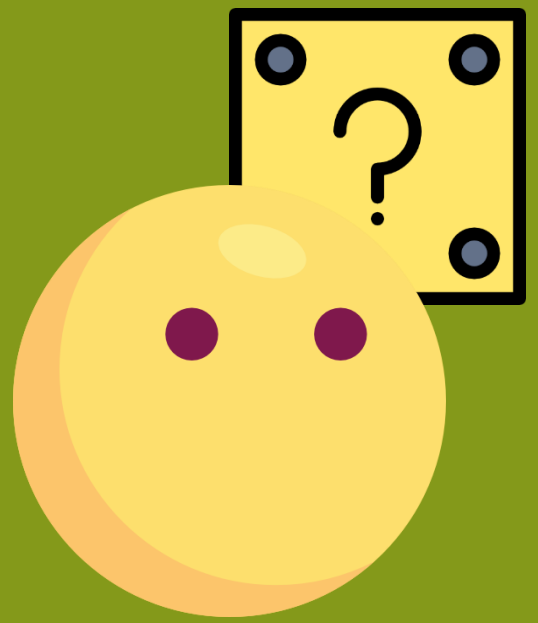
SOFTWARE ENGINEERING

Chapter 4.1: Agile Methodologies

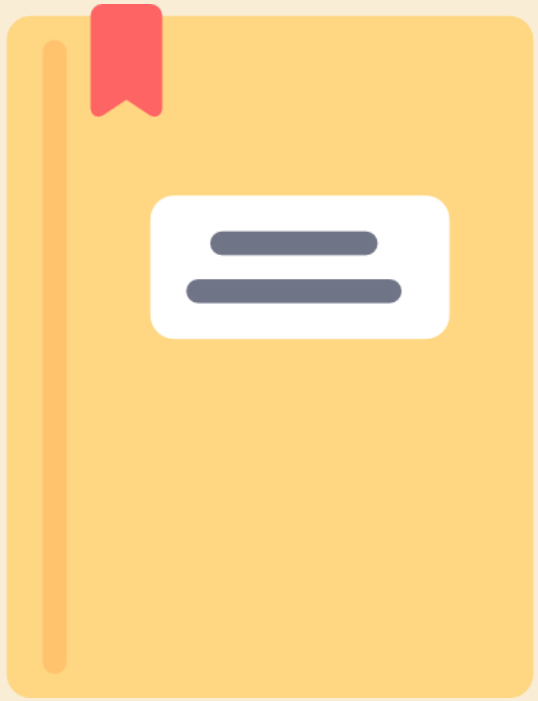
Part IV

Finally... the awaited... SCRUM METHODOLOGY!

What is it?



Definitions!



It’s a framework for developing sustaining complex products [We can employ various methods techniques!].

Came from early 1990’s

Remember!!

There’s a difference between methodology, software process model and framework, can we state that??

Scrum is...

- Adaptive!
- Lightweight
- Simple to understand!
- Difficult to master


Theory
Or basic principles...

1) Empiricism

Knowledge comes from experience and decision making is based on what is known.

Iterative, incremental, risk control!

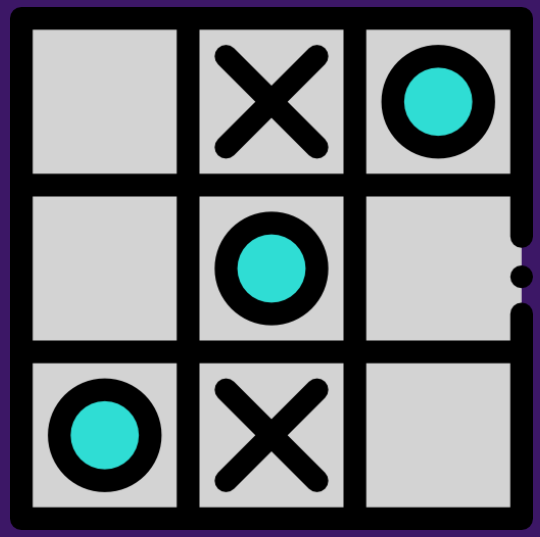
2) Transparency!

All the aspects of the framework need to be defined for all the team!, everyone understands the same for each phase / activity of the project

3) Inspection

Artifacts and progress must be inspected towards a common scrum goal!

Inspection should not interfere with the workflow of anyone!



