An Introduction to Scrum

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Outline

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- Functionality of Scrum
- Scrum Framework
  - Scrum Roles
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- Scaling Scrum

Introduction

Classical methods of software development have many disadvantages:

- *huge effort during the planning phase*
- *poor requirements conversion in a rapid changing environment*
- *treatment of staff as a factor of production*

➢ *New methods:*

Agile Software Development Methodology

What is Agile ?

- Agile proponents believe
  - Current software development processes are too heavyweight or cumbersome
    - Too many things are done that are not directly related to software product being produced
  - Current software development is too rigid
    - Difficulty with incomplete or changing requirements
    - Short development cycles (Internet applications)
  - More active customer involvement needed
    - CMM focuses on process

What is Agile ? (Continued)

- Agile methods are considered
  - Lightweight
  - People-based rather than Plan-based
- Several agile methods
  - No single agile method
  - XP most popular
- No single definition
- Agile Manifesto closest to a definition
  - Set of principles
  - Developed by Agile Alliance

Agile Manifesto

A Statement of Values

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan
- http://www.agilemanifesto.org

Agile Methods

- Agile methods:
  - Scrum
  - Extreme Programming
  - Adaptive Software Development (ASD)
  - Dynamic System Development Method (DSDM)
  - …
- Agile Alliance (www.**agilealliance**.org)
  - A non-profit organization promotes agile development

Scrum

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. Our teams self-manage 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 for another iteration.

What is Scrum?

- Scrum is an agile approach for developing innovative products and services
- Begin by creating a product backlog – a prioritized list of the features and other capabilities need to develop a successful product
- Guided by the product backlog, you always work on the most important or highest-priority items first
- When you run out of resources (e.g., time, money), any work that didn't get completed will be of lower priority than the completed work

What is Scrum? (continued)

- The work itself is performed in short, timeboxed iterations, which usually range from a week to a calendar month
- During each iteration, a self-organizing, cross-function team does all of the work – design, implementing and testing – required to produce completed, working features that could be put into production
- To start each iteration, the team plans with high-priority subset of the product backlog to create in the upcoming iteration
- At the end of iteration, team review the completed features with stakeholders to get feedback. Based on the feedback, the product owner and team can alter both what they plan to work on next and how the team plans to do the work

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”

Scrum Framework

- Scrum is not a standardized process where you methodically follow a series of sequential steps that guaranteed to produce on time, on budget, a high-quality product
- Scrum is a framework for organizing and managing work
- The scrum framework is based on a set of values, principles and practices that provide the foundation to which your organization will add its unique implementation of relevant engineering practices and your specific approaches for realizing the scrum practice
- The result is a version of scrum that is uniquely yours

Scrum Practice

- Roles
  - Product owner
  - Scrum master
  - Development team
- Activities
  - Sprint
  - Sprint planning
  - Daily scrum
  - Sprint execution
  - Sprint review
  - Sprint retrospective
  - Product backlog grooming
- Artifacts
  - Product backlog
  - Sprint backlog
  - Potential shippable product increment
- Rules

Product Owner

- Responsible for what will be developed and in what order
- Is the empowered central point of product leadership
- The single authority responsible for deciding which features and functionality to build and the order to build
- Maintains and communicates to all other participants a clear vision of what the team is trying to achieve
- He is responsible for the overall success of product

Product Owner (continued)

- 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 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

Scrum Master (continued)

- Scrum master is a leader, not a manager
- Help the team to understand and embrace the Scrum values, principles, and practices
- As a coach, provides leadership and helps the scrum team to their own organization-specific Scrum approach
- Help managing the challenges occur during a Scrum adoption
- As a facilitator, the Scrum master helps the team resolve issues and make improvement to its use of Scrum
- Responsible for protecting the team from outside interference, and take a leadership role in removing impediments that inhibit team productivity

Development team

- Traditional software development has various job types, such as architect, programmer, tester, UI designer, DB admin etc
- Scrum defines the role of a development team, which is simply a diverse, cross-functional collection of these types of people who are responsible for designing, implementing, and testing the desired product
- The development team must do all of the work to produce one or more vertical slices of working product functionality each sprint
- So we need a team that is skilled at all of those tasks

Development Team (continued)

- Typically 5-10 people
- Cross-functional
  - QA, Programmers, 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
- Membership can change only between sprints

