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SOFTWARE ENGINEERING

Introduction of the SCRUM

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Introduction...

What is Scrum?

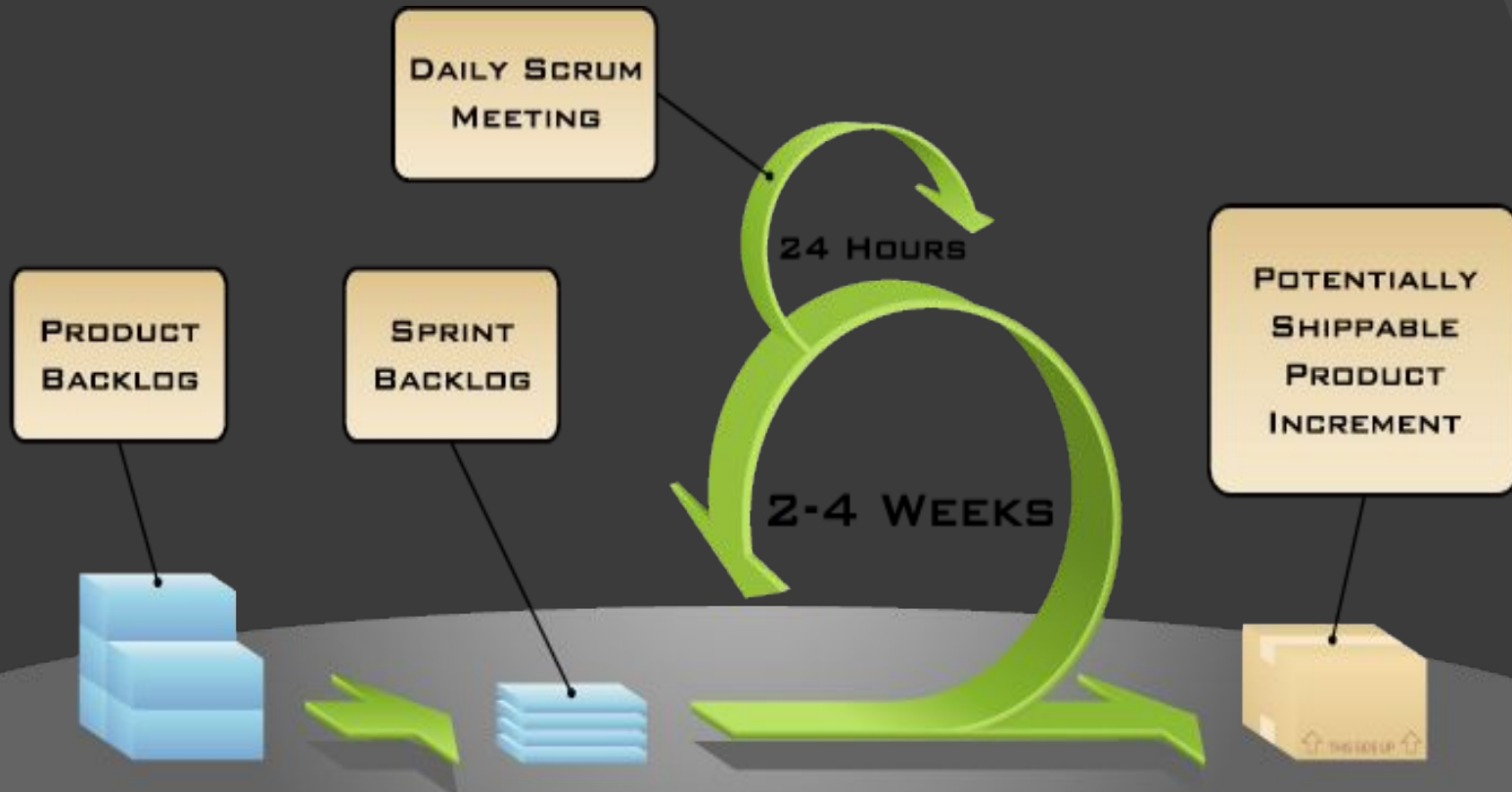
① Definition from rugby football:

- A scrum is a way to restart the game after an interruption,
- where the forwards of each side come together in a tight formation
- and struggle to gain possession of the ball when it is tossed in among them

What is Scrum?

