**Scrum Theory**

Scrum is a framework for developing and sustaining complex products.

**What type of theory is Scrum based on?**

Scrum is based on Empirical Process Control Theory.

**Objectives:**

1. Written by Jeff Sutherland and Ken Schwaber
2. The definitive guide to scrum and the rules of the game
3. You must understand the foundations of scrum
4. Exact scrum rules
5. Excerpts from the scrum guide
6. The rule book
7. The definitive guide
8. Minor changes
9. Subtle but distinct changes (in July 2013)
10. Latest revision
11. Planning out with a team
12. Having a retrospective
13. Having a sprint review
14. May be overkill
15. Scrum is mainly effective for complex projects

Key Points:

1. Scrum is a framework
2. Inspecting
3. Adapting
4. Improving
5. Delivering
6. Empirical process control theory
   1. Learn from past mistakes
   2. Improving
   3. Making new decisions
   4. Making new changes (adapting)
7. D

Three pillars uphold every implementation of empirical process control:

1. Transparency
   1. Being “open” and “Honest” as a team
   2. Task is really “Done”
   3. Fully tested
   4. All tasks are complete
   5. Matches original designs
2. Inspection
   1. Inspection should not be so frequent that inspection gets in the way of the work.
   2. Define frequency of inspection
   3. Weekly often too short
   4. 2 weeks perfect in my experience
   5. Setting the sprint length is very important!
   6. It gives enough chances for inspection
3. Adaptation
   1. Sprint Planning
   2. Daily Scrum
   3. Sprint Review
   4. Sprint retrospective

Scrum prescribes four formal events for inspection and adaptation, as described in scrum events.

1. Sprint planning
2. Daily scrum
3. Sprint review
4. Sprint retrospective

What are the 5 Scrum Values?

1. Commitment
2. Courage
3. Focus
4. Openness
5. Respect

Scrum Theory – Summary

1. The scrum guide is the definitive guide to scrum
2. Scrum is for delivering mainly complex products, but can be used for any
3. Scrum is a framework, does not have all the answers
4. Empiricism is about learning from the mistakes from the past
5. Team members must be transparent and honest
6. A sprint is an iteration of a calendar month or less in which a product increment is delivered.
7. Setting sprint length should give enough opportunities to inspect and adapt.

**Scrum Team Role.**

Learning Objectives

1. What the 3 scrum team roles are
2. What their responsibilities are
3. Difference between scrum team & development team
4. Scrum guide Gotchas / exam prep

Three Roles (The Scrum Team)

1. Scrum Master
   1. Expert on the scrum rules
   2. Remove team impediments (Blockers)
   3. Help the team to self organise
   4. Facilitate meetings or wherever necessary
   5. Help the product owner maximise R.O.I (Return on Investments)
   6. Helps the team to be more productive
2. Product Owner
   1. Responsible for creating the product backlog
   2. Prioritise requirements based on business value
   3. Make decisions to maximise R.O.I
   4. Make trade-offs to maximise product value
3. Development Team
   1. Build potentially releasable product increment
   2. Dev team one of the three scrum team roles
   3. Self organising & collaborative
   4. Multi-skilled as needed for the project
   5. Experts in their field
   6. Optimum team size is …. Between 3 and 9
4. The team model in scrum is designed to optimize flexibility, creativity and productivity.
5. Incremental deliveries of “done” product ensure a potentially useful version of working product is always available.
6. Includes “rules” defined by team.
7. Correctly tested product
8. Design standards met
9. Something else…..
10. Ordering the items in the product backlog to best achieve goals and missions;
11. Optimizing the value of the work the development team performs;
12. For the product owner to succeed, the entire organization must respect his or her decisions.
13. A working increment is delivered each sprint
14. A piece of the product is “done”, according to the team definition of “done”.
15. Definition of done -> As a scrum team -> output of each point -> useful increment of product
16. The product owner is responsible for maximizing the value of the product and the work of the development team.
17. What a product owner is responsible for?
18. What a product owner isn’t responsible for?
19. What a product owner is accountable for?
20. Product owner solely responsible for product backlog.
21. Product owner decision are not always respected
22. Product owners can often be over-ruled
23. Can be difficult for a product owner to carry out their role
24. Let seniors know how you can add value
25. Still prioritise while considering others
26. Use information from teams to make decisions

The Development Team

The development team consists of professionals who do the work of delivering a potentially releasable increment of “done” product at the end of each sprint.

