Overview of the Scrum process

- The following slides give an overview of the Scrum process, one of the most popular agile (management) processes.
- The overview is taken from the book “Agile Project Management with Scrum”.
- The book was written in 2004 by Ken Schwaber, who developed Scrum together with Jeff Sutherland.
What is Scrum?

• Scrum is a simple process for **managing** complex projects
• As opposed to Extreme Programming, it does not include software engineering practices such as unit testing, refactoring, and continuous integration
• Scrum’s process skeleton is iterative and incremental – the output of each iteration is an increment of product
• Scrum defines 3 roles, a relatively simple workflow, with few yet essential artifacts

The 3 Scrum roles

• The Product Owner
• The Team
• The Scrum Master

All management responsibilities in a project are divided among these roles
The Product Owner

- Is responsible for representing the interests of everyone with a stake in the project and its resulting system
- Is responsible for using the Product Backlog to ensure that the most valuable functionality is produced first
- This means frequently prioritizing the Product Backlog

In Scrum, the list of requirements is called the **Product Backlog**

The Team

- Is responsible for developing functionality
- They are responsible to figure out how to turn Product Backlog into an increment of functionality within an iteration, and managing their own work to do so
- Team members are collectively responsible for the success of each iteration and of the project as a whole
The Scrum Master

• Is responsible for the Scrum process
• Is responsible for teaching Scrum for everyone involved in the project
• Is responsible for ensuring that everyone follows Scrum rules and practices
• Is responsible for implementing Scrum so that it fits within an organization’s culture and still delivers the expected benefits

Why a Scrum Master?
If the rules aren’t enforced, people waste time figuring out what to do. If the rules are disputed, time is lost while everyone waits for a resolution.

Scrum pigs and chickens

• The people who fill the 3 roles are those who are committed to the project
• The rules of Scrum make a clear distinction between committed and interested (involved)
• They are called “pigs” and “chickens” respectively (based on an old joke)
Could the Scrum rules be changed?

- Scrum rules have been successfully applied in thousands of projects, however...
- If someone wants to change the Scrum rules, the *Sprint retrospective* is the forum to raise that.
- Rule changes should originate from the Team and not from the management.
- Changes should be approved by the Scrum Master only after he is convinced that the Team thoroughly understands how Scrum works.

Scrum Flow
A Scrum project starts with a vision

- The vision might be vague at first
- Perhaps stated in market terms rather than system terms
- The vision will become clearer as the project moves forward
- The Product Owner is responsible to those funding the project for delivering the vision while maximizing their ROI

Formulating the Product Backlog

- The Product Backlog is a list of functional and non-functional requirements
- When turned into functionality, will deliver the vision
- The Product Backlog is formulated by the Product Owner, prioritized, and divided into proposed releases
- It is a starting point. Product Backlog’s content, priorities, and groupings will change during the project
All work is done in Sprints

- Each Sprint is an iteration of 30 consecutive calendar days
- During a Sprint, no one can provide advice or instructions to the Team. The Team is self-managing
- A Sprint starts with a **Sprint Planning** meeting
- During the Sprint Planning, Product Owner and Team get together to decide what will be done for the next Sprint
- Sprint Planning meeting cannot last longer than 8 hours
- The Sprint Planning meeting has **2 parts**

Sprint Planning #1 – Commit to Product Backlog

- The first 4 hours are spent with the Product Owner (PO)
- Based on highest priority Product Backlog (PB) items, the PO tells the Team what is desired
- The Team asks questions about the content, purpose, meaning, and intentions of the PB
- The Team selects as much PB items it believes it can turn into functionality by the end of the Sprint
- The Team commits to the PO that it will do its best

No one is allowed to change the PB during the Sprint. It is frozen until the end of the Sprint

However, if during the Sprint the Team feels it cannot complete the PB items, it can consult the PO and remove ones (the same also for adding items)
Sprint Planning #2 – Create Sprint backlog

• During the second 4 hours, the Team plans out the Sprint
• The Team works on a tentative plan to start the Sprint
• The tasks that compose this plan are placed in a **Sprint Backlog**
  • These tasks emerge as the Sprint evolves
• In fact, at the start of this 4-hours part the Sprint has already started

Sprint planning – additional notes

• The Scrum Master also attends the meeting
• Additional parties can be invited, e.g., for providing technology information, however they should leave after the information is provided.
• There are no "chickens" as observers
• The PO must prepare the PB prior to the meeting
• The Team can suggest, but ultimately the PO decides what will constitute the next Sprint
Daily Scrum

• Every day, the Team gets together for a 15-minute meeting called a **Daily Scrum**
• Each Team member answers 3 questions
  • What have you done on this project since the last Daily Scrum?
  • What do you plan to do between now and the next Daily Scrum?
  • What impediments stand in the way of you meeting your commitments to this Sprint and this project?

