SESSION 14

What is Agile Methodology?

- It is an **Iterative** and **Incremental** Approach.
- **Iterative** means same process repeating again and again.(The process keeps on repeating).
- **Incremental** means, modules/features keep on adding on top of existing software.
- Agile is Iterative and Incremental model where requirements keeps on changing.
- As a company we should be flexible to accept requirements change, develop, test and finally release a peace of working software within short span of time.
- There will be good communication between Customer, Business Analyst, Developers & Testers.
- The Goal of the agile model is the customer satisfaction by delivering the piece of the software to the customer within short span of time.
- Agile Testing is type of testing where we follow the agile principles.

Advantages & Disadvantages

- **Advantages:**
  - Requirement changes are allowed in any stage of development (or) We can accommodate Requirement changes in the middle of development.
  - Releases will be very fast(Weekly)
  - Customer no need to wait for long time.
  - Good communication between team.
  - It is very easy model to adopt.

Disadvantage:

- Less focus on design and documentation since we deliver software very faster.

Principles of Agile

- Customer satisfaction
- Face to face communication
- Sustainable development
- Continuous feedback
- Quick respond to changes
- Successive improvement
- Self-organized
- Error-free clean node
- Collective work

Agile frameworks

- Kanban
- Scrum
- Extreme Programming (XP)
- Crystal
- Dynamic Systems Development Method (DSDM)
- Feature-Driven Development (FDD)
- Adaptive Software Development (ASD)
- Lean Software Development (LSD)
- Scaled Agile Framework (SAFe)
- Rapid Application Development (RAD)

What is Scrum?

- **Scrum** is a framework through which we build software product by following Agile Principles.
- Scrum includes group of people called as Scrum team.
  - Product Owner
  - Scrum Master
  - Dev Team
  - QA Team
- **Product Owner :**
  - Define the features of the product
  - Prioritize features according to market value
  - Adjust features and priority every iteration, as needed
  - Accept or reject work results.
- **Scrum Master:**
  - The main role is facilitating and driving the agile process.
- **Developers and QA:**
  - Develop and Test the software.