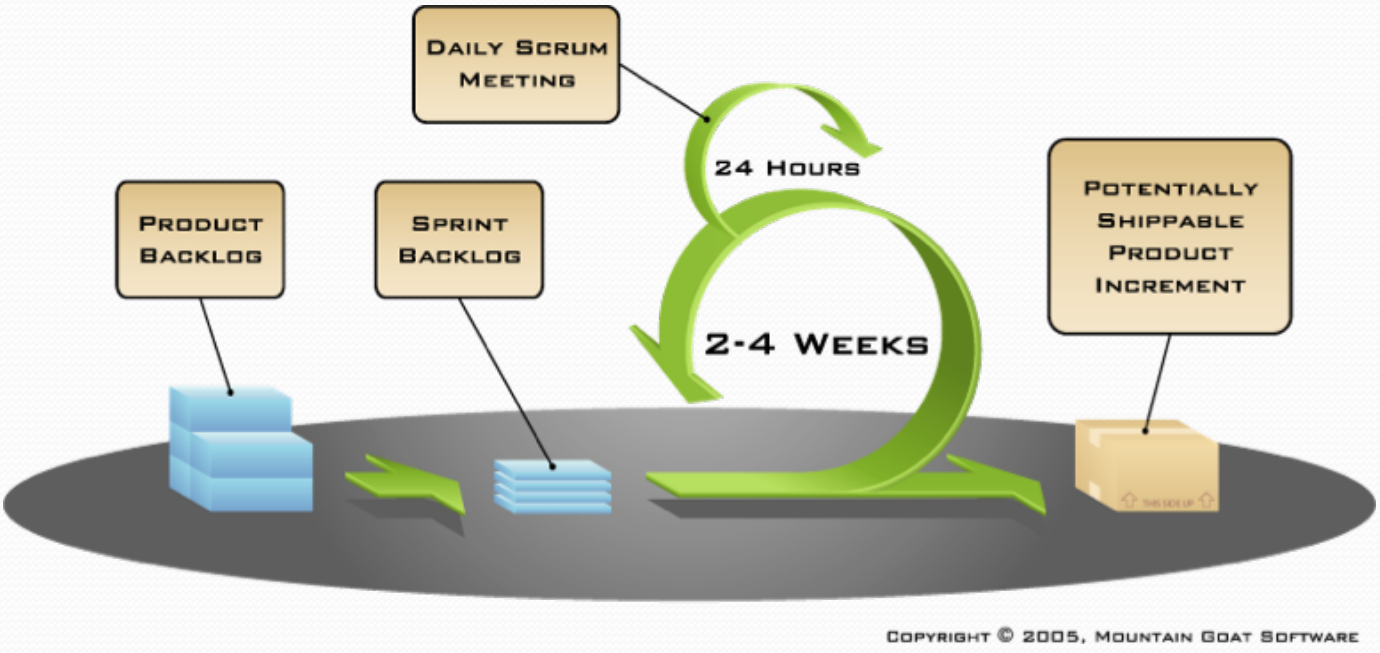
Scrum Activities and Artifacts

- Product backlog
- Sprint planning
- Sprint backlog
- Daily scrum
- Sprint execution
- Potentially shippable product increment
- Sprint review
- Sprint retrospective

Pre-Project/Kickoff Meeting

- A special form of Sprint Planning Meeting
- Meeting before the begin of the Project

How Scrum Works?



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.

Product Backlog

- Requirements for a system, expressed as a prioritized list of Backlog Items
- Is managed and owned by a Product Owner
- Spreadsheet (typically)
- Usually is created during the Sprint Planning Meeting
- Can be changed and re-prioritized before each PM

log

	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

- A month-long iteration, during which is incremented a product functionality
- NO outside influence can interfere with the Scrum team during the Sprint
- Each Sprint begins with the Daily Scrum Meeting