4) Adaptation

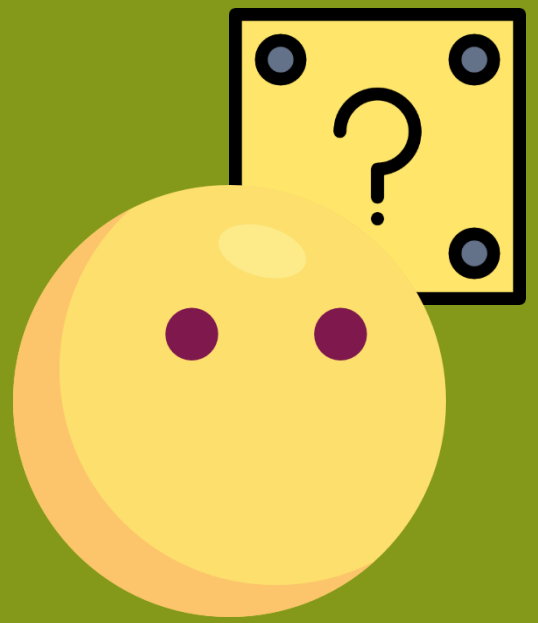
Processes need to be adjusted in order to make the resulting product as acceptable as it can get!. Every artifact, sprint, activity... must be within the limits or Scope of the project!

Adaptation tools!

Inspection and adaptation can be assured by performing the following activities:

1. Sprint Backlog
2. Daily Scrum
3. Sprint Review
4. Sprint Retrospective

What About Roles?



Scrum Roles!

Product Owner

Scrum Master

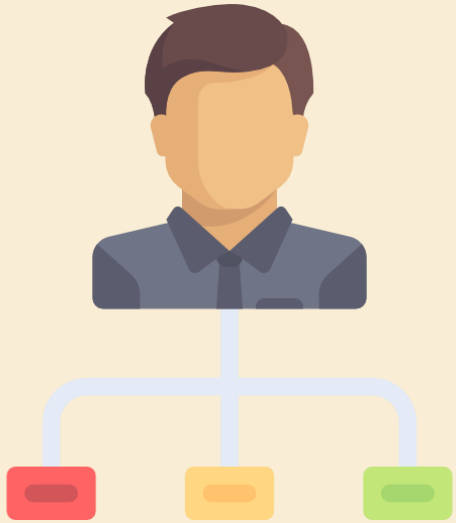
Development Team

Product Owner

- Is the one that understands domain and business the most
- Maximizes the value of the product!
- Is only one person (or authority…)

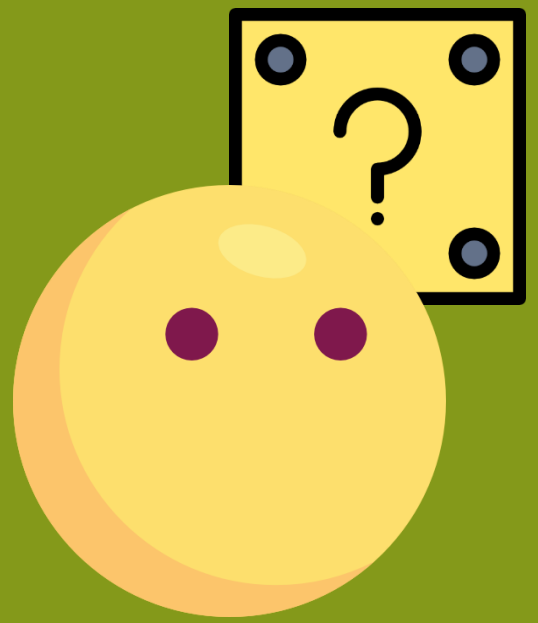
Product Owner

- Express and understands **product backlog items**
- Priorizes the product backlog items
- Optimizes the value of the development team work



Ensures transparency on the product backlog

But... what if I need UI designer and all of that...?

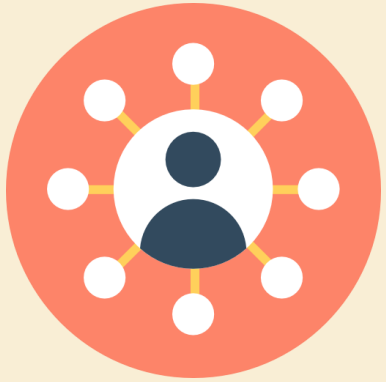


Development Team – Small Team

- Delivers potential increments
- They organize and manage their work!
- They are cross functional

Testing, Business Analysts, UX designer can be added here… but not always…

Scrum Master!



