



# Testing Agile Based Software cont ...

Prof. Durga Prasad Mohapatra  
Dept. of CSE, NIT Rourkela  
India

# Scrum



# Introduction

- Scrum is an Agile framework which concentrates on how team members should function to produce system flexibly in a constantly changing environment.
- Scrum is concerned with the product owner, project lead, and the team working together in an intensive and interdependent manner.

# Introduction

cont ...

- Scrum process includes three phases:
  - Pre-game
  - Development
  - Post-game

# Introduction

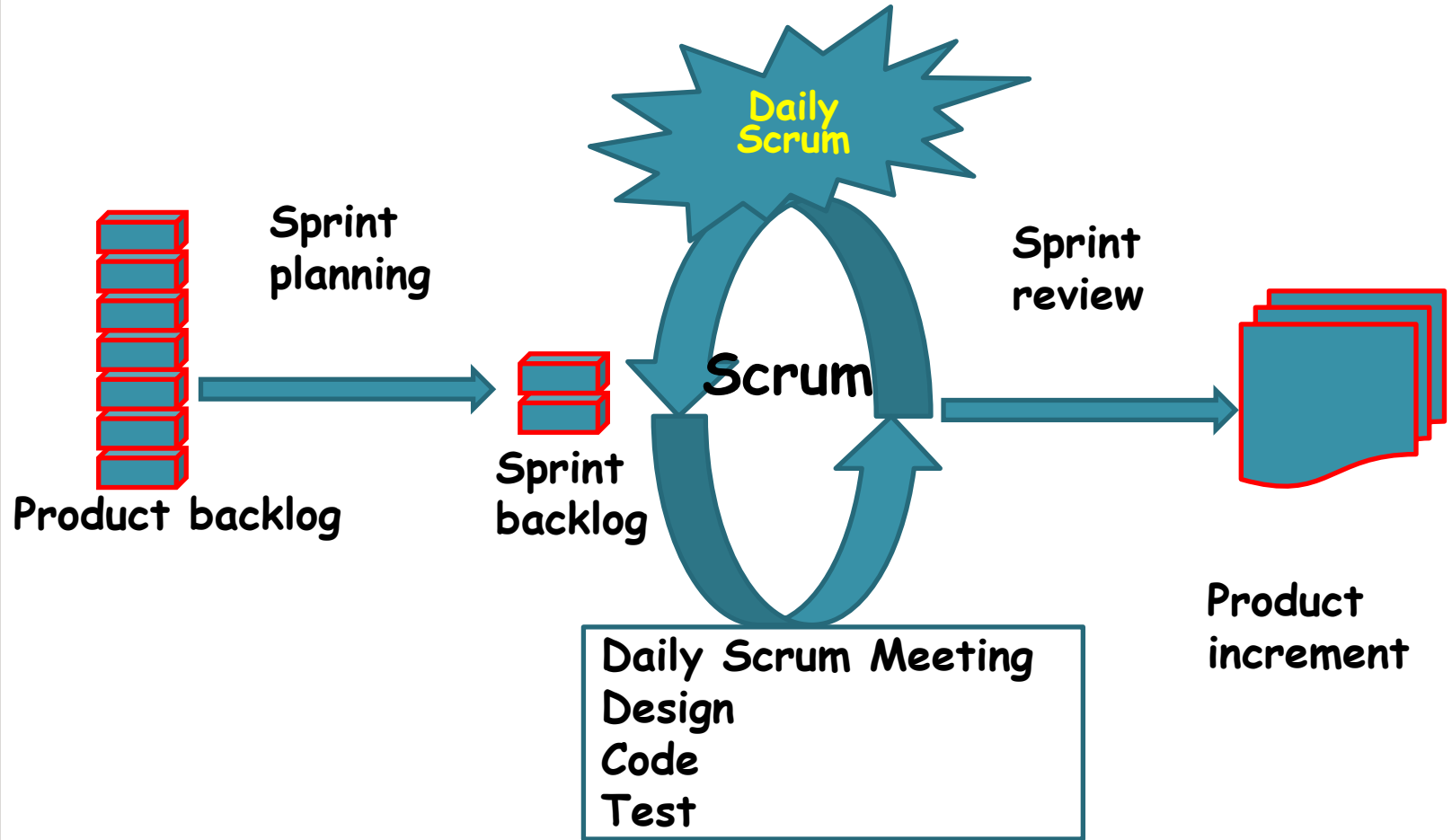
## cont ...