Agile Vs Scrum

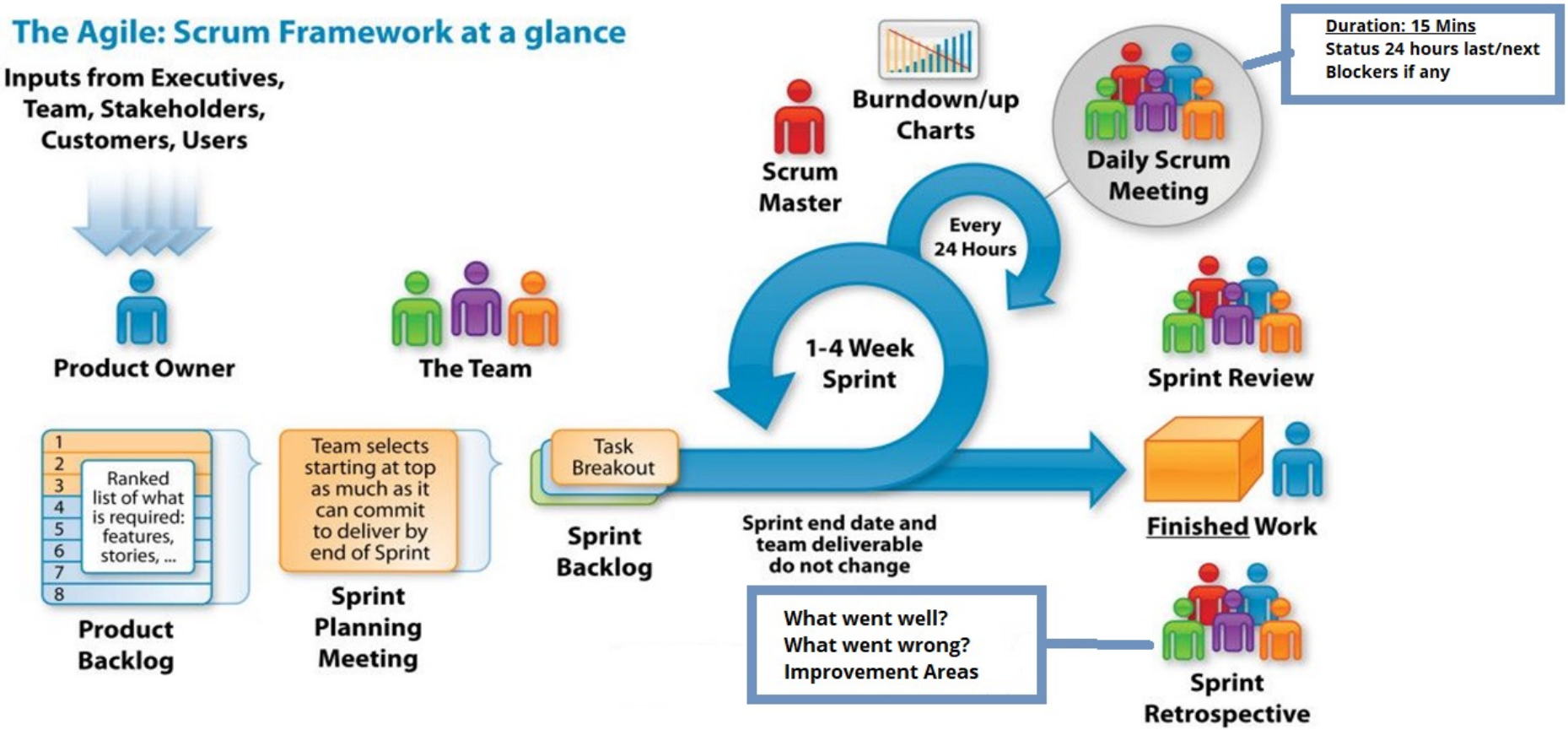
Agile:

- **Focus:** Agile is an approach to project management and product development that emphasizes flexibility and customer satisfaction.
- **Key Principles:** It values collaboration, adaptability, and delivering small, functional pieces of a project regularly.
- **Benefits:** Allows for changes in project requirements, encourages customer feedback, and promotes a collaborative team environment.

Scrum:

- **Type of Agile Framework:** Scrum is one of the specific frameworks within the broader Agile methodology.
- **Roles:** In Scrum, there are defined roles - Scrum Master, Product Owner, and Development Team.
- **Artifacts:** It uses specific artifacts like the Product Backlog, Sprint Backlog, and Increment to manage and deliver work.
- **Events:** Scrum includes specific events or ceremonies like Sprint Planning, Daily Standup, Sprint Review, and Sprint Retrospective.

The Agile: Scrum Framework at a glance



Scrum Terminology

- **User Story :** A Feature/module in a software
- **Epic :** Collection of user stories.
- **Product backlog :** Contains list of user stories. Prepared by product owner.
- **Sprint :** Period of time to complete the user stories, decided by the product owner and team, usually 2-4 weeks of time.
- **Sprint planning meeting:** Meating conducts with the team to define what can be delivered in the sprint and duration.
- **Sprint backlog :** List of committed stories by Dev/QA for specific sprint.

