Azure DevOps

Azure DevOps with Scrum

Hans-Petter Halvorsen

Contents

- [Introduction](#)
  - What is Azure DevOps?
  - What is Scrum?
- [Getting Started with Azure DevOps](#)
  - Create Project and Add Members
- [Scrum in Azure DevOps](#)
  - Work Items, Product Backlog, Product Backlog Items, Features
- [Working with Sprints in Azure DevOps](#)
  - Sprints and using Taskboard

Introduction

Hans-Petter Halvorsen

Azure DevOps

- Azure DevOps is tool for Software Engineering
  - Planning, Collaboration, Source Code Control, Bug Tracking, Agile and Scrum, etc.
- Developed by Microsoft.
- https://dev.azure.com
- Free for 5 Developers + Stakeholders.
- You use it in your web browser, and it also has integration with Visual Studio for Source Code Control and Git.

Scrum

Hans-Petter Halvorsen

Scrum

- The traditional way of organize and work in a project is the so-called "**Waterfall**" method or in general "**Plan-driven**" methods.

- **Agile** is a newer and more flexible way to organize and run a project.

- **Scrum** is one of the most poplar Agile methods today.

- **Azure DevOps** has built-in functionality for working with Scrum in a development project.

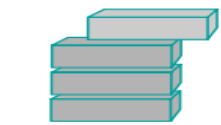# Scrum Overview

Stakeholders
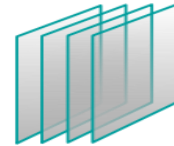
Product Backlog

Product Owner

Scrum Master

Sprint Backlog

Development Team
3-9 persons

Scrum Process:

Sprint Planning Meeting

24 h

30 days

Daily Scrum Meetings
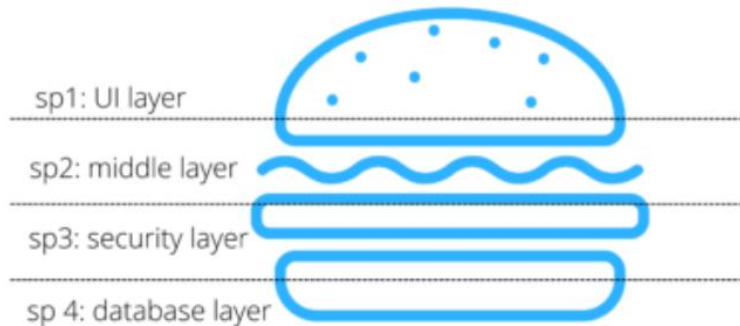Max 15 min.

Sprint Review Meeting

Product Backlog

Sprint Backlog

Sprint

Working increment of the software

Plan-driven vs Agile

Would you rather eat layers (left image) or slices (right image) of a burger?

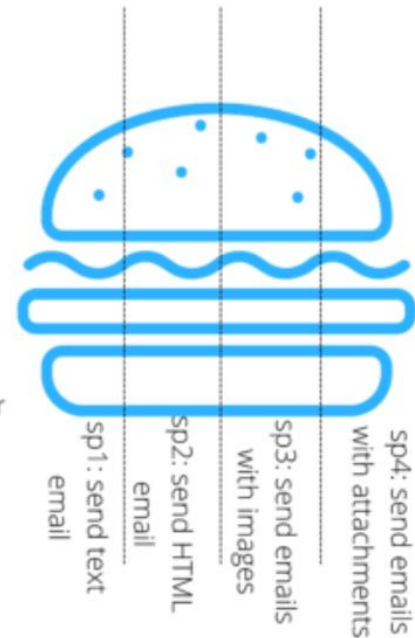Send HTML emails that can contain images and attachments

sp1: UI layer

sp2: middle layer

sp3: security layer

sp 4: database layer

(Plan-driven/Waterfall)

UI layer

middle layer

security layer

database layer

sp1: send text email

sp2: send HTML email

sp3: send emails with images

sp4: send emails with attachments

(Agile)