This role ensures that everyone understands the methodology (practices and rules)

Is the leader of the development team (Scrum Team)

Scrum Master to the Scrum Team

- Coaching: Cross functionality and Self Organization
- Facilitating Scrum processes
- Helping them to add value to their products

Scrum Master to Product Owner

- Finding the best techniques to manage the product backlog
- Understanding product planning
- Understanding the practice of agility
- Facilitating Scrum Events

Scrum Master to Organization

- Coaches the adoption of Scrum practices
- Helps stakeholders and the Scrum Team to master Scrum practices and empirical processes
- Provides guidance to those practices that enable agility and productivity

Scrum Events

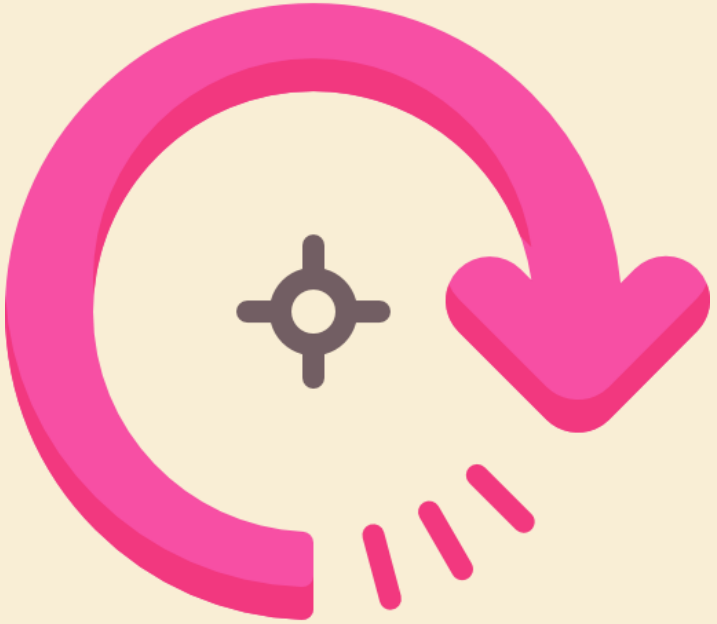
- Time boxed activities (everyone has a máximum duration)
- Sprint is the main container for other events (Once it begins you can’t change its duration)
- Events apart from sprints are opportunities to adapt and improve!

Sprint

- Is the heart of Scrum processes
- Is a time-box that lasts maximum 1 month
- A potentially usable product is created here!

Sprint

- Sprint Planning
- Daily Scrum
- Development Work
- Sprint Review
- Sprint Retrospective



Warning!...

You can’t change quality goals

No changes that could endanger the sprint goal can be done!

Sprint - Planning

- Takes maximum 8 hours
- Answers two questions
  - What can be done this sprint?
  - How will the chosen work be done?

Sprint Planning Q1

Sprint Planning Q2

- System design is done here
- Every activity is decomposed in terms of 1 day or less
- Decision if it’s too much or too little to do!
- The Sprint Backlog is created

Scrum Daily

- This is a daily meeting that can take as long as 15 minutes
- Synchronizes activities for the next 24 hours every member answers three questions!

Scrum Daily Questions!

1. What did I do yesterday that helped the Development Team meet the Sprint Goal?
2. What will I do today to help the Development Team meet the Sprint Goal?
3. Do I see any impediment that prevents me or the Development Team from meeting the Sprint Goal?

Sprint Review

- 4 hours time-boxed meeting
- Everyone is invited! (Product owner extends the invitations)
- Discussion of ‘Done’ things in the backlog is established
- Discussion about what went well, problems, solutions…

Sprint Retrospective

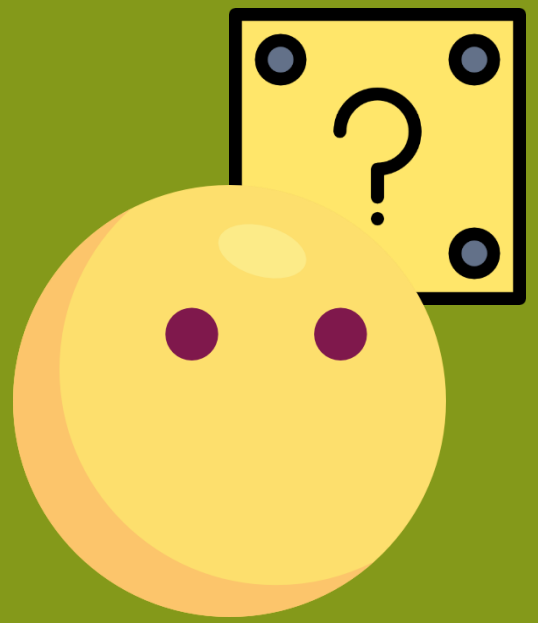
- Feedback about last sprint done
- 3 hour meeting after the sprint review
- Relationships between people, tools, processes
- Scrum Master creates a plan for improving scrum practices for upcoming sprints

Remember

The end of every sprint is an Increment

Must be at usable condition and is the sum of the product backlog from beginning to that moment.

