	By
Very High				
	1	**Finish database versioning**	16	KH
	2	**Get rid of unneeded shared Java in database**	8	KH
	-	**Add licensing**	-	-
	3	Concurrent user licensing	16	TG
	4	Demo / Eval licensing	16	TG
		Analysis Manager		
	5	File formats we support are out of date	160	TG
	6	Round-trip Analyses	250	MC
High				
	-	**Enforce unique names**	-	-
	7	In main application	24	KH
	8	In import	24	AM
	-	**Admin Program**	-	-
	9	Delete users	4	JM
	-	**Analysis Manager**	-	-
	10	When items are removed from an analysis, they should show up again in the pick list in lower 1/2 of the analysis tab	8	TG
	-	**Query**	-	-
	11	Support for wildcards when searching	16	T&A
	12	Sorting of number attributes to handle negative numbers	16	T&A
	13	Horizontal scrolling	12	T&A
	-	**Population Genetics**	-	-
	14	Frequency Manager	400	T&M
	15	Query Tool	400	T&M
	16	Additional Editors (which ones)	240	T&M
	17	Study Variable Manager	240	T&M
	18	Haplotypes	320	T&M
	19	**Add icons for v1.1 or 2.0**	-	-
	-	**Pedigree Manager**	-	-
	20	Validate Derived kindred	4	KH
Medium				
	-	**Explorer**	-	-
	21	Launch tab synchronization (only show queries/analyses for logged in users)	8	T&A
	22	Delete settings (?)	4	T&A

Sprint Planning Meeting



The Sprint Goal

- A short "theme" for the sprint:

Life Sciences

"Support features necessary for population genetics studies."

Database Application

"Make the application run on SQL Server in addition to Oracle."

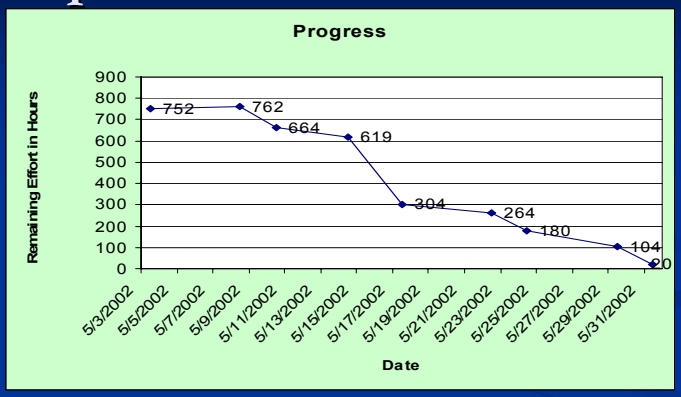
Financial Services

"Support more technical indicators than company ABC with real-time, streaming data."

From Sprint Goal to Sprint Backlog

- A Scrum team takes the Sprint Goal and decides what tasks are necessary
- Team self-organizes around *how* they'll meet the Sprint Goal
  - Managers don't assign tasks to individuals
  - Managers don't make decisions for the team
- ScrumMaster will facilitate team alignment towards Goal
- Sprint Backlog is created & used to drive work during the sprint

Sprint Burndown Chart



Burndown charts reflect total work planned moving towards Sprint completion. Scrum emphasizes the notion of seeing work reduce over the life of the sprint as a fundamental metric for progress. The charts can reflect a wide variety of work products.

Daily Scrum Meetings

- Dynamics
  - Daily, 15-minute, Stand-up meeting, Facilitated by ScrumMaster. Not for problem solving
- Three questions:
  1. What did you do yesterday?
  2. What will you do today?
  3. What obstacles are in your way?
- Attendees are "pigs" and "chickens" –
  - Pigs (team) speak to above questions
  - Chickens (interested observers) attendance helps to avoid other unnecessary meetings

Sprint Review Meeting

- 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
- Participants
  - Customers, Management
  - Product Owner, ScrumMaster, Scrum team
- Can also morph into a retrospective for lessons learned and in making adjustments for the next sprint

Leveraging Scrum for your Testing

Driving Forces

- Simply put – Scrum is a PM "wrapper" – so why not leverage it within your testing efforts?
- Support iterative testing
  - Backlog, sprint goal driven, team orchestrated
  - Measured (burndown) progress to goal
  - Daily meetings
- Derive clarity with stakeholders for testing focus, sequence and outcomes
- Simple PM model – team led, not command led

Application Notes

- Independent of a full Scrum implementation, targeting testing teams / efforts
- Larger teams (2-10+ testers) and independent testing
- Can be applied across the testing of a "series" of products and/or releases
- Can also be applied towards
  - Planning steps
  - Lab setup, testing preparation
  - Team breaks and employee development / training