Important Agile principle: Working software, documents and product at all times, which is illustrated with the hamburger to the right. In that way you can get a taste of the software early in the development and during the development and before the entire software is finished.
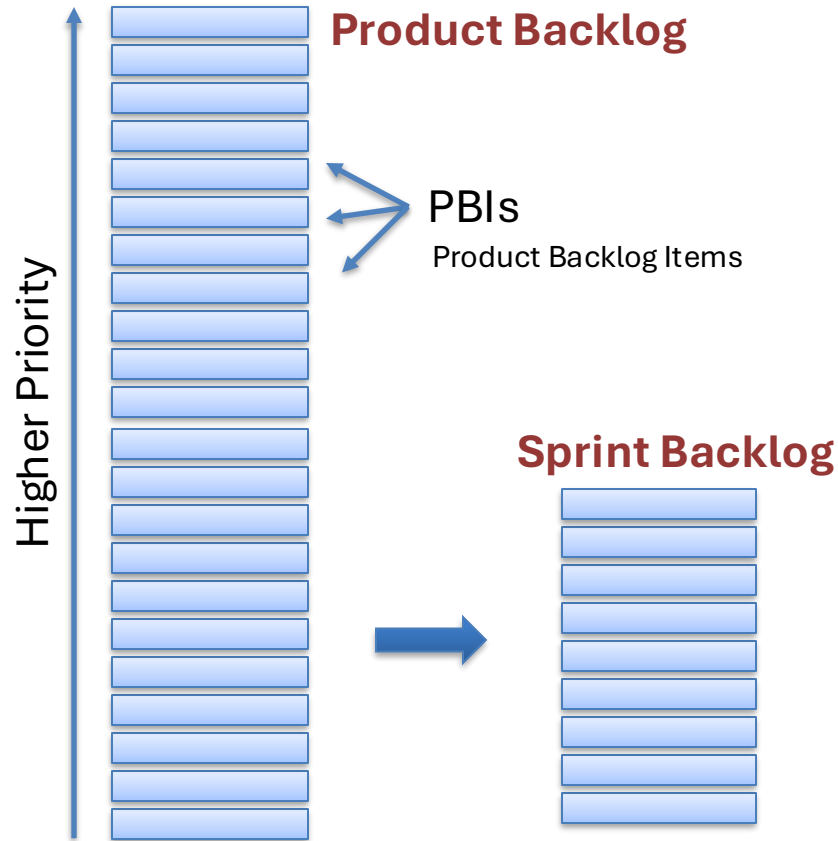
Product Backlog

- The Scrum **Product Backlog** is simply a list of all things that needs to be done within the project.

- It replaces or complements the traditional requirements specification.

- So basically, **The Product Backlog is a List of all the Requirements** for a given Software System that shall be developed by the Development Team.

- A **Product Backlog Item (PBI)** is a single item/requirement in the Product Backlog.

- You can choose to group the Product Backlog Items (PBIs) using "**Features**". "Features" will then be a level above the PBIs.

  - This is recommended because there can be many PBIs i development project (many hundred)

Scrum and Sprints

- In **Agile** you work in iterations or **Sprints** as it is called in Scrum.

- **A Sprint can typically be 1-4 weeks**.

- During the Sprint you use a **Taskboard** to keep track of your work.

- Then during the Sprint, you should move the Tasks from "**To Do**" to "**In Progress**" and then finally to "**Done**".

- When the Sprint is finish, the hopefully all the Tasks should be in the "Done" column.

- During the Sprint you have different Meetings, such as "**Sprint Planning Meeting**", "**Daily Scrum Meetings**" (also called "Standup Meetings) and "**Sprint Review Meeting**".

Product Backlog and Sprint Backlog

Product Backlog

PBIs

Product Backlog Items

Higher Priority

Sprint Backlog

- **Product Backlog**: The Product Backlog is an ordered list of everything that might be needed in the product and is the single source of requirements for any changes to be made to the product.

- **Sprint Backlog**: The Sprint Backlog is the set of Product Backlog items selected for the specific Sprint that shall be executed

The Project period is divided into Sprints

Product Backlog

- A prioritized list of ALL requirements to be implemented in the entire project

Project Start

Project Finished

Sprint Planning Meeting

Sprint Planning Meeting

Sprint Planning Meeting

Sprint 1

Sprint 2

...

Sprint N

Sprint Review Meeting

Sprint Review Meeting

Sprint Review Meeting

Divide PBIs into doable Tasks

Divide PBIs into doable Tasks

Divide PBIs into doable Tasks

Sprint Backlog

Sprint Backlog

Sprint Backlog

Sprint Planning

- Have a "**Sprint Planning Meeting**" within the Team.
- Move selected Items from the "**Product Backlog**" to the "**Sprint Backlog**".
- Create multiple Tasks for each PBI in the Sprint Backlog.
  - A **PBI** is a specific requirement for your system and should be understandable by the customer.
  - A **Task** is details how the developers are solving/implementing that specific PBI, so each PBI typically must be broken down into multiple Tasks. Tasks are typically only understandable for the development team.
- Both the "Product Backlog" and the "Sprint Backlog" should be created in **Azure DevOps**.