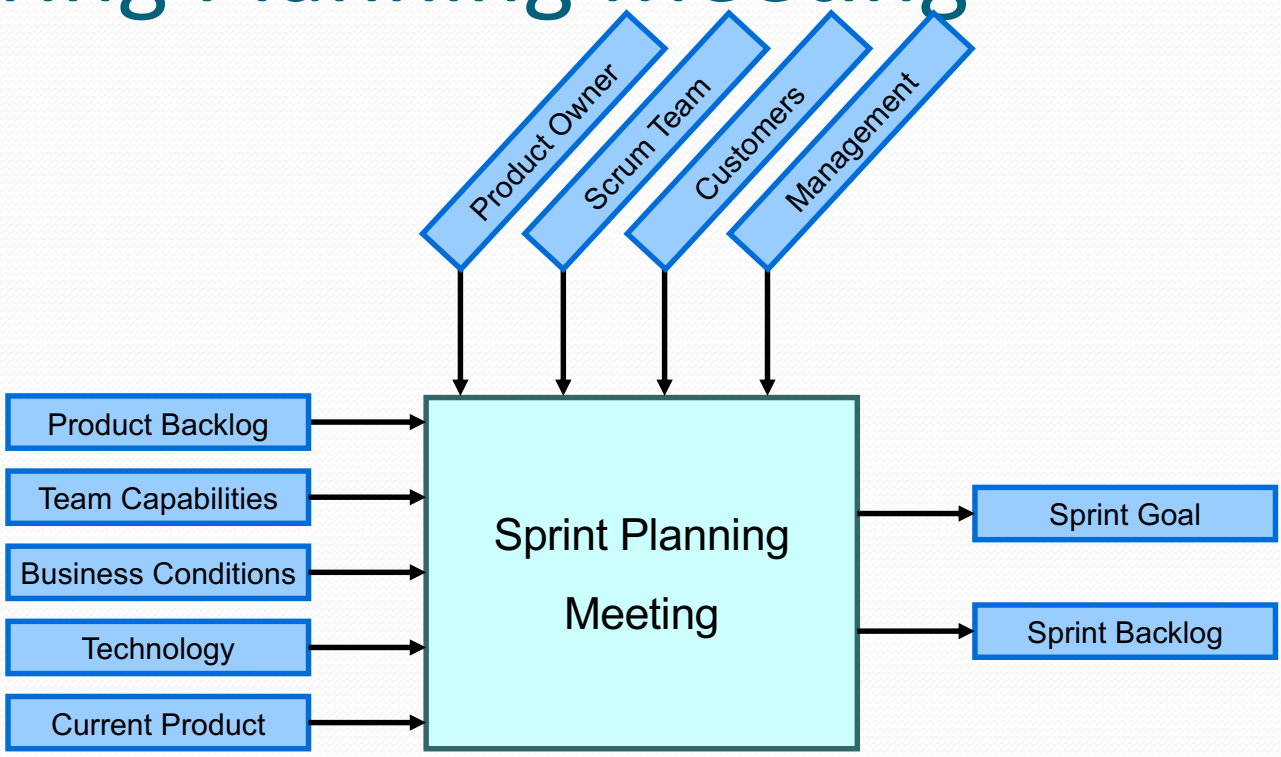
Sprints

- Scrum projects make progress in a series of "sprints"
  - Analogous to XP iterations
- Sprints are timeboxed so they always have a fixed start and end date, and generally they should all be of the same duration
- 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

Parts of Sprint Planning Meeting

- 1st Part:
  - Creating Product Backlog
  - Determining the Sprint Goal.
  - Participants: Product Owner, Scrum Master, Scrum Team
- 2nd Part:
  - Participants: Scrum Master, Scrum Team
  - Creating Sprint Backlog

Spring Planning Meeting



From Sprint Goal to Sprint Backlog

- Scrum team takes the Sprint Goal and decides what tasks are necessary
- Team self-organizes around how they' ll meet the Sprint Goal
  - Manager doesn' t assign tasks to individuals
- Managers don' t make decisions for the team
- Sprint Backlog is created

Sprint Backlog during the Sprint

- Changes
  - Team adds new tasks whenever they need to in order to meet the Sprint Goal
  - Team can remove unnecessary tasks
  - But: Sprint Backlog can only be updated by the team
- Estimates are updated whenever there's new information

Sprint Backlog

- A subset of Product Backlog Items, which define the work for a Sprint
- Is created ONLY by Team members
- Each Item has it's own status
- Should be updated every day

Sprint Backlog

- No more than 300 tasks in the list
- If a task requires more than 16 hours, it should be broken down
- Team can add or subtract items from the list. Product Owner is not allowed to do it