Scrum recognizes no titles for development team members other than developer, regardless of the work being performed by the person; there are no exceptions to this rule;

The scrum master is a servant-leader for the scrum team.

1. Done increment is key
2. Facilitate
3. Make sure scrum is understood and enacted
4. Set up a meeting (but not always present)
5. Teams self organise
6. Serving the team means you’re leading the team
7. Facilitating scrum events as requested or needed.
8. Removing impediments to the development team’s progress;
9. Authority to coach & lead anyone in the organisation
10. Be the authority on scrum

**Scrum Team Roles – Summary**

1. Scrum team consists of product owner, scrum master and development team
2. The product owner is responsible for maximising the value of the product and managing the backlog.
3. The product owner’s decisions must be respected within the organization
4. The dev team are responsible for building the increment and self-organise
5. The dev team must be respected and trusted on development decisions
6. The scrum master is responsible for facilitating, coaching and being a servant-leader
7. The scrum master must be respected as the authority on scrum (not the people)

**Scrum Events (Time-Boxes)**

Scrum Events Objectives

1. What the scrum events are
2. What the purpose of each is
3. What happens in each event
4. Scrum guide Gotchas / exam prep

Time Boxes (Events) and rules

Sprint Planning Meeting

Team plan the work for the sprint, 8 hours for a one month sprint and 4 hours for a two week sprint

2 topics: “The What” and “The How”

Daily Scrum

Lasting not more than 15 minutes

What did I do yesterday that helped the development team meet the sprint goal?

What will I do today that helped the development team meet the sprint goal?

Do I see any impediment that prevents me or the development team from meeting the sprint goal?

Sprint Review

Sprint retrospective

What worked this sprint?

What could be improved in the next sprint?

Release planning meeting

Note: not officially a scrum event but often used in scrum

Team agree what is feasible for release

An indicator not a commitment

Team velocity used to predict release date or scope by release date.

* Set time for a task for maximum productivity and deliverability
* Trying to minimize the need for other meetings
* Maximum duration for every events
* Observe time taken over planning
* A sprint is the heart of scrum
* Usable piece of the product is created each sprint.
* A new sprint starts immediately after the conclusion of the previous sprint.
* Length limited to one calendar month
* Only product owner has authority to cancel the sprint.
* Sprint planning is time boxed to a max of 8 hours
* For a 2 week sprint a 4 hours meeting usually works
* Lots to cover, so take breaks
* 2 topics to be covered in planning for flexibility
* What needs to be done?
* “How” the work will get done?

Prescribed events are used in scrum to create regularity and to minimize the need for the meetings not defined in scrum. All events are time-boxed events, such that every event has a maximum duration.

Failure to include any of these events results in reduced transparency and is a lost opportunity to inspect and adapt.

The heart of scrum is a sprint, a time-box of one month or less during which a “done”, useable and potentially releasable product increment is created.

A new sprint starts immediately after the conclusion of the previous sprint.

Each sprint may be considered a project with no more than a one-month horizon.

Sprints are limited to one calendar month.

Only the product owner has the authority to cancel the sprint,

Sprint planning is time-boxed to a maximum of eight hours for a one-month sprint.

Development Team Capacity

* Work out how much time the development team have (capacity)
* The sprint goal is an objective that will be met within the sprint through the implementation of the product backlog.
* Sprint goal is an objective that’s met through implementation of product backlog.

Daily Scrum

* The daily scrum is 15 minutes time-boxed event
* Helps drive productivity
* Daily scrum is held at the same place each day to reduce complexity
* Daily Scrum Three Questions
  + **What did I do yesterday** that helped the development team meet the sprint goal?
  + **What will I do today** to help the development team meet the sprint goal?
  + **Do I see any impediment** that prevents me or the development team from meeting the sprint goal?
* who attends the daily scrum
  + The scrum master ensures that the development team has the meeting, but the development team is responsible for conducting the daily scrum.
* Scrum master ensures team have the meeting but the development team are responsible if scrum master is away

Coaching & Exam Prep: Daily Scrum: Different ways of running it.