Can we see all of this in a process model?



Scrum
according to **mm1**

Product

yes

not yet

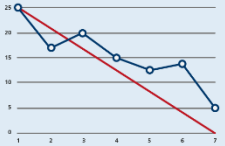
Sprint Retrospective

Sprint Review

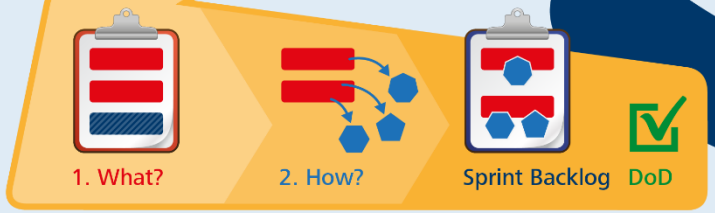
User Stories

Daily Scrum Meeting

- Taskboard (to do, in progress, done)
- Impediment Backlog
- Burndown Chart



Sprint Planning 1&2



Roles

Product Owner: the person responsible for maintaining the product backlog by representing the interests of the stakeholders, ensuring the value of the work the development team does.

Scrum Master: the person responsible for the scrum process, making sure it is used correctly and maximizing its benefits. Although the designation of a scrum master and its presence in scrum meetings is generally advisable, teams with a lot of scrum experience may also work without this role.

Development Team: a cross-functional group of people responsible for delivering potentially shippable increments of the product at the end of every sprint.

Stakeholders: are the people who enable the project and for whom the project produces the agreed-upon benefit. They are only directly involved in the process during the sprint reviews. The main stakeholders are manager, customer and user.

Artifacts

Product Backlog: an ordered list of "requirements" that is maintained for a product. The features are commonly written in user story format. It is open and editable by anyone, but the product owner is ultimately responsible for ordering the stories. The product backlog contains rough estimates of both business value and development effort.

Sprint Backlog: a list of work the development team must address during the next sprint. The list is created by selecting stories/features from the top of the product backlog until the development team feels it has enough work to fill the sprint, keeping in mind the velocity of its previous sprints. The stories/features are broken down into tasks by the development team. Often an accompanying task board is used to see and change the state of the tasks of the current sprint, like "to do", "in progress" and "done".

Story/feature: a description of a certain product feature or behavior. Ideally, it is formulated strictly from the user's point of view ("user story").

Task: a unit of work which should be feasible within 12 hours or less, and which must be accomplished in order to implement a story/feature.

Burn Down Charts: are publicly displayed charts showing invested and remaining work. They are often used to visualize the sprint progress as sprint burn down chart. Other types comprise the release burn down chart that shows the amount of work left to complete the target commitment for a Product Release.

Impediment Backlog: list of current impediments maintained by the scrum master.

Definition of Done: a checklist of activities required to declare the implementation of a story to be completed. The definition is determined at the beginning of but may be changed in the course of the project.

Meetings

Sprint Planning 1: (60 min per sprint week) is held to select the work to be done for the next sprint (the "what"). The product owner explains the stories of the product backlog to the team and answers their question. After this analysis phase the team should have understood the requirements and its commits the scope for the sprint.

Sprint Planning 2: (60 min per sprint week) the designing phase for the selected backlog (the "how"). The team discusses a solution for the selected stories and creates according task for each story.

Daily Scrum: (ca. 15 min) short, time boxed meeting, every day at the same time. Every team member answers three questions:
1) What have I done since yesterday?
2) What am I planning to do today?
3) What are my impediments?

Sprint Review: (ca. 60 min per sprint week) used to present and review the work that was completed and not completed during a sprint. It should include a demonstration of the realized product increment.

Sprint Retrospective: (ca. 45 min per sprint week) a reflection on the past sprint used to make continuous process improvements. Two main questions are asked in the sprint retrospective:
1) What went well during the sprint?
2) What could be improved in the next sprint?

Estimation Meeting: (max. 60 min) used to introduce and estimate new backlog items and to refine existing estimations as well as acceptance criteria. It is also used to break large stories into smaller ones.

mm1
Consulting & Management

References

- [SCHWABER & SUTHERLAND] Ken Schwaber and Jeff Sutherland. *The Scrum Guide*
- [SOMMERVILLE] Ian Sommervile. *Software Engineering 9th Edition*
- [SCHMIDT] Richard Schmidt. *Software Development Architecture-Driven Software Development*
- [STEPHENS] Beginning Software Engineering. 2015
- [CROOKSHANKS] Software Development Techniques. 2015

Class has died… for today!