Samp

	Days Left in Sprint	15	13	10	8	
Who	Description	7/22/2002	7/24/2002	7/26/2002	7/31/2002	
	Total Estimated Hours:	**554**	**458**	**362**	**270**	**0**
-	**User's Guide**	-	-	-	-	-
SM	Start on Study Variable chapter first draft	16	16	16	16	
SM	Import chapter first draft	40	24	6	6	
SM	Export chapter first draft	24	24	24	6	
	Misc. Small Bugs					
JM	Fix connection leak	40				
JM	Delete queries	8	8			
JM	Delete analysis	8	8			
TG	Fix tear-off messaging bug	8	8			
JM	View pedigree for kindred column in a result set	2	2	2	2	
AM	Derived kindred validation	8				
	Environment					
TG	Install CVS	16	16			
TBD	Move code into CVS	40	40	40	40	
TBD	Move to JDK 1.4	8	8	8	8	
	Database					
KH	Killing Oracle sessions	8	8	8	8	
KH	Finish 2.206 database patch	8	2			
KH	Make a 2.207 database patch	8	8	8	8	
KH	Figure out why 461 indexes are created	4				

Sprint Execution

- Once the scrum team finishes sprint planning and agrees on the content of the next sprint
- Guided by Scrum master's coaching, performs all of the task-level work necessary to get the features done
- "done" means there is a high degree of confidence that all of the work necessary for producing good-quality features has been completed
- The team members define their own task-level and self-organizing in any manner they feel is best for achieving the sprint goal

Daily Scrum

- Parameters
  - Daily
  - 15-minutes
  - Stand-up
  - 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?

Daily Scrum

- Is NOT a problem solving session
- Is NOT a way to collect information about WHO is behind the schedule
- Is a meeting in which team members make commitments to each other and to the Scrum Master
- Is a good way for a Scrum Master to track the progress of the Team

Inspect-and-Adapt activities

- Sprint review – product
- Sprint Retrospective – process

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
  - Other engineers

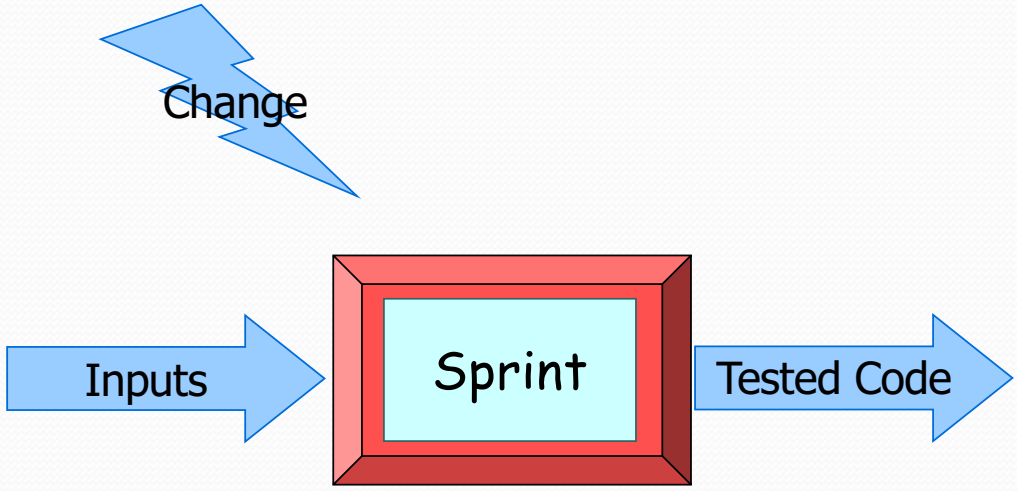
Sprint Review

- A successful review results in bidirectional information flow
- 1. People who are not on the scrum team get to sync up on the development effort and help guide its direction
- 2. scrum team members gain a deeper appreciation for the business and marketing side of their product by getting frequent feedback on the convergence of the product toward delighted customers or users

Sprint Retrospective Meeting

- Occur after sprint review and before the next sprint planning
- Focus on continuous process improvement
- Scrum Team only
- Feedback meeting
- Three questions
  - Start
  - Stop
  - Continue

No changes during the sprint



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

Scrum FAQs

- Why daily?
  - "How does a project get to be a year late?"
    - "One day at a time."
      - Fred Brooks, The Mythical Man-Month.
- Can Scrum meetings be replaced by emailed status reports?
  - No
    - Entire team sees the whole picture every day
    - Create peer pressure to do what you say you'll do

References

- https://www.scrumalliance.org
- https://www.scrum.org
- http://agilemanifesto.org