Taskboard

The Product Backlog Items that has been selected for the specific Sprint (Sprint Backlog items) must be broken down in manageable Tasks by the Development Team. These Tasks are then put on the Taskboard for the current Sprint.
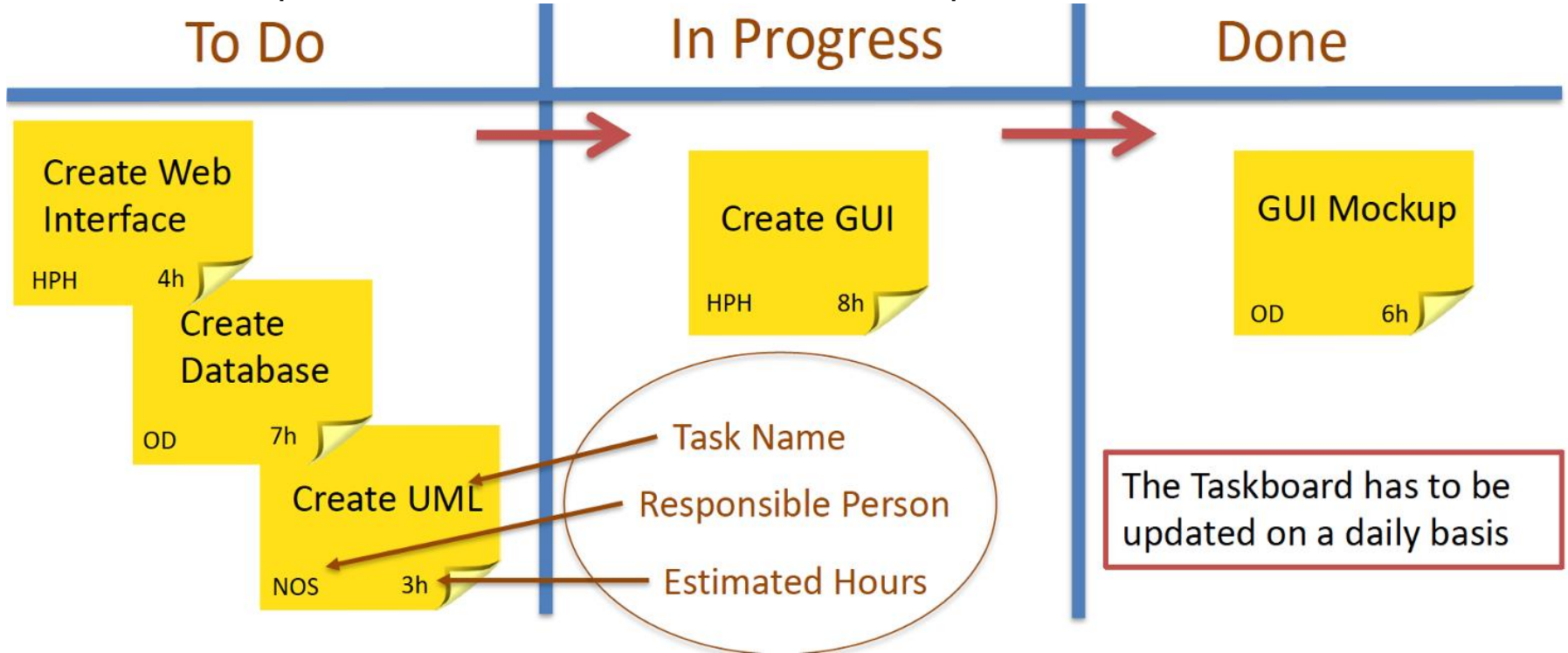
Daily Scrum Meetings

The Daily Scrum Meeting is a short status meeting where the team members stand around the Taskboard. The purpose with the Daily Scrum Meeting is to track progress and synchronize activities and create a plan for next 24 hours.

To Do	In Progress	Done
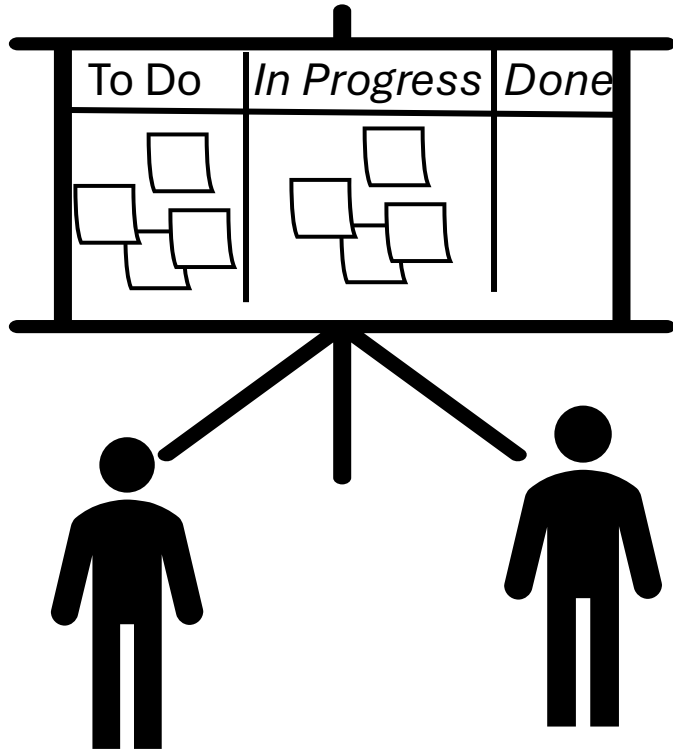
3 Questions are answered by each team member in the meeting:
1. What did you do yesterday?
2. What shall you do today?
3. Any Problems?

Best practice

- **Assign only 1 Person to a Task**.
  - If there are more than one person there will be none in charge of the Task and it will most likely not be done at all
  - Then better to divide into multiple Tasks, one for Person A and another Task for Person B
- Better to **Create many small Tasks** than a few large Tasks
  - Example "Update Report" is NOT a good Task, will it take a week or a month? and what shall be done?
  - Example "Update Chapter 2.3 with Results from the Simulations" is much more specific and time limited Task
- Create Tasks that has a **Max duration of 8 hours**
- **Work in Iteration/Sprints that last 1-4 week**, this means you come together in a Meeting (**Sprint Planning Meeting**) and setup all the necessary Tasks for the current iteration/Sprint.
  - Make sure to create enough Tasks for the entire Iteration/Sprint for all members.
- **Update Tasks when working**
  - Make sure to immediately update your Task from "Not started" to "In progress" when you start working on that specific Task.
  - Make sure to immediately update your Task from "In progress" to "Completed" when you are finished with that specific Task.
- Make sure to have a **Scrum Master** (informal Project Manager) that keep track of all the Tasks and have an overall control of the situation and status
- When the Sprint is finished you need to have a **Sprint Review Meeting** where you go through in detail all that has been done in that Sprint.