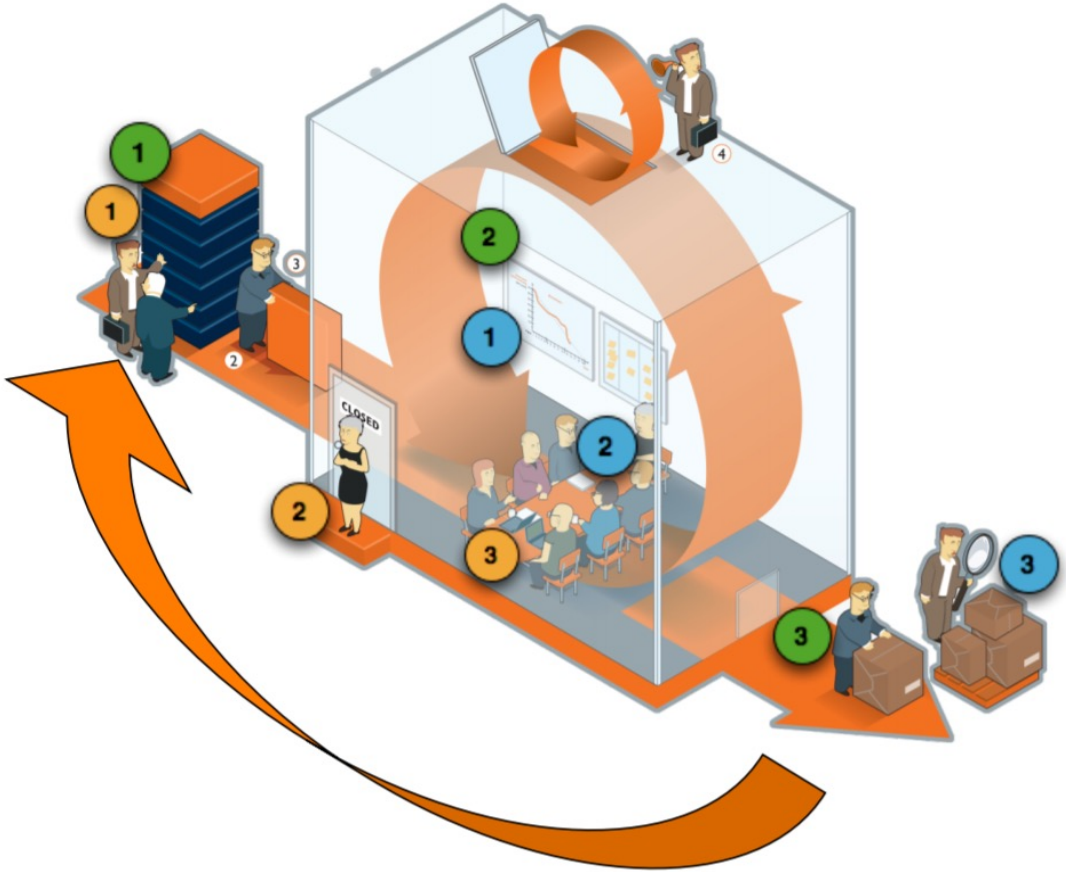
Scrum Terminology

- **Scrum meeting :** Meating conducted by Scrum Master everyday 15 mins. Called as Standup meeting.
  - What did you do yesterday?
  - What will you do today?
  - Are there any impediments in your way?

- **Sprint retrospective meeting :** Review meeting after completion of sprint. The entire team, including both the ScrumMaster and the product owner should participate.

- **Story point :** Rough estimation of user stories, will be given by Dev & QA in the form of Fibonacci series.

- **Burndown chart :** Shows how much work remining in the sprint. Maintained by the scrum master daily.



