



# Scrum

## Agile Software Development



S. Adams. *Dilbert*. Available: <http://dilbert.com>

# Typical Job Ad

## **Utviklingsjobb i programvarehus**

Vi har for tiden stor etterspørsel etter dyktige .Net utviklere.

Er genuint opptatt av programmering og har relevant erfaring ber vi deg kontakte oss.

### **Kvalifikasjoner:**

Minimum Bachelor med vekt på programvareutvikling

Ønskelig med noen års relant erfaring - solid relevant praksis og konkret erfaring kan kompensere for utdanning

Det er ønskelig at du har god kjennskap til:

C#, .Net-rammeverk og ASP.Net

Javascript

HTML5,

SQL databaser

**Smidige utviklingsprosesser (scrum etc)**

Gode ferdigheter i norsk og engelsk skriftlig og muntlig er nødvendig

**Søknadsfrist:** Snarest

Agile methods and especially Scrum have become very popular these days!!

<http://www.digi.no/919886/atle-42-staar-bak-amazon-skyen>



Atle Jørgensen er del av et lite utviklerteam i Sør-Afrika, som de siste 7 årene har utviklet skytjenester for Amazon. (Foto: Marius Jørgenrud)



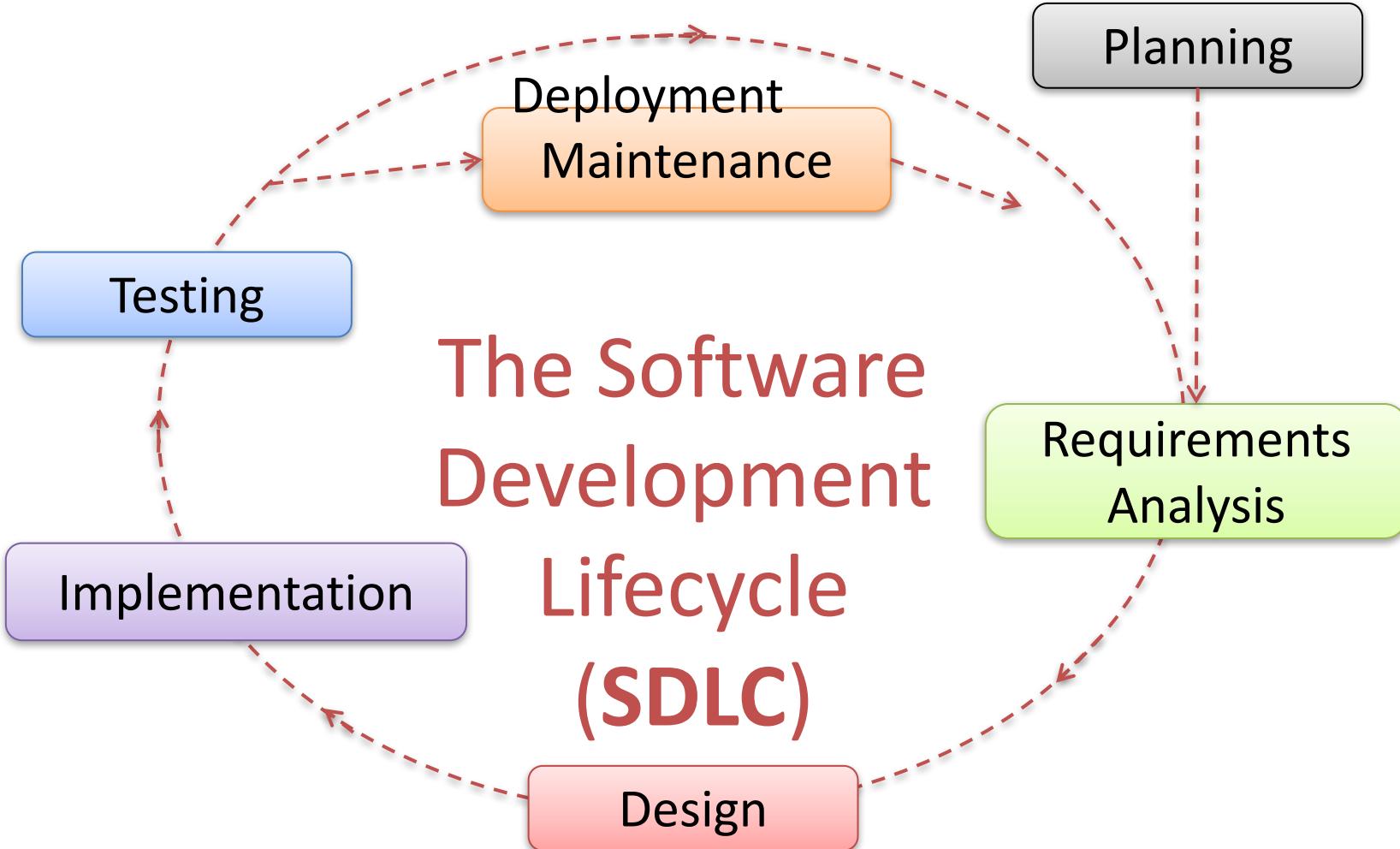
## Atle (42) står bak Amazon-skyen

INTERVJUET: Fikk drømmejobben på surfetur i Sør-Afrika.

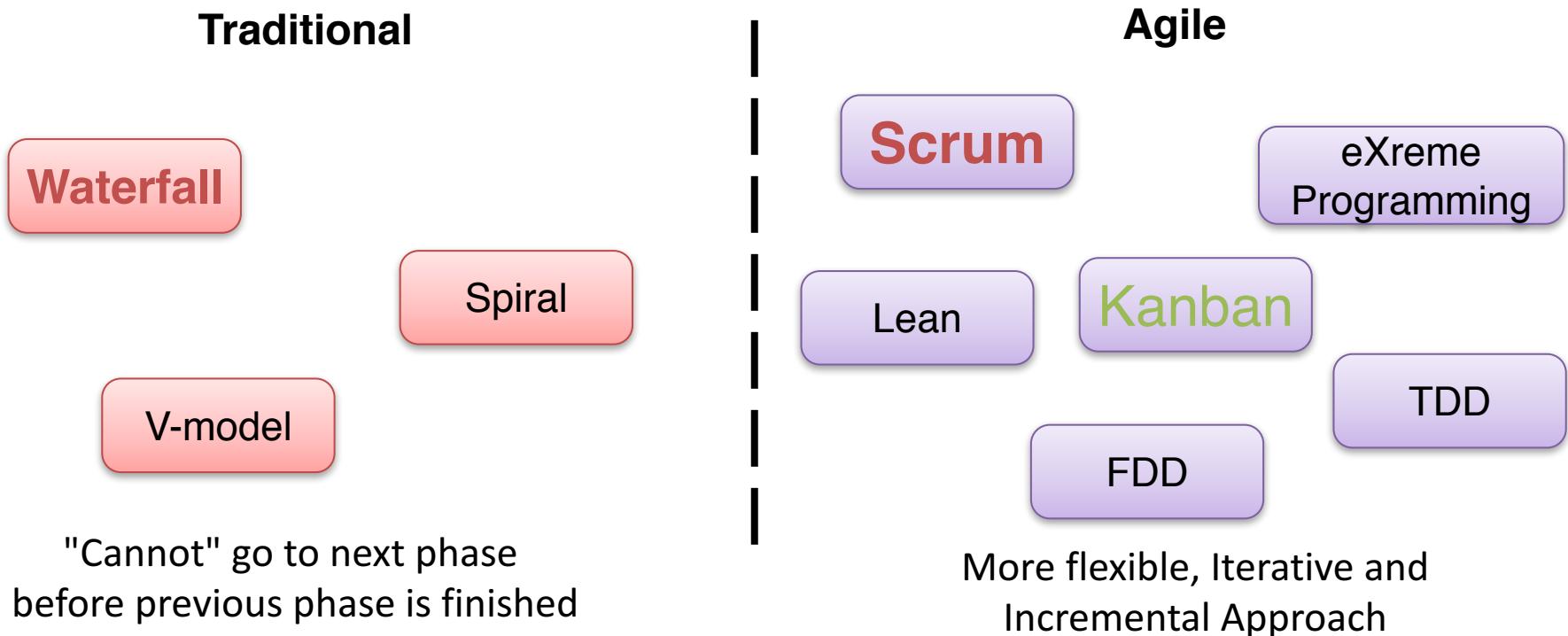
“Hvordan ser en typisk arbeidsdag ut for deg, når du ikke har fri eller surfer med barna i Sør-Afrika?”

“Det kommer an på fasen i et prosjekt. Tidlig i utviklings- eller konseptfasen er det mye møter. **Vi jobber i Scrum-prosess med daglige møter.** Senere mot leveringstid er det mye utvikling og koding. Noe som er spesielt for Amazon, som jeg ikke tror mange andre opplever, er at når du leverer et system så eier du det også operasjonelt i hele dets levetid. Å holde løsningene i drift er også noe vi bruker mye energi på.”

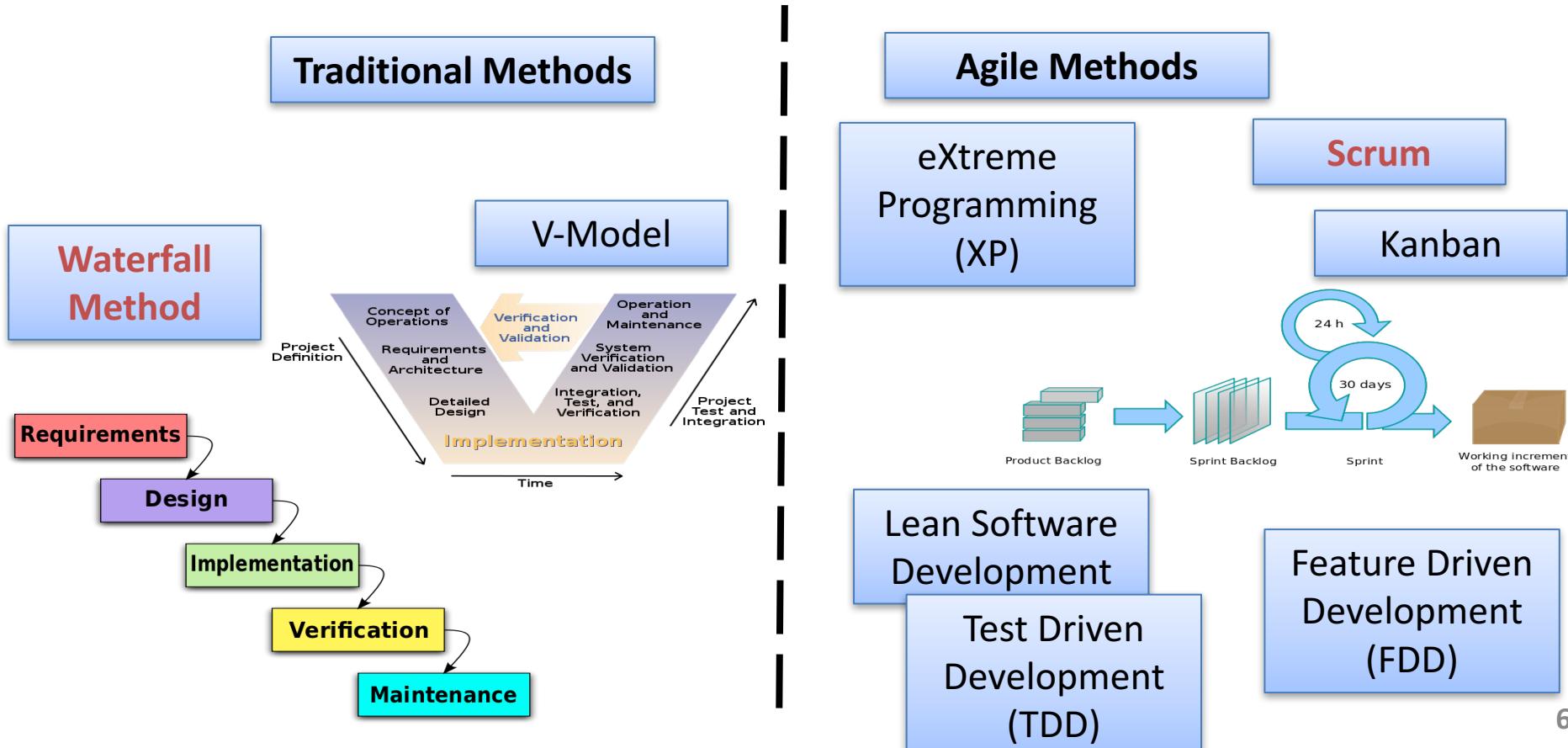
# The Software Development Lifecycle (SDLC)