**The purpose of this meeting is to synchronize the work of all Team members daily, and to schedule any meeting that the Team needs**

Daily Scrum – additional notes

• Hold the meeting at the same place at the same time, preferably first thing in the day
• If a Team member cannot attend, he must attend by telephone or report his status by another member
• The SM starts the meeting on time. Any member who is late pays $1 to the SM immediately
• Only one person talks at a time (the one reporting his status). Everyone else listens
• Chickens are not allowed to talk, make observations, or made faces during the meeting. If too many chickens attend, the SM can limit their attendance
Sprint review meeting

• An informal meeting held at the end of the Sprint
• 4-hour time-boxed meeting
• The Team presents what was developed during the Sprint to the Product Owner, and any other stakeholders who want to attend
• This meeting is intended to bring people together and help them collaboratively determine what the Team should do next

Sprint review – additional notes

• The Team should not spend more than 1 hour preparing for the review
• Functionality that isn’t “done” cannot be presented (see definition of “done” in the next slides)
• Non-functional artifacts are not presented expect when they support understanding the presented functionality
• Functionality is presented in the Team member workstations
• A Team member starts with presenting the Sprint goal, committed PB, and completed PB, however the majority of the review is spent on presenting functionality
• At the end, stakeholders are asked for their feedback and the PO discusses potential rearrangement to the PB
• Stakeholders are free to provide any comments
Sprint retrospective meeting

• A meeting held by the Scrum Master (SM) after the Sprint review, and before the next Sprint planning
• Attended only by the SM, Team, and PO (PO is optional)
• 3-hour time-boxed meeting
• The SM encourages the Team to revise its development process, within the Scrum framework and practices, to make it more effective and enjoyable for the next Sprint

SM asks the Team members to answer 2 questions:
1. What went well during the last Sprint?
2. What could be improved in the next Sprint?

Note: the SM should not provide answers but facilitate the Team’s search for better ways for the Scrum process to work for it.

A Sprint is an increment of shippable functionality

• A Sprint is an increment of potentially shippable product functionality
• At the end of a Sprint, the PO might choose to immediately implement the functionality
• Therefore the increment should consist of
  • Thoroughly tested, well-structured, and well-written code
  • Code built into an executable
  • Documented user operation either in Help files or in user documentation
• This is the definition of a “done” increment. If “done” has other meaning, make sure that the PO understands it
Scrum Artifacts

Product Backlog (PB)

- The PB lists the requirements for the system/product being developed
- The PO is responsible for the contents, prioritization, and availability of the PB
- The PB is dynamic and never complete
  - the PB used in the project plan is only an initial estimate of the requirements
  - The PB evolves as the product and the environment in which it will be used evolves
  - Management constantly changes it according to what is appropriate for the product, for competitiveness and usefulness
**Product Backlog**

- This is an example for a real Product Backlog used in a project for developing Scrum Project Management software in 2003.
- Ken Schwaber was the Product Owner.
- We will explain its structure in the next slides.

### Table: Product Backlog

<table>
<thead>
<tr>
<th>PB Item</th>
<th>Initial Estimate</th>
<th>Adjusted Estimate</th>
<th>work remaining until completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project selection or row</td>
<td>3 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Tendered backlog for new projects</td>
<td>0 0.2 2.4 2.4</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Create product backlog worksheet with formatting</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Create sprint backlog worksheet with formatting</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Display tree view of product backlog, releases, sprints</td>
<td>0 0.2 2.4 2.4</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Sprint-1</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Create a new window containing product backlog template</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Display free view of product backlog, releases, sprints</td>
<td>0 0.2 2.4 2.4</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Display tree view of product backlog, releases, sprints</td>
<td>0 0.2 2.4 2.4</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Sprint-2</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Burndown window of product backlog</td>
<td>0 0.2 2.4 2.4</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Display free view of product backlog, releases, sprints</td>
<td>0 0.2 2.4 2.4</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Display tree view of product backlog, releases, sprints</td>
<td>0 0.2 2.4 2.4</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Sprint-3</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Automatic recalculation of values and totals</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Sprint-4</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Automatic recalculation of values and totals</td>
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<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Sprint-5</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
<tr>
<td>Automatic recalculation of values and totals</td>
<td>0 0.2 3.6 3.6</td>
<td>0 0 0 0 0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Figure 1-4: Product Backlog*
Product Backlog

- The next 3 columns are the initial estimate, the complexity factor, and the adjusted estimate.
- The complexity factor increases the estimate due to project characteristics reducing the productivity of the team.

Product Backlog

- These columns represent all the Sprints.
- When a PB item is first thought, its estimated work is inserted in the current Sprint.
- E.g., identify the only item that was not thought of for the first Sprint.

Note that the items for future Sprints have only general estimations. When the time will come, they will be better analyzed and estimated.
Burndown chart (1)

- A *burndown chart* shows the amount of work remaining during time.
- It is an “excellent way” to visualize work remaining (and done) and the progress of the Team (how fast it’s being done).

![Burndown Chart](image)

**Figure 1-5** Burndown chart

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Burndown chart (2)

- The intersection of a **trend line** with the horizontal axis indicates the estimated completion of work at that time.
- This also allow to predict the completion date where functionality is added or removed.

![Burndown Chart](image)

**Figure 1-5** Burndown chart

“Trend line” during the 3rd Sprint
Sprint Backlog (1)

- The SB holds the tasks the Team defines for turning the PB for that Sprint into an increment of potentially shippable product functionality
- An initial task list is created in the second part of the Sprint planning
- Tasks should be defined to take 4-16 hours to finish. Longer tasks are placeholders for tasks that haven’t yet been appropriately defined
- Only the Team can change the SB
- The SB is highly visible, real-time picture of the work planned to be accomplished during the Sprint

Sprint Backlog (2)

- The rows represent the tasks
- The columns represent the 30 Sprint days
- Once a task is defined, the person working on that task places its estimated time in the appropriate Sprint day
- Team members are responsible to keep the SB visible to all (e.g., in a public folder), and keep it up-to-date (adding new tasks, and updating the status of current tasks)
Final remarks

• We have provided knowledge about the Scrum process
• However that knowledge doesn’t qualify you to manage a project with Scrum
• For this, you need some practice and understanding of Scrum being applied in real situations
• You are invited to read the book which mainly discusses the practice of Scrum