Roles

1. Product Owner
2. Scrum Master
3. Team

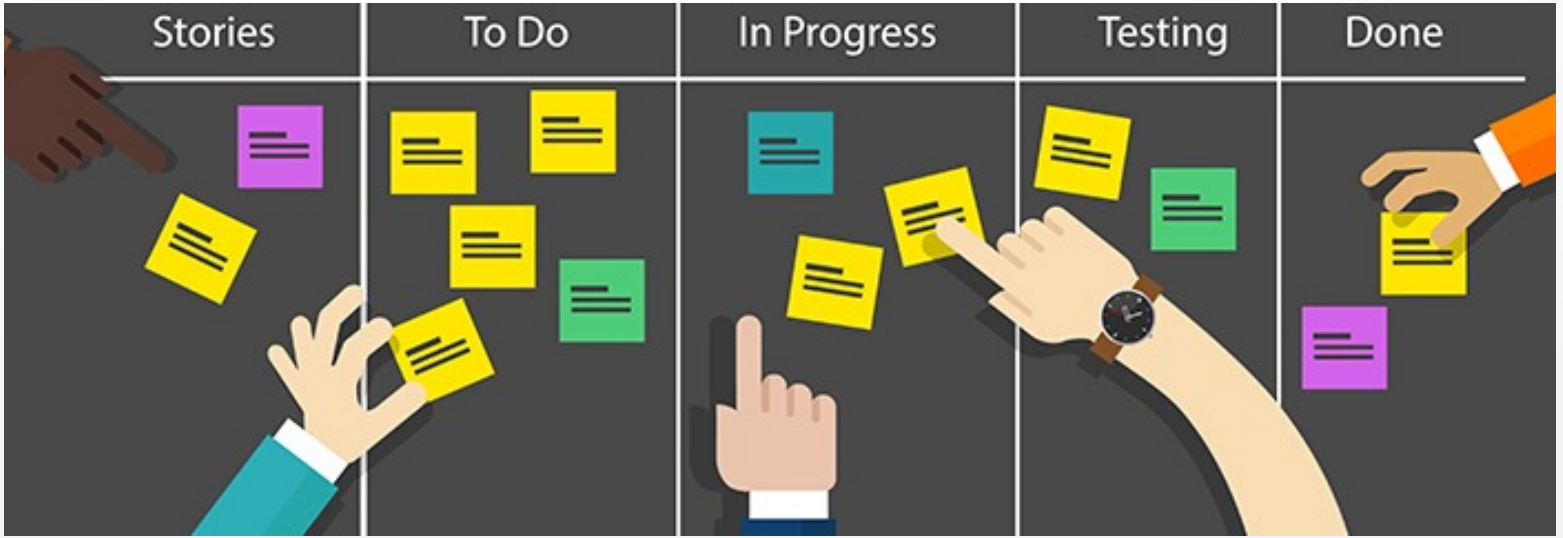
Artefacts

1. Product Backlog
2. Sprint Backlog
   Burndown chart

Ceremonies

1. Sprint Planning
2. Daily Scrum
3. Sprint Review

Scrum Board



DoR & DoD

Definition of Ready (DoR):

- **Preparation:** Ensures tasks are well-prepared before starting work.
- **Clarity:** Describes what needs to be done, making sure everyone understands the plan.
- **Timing:** Decided before starting a task or user story during planning.
- **Owner:** Managed by the task planner or team lead.
- **Adjustable:** Can be tweaked as needed during planning.

Definition of Done (DoD):

- **Completion:** Declares when a task or user story is considered finished.
- **Criteria:** Lists specific standards that must be met for completion.
- **Timing:** Decided at the beginning of the project or sprint.
- **Shared Responsibility:** Owned by the entire team, including developers and testers.
- **Consistency:** Should remain constant during the sprint; changes considered for future sprints.

Agile Meetings

1) Sprint Planning:

- Attendees: Entire team (developers, testers, product owner).
- When: At the beginning of each sprint.
- Duration: Typically 1-2 hours.
- Purpose: Plan and prioritize tasks for the upcoming sprint.

2) Daily Standup (Daily Scrum):

- Attendees: Entire team.
- When: Daily, preferably in the morning.
- Duration: 15 minutes or less.
- Purpose: Share updates on work, discuss challenges, and align for the day.

Agile Meetings

3) Sprint Review:

- Attendees: Team, stakeholders, product owner.
- When: At the end of each sprint.
- Duration: 2-4 hours.
- Purpose: Showcase completed work, gather feedback, and discuss what's next.

4) Sprint Retrospective:

- Attendees: Team members.
- When: At the end of each sprint, after the sprint review.
- Duration: 1-2 hours.
- Purpose: Reflect on the sprint, discuss what went well and what could be improved, and plan for adjustments.