Getting Started with Azure DevOps
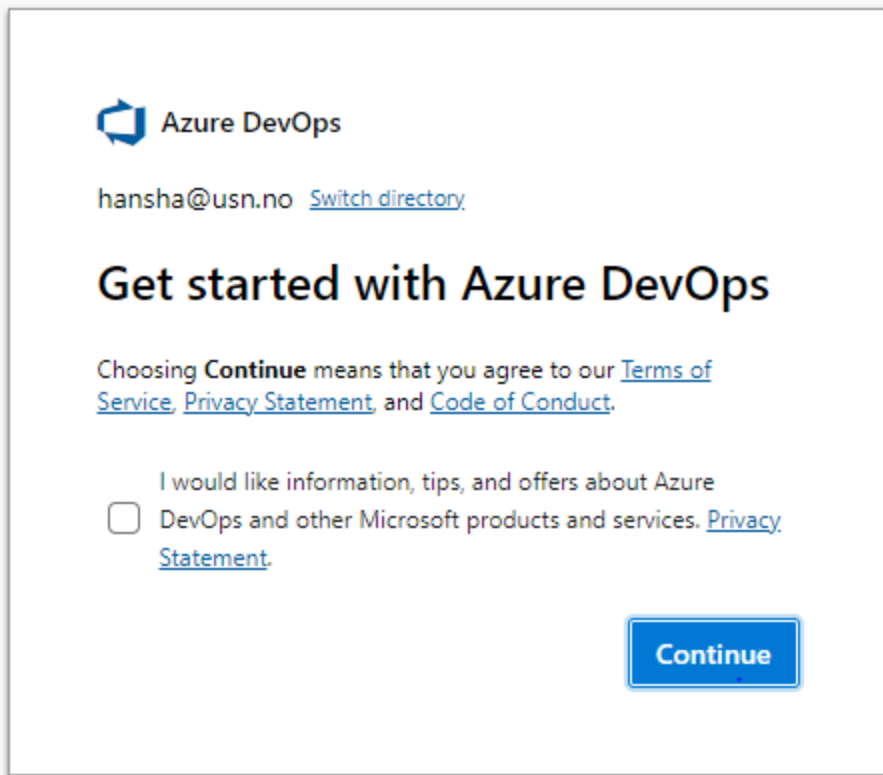
Hans-Petter Halvorsen

Getting Started with Azure DevOps

First, you need to Create a New **Organization**

Azure DevOps
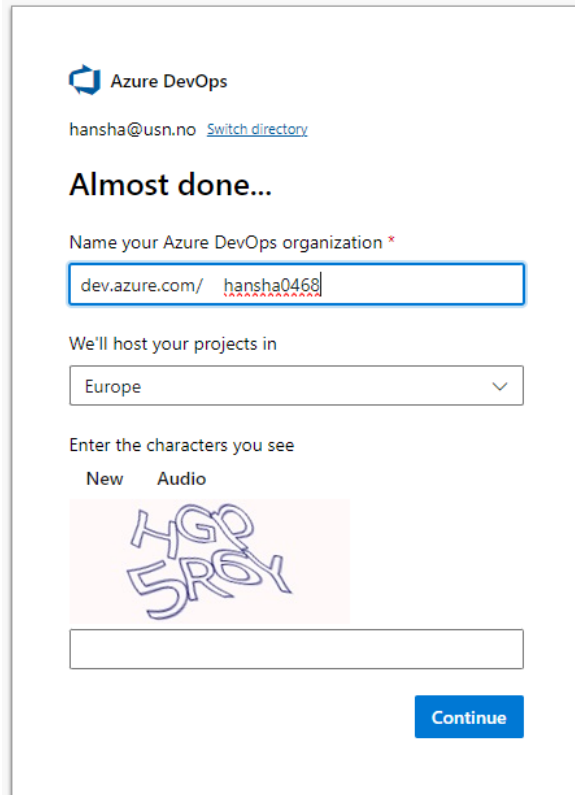
hansha@usn.no   Switch directory

Get started with Azure DevOps

Choosing **Continue** means that you agree to our Terms of Service, Privacy Statement, and Code of Conduct.

☐ I would like information, tips, and offers about Azure DevOps and other Microsoft products and services. Privacy Statement.

Continue

Azure DevOps

hansha@usn.no   Switch directory

Almost done...