Hey.

I just thought I would clarify that the 3 questions are the most common way of running a Daily Scrum. However, as of November 2017, the Scrum Guide clarified that the development team can decide how best to run the meeting as long as it is in line with reaching the sprint goal:

"The structure of the meeting is set by the Development Team and can be conducted in different ways if it focuses on progress toward the Sprint Goal. Some Development Teams will use questions, some will be more discussion based. Here is an example of what might be used:

What did I do yesterday that helped the Development Team meet the Sprint Goal?

What will I do today to help the Development Team meet the Sprint Goal?

Do I see any impediment that prevents me or the Development Team from meeting the Sprint Goal?"

I hope this helps!

Paul.

During the sprint review, the scrum team and stakeholders collaborate above what was done in the sprint. Based on that and any changes to the product backlog during the sprint, attendees collaborate on the next things that could be done to optimize the value.

* Stakeholders review from previous sprint and add input to next sprint
* Stakeholders have a stake in the outcome of the project

Sprint review Length

* 4 hours maximum time-box meeting for sprint review

Scrum Events – Summary

1. There are 4 formal events in scrum.
   1. Sprint planning,
   2. daily scrum,
   3. sprint review,
   4. sprint retrospective
2. The sprint is the heart of scrum where an increment is created
3. Only the product owner can cancel the sprint
4. All events have specific maximum lengths
5. Work out development team capacity before planning
6. Daily scrum is held in the same place each day to make things easier
7. The development team alone are responsible for having daily scrum
8. The scrum master coaches them and often facilities
9. The sprint review allows stakeholders to collaborate with the scrum team.
10. The retrospective allows teams to improve continuously

Scrum Artefacts

* Artefacts
  + Product Backlog
    - CEO
    - Customer
    - Final product vendor
    - Director/Head of department
    - Team
  + Release backlog & Burn-down
    - Note officially a scrum artefact but often used in scrum
  + Releasable product increment
    - Meet definition of done (high quality)
  + Key Points
    - Everyone must be transparent & honest about the project, product backlog, sprint backlog, and final increment.
    - Product backlog helps convey what has and hasn’t been done.
    - Product backlog refinement is the act of adding detail, estimates, and order to items in the product backlog.
    - Discuss key points with product owner & gain understanding of upcoming features.
    - When refining the backlog, make sure the items are “ready” for planning.
    - “Ready” means stories are clear to the team and small enough to be completed in one sprint using the team’s definition of “Done”
    - Higher priority items are the tasks to be worked on next.
    - Break items down into smaller manageable chunks
    - Refinement leads to higher priority items being really clear.
    - Stories / features are said to be “ready” when they’re clear enough to be “done” in a sprint.
    - Done when team has built items as features & delivered at the end of sprint.
    - The sprint backlog is the set of product backlog items selected for the sprint, plus a plan for delivering the product increment and realizing the sprint goal.
    - *Frozen sprint backlog*: Only the development team can change its sprint backlog during a sprint
    - Product owner should negotiate with the team and vice versa on sprint changes.

Note:

Scrum’s artefacts represent work or value to provide transparency and opportunities for inspection and adaption. Artefacts defined by scrum are specifically designed to maximize transparency of key information so that everybody has the same understanding of the artefacts.

The product owner is responsible for the product backlog. Including its content, availability, and ordering.

High ordered product backlog items are usually clearer and more detailed than lower order ones.

The product owner compares this amount of work remaining at previous sprint reviews to assess progress toward completing projected work by the desired time for the goal. This information is made transparent to all stakeholders.

Various projective practises upon trending have been used to forecast progress, like burn-downs, burn-ups, or cumulative flows.

The sprint backlog is the set of product backlog items selected for the sprint, plus a plan for delivering the product increment and realizing the sprint goal.