# Traditional Plan-driven vs. Agile Software Development Processes

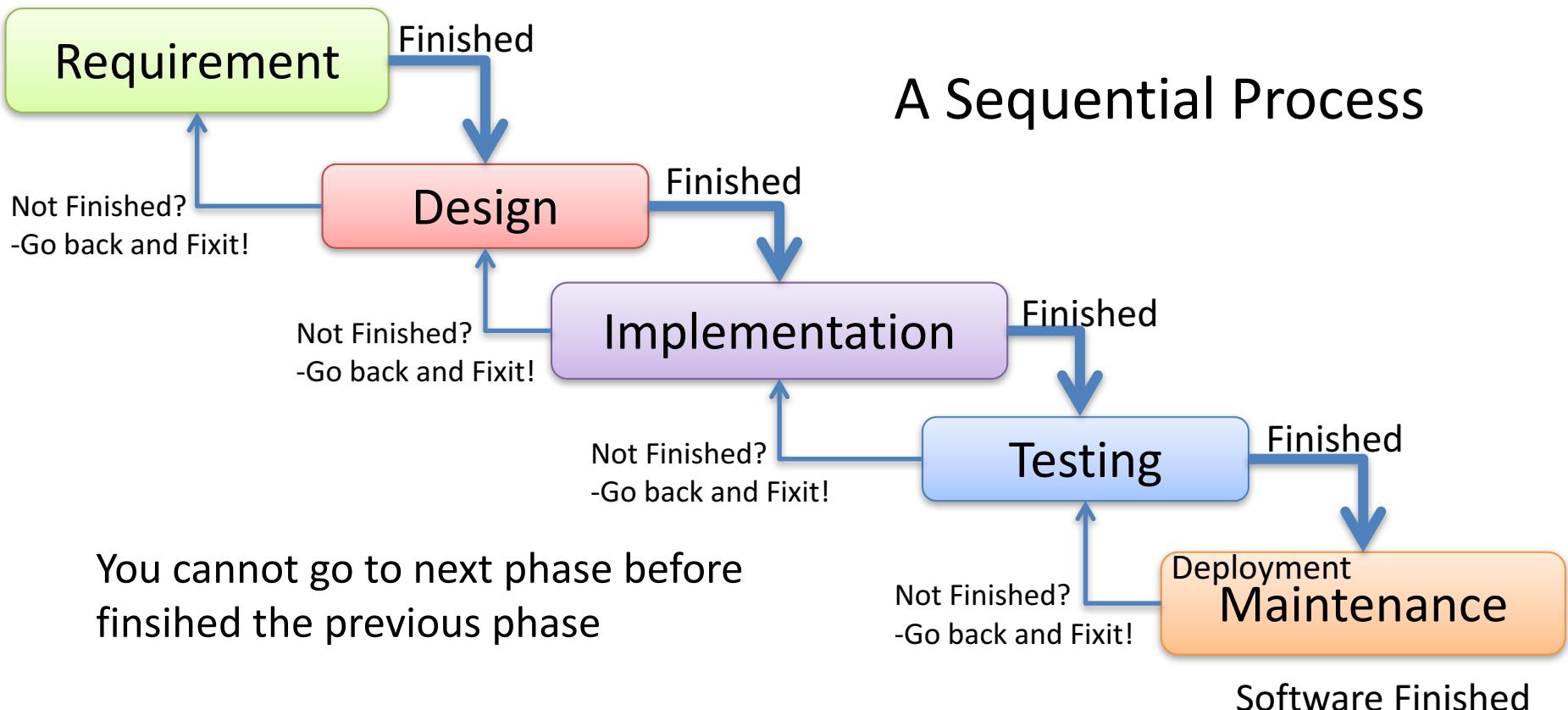


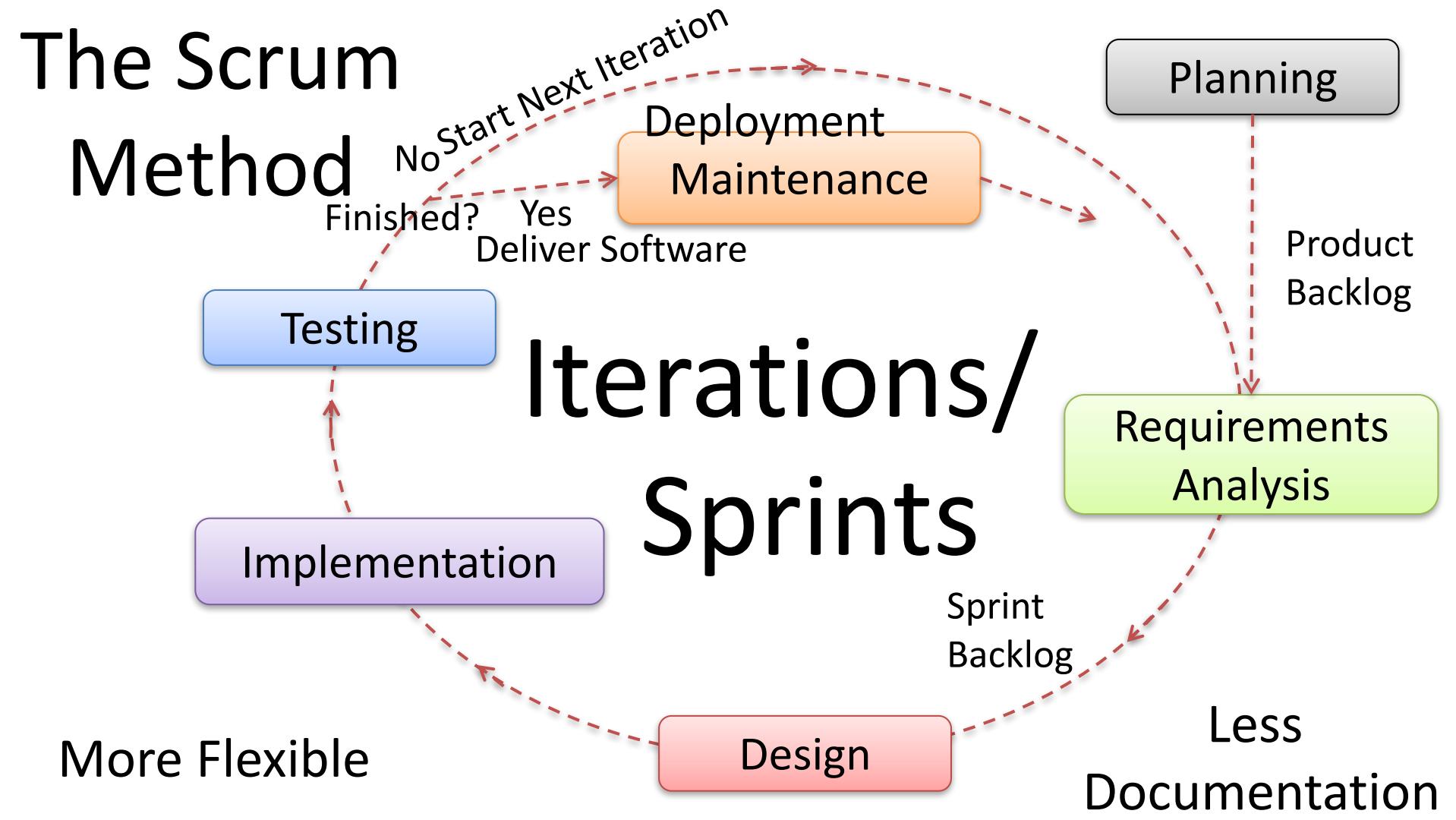
# Software Development Methods



# The Waterfall Model

Planning to create a new Software





# Agile Software Development

Iterative and Incremental Approach for Software Development



Self-organizing and cross-functional Teams

Incremental: Software available to  
Customers every 2-4 weeks

**Working Software at all times!**

Agile and Scrum, which we will test out in this course, are modern approaches for developing software.

# What is Scrum?

- Scrum - a term used in Rugby football
- A Framework for Software Development
- An Agile Software Development method
- Simple to understand
- Flexible
- Extremely difficult to master!
- Self-organizing Teams (3-9 persons)
- Scrum Team:
  - Product Owner
  - Scrum Master
  - Development Team



Scrum Members:

# Scrum



Stakeholders



Product Owner



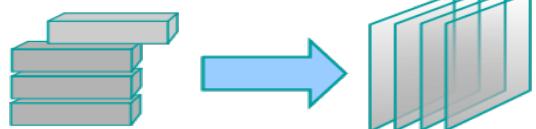
Scrum Master



Development Team  
3-9 persons

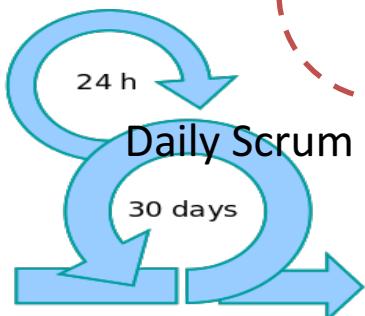
Scrum Process:

Sprint Planning



Product Backlog

Sprint Backlog



Daily Scrum Meetings. Max 15 min.

30 days



Working increment  
of the software

Sprint Review

Scrum Team

# Scrum Videos



Scrum 101 - Part 1 - <http://www.youtube.com/watch?v=aQrsVfjbQZ4>

Scrum at Microsoft (Short) – <http://youtu.be/YR84qH6d7QE>

Scrum at Microsoft (Long) - [http://www.youtube.com/watch?v=-UUrLxNBK\\_g](http://www.youtube.com/watch?v=-UUrLxNBK_g)

Daily Scrum Meeting (Bad vs. Good Example):

[http://www.youtube.com/watch?v=q\\_R9wQY4G5I](http://www.youtube.com/watch?v=q_R9wQY4G5I)

# Daily Scrum Meeting

## 3 Questions:

- What did you do yesterday?
- What shall you do today?
- Any Problems?

