A Brief Introduction to Scrum
An Agile Methodology

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Presentation Outline

- Introduction to Scrum
- Origins of Scrum
- Definitions & Principles
- Benefits & Risks
Caveats & Disclaimers

- Focused on “core” Scrum as defined in “ScrumGuide” by Ken Schwaber and other introductory Scrum texts
- Presentation is a summary of a two-day class – all topics are touched upon but summarized and simplified
- Scrum and the Scrum community are evolving - many weaknesses have been or are being addressed
An “agile” methodology

Supports the Agile Manifesto:

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

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Agile Methodologies

- Extreme Programming
- MSF for Agile Software Development
- Crystal
- Scrum
- Feature Driven Development
- Adaptive Software Development
- Dynamic Systems Development Method
Why Talk About Scrum?

- Popular
- Powerful
- Easy to learn

But…..

misunderstandings abound
“All models are wrong, some are useful…..”

George Box, industrial statistician
Popularity of the Scrum Model

- Basic principles are easy to understand
- Technology and tool agnostic
- Built on several time-tested techniques
- Utilizes team-of-peers management approach
History of Scrum

- Inspired from approach defined in 1986 by H. Takeuchi and I. Nonaka
- Term “scrum” used in “Wicked Problems, Righteous Solutions” by DeGrace and Stahl in 1991
A Rugby Scrummage
Definition of Scrum

“Scrum…is a framework within which you can employ various processes and techniques…within which complex products can be developed”

Scrum Principles

- Time-boxes
- Cross-functional teams
- Open communications
  - Within team
  - With stakeholders
- Priorities set by Product Owner
- Demonstrable results
- Responsive to change
The Process

- **Daily Scrum Meeting**
- **Product Backlog**
- **Sprint Backlog**
- **Potentially Shippable Product Increment**

24 hours

2-4 weeks

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Scrum Terms

- **Team**
  - ScrumMaster
  - Scrum Team
  - Product Owner
  - Users & Stakeholders

- **Sprint**

- **Backlog**
  - Product
  - Sprint

- **Meetings**
  - Daily scrum
  - Planning
  - Review
  - Retrospective

- **Burndown**
  - Chart
  - Velocity
The Team

- **ScrumMaster**
  - Not “command & control” project manager
  - Process coach and team facilitator
  - Remover of roadblocks

- **Scrum Team**
  - Individuals responsible for the Sprint results
  - Mix of skills representing multiple disciplines
  - Usually 6-8 individuals

- **Product Owner**
  - Individual responsible for product
    - Responsible for product profitability (ROI)
  - Adjusts feature list and priorities for each Sprint
  - Accepts or rejects work results

- **Users & Stakeholders**
  - Interested in results but not responsible for deliverables
The Sprint

- **Time boxed effort**
  - Usually 2 weeks to 1 month
  - Can be longer or shorter

- **Defined workload**
  - No changes once Sprint is begun
  - If workload changes, Sprint restarted

- Begins with Planning Meeting

- Ends with demonstrable Release
Product Backlog

- All features and functions for final product
- May be subdivided into releases
- Prioritized by Product Owner
- Initial backlog is established and releases are defined prior to start of Sprints
- Product backlog is reviewed and updated throughout the project
- Time must be allotted during Sprints to allow for this activity
Sprint Backlog

- Features and functions targeted for a single Sprint
  - Frequently broken down into User Stories; especially if function is complex
- May include technical requirements or objectives
  - e.g.; database design, UI standards, architecture documentation
Meetings

- **Sprint Planning**
  - Sprint goal and functionality objectives
  - Sprint tasks identified

- **Daily Scrum**

- **Sprint Review**

- **Sprint Retrospective**

Scrum meetings are time-boxed and occur on a regular schedule!
Sprint Planning

- Product Owner and Team
- Review of Product Backlog
- Product Owner provides definition and details of features and functions
- Negotiation of what will be in Sprint
- May identify new Product Backlog needs
- Results in Sprint Goals
Sprint Task Definitions

- Sprint Team meeting
- Immediately follows Sprint Planning
- Breaks work into tasks
  - 4-16 hours of effort each
  - Identifies interdependencies
- Results in Sprint Backlog
- Tasks are prioritized by team
Daily Scrum

- Standup 15 minute meeting
- Each team member answers 3 questions:
  - What have you done since the last meeting?
  - What will you do before the next meeting?
  - What is preventing you from accomplishing your tasks?
- For benefit of other team members
  - Not a “status report” to the ScrumMaster
Sprint Review

- Results of Sprint are demonstrated to Product Owner
- Owner accepts or rejects results
- Results are input to:
  - Next Sprint Planning meeting
  - Sprint Retrospective
Sprint Retrospective

- Meeting with Sprint Team
  - May include Product Owner
- Process review and modification
- Lessons learned applied in following Sprints
Scrum Estimation Technique

- Team effort
  - Only those doing the work
- Real time Delphi method
- Evaluate relative “effort size” of functions
  - Factors may include complexity, effort, uncertainty
- Assign relative “work effort value” to each function
- Track progress against effort estimate
Delphi Process

