Software Engineering

SCRUM

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Outline

- Scrum
  - Scrum Overview
  - Scrum Elements
  - Retrospectives
  - Summary

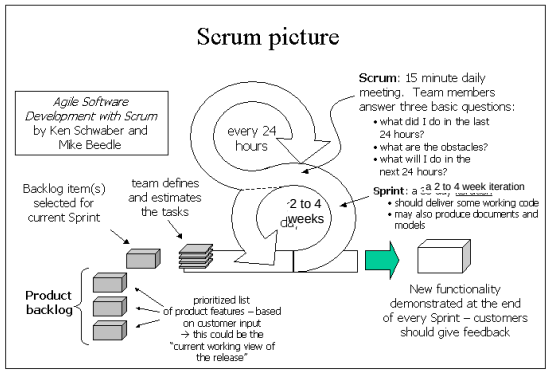
Scrum overview

- Used to manage work on complex products since the early 1990s.
- Is not a process, technique, or definitive method
- Is a **methodological framework** within which you can employ various processes and techniques.

- https://www.scrum.org/ (with videos, guide)
- https://www.scrumguides.org/index.html

Scrum iteration process

- Designed to organize the work of a single cross-functional team
- Software development based on the release plan, iterates on:
  1. *Iteration planning* – create a plan for one iteration
     - Select next features or sub-features to deliver (choose from highest priority items), define and estimate tasks, negotiate scope of the delivered product
  2. *Iteration execution* – implement the items in the plan
     - Fill in missing requirements, design, code, integrate/build, and test the modules needed in the plan
  3. *Deliver* the results of the iteration – give a demo
- Each cycle is a fixed-length *timebox*:
  - Always end each iteration on schedule, even if it isn't complete
    - (Don't say – "we can finish everything in this iteration in 2 more days". Just deliver and run the next iteration planning meeting.)
  - The team learns to make good short-term estimates – so over time, most of the iterations will deliver as expected



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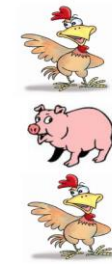
Scrum Elements

- THREE Roles
  - Product Owner
  - Scrum Master
  - Team Member , or developper
- THREE Meetings
  - Planning (Release & Sprint)
  - Daily Scrum
  - Sprint Review
- THREE Lists
  - Product Backlog
  - Sprint Backlog
  - Impediments List

For details, see
Scrum Guide: http://www.scrum.org/scrumguides

Scrum Elements: Roles

- Product Owner - acts in the role of the customer, adding new features to backlog, prioritizing work on the backlog
- Developers - estimate work items on backlog, develop product using highest priority items from backlog
- Scrum Master - keeps the team on track and removes obstacles. This is a damping capacitor, not an amplifier! Protect the developers from all external distractions.



http://www.youtube.com/watch?v=vmGMpME_phg

Scrum Elements: Roles

- **Product Owner**
  - Responsible for the ROI
  - Available for the Team during the whole product development period
  - Gets answers to all requirements questions
  - Talks with customers and understands their priorities
  - Keeps the Product Backlog current
- **Scrum Master**
  - Scrum rules guardian
  - Coach the team
  - Removes impediments
  - Prevents outside interference during an iteration
  - Scrum Master is both a teacher and a referee

Scrum Elements: Lists Product Backlog

Backlog item	Prio	Effort
Subfeature 1	1	5
Subfeature 2	2	8
Subfeature 5	3	13
Subfeature 4	4	1
Subfeature 3	5	2
…		

- Simple spreadsheet listing all features and sub-features that you know you need to do to build the product
- Plan for multiple iterations that can be updated at any time
- Product Backlog Items (PBIs)
  - names of "customer features" (Could be a user screen, an interaction scenario or use case, a new report, a new algorithm)
  - internal tasks that contribute to the value of the product
- Priority order. – value to the customer (you want to deliver some value to the customer in each iteration, so you put the most important things early)
- Effort estimates: each PBI should have an "estimated effort" that is assigned by the team
  - Estimates must come from the team – and they should be realistic

Scrum Elements: Lists Product Backlog (2)

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…		

•The Product Backlog – managers and customers use it to set the working agenda of the development team

- Managers and customers work with Product Owner to set the priority of each item
- Development team estimates the size/effort for each item
- Even if the managers and customers don't like the estimates, they are not allowed to change them

Within an iteration, the team divides the Product Backlog Items into individual tasks – the "task view" is only used within the iteration

- Development team defines tasks and the estimated effort
- The list of tasks is flexible – new items might be discovered during the iteration, some items might be combined or eliminated
- Development team tracks all "tasks" on a Task Board
- Development team tracks progress with a burndown chart