While answering these questions the person updates the Task Board

# Daily Scrum Meeting

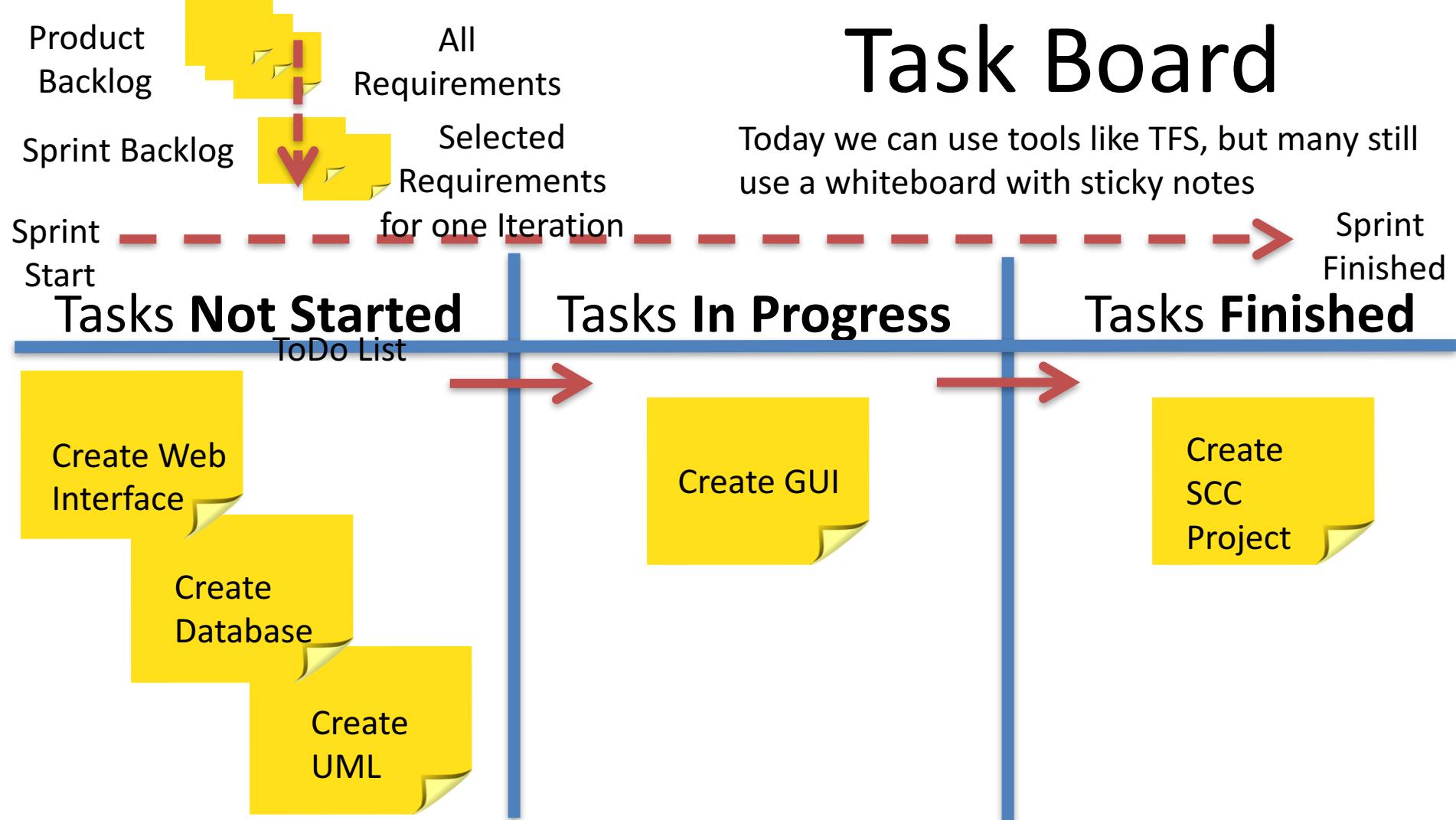


They are short (max 15 min) - and usually stand up meetings in the hallway



<https://www.youtube.com/watch?v=YR84qH6d7QE&feature=youtu.be>

# Task Board

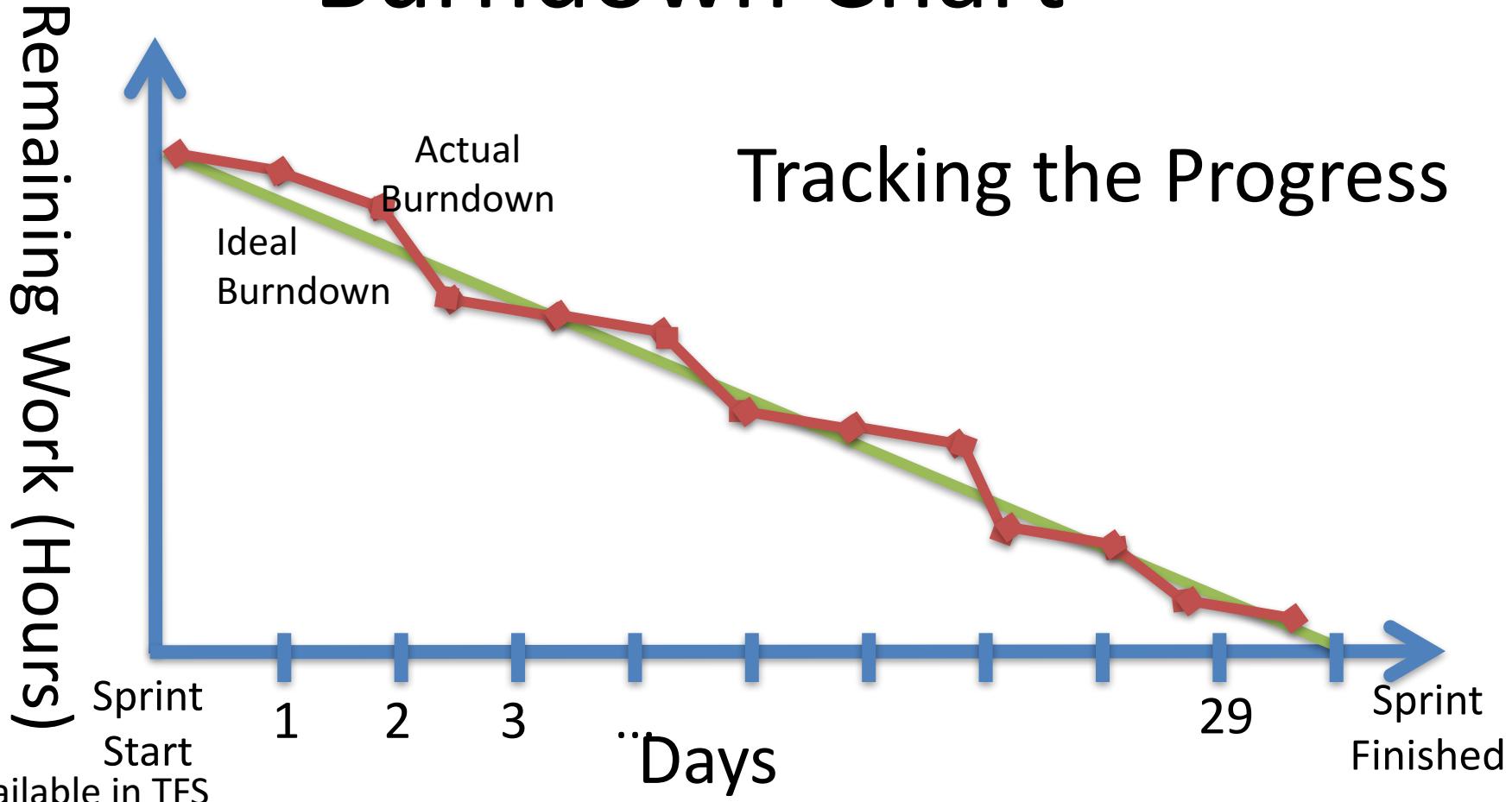


# Scrum Task Board Example



# Burndown Chart

Tracking the Progress



# Waterfall vs. Agile



- Agile is more flexible than traditional methods (like the waterfall)
- Agile and Scrum is based on Iterations while Waterfall is Sequential
- Agile and Scrum focus on less documentation
- Agile is good for small projects – not so good for larger projects?
- If the Customer dont know what he wants in detail – Scrum is a good approach

# Daily Scrum Meeting

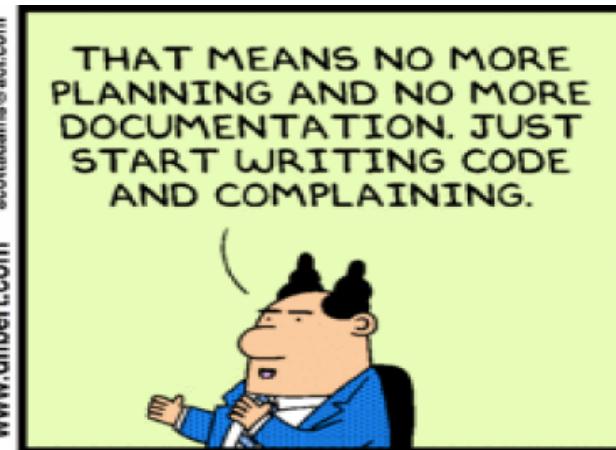


- Max 15 min.
- Same Time and Place every day
- Dont be late
- No phones, no checking E-mails, etc. (No distractions)
- Each answer 3 queations (Dont go into details!).
- No others can talk.
- Update your Tasks and the Electronic Task Board before the meeting (if sticky notes, you can update the Task Board while answering the 3 questions)
- Stand up (dont sit down) during the whole meeting
- Show the Burddown Chart at the end of the meeting



# Scrum

## More Information & Details



S. Adams. *Dilbert*. Available: <http://dilbert.com>

Hans-Petter Halvorsen, M.Sc.

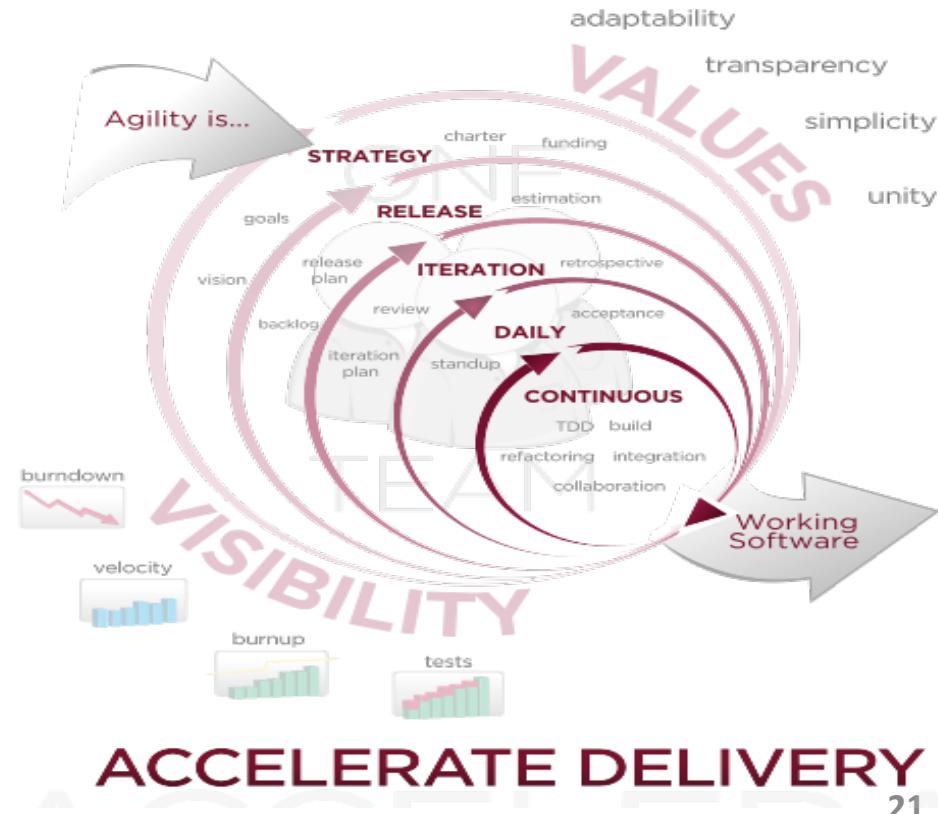
# Agile Software Development

## AGILE DEVELOPMENT

- A group of software Development methods
- **Iterative** approach
- **Self-organizing and cross-functional** Teams