- Developed by Rand Corporation in late 1940’s
- Documented in software development in 1970’s by Barry Boehm and John Farquhar
  - Defined as “Wideband Delphi” due to more interactive discussions
- In Scrum
  - Team members evaluate and compare a list of functions
  - Next, compare opinions of relative effort required
  - Work to an agreement on estimates
  - Occurs during backlog review and updates
Relative Estimation

- Define relative complexity & effort
  - Much larger, larger, equal, smaller, much smaller
  - Several “fun” techniques (Number of pizzas, T-shirt sizes, buckets, Planning Poker®)

- Assign numeric value to each category
  - Numbers have no intrinsic value; only relative value

- Estimators discuss results and continue re-estimating until everyone in agreement

- Results in work points
Using Work Points

- At end of Sprint total work points achieved by adding estimates for all **accepted** functions
- Track number of work points earned in each iteration to determine
  - Product Backlog Burndown
  - Velocity
- Difficult to carry work point estimations over to other projects
  - Different teams, tools, technologies, etc.
**Burndown**

- Measurement of accomplishments
  - Product Backlog Burndown
  - Sprint Task Burndown
- Burndown Chart

![Burn Down Rate Chart](image)
Velocity

- Compare Velocity to total Estimated Work Points for Product Backlog to estimate project duration
- Need several Sprints to determine team’s velocity
- Same technique is used to estimate Sprint Burndown
  - Track tasks instead of functions
Benefits of Scrum

- Targets Product Owner’s functions-of-value
- Focus on team communications
  - Frequent and ready access to knowledge
  - Co-location improves communications
- Frequent demonstrations for early feedback from stakeholders
- Team spirit and camaraderie
- Sense of accomplishment
- Quality of product
But keep the following in mind.....
Sprint Process

- Sprint is not a “mini-waterfall”
- Must result in quality, demonstrable function(s) of value to Product Owner
  - Beware of defect build-up (aka technical debt)
- Sprints will include requirements clarification, development, and testing
  - Sprints may include architectural design
  - Full regression testing may parallel next Sprint
A Phase Is Not A Sprint

Time-boxed coding phases following on the footsteps of each other is not Scrum and violates several principles of the methodology.
Team Roles – ScrumMaster

- Lacks many Project Manager responsibilities as defined by Project Management Body of Knowledge
  - Someone needs to perform these responsibilities
  - May be PM overseeing several related Scrum teams

- Lacks authority given to some Project Managers – which may be needed on large scale or difficult projects
ScrumMaster Certification

- Currently achieved by attending 2-day lecture provided by Certified Scrum Trainer
- Effective October 1, 2009 must also pass a Certified ScrumMaster online certification exam
Team Roles – Product Owner

- Role filled by prime user or sponsor
  - Responsible for resulting product and its ROI
- Role may be supported by Business Analyst
  - Representing the interests of users and stakeholders
  - Must be careful not to become a wall between users and Sprint Team
    - Should be a “communication enabler”
    - Facilitate communications between users and team
Team Roles – Team Members

- Choose their own tasks
  - Not assigned by Scrum Master
  - Works better with a “process mature” team

- Beware “task hogs” who
  - Take on more than they can handle
  - Grab the best tasks for themselves

- Some may perceive themselves as filling a traditional role rather than co-owner of Sprint Release

“I’m a QA guy. Call me when you’re ready to test…….”
Intense Iterations

- Full team is “always on” during a Sprint
- Must be cautious of team burnout
- Limit overtime
- Set a sustainable pace
Project Duration Estimates

In order to estimate project duration you need to know:
- Full inventory of Product Backlog
- Know enough about each function to perform estimation technique

Address this by using Product Releases:
- Break large projects into several production releases

Do not rely solely on the Delphi estimation technique for project duration estimates:
- Experience and common sense should not be ignored
Product Engineering

- Scrum does not address product engineering
  - For software development you will need a software engineering process such as Object Oriented Analysis & Design
- May benefit by adding methods that are more focused on software creation
  - Extreme Programming (XP)
Target Fixation

- Beware team target fixation
  - If goal is velocity and burn-down, quality could suffer

- Focus may be on developing to requirements and a miss on getting the requirements right
  - Product owners may not always know “right” requirements. Still need effective research, analysis, process re-engineering, etc.
In “core” Scrum, this is very poorly defined
- Assumes Product Owner has, or can, fully define the requirements
- Does not address requirements discovery, non-functional requirements, or requirements analysis

Product Backlog requires on-going “grooming” and this activity must be part of Sprints
- Breakdown functions into User Stories
- Provide greater detail for upcoming Sprints
Suggestions For Further Study

- Scrum Alliance  www.scrumalliance.org

- Mountain Goat Software  Mike Cohn is the founder and great presenter on the topic!  www.mountaingoatsoftware.com

- 30-Day Blitz  Another time-boxed methodology:  www.michaelhugos.com/30-day_Blitz.html

- Case study: “Issues and Challenges of Agile Software Development with Scrum” by Juyun Cho, Colorado State University

More presentations by Craig D. Wilson  www.matincor.com