Name your Azure DevOps organization *

dev.azure.com/   hansha0468

We'll host your projects in

Europe

Enter the characters you see

New   Audio

HGO 5R6Y

Continue

Create New Project

Create new project ✕

Project name *

| SoftwareHPH |

Description

| |

Visibility

| 🌐 Public ○ Anyone on the internet can view the project. Certain features like TFVC are not supported. | 🔒 Private 🔵 Only people you give access to will be able to view this project. |

Public projects are disabled for your organization. You can turn on public visibility with organization policies.

⌃ Advanced

Version control ⓘ
| Git ⌄ |

Work item process ⓘ
| Scrum ⌄ |

⬆️ !!!

Cancel   Create

Select a meaningful Project name

Make sure to select "Advanced":
Version control = Git
Work item process: **Scrum**

Project Start Page

Invite/Add Members

By adding users here, you will only get "Read" rights ("Stakeholder") to some parts of the project. To give "full access" ("Administrator" access) go into "**Organization setting**". Select "Users" and then "Add users".

https://learn.microsoft.com/en-us/azure/devops/organizations/security/add-users-team-project

Give Users "Full Access" in Organization Settings

To get full access ("Administrator" access) go into "**Organization setting**". Select "Users" and then "Add users". Then Access level = Basic and the proper Project.

Make sure to select "Basic"

Select Project(s)

Make sure to select "Send email .." as well

Scrum in Azure DevOps

Hans-Petter Halvorsen

Scrum in Azure DevOps

Work Items

3 important Work Item Types related to Product Backlog

- **Product Backlog Item** (PBI)
- **Feature** – Can be used to group PBIs that belong together
- **Task** – Divide a PBI into doable Tasks. Each PBI needs to be broken down into a set of Tasks. A Task is something that should be done by the developer

Product Backlog

Start to Create Product Backlog Items
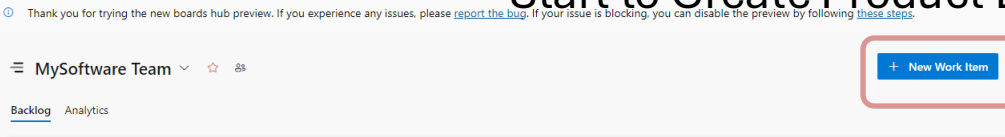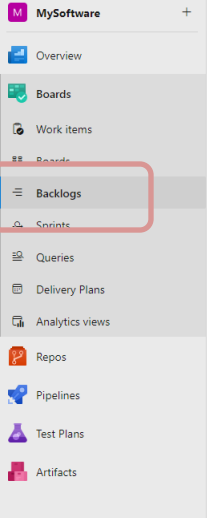
Alternative 1
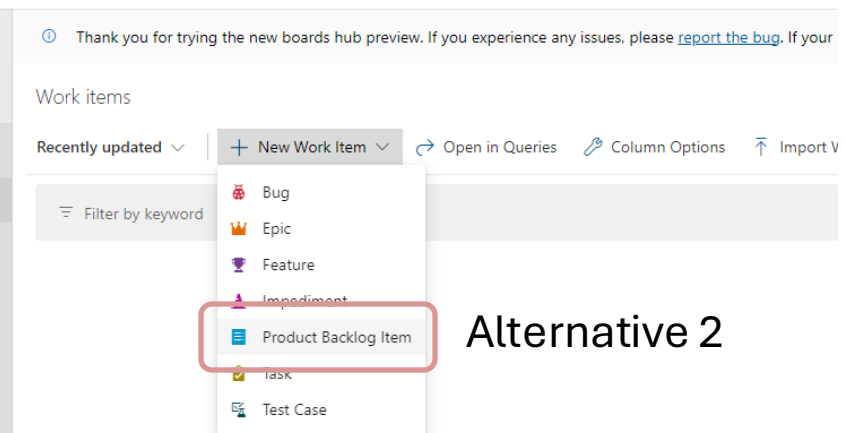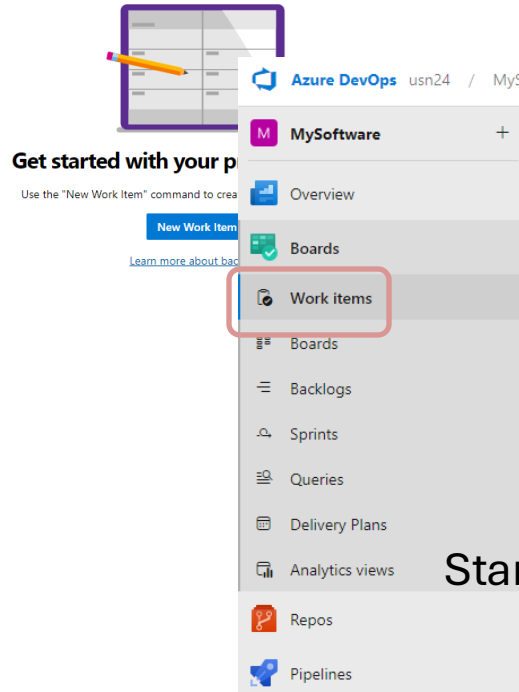
Alternative 2

Start to Create Product Backlog Items

Create Product Backlog Items

Product Backlog Example

- The Scrum Product Backlog is simply a list of all things that needs to be done within the project.
- It replaces the traditional requirements specification.
- So basically, The Product Backlog is a List of all the Requirements for a given Software System.