- **SCRUM is an agile, lightweight process for managing and controlling software and product development in rapidly changing environments.**
 - Iterative, incremental process
 - Team-based approach
 - developing systems/ products with rapidly changing requirements
 - Controls the chaos of conflicting interest and needs
 - Improve communication and maximize cooperation
 - Protecting the team form disruptions and impediments
 - A way to maximize productivity
- Embraces the opposite of the waterfall approach.

Functionality of Scrum



The scrum process

SCRUM PROCESS



What is Scrum?

- Scrum is not a process or a technique for building products
 - It is a framework within which you can employ various processes and techniques
- Three components:
 - **The Scrum Team**
 - **The Process**
 - **Scrum Artifacts**

The Scrum Team...

The Scrum Team

- The Scrum Team consists of
 - a **Product Owner**,
 - the **Development Team**,
 - and a **Scrum Master**
- Scrum Teams are self-organizing and cross-functional:
 - They choose how best to accomplish their work, rather than being directed by others outside the team
- Scrum Teams are cross-functional:
 - teams have all competencies needed to accomplish the work without depending on others not part of the team.
- Within a Scrum Team, there are no sub-teams or hierarchies

The Scrum Team

- The team model in Scrum is designed to optimize flexibility, creativity, and productivity.
- Scrum Teams deliver products iteratively and incrementally
 - maximizing opportunities for feedback.
- Working product is always available:
 - Because of incremental deliveries of “Done” product.

The Scrum Team

- A typical scrum team: between five and nine people
 - Ideal is five. Having more than nine members requires too much coordination!
 - Smaller teams communicate better and are more productive
- The team does not include any of the traditional software engineering roles
 - such as programmer, designer, tester or architect.
 - Everyone on the project works together to complete the set of work
 - Scrum teams develop a deep form of camaraderie and a feeling that “we’re all in this together.”

The product owner...

The Product Owner

- The Product Owner is responsible for
 - maximizing the value of the product
 - and the work of the Development Team
- The Product Owner is the sole person responsible for managing the Product Backlog:
 - Clearly expressing Product Backlog items;
 - Ordering the items in the Product Backlog to best achieve goals and missions
 - Optimizing the value of the work the Development Team performs
 - Ensuring that the Product Backlog is visible, transparent, and clear to all
 - Ensuring the Development Team understands items in the Product Backlog to the level needed

The Product Owner

- The product owner is the project's key stakeholder
 - represents users, customers and others in the process
- The product owner is often someone from product management or marketing,
 - a key stakeholder or a key user
- For the Product Owner to succeed, the entire organization must respect his or her decisions.

The Scrum Master...

The Scrum Master

- **The Scrum Master is a servant-leader for the Scrum Team**
 - Responsible for ensuring Scrum is understood and enacted
 - Responsible for making sure the team is as productive as possible
- **The Scrum Master serves the Development Team in several ways:**
 - Coaching the Development Team in self-organization and cross-functionality
 - Helping the Development Team to create high-value products
 - Removing impediments to the Development Team's progress
 - Facilitating Scrum events as requested or needed