Examples:

- Scrum
- eXtreme Programming (XP)

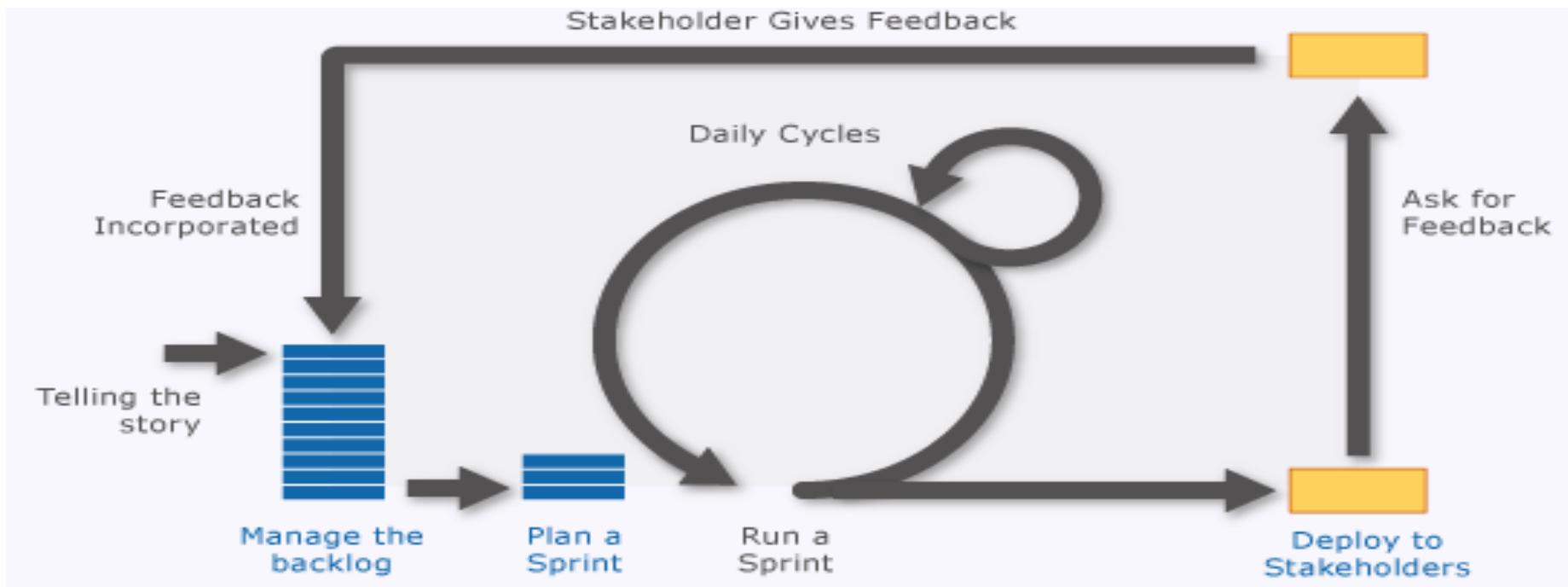


# Agile (Scrum) Documentation



Scrum (and Agile methods) has less focus on Documentation

# Scrum



# Scrum Members



Stakeholders



Product Backlog



Product Owner



Scrum Master

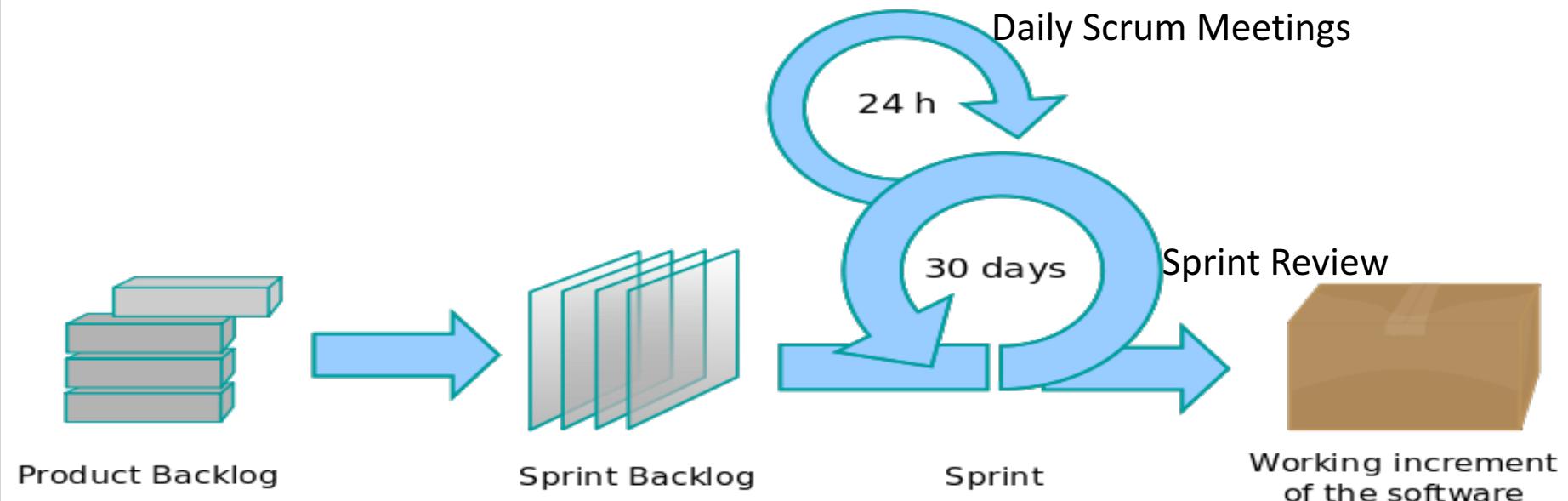


Sprint Backlog

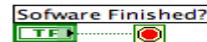
Development Team

# Scrum Process

While Loop

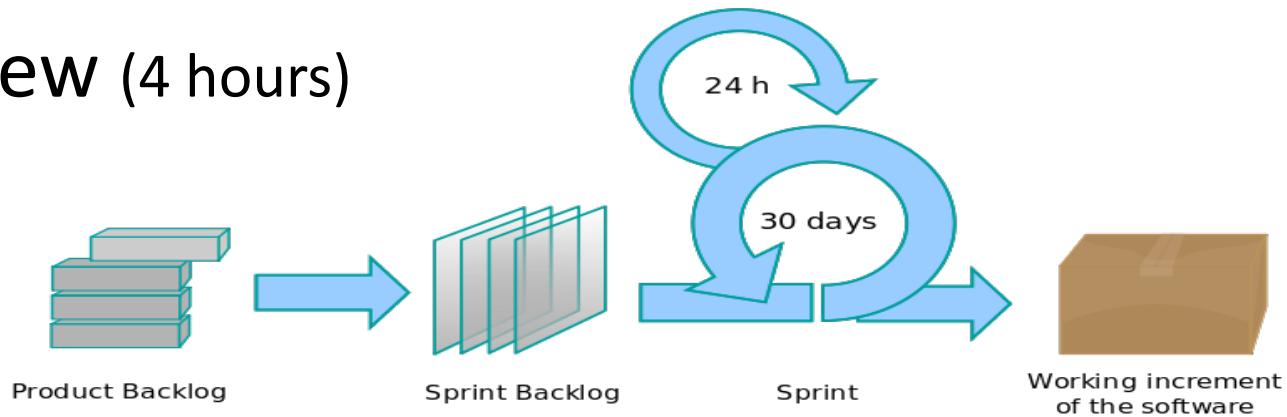


This Loop is running until Software is finished



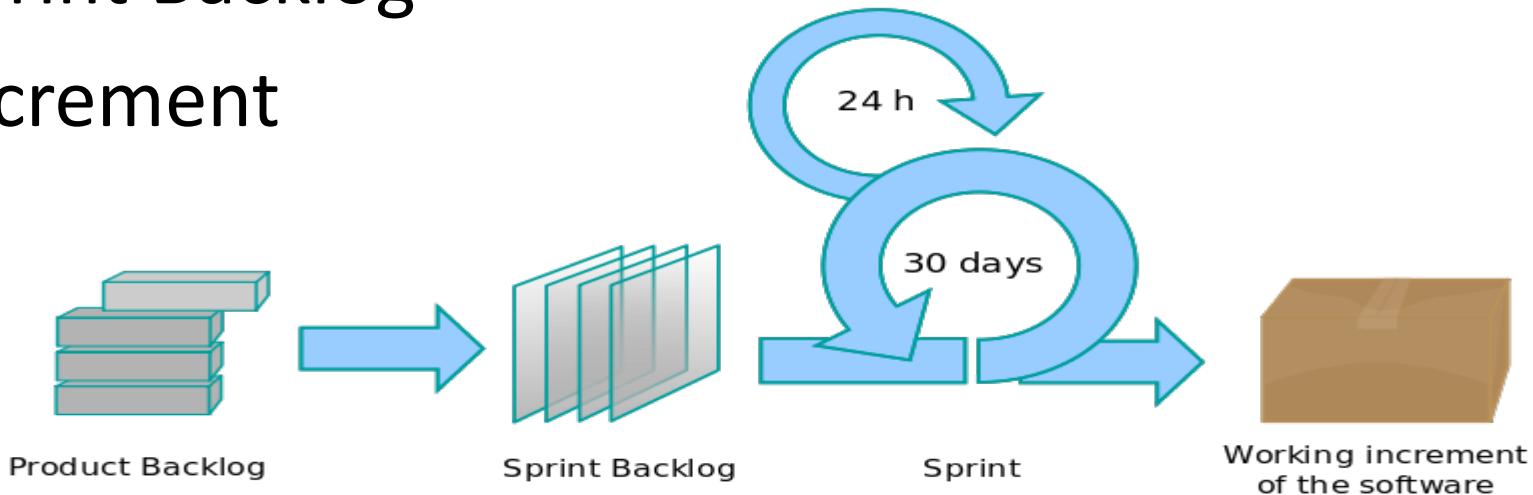
# Scrum Events

- The Sprint (30 days)
- Sprint Planning Meeting (8 hours)
- Daily Scrum Meeting (Max 15 min, Every day at the same time) (also called Standup Meeting)
- Sprint Review (4 hours)