Sprint Backlog and Taskboard

A **PBI** is a specific requirement for your system and should be understandable by the customer.

Tasks (yellow items)

PBIs (blue items)

A **Task** is details how the developers are solving/implementing that specific PBI, so each PBI typically must be broken down into multiple Tasks. Tasks are typically only understandable for the development team.

Make sure to add proper Title, Assign a Responsible Person and estimate Number of Hours for each Task.
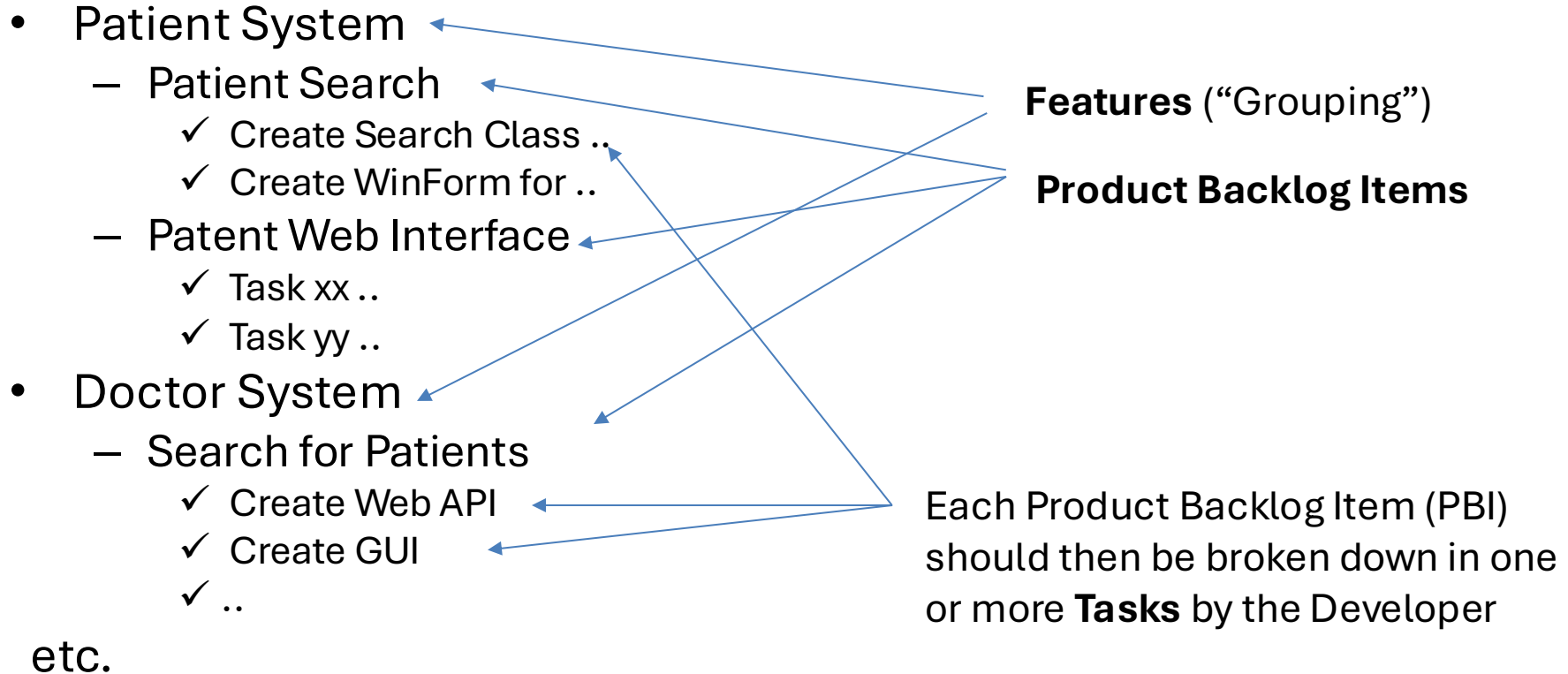
Features

Features can be used to make it easier to structure all the Product Backlog Items (PBIs). Features will then be a level above the Product Backlog Items (PBIs)

Features -> PBIs -> Tasks

Features can be used to make it easier to structure all the Product Backlog Items (PBIs):

- Patient System
  - Patient Search
    - ✓ Create Search Class ..
    - ✓ Create WinForm for ..
  - Patent Web Interface
    - ✓ Task xx ..
    - ✓ Task yy ..
- Doctor System
  - Search for Patients
    - ✓ Create Web API
    - ✓ Create GUI
    - ✓ ..
  - etc.

Features ("Grouping")

Product Backlog Items

Each Product Backlog Item (PBI) should then be broken down in one or more **Tasks** by the Developer

Areas

In "Project Settings" you can configure "Areas" which can also be used to group or divide into different Systems, Modules, Applications, etc.