The Scrum Master

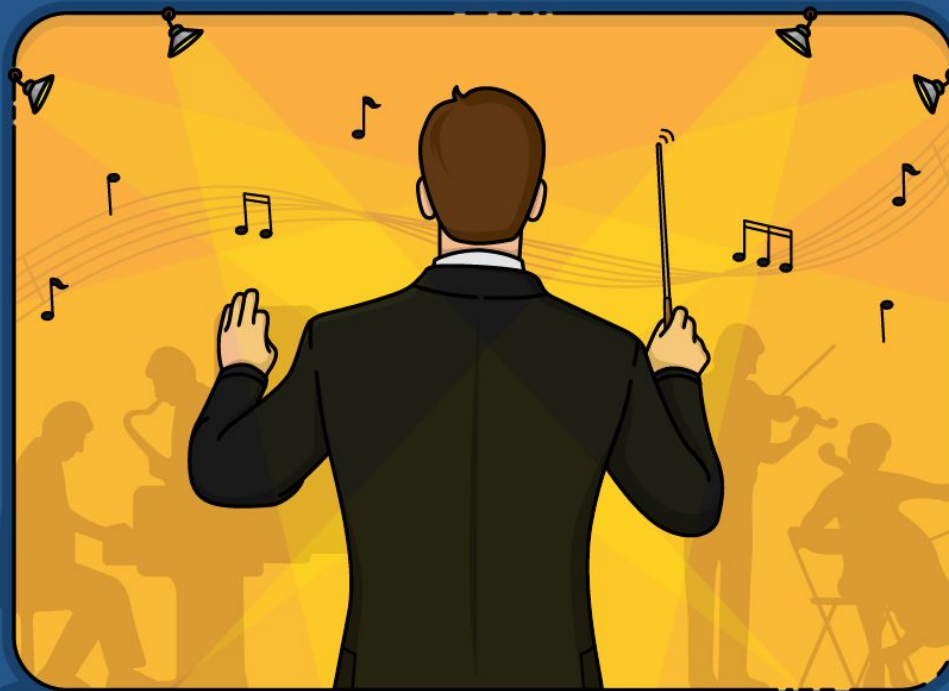
- **Scrum Master serves the organization in several ways:**
 - Leading and coaching the organization in its Scrum adoption
 - Planning Scrum implementations within the organization
 - Helping employees and stakeholders understand and enact Scrum and empirical product development
 - Causing change that increases the productivity of the Scrum Team
 - Working with other Scrum Masters to increase the effectiveness of the application of Scrum in the organization

The Scrum Master

- An additional responsibility is to function as a **protector of the team**
 - E.g.: protect the team from over-committing themselves to what they can achieve during a sprint
- **Help the team** in its understanding and use of the Scrum framework
 - Like a trainer: A good personal trainer will provide motivation while at the same time making sure you don't cheat by skipping a hard exercise
- Hold teams to their commitments:

They can say to a team, “Look, we all agree that we're supposed to deliver potentially shippable software at the end of each sprint. We didn't do that this time. What can we do to make sure we do better the next sprint?”

The Scrum Master



A Scrum Master is like an orchestra conductor, guiding a group of individuals to create something that no one of them could create alone.



The Sprint...

The Sprint

● The heart of Scrum

● Characteristics:

● Sprint is time-box of one month or less

- During this time a useable, and potentially releasable product Increment is created.

- Sprints best have consistent durations throughout a development effort.

- A new Sprint starts immediately after the conclusion of the previous Sprint.

● Sprints contain and consist of:

- the Sprint Planning,
- the Daily Scrums,
- the Development work,
- the Sprint Review, and
- the Sprint Retrospective.

The Sprint

● During the Sprint:

- No changes are made that would endanger the Sprint Goal
- Quality does not decrease
- The Product Backlog is refined as needed
- Scope may be clarified and renegotiated with the Product Owner as more is learned

● When a Sprint's horizon is too long

- the Sprint Goal may become invalid, complexity may rise, and risk may increase

- **Shorter Sprints** can be employed to generate more learning cycles and limit risk of cost and effort to a smaller time frame.
- **Each Sprint may be considered a short project.**

The Sprint

Important

- Each sprint is required to deliver a potentially shippable product increment.
- This means that at the end of each sprint, the team has produced a coded, tested and usable piece of software.