- There are six identifiable roles in Scrum that have different tasks and purposes during the process and its practices:
  - Scrum master
  - Product owner
  - Scrum team
  - Customer
  - User
  - Management

# Scrum: Characteristics

- Self-organizing teams
- Product progresses in a series of month-long **sprints** (iterations or runs or development cycles)
- Requirements are captured as items in a list, called **product backlog**
- One of the agile processes

# Scrum Life Cycle



# Sprint

- Scrum projects progress in a series of “sprints”
  - Analogous to XP iterations or time boxes
  - Target duration is one month
- Software increment is designed, coded, and tested during the sprint
- No changes are entertained during a sprint



# Scrum Framework

- **Roles:** Product Owner, Scrum Master, Scrum Team, Customer, End User, Management
- **Ceremonies:** Sprint Planning, Sprint Review, Sprint Retrospective, and Daily Scrum Meeting
- **Artifacts:** Product Backlog, Sprint Backlog, and Burndown Chart

# Key Roles and Responsibilities in a Scrum Team

- **Product Owner**
  - Represents customers' views and interests.
- **Development Team**
  - Team of 5 - 10 people with cross-functional skill sets.
- **Scrum Master (aka Project Manager)**
  - Facilitates scrum process and resolves impediments at the team and organization level by acting as a buffer between the team and outside interference.

# Product Owner

- Defines the features of the product
- Decides on release date and content
- Prioritizes features according to usefulness
- Adjusts features and priority every iteration, as needed
- Accepts or reject work results.

# The Scrum Master

- Represents management in the project
- Removes impediments
- Ensures that the team is fully functional and productive
- Enables close cooperation across all roles and functions
- Shields the team from external interferences

# Scrum Team

- Typically 5-10 people
- Cross-functional
  - Quality Assurance Engineers, Programmers, UI Designers, etc.
- Teams are self-organizing
- Membership can change only between sprints

# Sprint

- Fundamental process flow of Scrum
- It is usually a **month-long iteration**:
  - during this time an incremental product functionality is completed
- No outside influence is allowed to interfere with the Scrum team during the Sprint
- Each day begins with the Daily Scrum Meeting

# Ceremonies

- Sprint Planning Meeting
- Daily Scrum
- Sprint Review Meeting

# Sprint Planning

- Goal is to produce Sprint Backlog
- Product owner works with the Team to negotiate what Backlog Items
- Scrum Master ensures that the Team agrees to the realistic goals




# Daily Scrum

- Daily
- 15-minutes
- Stand-up meeting
- Not for problem solving
- Three questions:
  1. What did you do yesterday?
  2. What will you do today?
  3. What obstacles are in your way?

# Daily Scrum

- Is NOT a problem solving session
- Is NOT a way to collect information about WHO is behind the schedule
- Is a meeting in which team members review what is done and make informal commitments to each other and to the Scrum Master
- Is a good way for a Scrum Master to track the progress of the Team

- 
- Team presents what it accomplished during the sprint
  - Typically takes the form of a demo of new features
  - Informal
    - 2-hour prep time rule
  - Participants
    - Customers
    - Management
    - Product Owner
    - Other team members

## **Sprint Review Meeting**

# Product Backlog

- A list of all desired work on the project
  - Usually a combination of
    - story-based work (“let user search and replace”)
    - task-based work (“improve exception handling”)
- List is prioritized by the Product Owner
  - Typically a Product Manager, Marketing, Internal Customer, etc.

# Product Backlog

- Requirements for a system, expressed as a prioritized list of Backlog Items
  - Managed and owned by Product Owner
  - Spreadsheet (typically)

# Sample Product Backlog

	Item #	Description	Est	By
<b>Very High</b>				
	1	<b>Finish database versioning</b>	16	KH
	2	<b>Get rid of unneeded shared Java in database</b>	8	KH
	-	<b>Add licensing</b>	-	-
	3	Concurrent user licensing	16	TG
	4	Demo / Eval licensing	16	TG
		<b>Analysis Manager</b>		
	5	File formats we support are out of date	160	TG
	6	Round-trip Analyses	250	MC
<b>High</b>				
	-	<b>Enforce unique names</b>	-	-
	7	In main application	24	KH
	8	In import	24	AM
	-	<b>Admin Program</b>	-	-
	9	Delete users	4	JM
	-	<b>Analysis Manager</b>	-	-
	10	When items are removed from an analysis, they should show up again in the pick list in lower 1/2 of the analysis tab	8	TG
	-	<b>Query</b>	-	-
	11	Support for wildcards when searching	16	T&A
	12	Sorting of number attributes to handle negative numbers	16	T&A
	13	Horizontal scrolling	12	T&A
	-	<b>Population Genetics</b>	-	-
	14	Frequency Manager	400	T&M
	15	Query Tool	400	T&M
	16	Additional Editors (which ones)	240	T&M
	17	Study Variable Manager	240	T&M
	18	Haplotypes	320	T&M
	19	<b>Add icons for v1.1 or 2.0</b>	-	-
	-	<b>Pedigree Manager</b>	-	-
	20	Validate Derived kindred	4	KH
<b>Medium</b>				
	-	<b>Explorer</b>	-	-
	21	Launch tab synchronization (only show queries/analyses for logged in users)	8	T&A
	22	Delete settings (?)	4	T&A