These "Areas" that you configure shows up when creating new Work Items

Working with Sprints in Azure DevOps

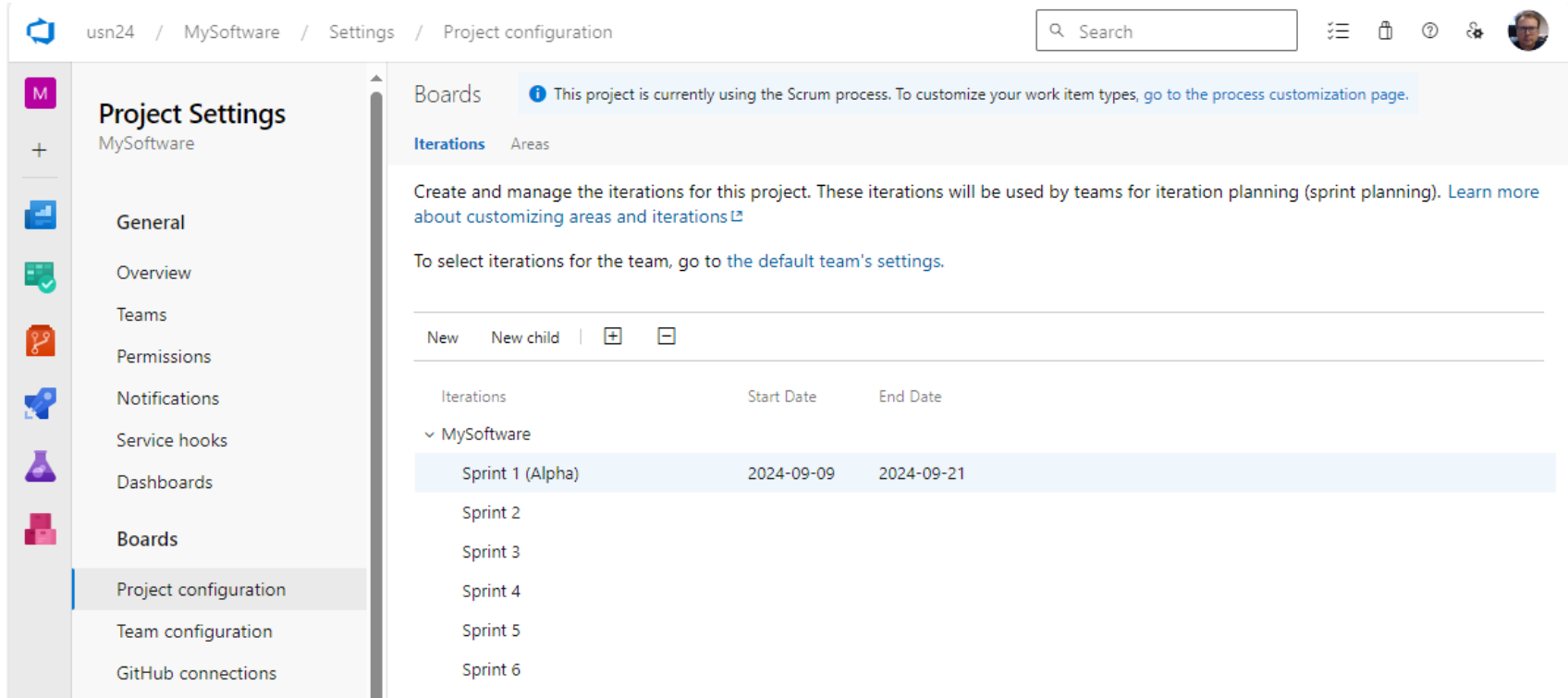Hans-Petter Halvorsen

Sprints in Azure DevOps

In "Project Settings" you can configure the different Sprint for your Project

Start Working with the Sprint

Sprint Start

- Before the Sprint stats you need to have a "**Sprint Planning Meeting**".
  - Here you decide and setup which **Product Backlog Items** and **Tasks** that should be included in the Sprint.
  - All Tasks that shall be executed in the Sprint should be put into "To Do" column on the **Taskboard**.
- During the Sprint you move Tasks (one at the time) from "To Do" to "In Progress".
- When you are finished with a Task move it to "Done"
- Every day the Team performs a "**Daily Scrum Meeting**", also called a "**Standup Meeting**" where each member tells what he has been working with, what he should start work on and if he has any problems.
- When the Sprint is finished, all the Tasks should then hopefully be in the "Done" column.
- Then you need to have a "**Sprint Review Meeting**" where the team goes through and show/demonstrate these Tasks.

Sprint Finished

Taskboard in Azure DevOps

Use the Taskboard during the Sprint

Taskboard

Her you see Start and Stop Date for the Sprint and remaining days

Product Backlog Items (PBIs)

For each PBI you need to enter one ore more Tasks

September 9 - September 21
7 work days remaining

Make a proper Task **Title** for each Task

Make sure to **Assign a Person** ad add **Number of Hours** the Task should take

You can easily **Add** more Task for a given PBI by clicking the "+" symbols

Alpha/Sprint1

Hans-Petter Halvorsen

Alpha Release Overview

Important parts in the Alpha release are:

- Software Development Plan (SDP) is finished
- Software Requirements and Design (SRD) is finished
- Product Backlog in Azure DevOps (A Prioritized list of all Requirements) is created
- Database Design and Implementation has ben made
  - ER diagram
  - SQL Server is ready to use with the tables installed
- Proof of Concept (PoC) System/Applications
  - Made some simple apps (desktop or web) that are able to communicate with the database you have created
  - The Code is checked into the Azure DevOps Git respository
- HTML Web Page

Alpha Release - Details

1. Documents: The following Documents should be "finished":

❑ **Software Development Plan (SDP)**
   – Product Description, Team Description and Project Organization, Gantt Chart, Tools and Templates, etc.