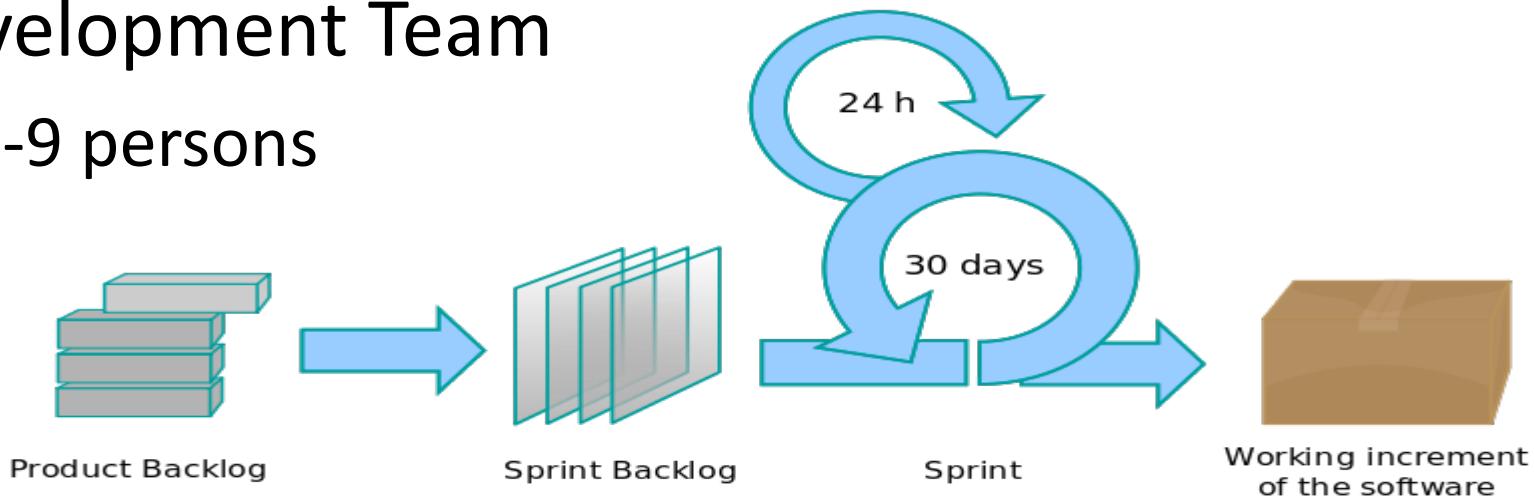
# Scrum Artifacts

- Product Backlog
- Sprint Backlog
- Increment



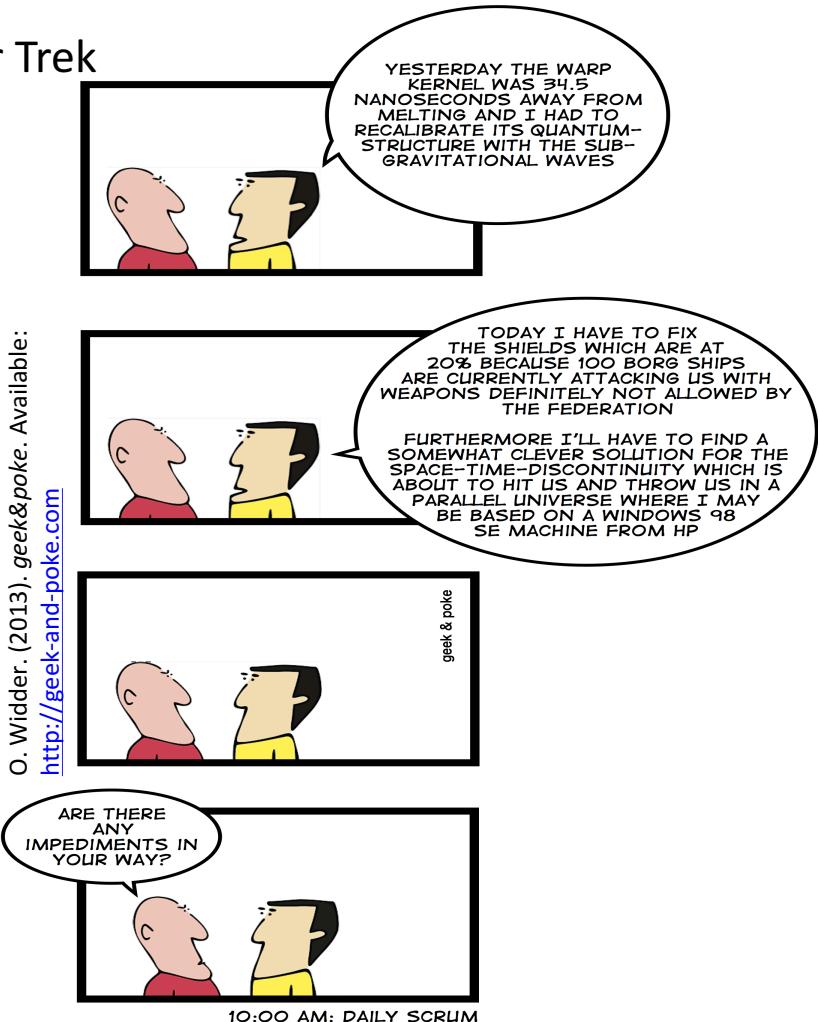
# The Scrum Team

- Product Owner
- Scrum Master
- Development Team
  - 3-9 persons



# ONE DAY ON THE USS ENTERPRISE

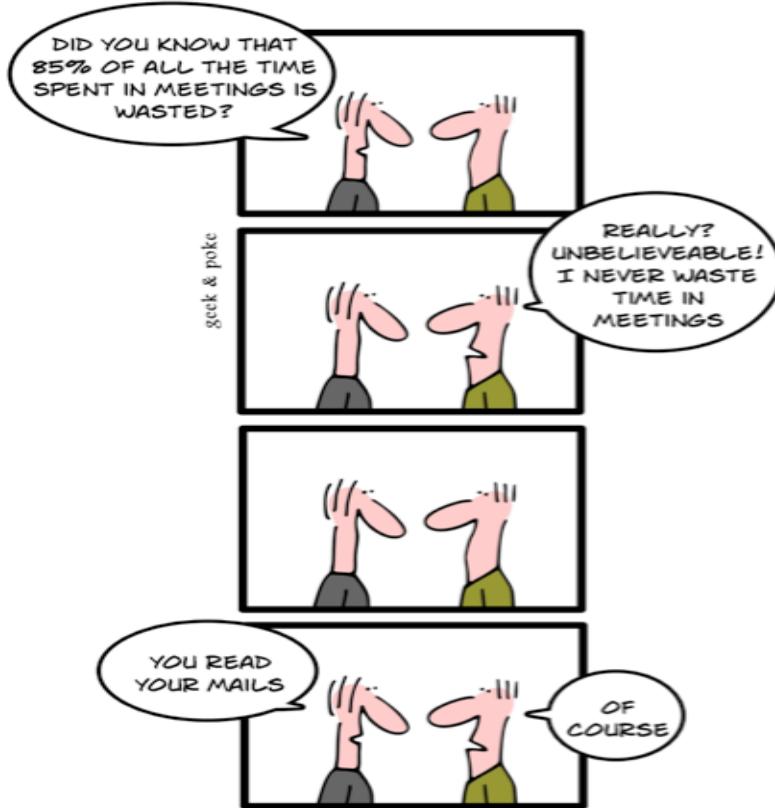
Star Trek



O. Widder. (2013). geek&poke. Available:  
<http://geek-and-poke.com>

# Daily Scrum Meeting

HOW TO MEET EFFICIENTLY



# Daily Scrum Meeting



- Max 15 min.
- The meeting is held at the same time and place every day
- “Stand Up” Meeting
- Purpose:
  - Synchronize activities and create a plan for next 24 hours.
  - Track Progress
- Agenda – Each Team member answer **3 Questions**:
  1. What has been accomplished since last meeting?
  2. What will be done before the next meeting?
  3. What obstacles are in the way?

# Scrum Videos



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Scrum at Microsoft (Short) – <http://youtu.be/YR84qH6d7QE>

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# Scrum Meetings



Hans-Petter Halvorsen, M.Sc.

# Scrum Meetings

- The meeting **agenda** should be clear.
- If team members start a discussion that does not address the purpose of the meeting, the members should take the discussion offline, to be completed later. The Scrum Master should identify and indicate when team members should take a discussion offline.
- All meetings should follow the basic structure that is described for that meeting.
- Meetings should **start on time**, even if some team members are late.
- Team members should be on time except in rare, unavoidable cases. If your schedule prevents you from being on time regularly, the conflict should be resolved as soon as possible. If necessary, the Scrum Master should adjust the meeting time to resolve the conflict if the change does not unfairly inconvenience another member of the team.
- Each team member should come to the meeting prepared.
- Meetings should finish on time. In most cases, the length of the meeting is determined by the length of the sprint. For example, take two hours for a sprint planning meeting if the sprint is one week long and four hours if the sprint is two weeks long.
- Scrum enforces this meeting structure to a level that might make people uncomfortable. This reaction comes from the pressure to be on time, the peer accountability that is associated with making and keeping commitments, and the transparency that is required to actively participate. Daily Scrum meeting are also usually a standup meetings.

# Scrum Meetings

Meeting	Purpose	Duration	Frequency
Sprint Planning Meeting	Determine what work to do in the coming sprint.	Two hours per week in the sprint, up to four hours	Once per sprint
Daily Scrum Meeting	Allow team members to commit, collaborate, and communicate risks.	Fifteen minutes	Daily
Sprint Review Meeting	Show the customer and other stakeholders the work that the team accomplished in the sprint, and receive feedback.	Two hours per week in the sprint, up to four hours	Once per sprint
Retrospective Meeting	Identify and implement ideas for process improvement.	Three hours	Once per sprint

When your team practices Scrum, it will hold a set of meetings, and each meeting has a specific purpose and frequency. Your ScrumMaster should ensure that each meeting fulfills its intended purpose.

# Scrum Meetings

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- Scrum enforces this meeting structure to a level that might make people uncomfortable. This reaction comes from the pressure to be on time, the peer accountability that is associated with making and keeping commitments, and the transparency that is required to actively participate. Daily Scrum meeting are also usually a standup meetings. When you standup it forces you to be short and focused, so you don't waste time on meetings.

# Sprint Planning Meeting

- Your team builds the **sprint backlog** in the planning meeting on the first day of the sprint
- At this meeting, your **product owner** works with your team to determine which stories it will complete in the sprint
- Your team then breaks those **user stories** down into **tasks** and **estimates** the work that is required to complete them
- Tasks should take no more than a day to complete
- **Assign tasks** to the team members

# Daily Scrum Meeting

- The goal to make forward progress is clear, and your team pulls together toward that common goal.
- Your Scrum Master strictly enforces the structure of the meeting and ensure that it starts on time and finishes in 15 minutes or less. In this meeting, each member of the team answers 3 questions:
  - What have I accomplished since the most recent Scrum?
  - What will I accomplish before the next Scrum?
  - What blocking issues or impediments might affect my work?
- It is important that team members answer these questions quickly and concisely.
- The time for elaboration is after the meeting, as people return to their desks or, if a significant amount of conversation is necessary, in a follow-up meeting.
- Many teams delay discussions by using the "virtual parking lot" method. As topics come up that a team member feels must be discussed later, any team member can quietly walk to a whiteboard or flipchart and list the topic in the parking lot. At the end of the meeting, the team plans to discuss topics that appear in the list.
- Another aspect of a successful Scrum is that people actually stand up. When the team stands up, members feel uncomfortable, especially when they are speaking. If everyone stands, the meeting will keep moving and discourage lengthy conversations.
- Third, the meeting should start and end on time and be at the same time in the same location every day
- Useful tools: Task board and Burndown chart



# Daily Scrum Meeting



Max. 15 min.!!!