# Sprint Backlog

- A subset of Product Backlog Items, which defines the work for a Sprint
  - Created by Team members
  - Each Item has it's own status
  - Updated daily

# Sprint Backlog during the Sprint

- Changes occur:
  - Team adds new tasks whenever they need in order to meet the Sprint Goal
  - Team can remove unnecessary tasks
  - But, Sprint Backlog can only be updated by the team
- Estimates are updated whenever there's new information



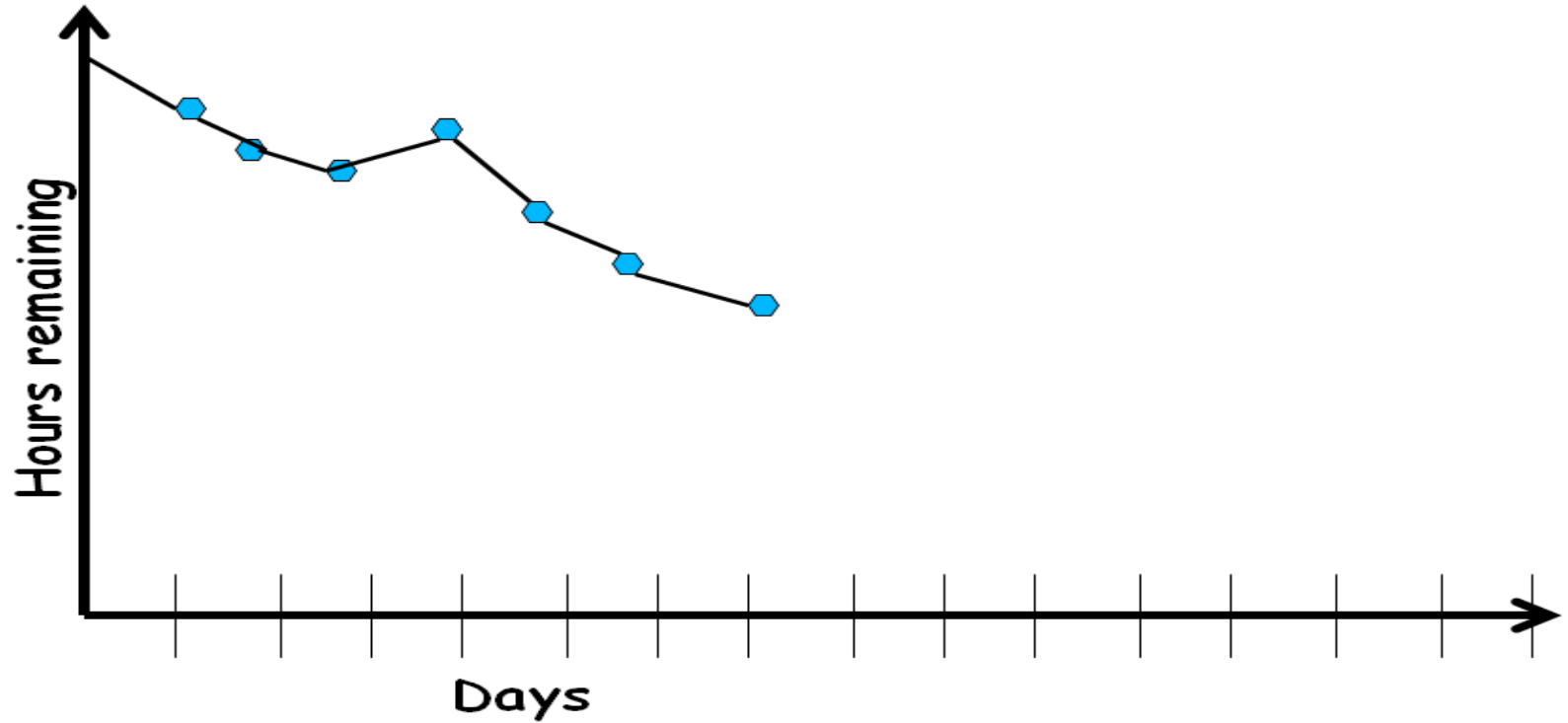
# Burn down Charts

- Are used to represent “work done”.
- Are remarkably simple but effective Information disseminators
- 3 Types:
  - Sprint Burn down Chart (progress of the Sprint)
  - Release Burn down Chart (progress of release)
  - Product Burn down chart (progress of the Product)