SCRUM-in-Testing Overview

Test Sprint Backlog

- Identify a "backlog" of testing activities for the entire project
- Prioritize them within the team. In this case:
  - Customer and Product Owner
  - Development team
  - Testing team
- This becomes your testing flow and strategy for attacking the product
  - Use risk based techniques to identify tasks, phasing and focus

Test Sprint Backlog

Testing task	Priority	Sprint Timing
C1 – Functional – Basic search	1	1
C1 – Functional – Content access	2	2
C1 – Regression	3	2
C1 – Verification	1	1
C1 – Smoke & acceptance	1	1
C1 – Load / baseline	3	2
C2 – Functional – Adv. Search	1	3/4
C2 – Functional – Shopping cart	1	3
C2: Functional – Ordering & billback	2	3
C3 – Regression	3	4
C3 – Exploratory, Searching	2	4
C3 – Load / Production	1	3

- Example backlog from a RUP – Enterprise document search application
- Backlog ordered collaboratively –
  - Delivery
  - Coverage
  - Time
  - Risk

Test Sprints

- Testing cycles as sprints
- The duration can vary by team and product, but create a tempo for your testing intervals
  - Keep the tempo consistent!
  - 1-2 weeks, most of my experience is with 2 week intervals
  - Tied to ratio's of developer (output) to tester (productivity and scope)
- Can also include lab setup, test design, automation, planning and post-release testing activities

Test Sprint Goals

- Goals should be meaningful and focusing
- They should evolve along the product maturity evolutionary path
- They should guide the team towards decisions, not presupposing the steps
- Should consider previous and upcoming goals – overall workflow
- RUP
  - E1, E1 – Elaboration / preparation sprints
  - C1, C2, C3 – Functional testing sprints
- XP – Iteration acceptance testing
- Types of coverage:
  - Requirements tracing, % coverage
  - Performance and load
  - Usability, focus groups
  - Alpha, Beta readiness

The Sprint Goals Examples

- A short "theme" for the sprint:

XP Release

"With the customer, run all acceptance tests for XP iteration #12."

Database Application

"Develop load testing strategy and design scripts for production release using Oracle upgrade and new clustering ."

RUP Product Release

"Functionally test all C1 delivered Use Cases."

Burndown Charts & Metrics

- Apply the notion of burndown charts to whatever makes sense within the context of the Test Sprint. For example:
  - Test case execution rates
    - % manual complete, % automation complete, % blocked
  - Total # of lab setup tasks, rigs setup, production environment instances setup
  - Defect repair verifications
  - Test cases designed and reviewed
  - Automated tests completed and deployed
  - Regression coverage percentages

Daily Test Scrum Meetings

- Every day, entire team, I prefer first thing in the morning
- Same 3 questions
- Advantages to including specific "chickens" –
  - Development (quality, challenges, assistance, prioritization)
  - PM & Executives (general progress, challenges, testing focus and prioritization)
  - Business (health checks)
- Progress, issue management, working towards goal – as a team

Test Sprint Review

- No more than a 1 hour meeting
- Scrum provides a wonderful mechanism for very fast –
  - Sprint accomplishment review
  - Work (Sprint Backlog) carryover into next sprint
  - Identify adjustments for the next sprint
- Then carry this into your next Sprint Goal / Sprint Planning session
- Oft times in testing we miss interim reflection or review steps – waiting until the end of the project

Break out
Using Scrum Yourselves

- Break into small groups:
  - Discuss possible integration of Scrum into the groups' existing work environments and teams
  - What do you perceive to be the useful bits to apply
  - What might not be useful, and why?
  - What would be the key challenges for adoption – in your specific contexts?
  - And what could you do to overcome the challenges?
  - Let's de-brief and share...

Testing with Scrum
Wrap-up

- Get over the silly names and animal references ☺
- Scrum aligns well to software testing "cycles"
- Simple attributes:
  - Backlog -> Iterative testing sprints
  - Goals -> Self directed teams
  - Daily feedback loop, burndown progress
  - End of sprint assessment and future adjustments
- Value can be derived from using bits & pieces
- Self directed – increased buy-in, empowerment and fun!

Thank you for taking the time!

Any questions?

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Acknowledgement

- I want to thank Mike Cohn for making available a set of introductory slides for Scrum. I used those slides for most of the content in the "Primer" section. They are made available under –

- Mike has a wonderful website where this and other presentations are available on Scrum and XP Planning / Stories – www.mountaingoatsoftware.com

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