Sprint planning

- ① **Sprint begins with a sprint planning meeting**
 - ① the product owner presents the highest priority features to the team
 - ② top items on the product backlog
 - ① team asks enough questions to be able to turn the high-level user stories from the product backlog into the more detailed tasks of the sprint backlog
- ① Planning is attended by the entire Scrum team
 - ① including the product owner, Scrum Master
- ① Sprint Planning is timeboxed to a maximum of eight hours for a one-month Sprint

Sprint goal

- A sprint goal is a short, one- or two-sentence
 - description of what the team plans to achieve during the sprint.
 - It is written collaboratively by the team and the product owner.
- Example:
 - Implement basic shopping cart functionality including add, remove, and update quantities.
- The sprint goal can be used for quick reporting to those outside the sprint.
 - stakeholders always want to know what the team is working on
- The success of the sprint will later be assessed during the sprint review meeting against the sprint goal
 - rather than against each specific item selected from the product backlog.

Daily Scrum meeting

- On each day of the sprint, all team members attend a **daily scrum meeting**
- Daily scrums are a way for team members to synchronize their work
- It last no more than 15 minutes
 - the team share what they worked on the prior day, will work on that day, and identify any impediments to progress.
- It is typically held in the same location and at the same time each day.
- Ideally, a daily scrum meeting is held in the morning, as it helps set the context for the coming day's work.

Daily Scrum meeting

① Three questions of the daily scrum

- 1) What did you do yesterday?
- 2) What will you do today?
- 3) Are there any impediments in your way?

By focusing on what each person accomplished yesterday and will accomplish today, the team gains an excellent understanding of what work has been done and what work remains.

The sprint backlog

- The sprint backlog is the other output of sprint planning.
- A sprint backlog is a list of the product backlog items the team commits to delivering
 - plus the list of tasks necessary to delivering those product backlog items.
- Each task on the sprint backlog is also usually estimated.
- **It's critical that the team selects the items and size of the sprint backlog.**
 - Because they are the people committing to completing the tasks

The sprint review

- ① **At the end of a sprint, the team conducts a sprint review**
 - ① the team demonstrates the new functionality to the product owner or any other stakeholder
 - ① Typically this takes the form of a demo of the new features
- ① It's critical that the sprint review remains informal and doesn't become its own task, distracting from the work itself
 - ① typically forbidding the use of PowerPoint slides and allowing no more than two hours of preparation time
- ① Typically include the product owner, the Scrum team, the ScrumMaster, management, customers and developers from other projects

The sprint retrospective

- **No matter how good a Scrum team is, there is always opportunity to improve!**
- There should be always a **retrospective** at the end of each sprint
 - Usually it is the last thing in the sprint
- **What is this for?**
 - The team reflect on how they are doing and to find ways to improve
 - The goal is to plan ways to increase quality and effectiveness
- The entire team, including both the ScrumMaster and the product owner should participate
- **It takes usually 1 hour**, but
 - a hot topic will arise or a team conflict will escalate and the retrospective could take significantly longer.

The Product backlog...

The product backlog

- **It is a prioritized features list, containing short descriptions of all functionality desired in the product**
- In agile development there is no document with all the requirements
- Scrum team and its product owner begin by writing down everything they can think of for agile backlog prioritization
- The backlog is almost always more than enough for a first sprint
- Typical items on a backlog:
 - Features
 - Bugs
 - Technical work
 - Knowledge acquisition