# Daily Scrum Meeting



**Product Owner** may join the Daily Scrum Meetings – but are not allowed to say anything!

The Daily Scrum Meeting is also a Standup Meeting!

# Sprint Review Meeting

- On the last day of the sprint, your team meets with your product owner, customers, and stakeholders to accept completed work and to identify new requirements.
- In this meeting, your team demonstrates each user story that it completed in the sprint.
- In many cases, your customers will understand their additional needs more fully after seeing the demonstrations and will identify and discuss the changes that they want to see.
- Based on this meeting, some user stories will be accepted as complete. Incomplete user stories will remain in the product backlog, and new user stories will be added to the product backlog.
- After this meeting and the retrospective meeting, your team will plan the next sprint.



# Scrum Project Management



Hans-Petter Halvorsen, M.Sc.

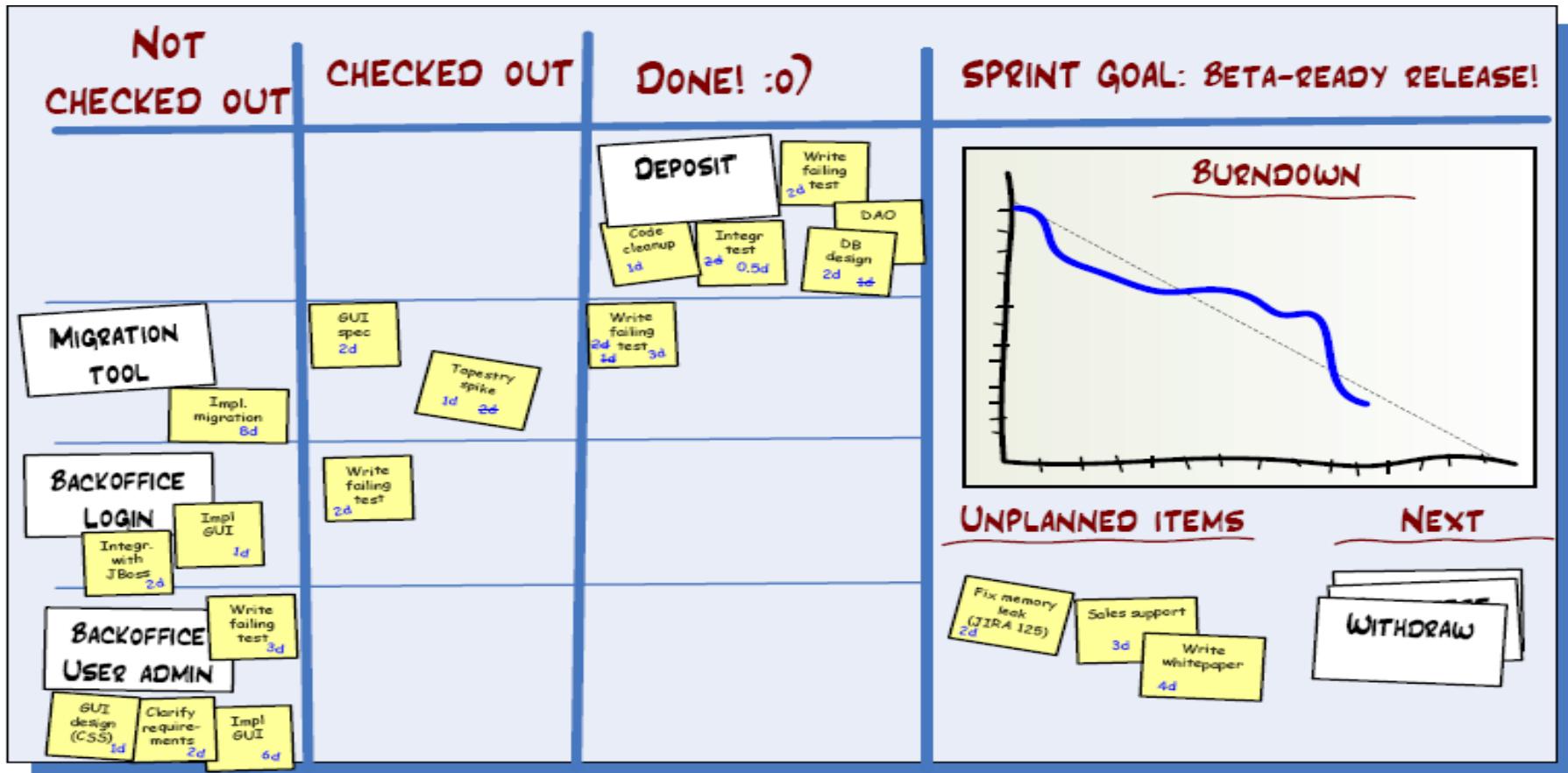
# Task board



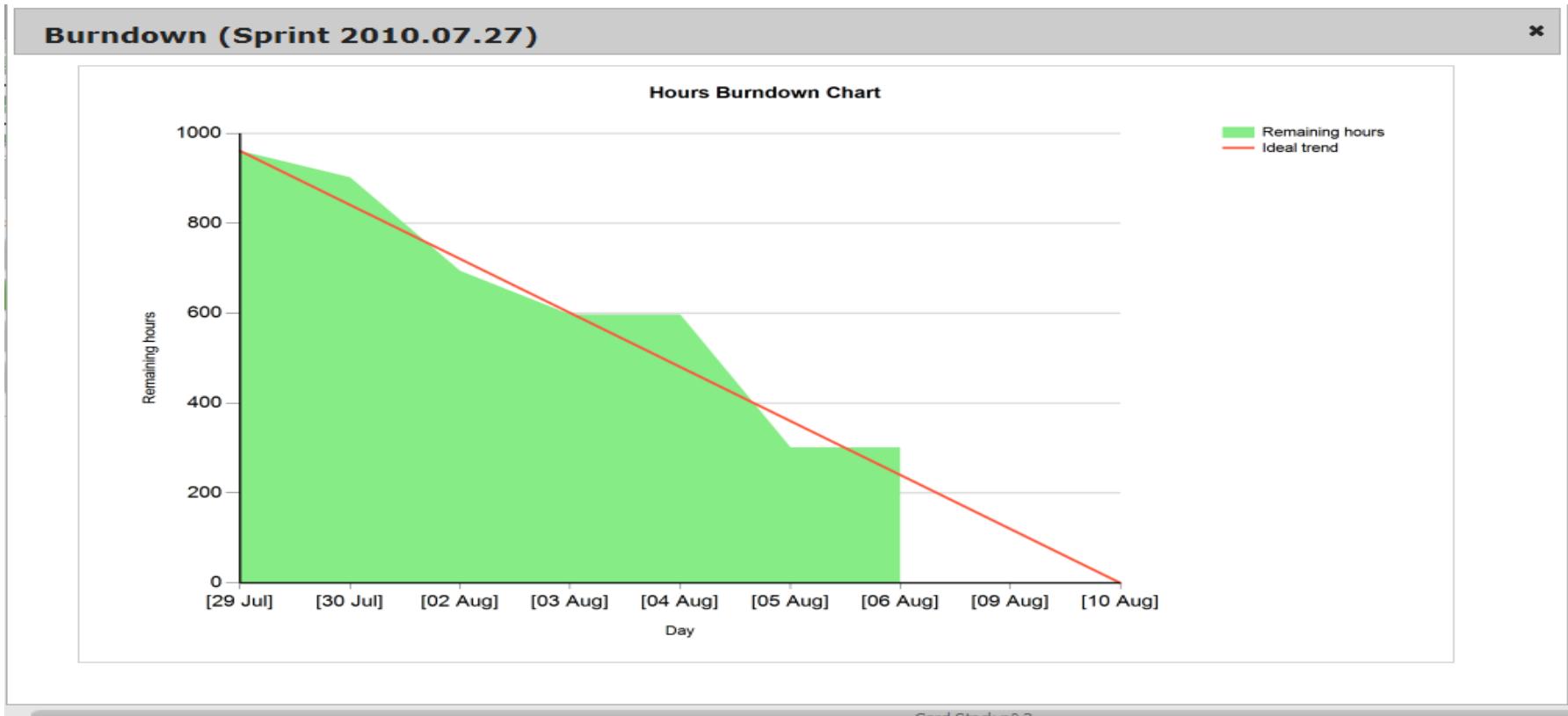
# Task board

PROJECT/TEAM: <i>Awesome Scrum Team</i>						
		Backlog	To-Do	In Progress	In Review/QA	Done!
User Story 1						
User Story 2						
User Story 3						
User Story 4						
User Story 5						
User Story 6						
User Story 7						