*Frozen sprint backlog:* Only the development team can change its sprint backlog during a sprint:

I just wanted to add that the Sprint Backlog needs to include one improvement from the Sprint Retrospective with regards to how the team works. This is to ensure that each sprint is focussing on continuous improvement!

"To ensure continuous improvement, it includes at least one high priority way in which the team works, identified in the previous Retrospective meeting."

An example of this (from my previous projects) could be a decision to focus on :

changing the room that Daily Scrum is held in to a more quiet one,

fixing a server that could speed up development,

building an automated test framework for higher quality, or

requesting that another team do not interfere with an important server during important demos every sprint

meeting with another team regularly to share knowledge

I hope it helps

Paul.

Artefacts transparency

* Product backlog
* Sprint backlog
* Increment
* Product backlog, sprint backlog and increment provide information on project
* Product backlog shows priority of work to be “done”.
* Sprint backlog shows plan for current sprint.
* Increment shows that HAS been done.
* Development team use Burn-down to track progress & improve chances of meeting the sprint goal
* Burn-down should be visible in the daily scrum.
* Product owner responsible for monitoring progress of release

The scrum master must work with the product owner, development team, and other involved parties to understand if the artefacts are completely transparent.

* “Shared understanding” of “Done” is key in Scrum
* If the definition of “Done” for an increment is part of the Conventions, standards or guidelines of the development organization, all scrum team must follow it as a minimum. If “Done” for an increment is not a convention of the development organization, the development team of the scrum team must define a definition of “done” appropriate for the product. If there are multiple scrum teams working on the system or product release, the development teams on all of the scrum teams must mutually define the definition of “Done.”
* Bear in mind departmental standards
* Development team decide the definition of Done
* Multiple teams should all decide & Agree on the done definition

**Scrum Artefacts Summary**

1. The artefacts are product backlog, sprint backlog, increment.
2. The artefacts increase transparency.
3. The product backlog is a living document and should be refined and prioritised regularly.
4. Progress can be monitored in many ways such as the sprint burn-down and release burn-down.
5. The sprint backlog consists of the items (e.g. Stories) and a plan (e.g. tasks)
6. Only development team can update the sprint backlog during a sprint…
7. The product owner and team should negotiate any changes during the sprint.
8. Product backlog, sprint backlog and increment should be visible to all to show progress
9. Aids such as burn-downs aid this transparency
10. The product owner monitors progress towards the goal eg. Sprint
11. Scrum master needs to coach to ensure that all artefacts are transparent
12. Daily scrum is held in the same place each day to make things easier
13. Bear in mind organization standards for definition of done
14. Multiple teams working on one product should mutually define the definition of done.

**Lessons Learned**

1. Ask before the sprint review if code is shippable – day of the sprint review is the first day of the new sprint
2. Add a buffer for sprint-review preparation – add a time buffer for server downtime, meetings etc.
3. Select stand-up time wisely – adjust the time to suit the needs of the team, if possible
4. Try and use “live” or “As live” data – Emphasise the need for “As Live” data in testing
5. Discuss sprint review at retrospective – this could alleviate concerns or tensions further on
6. One-to-ones with team members – hold a personal meeting to resolve any particular negative behaviours

**What have you learned?**

**Requirements -> Design -> Implementation -> Verification -> Maintenance**

1. Waterfall Model – Original method, less flexible
2. Birth of agile – agile embrace change. A number of methods, framework and processes, which share principles.
3. Agile is more flexible than waterfall – agile methods based around iteration and to deliver frequently.
4. Empirical process control theory is at the centre of scrum
5. Importance of iterations – excellent framework for delivering frequently (which we called Sprints)
6. Scrum theory – Empirical process control theory. Ongoing transparency, Inspection and Adaption (Three Pillars).
7. Scrum team roles – Product Owner, Scrum Master, Development Team (Scrum Team)
8. Events – Sprint Planning, Retrospective, Daily Scrum, Sprint Review and Sprint.
9. Scrum Artifacts – Product Backlog, Sprint Backlog, Increment of releasable product
10. Burn Downs
11. Sprint Burn down used to show progress during a sprint and can be used by the dev team.
12. Release burn down used by everyone, in particular the product owner.
13. Artefact transparency – valuable for delivering projects. Artifacts are transparent to everyone including stakeholders