# Sprint Burn down Chart

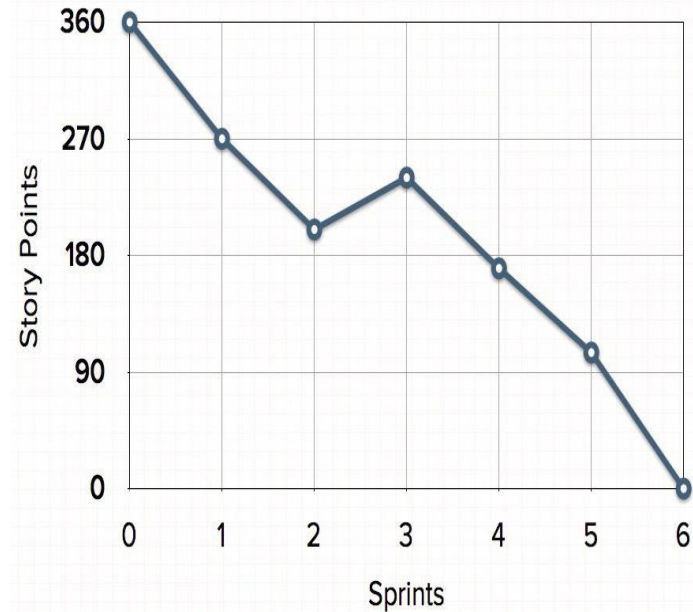
- Depicts the total Sprint Backlog hours remaining per day
- Shows the estimated amount of time to complete
- Ideally should burn down to zero to the end of the Sprint
- Actually is not a straight line

# Sprint Burndown Chart



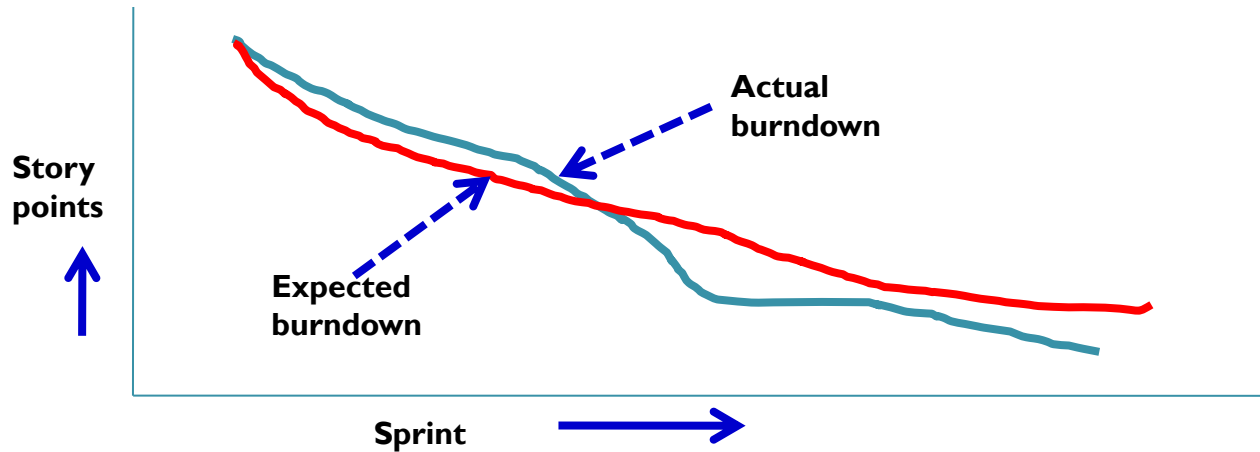
# Release Burndown Chart

- Will the release be done on right time?
- How many more sprints?
- X-axis: sprints
- Y-axis: amount of story points remaining



# Product Burndown Chart

- It is a “big picture” view of project’s progress (all the releases)



# Scalability of Scrum

- A typical Scrum team is 6-10 people
- Jeff Sutherland - up to over 800 people
  - “Scrum of Scrums” or “Meta-Scrum”



# Summary

- Discussed the basic concepts of Scrum.
- Presented the characteristics of Scrum.
- Explained the Scrum Life Cycle.
- Discussed the Scrum Framework.
  - Roles
  - Ceremonies
  - Artifacts
- Explained the Burn down Charts.



# References

1. Rajib Mall, Fundamentals of Software Engineering, Fifth Edition, PHI, 2018.
2. Naresh Chauhan, Software Testing: Principles and Practices, (Chapter – 16), Second Edition, Oxford University Press, 2018.





**Thank You**