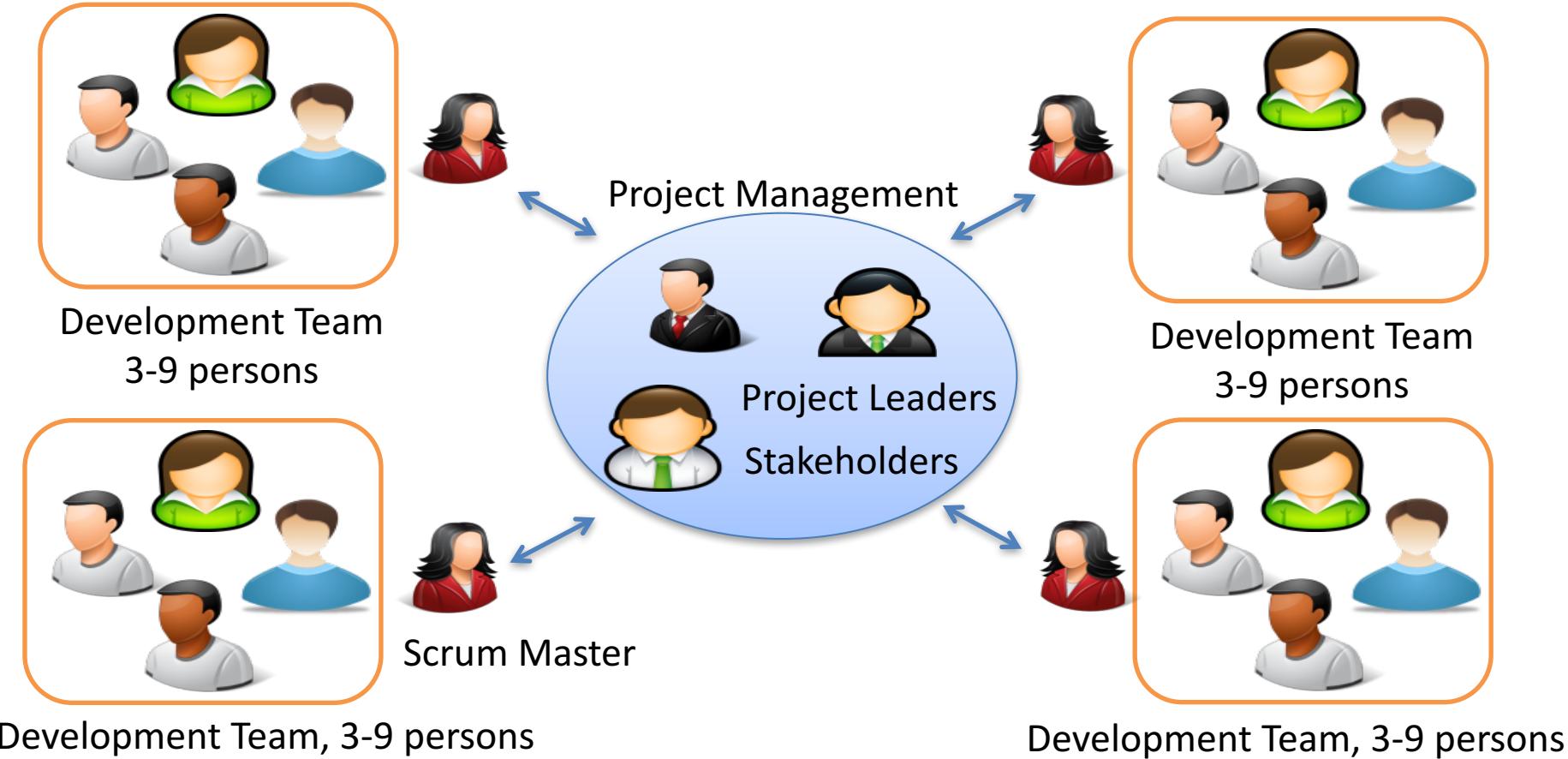
# Task board



# Burndown Chart

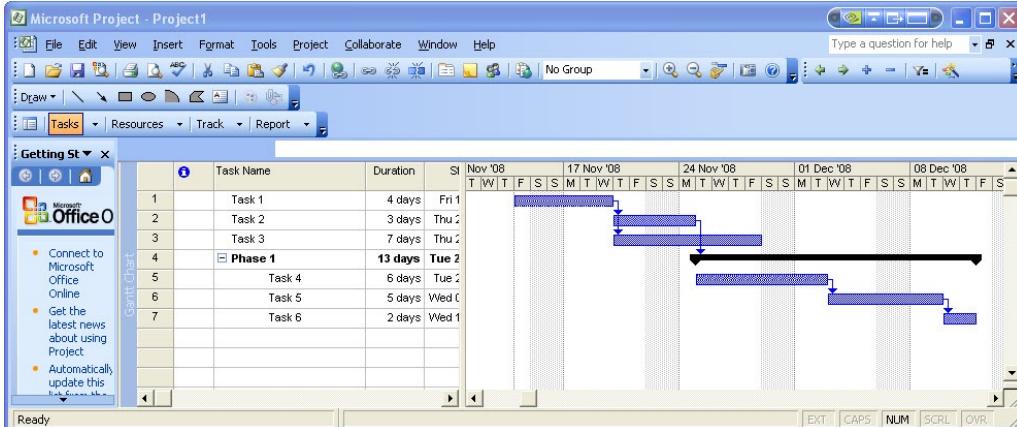


# Using Scrum in Large Software Development?



# Gantt Chart vs. Backlog

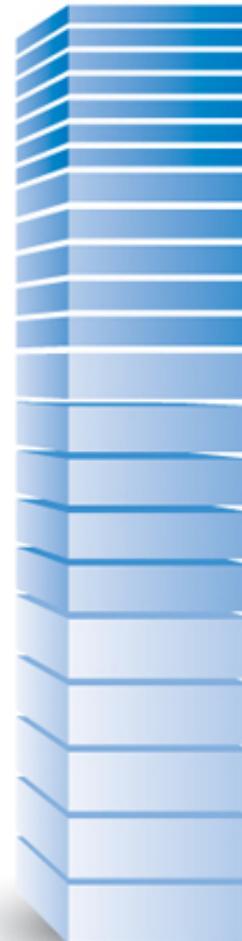
Gantt Chart is not part of Scrum, but can be handy!



The “Big Picture”. It is used by Managers, Project Leaders, etc. Overall Project Management for several Teams.

Small size  
Lots of details

Product backlog items



Worked on soon

Details. It is used by the Scrum Team/Development Team

Large size  
Few details

Not worked on soon

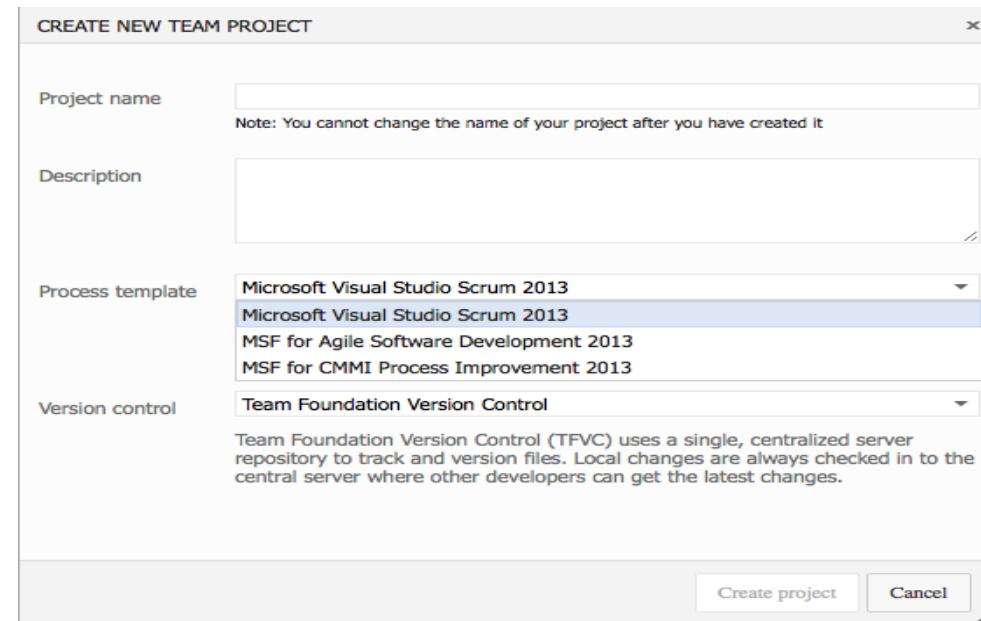


# Using Team Foundation Server together with Scrum

Hans-Petter Halvorsen, M.Sc.

# Using Scrum with TFS

- TFS – Team Foundation Server
- TFS has built-in Templates for Agile Development and Scrum



# Product Backlog and Sprint Backlog

Visual Studio Online / ScrumTest

Hans-Petter Halvorsen | ?

HOME CODE WORK BUILD TEST

Backlogs Queries

Features Backlog items

Current Alpha

Future Beta RC RTM

Backlog items

Backlog Board

New Create query Column options Add

Type: Product Backlog Item Title: Backlog Item 1 State: New Effort: Iteration Path: ScrumTest\Alpha

Type: Product Backlog Item Title: Backlog Item 2 State: New Effort: Iteration Path: ScrumTest\Beta

Forecast Off Mapping On View Backlog items

Features

Title

Order	Work Item Type	Title	State	Effort	Iteration Path
1	Product Backlog Item	Backlog Item 1	New		ScrumTest\Alpha
2	Product Backlog Item	Backlog Item 2	New		ScrumTest\Beta

# Digital Task board in TFS

The screenshot displays the Microsoft Team Foundation Server (TFS) digital task board. The board is organized into two main columns representing different sprints:

- Sprint Planning - Capacity by discipline (24.5 h):**
  - QA: Automation: Add activity validation on existing tests (4 Testing)
  - QA: Exploratory testing of interaction between capacity page and capacity (5 Testing)
  - QA: Exploratory testing of discipline assignment on capacity page (1 David Gorena Eliz..)
  - QA: Exploratory testing of discipline rollup on capacity pane (3 Mehmet Argun Al..)
  - Add activity group to QA: Automation: Add activity validation on existing tests (4 Aaron Patterson Testing)
  - QA: Adding Discipline to Automation Framework (8 Kevin McMurry)
  - Error message scrub (0.5 Susan Ferrell)
  - Update server to save capacity by activity (Aaron Patterson)
  - QA: Exploratory testing of interaction between sprint backlog and capacity (Mehmet Argun Al..)
- Product Backlog: Insert at current location (31 h):**
  - Exploratory testing (4 Testing)
  - Modify Add Panel to add at current location (5 Development)
  - Refactor Grid to remove order usage (5 Development)
  - Style changes to Product backlog grid to highlight insertion location (5 Development)
  - Add new and fix existing automation (12 Testing)

The board also features a header with navigation links (home, boards, backlogs, feedback, work items, source, build), a search bar, and a user profile for AARON BJORK.

Team Foundation Server Web App | About

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51

# Using TFS to create the Backlog

The screenshot shows the Visual Studio Team Foundation Server 2013 interface. The top navigation bar includes HOME, CODE, WORK, BUILD, and TEST. The WORK tab is selected, and the sub-menu BACKLOGS is active. The main content area displays 'Backlog items' under 'Features'. A sidebar on the left lists 'Backlog items' under 'Current' (Sprint 1) and 'Future' (Sprint 2, Sprint 3). The main panel shows a table with columns for 'Type' (set to 'Product Backlog Item') and 'Title' (containing 'Add an information form'). A modal dialog at the bottom is titled 'New' and also has 'Product Backlog Item' selected in the type dropdown. The 'Add' button in this dialog is highlighted with a red circle.

<http://msdn.microsoft.com/en-us/library/ee518933.aspx>

# Sprint Backlog in TFS

The screenshot shows the TFS interface with the following elements:

- Top Navigation:** HOME, CODE, **WORK**, BUILD, TEST.
- Sub-navigation:** Backlog items (selected), Work items.
- Left Sidebar:** Product Backlog, Current (Sprint 1, Sprint 2, Sprint 3, Sprint 4, Sprint 5, Sprint 6), Future.
- Central Area:** Backlog items table.

**Backlog Items Table Headers:**

Order	Work Item Type	Title	State
-------	----------------	-------	-------

**Backlog Items Table Data:**

1	Product Backlog Item	Hello World Web Site	New
2	Bug	Slow response on welcome...	New
3	Product Backlog Item	Change initial view	New
4	Product Backlog Item	Add an information form	New
5	Product Backlog Item	Welcome back	New
6	Product Backlog Item	Resume	New
7	Product Backlog Item	Interim save on long forms	New

# Break items down into Tasks

In the sprint backlog, add a task:

The screenshot shows a software interface for managing a sprint backlog. At the top, it says "Sprint 1" and "April 29 - May ... 12 work days remain...". Below this is a navigation bar with "Backlog" (highlighted in blue), "Board", and "Capacity". There are also icons for creating a query, column options, and email.

The main area displays a table with columns for "Title", "State", and "Assigned". A task titled "Hello World Web Site" is listed with its state as "New". To the left of this task, there is a plus sign icon with an orange border, indicating it can be expanded. Expanding this task reveals four sub-tasks: "Add an information form", "Change initial view", and "Welcome back", each preceded by a green plus sign icon.

A modal window is open over the table, showing a list of sub-tasks: "New Task 1\*: Welcome Screen" followed by three icons (refresh, undo, redo) and a "Copy template URL" button. Below this, a new task is being created with the title "Welcome Screen" highlighted with an orange border.

On the right side of the interface, there is a detailed view of the "Welcome Screen" task. It includes fields for "Iteration" (FabrikamFiber\Release 1\Sprint 1), "STATUS", "DETAILS", and "DESCRIPTION". The "STATUS" section includes dropdowns for "Assigned To", "State" (set to "To Do"), "Reason" (set to "New task"), and "Blocked". The "DETAILS" section includes fields for "Remaining Work" (set to "2" and highlighted with an orange border), "Backlog Priority", "Activity", "Area" (set to "FabrikamFiber"), and "Links" and "Attachments" tabs at the bottom.