How to get certified at Scrum.org (including Professional Scrum Master PSM 1)

**How to Get Certified at Scrum.org in 3 easy steps**

**1.** Do the open assessment of your choice at [https://www.scrum.org/Assessments/Open-Assessments/Scrum-Open-Assessment//](https://www.scrum.org/Assessments/Open-Assessments/Scrum-Open-Assessment/)

I recommend until you get 100% 3 times. This is just a guideline. You need to feel

confident : )

**For Scrum Masters I recommend you do the Scrum Open Assessment**

**2.** Until you pass - Read the Scrum Guide and suggested reading:

Sit this course again till you pass the open assessment. The scrum guide is also attached to this course

and available at: [http://www.scrumguides.org](http://www.scrumguides.org/)/

The suggested reading from scrum.org is here**:**<https://www.scrum.org/resources/suggested-reading-professional-scrum-master>

Also **see the next lecture** and **do the student recommended preparation**.

**3.** When you pass and feel confident - Pick a Certification at: <https://www.scrum.org/Assessments>/

The PSM 1 is located here: <https://www.scrum.org/professional-scrum-certifications/professional-scrum-master-assessments>

**To be an officially certified professional scrum master you will want to pick the PSM 1**

The PSM 1 is an online exam. Nothing is necessary except access to a computer and browser. You can take the test at home or wherever you have access.

Good luck!

Paul.

Student Recommended Resources for PSM 1 Exam Preparations

The following resources have been recommended by students who passed the PSM 1.  Thanks to Sojy and David for providing these links.

**Passed PSM 1 (From student - Sojy)**

Thanks Paul for the course.

I passsed PSM 1 yesterday(28 Sep 2017) with 91%. It was my second try and in first try at May I had scored 81% :(. This time i followed <http://www.ru-rocker.com/2017/02/19/preparing-your-professional-scrum-master-1-psm1-certification/>   and <https://www.scrum.org/forum/scrum-forum/7708/passed-psm-i-975-experiences>.

I took below mock

1. [Scrum Open Assesment](https://www.scrum.org/Assessments/Open-Assessments)  (9 Exams - From 5th exam I started getting 100% in less than 5 mins )
2. [Mikhail Laphsin’s blog.](http://mlapshin.com/index.php/psm-quiz/learning-mode/)(7 Exams in learning mode ->Last two exams i scored 100% and one in Real mode with 100% )
3. [Test Taker Online](http://www.testtakeronline.com/) (10 Exams and last 5 with 100%)

I did not pay for any tests.

**Tips for PSM 1 (From Student - David)**

1. Read The Scrum Guide until you really understand.

2. Read The Nexus Scrum Guide, at least until you know the main concept how to maintain multiple scrum team in the same project: <https://www.scrum.org/resources/online-nexus-guide>

3. Find and do assignments as many as possible (just googling it), do not focus on 1 source (it may be good, but you have to make sure if the question is different or changed (to test your knowledge), your answer is still correct and consistent with the Scrum Guide)

4. Keep asking yourself about every case that could happen in Scrum, it is good for you to always curious!

5. Manage your time! Make sure you can answer all the question and check again. (In my case, I need 40 minutes to answer all the questions and 20 minutes to check once again - ensure you read Q&A carefully)

Certification Options: Eligibility for the CSM and PSM

Hi!

The Scrum Alliance require that all students do a 2 day course before they can sit certification as (CSM). This course will help you get grounding for any certification based on the scrum guide, however as stated the Scrum Alliance have decided that face to face training is still necessary for their qualification.  Therefore unfortunately you are NOT eligible to sit the CSM after taking this course.

You can find a course here. They cost usually around $1200

https://www.scrumalliance.org/courses-events/course

Now, to get an official qualification from the founders of scrum and still save money, I recommend doing my Agile Scrum Training and Certification Prep course then going to the scrum.org site and sitting PSM I.for around $150 at the time of this post.

https://www.scrum.org/Assessments/Professional-Scrum-Master-Assessments

You can do this directly.