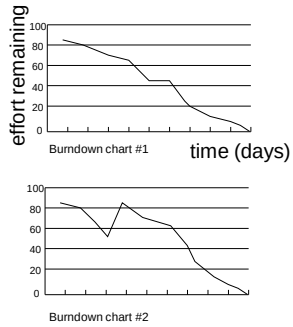
Scrum Elements: Lists Sprint Backlog

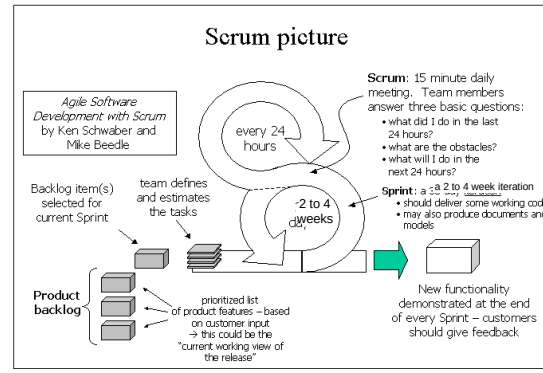
- For a Scrum iteration (called a *Sprint*)
- Contains a list of tasks and work product outputs that will be done in a 4-week* timebox
- At the beginning of the 4 weeks, each team member has a pretty good idea of what they will be working on
- Management should not add new work product outputs to the Sprint – any new items should be added to the Product Backlog instead
- If new work items are important enough, they will get done in the next 4 week iteration

* (30-day iteration in the original Scrum articles – most teams use a 2-week to 6-week iteration)

Burndown chart

- Tracking an iteration:
  - A burndown chart tracks the amount of estimated effort remaining in the current iteration
    - it should go down each day
    - but if you discover that something is missing, or you have mis-estimated a difficult task, it could go up
    - it's OK: better to acknowledge reality early
  - Don't make your estimates too pessimistic
    - you will get a burndown chart that gets to zero well before the end of the iteration





Scrum Element: Meetings

- The Scrum Team has two kinds of "once-per-iteration" meetings:
  - An Iteration Planning meeting at the beginning of each Sprint
  - A Sprint Review meeting at the end of each Sprint
- In addition, the Scrum Team has one daily meeting: the Daily Scrum
  - Daily Scrum is 15 minutes – no longer
  - Everyone is supposed to speak:
    - "This is what I did yesterday."
    - "Here is what I am planning to do today."
    - "These are the obstacles in my way."
  - No problem solving in the meeting – everything is taken offline later.
- What is the purpose of the Daily Scrum? To make sure that problems and obstacles are visible to the team
  - Obstacles are valuable input for managers

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Retrospectives

- One important idea in Agile Development: take time to reflect and learn
  - Iteration is good, because you have a natural breakpoint to apply some of what you have learned
- In Scrum (and many other Agile methodologies), the team runs a Retrospective meeting at the end of each iteration
  - A Retrospective is like a post-mortem, but it isn't dead yet
  - An end-of-iteration retrospective meeting takes an hour or two
- The end-of-iteration Retrospective meeting is a chance to learn what worked well, what should be changed
  - don't use a Retrospective to blame team members or managers for all of the problems – focus on fixing the process

Retrospectives

- The Retrospectives Prime Directive:

> ***Regardless of what we discover, we understand and truly believe that everyone did the best job they could, given what they knew at the time, their skills and abilities, the resources available, and the situation at hand.***

(From Norm Kerth's book on Project Retrospectives
See also http://www.retrospectives.com)

Why this rule? The goal of a retrospective is to ***improve the process***, not to assign blame for the problems

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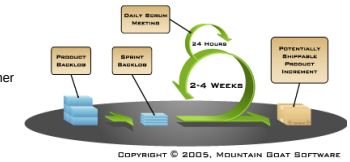
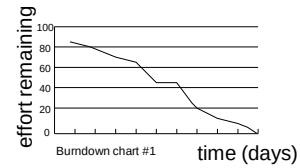
Scrum summary

- Scrum is a "team-oriented" Agile methodology
- Short timeboxed iterations
- Each iteration produces some real software that has value to the customer
- Each iteration has
  - iteration planning
  - development work
  - iteration review
- All estimation is done by the team
- Within a Sprint, the progress is tracked using a burndown chart
- Product Owner determines the priorities in the Product Backlog (list of things to build)
- Scrum Master helps enforce the rules of Scrum
- There is a 15-minute daily meeting to report what was done and identify obstacles





based on Vassilka Kirova Agile Intro | June 2010

References

•Some references:

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