On the left side of the interface, there is a text box with the following text:

Give the task a name, and estimate the work it will take:

# Final Results:

The screenshot shows a software application interface for managing a backlog. At the top, there is a navigation bar with links: HOME, CODE, WORK (which is highlighted in blue), BUILD, and TEST. Below the navigation bar, a secondary menu shows 'Backlog item' and 'Work items'. On the left side, there is a sidebar with sections for 'Features' and 'Product Backlog', followed by a tree view under 'Current' and 'Future' sprints. The 'Sprint 1' node is selected and expanded, revealing several tasks. The tasks are listed with icons: a green plus sign for new items, a blue square for completed items, and a red square for items in progress. The tasks are:

- Hello World Web Site**
  - Welcome Screen
  - Change background color
  - About Screen
- Slow response on welcome page**
  - Rework opening animation
- Change initial view**
- Add an information form**
  - Auto-complete user's name in form if logged in
  - Auto-save
- Welcome back**

# Use the Taskbord to update Tasks

The task board is at the heart of daily standups. Move tasks on the task board to reflect their current state.

Sprint 1

April 29 - May 17  
11 work days remaining

Backlog    **Board**    Capacity

Group by Backlog items    Person...

	TO DO 10 h	IN PROGRESS 5 h	
▲ Add an information form 7 h	+ Auto-save 4	Auto-complete user's name in form if logged in 3 Jamal Hartn...	
▲ Welcome Back 2 h	+ Add interactive text to Welcome Back page 2 Raisa Pokrov...		
▲ Hello World Web Site 6 h	+ Welcome Screen 2 Johnnie McL...	Change Background Color 2 Christie Chu...	About Screen 2 Nicole Zam...

# Use the Taskbord to update Tasks

You can assign a task to a specific person:

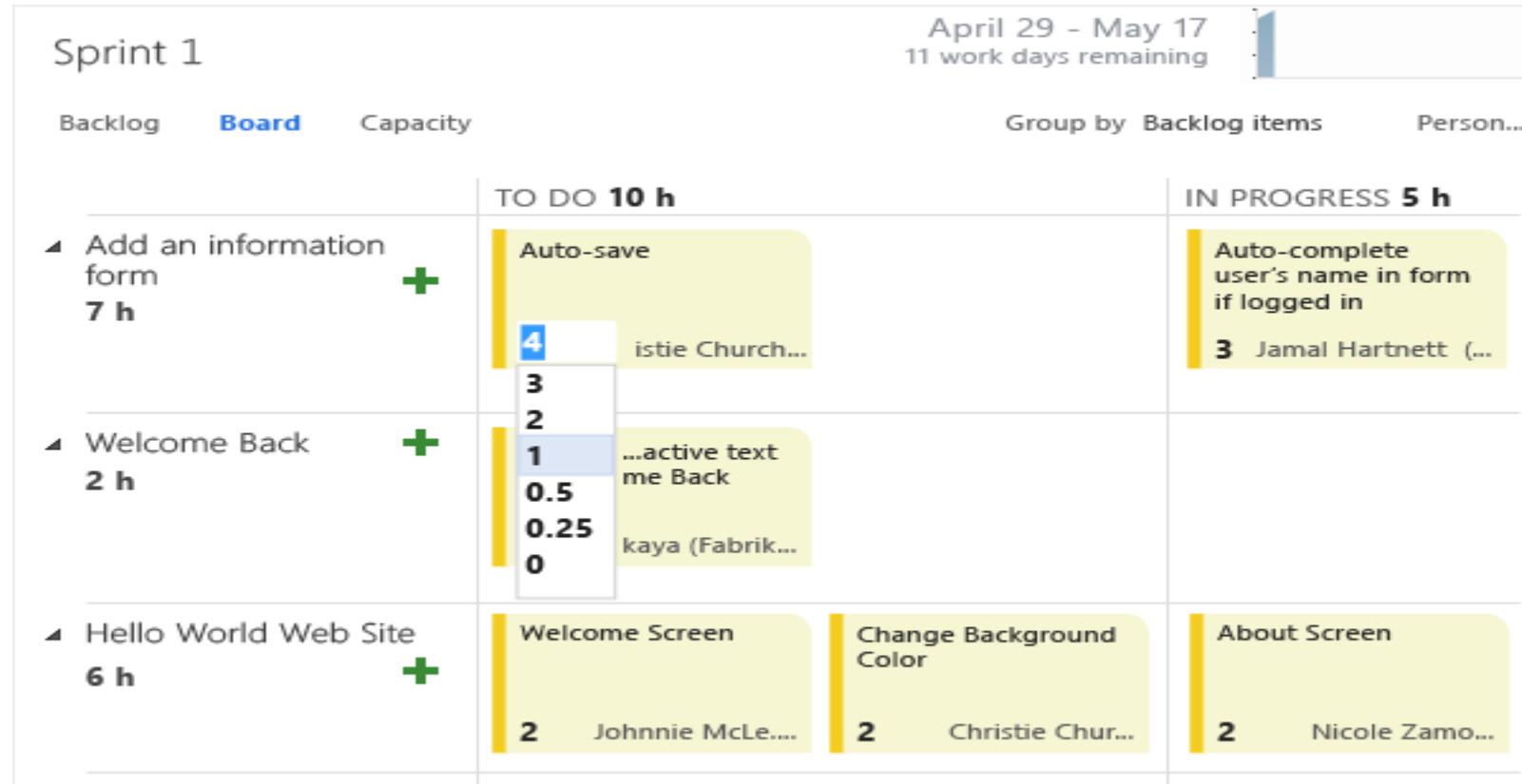
Sprint 1      April 29 - May 17  
Backlog      Board      Capacity      11 work days remaining

Group by Backlog items      Person...

	TO DO 10 h	IN PROGRESS 5 h
▲ Add an information form 7 h	<p>Auto-save</p> <p>Unassigned</p> <p>Unassigned</p> <p>Johnnie McLeod (Fabrikam)</p> <p>Christie Church (Fabrikam)</p> <p>Nicole Zamora (Fabrikam)</p> <p>Raisa Pokrovskaya (Fabrikam)</p> <p>Francis Totten (Fabrikam)</p> <p>Jamal Hartnett (Fabrikam)</p>	<p>Auto-complete user's name in form if logged in</p> <p>3      Jamal Hartn...</p>
▲ Welcome Back 2 h		
▲ Hello World Web Site 6 h	<p>Welcome Screen</p> <p>Change Background Color</p> <p>2      Johnnie McL...</p> <p>2      Christie Ch...</p>	<p>About Screen</p> <p>2      Nicole Zamor...</p>

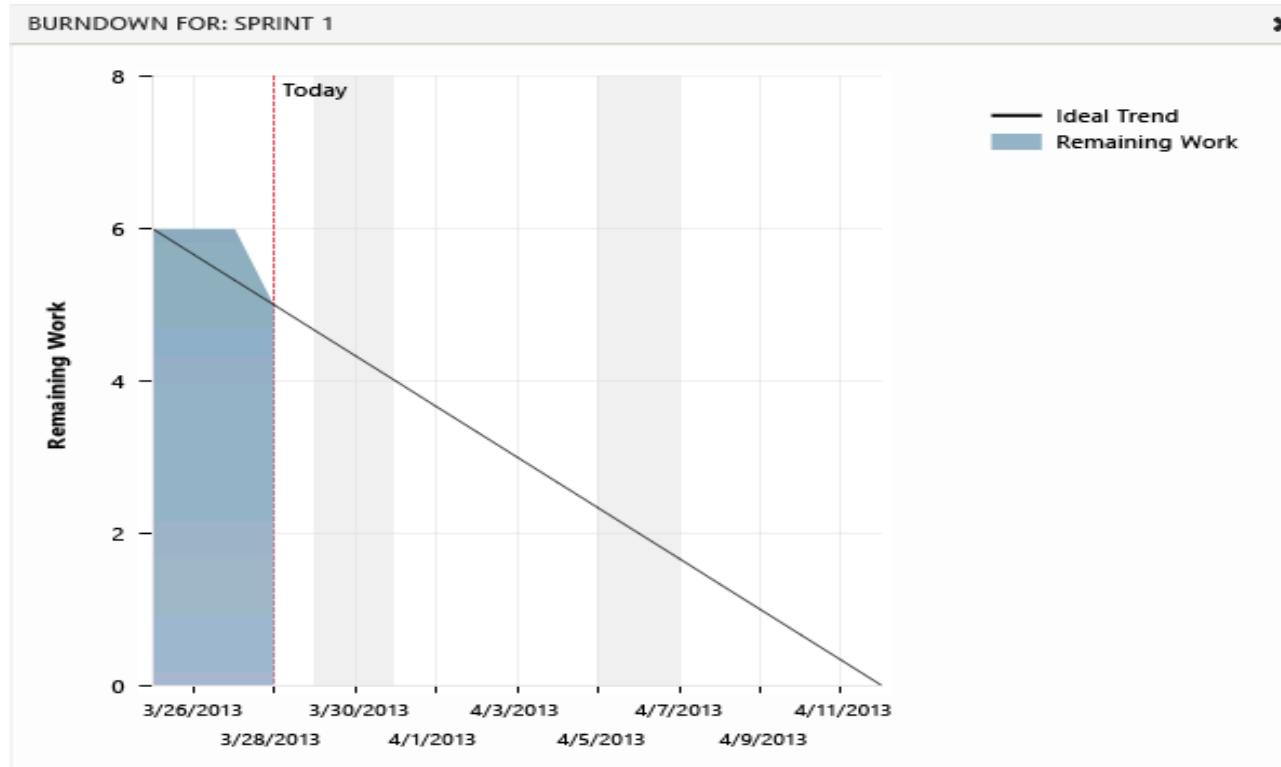
# Use the Taskbord to update Tasks

Update the remaining work by either using the drop-down list or typing a specific value:

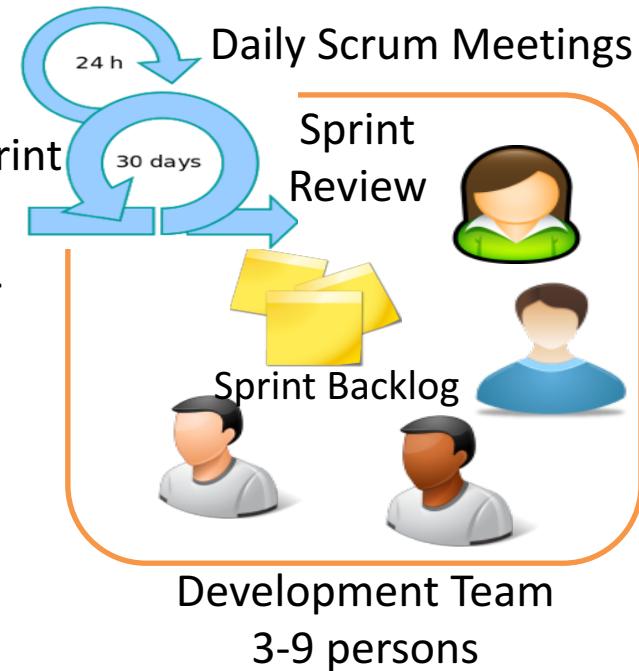


# Burndown Chart Example

Review overall progress by opening the burndown chart for the sprint:



# Summary



# References



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# Hans-Petter Halvorsen, M.Sc.



University College of Southeast Norway

[www.usn.no](http://www.usn.no)

E-mail: [hans.p.halvorsen@hit.no](mailto:hans.p.halvorsen@hit.no)

Blog: <http://home.hit.no/~hansha/>