❑ **Software Requirements and Design (SRD)**
   – System overview, System and User Requirements, **Functional and Non-Functional Requirements**, **GUI Sketches**, **ER diagram**, **UML** Diagrams

❑ SDP and SRD can easily be found in Microsoft Teams, and you have made a good folder structure

2. Software/Programming:

❑ Latest Visual Studio has been installed

❑ Tables Implemented in SQL Server (on everybody's Development PCs) – Generated from erwin Script

❑ You know how to Communicate with your SQL Server Database from C# Code (You have made a small examples to for storing and reading data from the database used in your project)

❑ Database API. You have made one or more common Views/Stored Procedures that can be used by all the application. Sql scrips are in Azure DevOps

❑ **PoC**: You have started to to make a draft/PoC of your Applications with some some basic Database Communication

❑ You have created Classes and Methods (according to the UML diagrams) - not the contents in the Methods, just the Names/declarations

❑ ALL Team Members have installed MS Project (or similar), erwin Data Modeler, SQL Server, Visual Studio, UML software

❑ ALL Team Members have started to do some Programming in Visual Studio!

❑ ALL Team Members have been given a clear responsibility (e.g., responsible for a separate module or application) when it comes to Programming!

3. Azure DevOps (An Azure DevOps Project has been made + give access to all Team members + supervisor):

❑ A good Folder structure has been made + Iterations (Alpha, Beta, RC, RTM). Make sure to have a good structure in Microsoft Trams as well

❑ **Product Backlog** has been made (A List of Requirements for your System) in Azure DevOps

❑ ER Diagram, Database Scripts, etc. have been uploaded/Checked-in into Azure DevOps

❑ PoC Applications have been uploaded/Checked-in into Azure DevOps + Same with Database Scripts (Tables, Views, Stored Procedures)

4. Project Web Page

❑ A simple **HTML Web Page** with an Introduction (Text and Figures) + Links to SDP and SRD (PDF) +++ (work next week)

Tasks for Alpha Release/Sprint 1

Here is some Examples how the Sprint 1 can look like:

ProjectHPH

- Overview
- Boards
  - Work items
  - Boards
  - Backlogs
  - Sprints
  - Queries
  - Delivery Plans
  - Analytics views
- Repos
- Pipelines
- Test Plans
- Artifacts

ProjectHPH Team

+ New Work Item

Backlog   Analytics

Order	Work Item Type	Title	State	Effort	Value Area	Iteration Path
1	Product Backlog Item	Project Management	New		Business	ProjectHPH\Sprint 1 (Alpha)
	Task	Finalize Gantt Chart	To Do			ProjectHPH\Sprint 1 (Alpha)
2	Product Backlog Item	Software	New		Business	ProjectHPH\Sprint 1 (Alpha)
	Task	Test Communication with Database in App1	To Do			ProjectHPH\Sprint 1 (Alpha)
3	Product Backlog Item	Product Web Page	New		Business	ProjectHPH\Sprint 1 (Alpha)
4	Product Backlog Item	Azure DevOps	New		Business	ProjectHPH\Sprint 1 (Alpha)
	Task	Create Project	To Do			ProjectHPH\Sprint 1 (Alpha)
	Task	Assign Membera	To Do			ProjectHPH\Sprint 1 (Alpha)
	Task	Create Product Backlog	To Do			ProjectHPH\Sprint 1 (Alpha)
5	Product Backlog Item	Visual Studio	New		Business	ProjectHPH\Sprint 1 (Alpha)
	Task	Setup Git	To Do			ProjectHPH\Sprint 1 (Alpha)
6	Product Backlog Item	Database	New		Business	ProjectHPH\Sprint 1 (Alpha)
	Task	Finalize ER diagram	To Do			ProjectHPH\Sprint 1 (Alpha)
	Task	Implement Tables	To Do			ProjectHPH\Sprint 1 (Alpha)
7	Product Backlog Item	Software Requirements and Design	New		Business	ProjectHPH\Sprint 1 (Alpha)
	Task	Update Picture on Title Page	To Do			ProjectHPH\Sprint 1 (Alpha)
	Task	Finalize Daatabase chapter	To Do			ProjectHPH\Sprint 1 (Alpha)
8	Product Backlog Item	Software Development Plan	New		Business	ProjectHPH\Sprint 1 (Alpha)
	Task	Finalize Chapter 4	To Do			ProjectHPH\Sprint 1 (Alpha)

Taskboard for Alpha Release/Sprint 1

A snapshot of the Taskboard for Sprint 1

Remember to Assign 1 Person on each Task

Hans-Petter Halvorsen

University of South-Eastern Norway

www.usn.no

E-mail: hans.p.halvorsen@usn.no

Web: https://www.halvorsen.blog