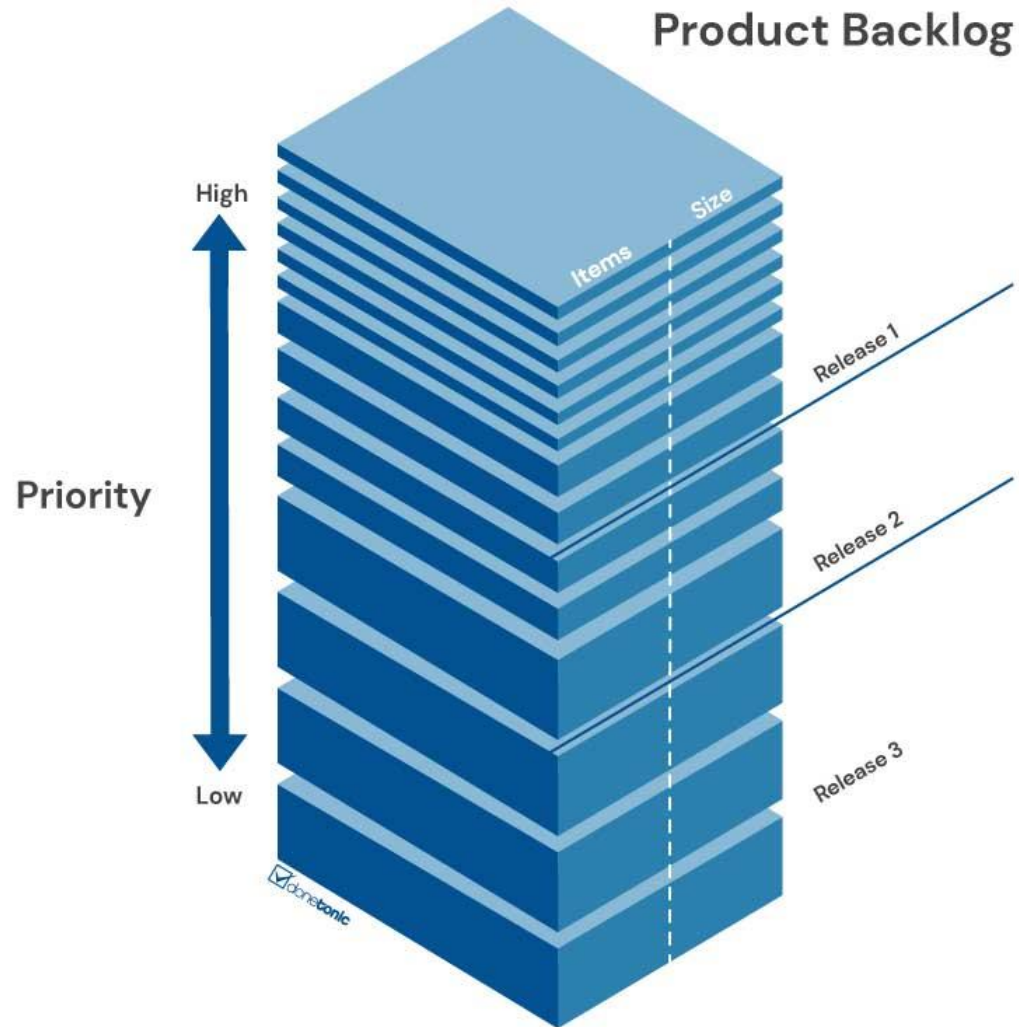
The product backlog

- The predominant way for a Scrum team to express features on the backlog is in the form of user stories
 - Short, simple descriptions of the desired functionality told from perspective of the user
 - Example:

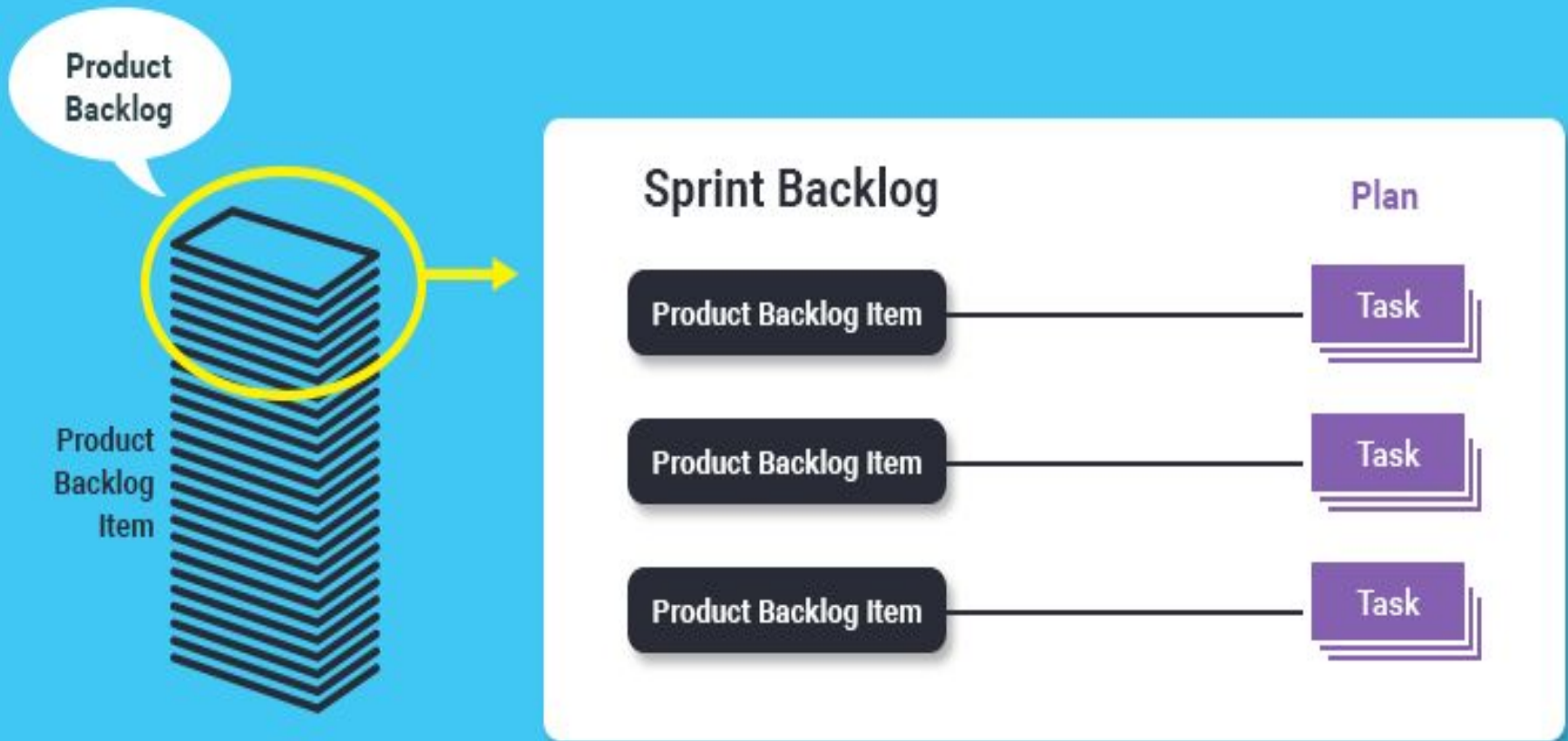
"As a shopper, I can review the items in my shopping cart before checking out so that I can see what I've already selected."
 - Technical work example:

"Upgrade all developers' workstations to Windows 11."
- The product owner shows up at the sprint planning meeting
- The team determines which items they can complete during the coming sprint.
- The team then moves items from the product backlog to the sprint backlog

The product backlog



The product backlog



The Scrum Master

Product Backlog



Sprint Backlog

Product Backlog

Sprint Backlog

DEEP

Technique

- * Detailed
- * Estimated
- * Emergent
- * Prioritized

Userstory#1

Userstory#2

Userstory#3

Userstory#4

Userstory#5

Userstory#6

Sprint #1

Userstory#1

Userstory#2

Userstory#3

Sprint #2

Userstory#4

Sprint #3

The Scrum

- ◎ **Scrum is a good framework for modern companies**
 - It is widely used by companies around the world
 - It gives useful guidelines how to manage product and the team
- ◎ **Scrum can improve:**
 - the product quality
 - the effectiveness of the processes
 - the motivation of team members

Thank you for your attention!