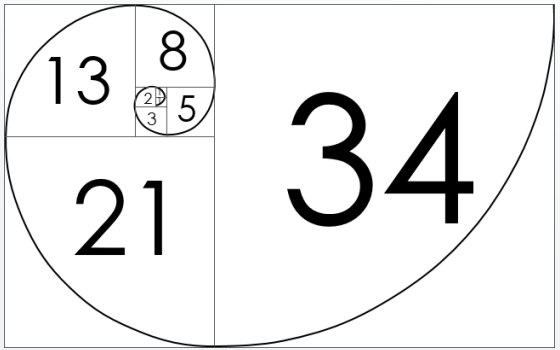
Agile Meetings

5) Backlog Grooming (Refinement):

- Attendees: Product owner, Scrum Master, development team.
- When: As needed between sprints.
- Duration: Typically 1-2 hours.
- Purpose: Review and refine the product backlog, ensuring items are well-defined and ready for upcoming sprints.

Story Point

- A **story point** is a unit of measure used to estimate the difficulty or complexity of a task or user story.
- Estimating a user story in Agile involves assigning it a story point value, and teams often use the Fibonacci sequence (1, 2, 3, 5, 8, 13, etc.)



Estimating a story using story point

User Story: "As a user, I want to be able to log in to the application using my email and password."

Estimation Process:

1. **Understand the User Story:**
   The team discusses the user story to ensure everyone understands what's required. Logging in with email and password seems straightforward.
2. **Compare Complexity:**
   The team compares this user story to a reference story. Let's say the reference story is a simple one-point story, like "displaying a welcome message."
3. **Use Relative Sizing:**
   Team members discuss and agree that logging in is a bit more complex than displaying a welcome message but not significantly more complex. They decide to assign it a story point value of 2.
4. **Fibonacci Sequence:**
   The team considers whether the complexity is closer to 2 or 3 in the Fibonacci sequence. After discussion, they agree that 2 is a more accurate representation.
5. **Team Consensus:**
   The team discusses any differing opinions. If someone initially suggested 3, they might discuss why they thought it was more complex. After a brief discussion, the team reaches a consensus, and everyone agrees on 2 story points.
6. **Record the Estimate:**
   The team records the estimate of 2 story points for the "log in" user story. This estimate will be used for planning and prioritizing in the upcoming sprint.

Estimating a story using story point

1 Story Point: Typically takes a few hours to complete (half a day).

2 Story Points: Could take a day to a day and a half.

3 Story Points: Might take two days.

5 Story Points: Could take around three days.

8 Story Points: A larger task, likely taking a week.

13 Story Points: A significant effort, possibly spanning multiple weeks.

Burn-Down Charts

There are four popularly used burn down charts in Agile.

- **Product burndown chart :** A graph which shows how many Product Backlog Items (User Stories) implemented/not implemented.
- **Sprint burndown chart :** A graph which shows how many Sprints implemented/not implemented by the Scrum Team.
- **Release burndown chart :** A graph which shows List of releases still pending, which Scrum Team have planned.
- **Defect burndown chart :** A graph which shows how many defects identified and fixed.

SCRUM CHEAT SHEET

Roles

Scrum Team

- Team is cross-functional and consists of 5-9 people
- There are no set project roles within the team
- Team defines tasks and assignments
- Team is self-organizing and self-managing
- Maintains the Sprint Backlog
- Conducts the Sprint Review

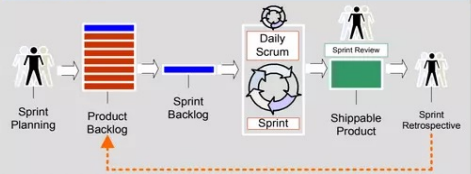
Product Owner (PO)

- Accountable for product success
- Defines all product features
- Responsible for prioritizing product features
- Maintains the Product Backlog
- Insures team working on highest valued features

Scrum Master (SM)

- Holds daily 15 minute team meeting (Daily Scrum)
- Removes obstacles
- Shields the team from external interference
- Maintains the Sprint Burndown Chart
- Conducts Sprint Retrospective at the end of a Sprint
- Is a facilitator not a manager

Process



Tools

Task Board

- White Board containing teams Sprint goals, backlog items, tasks, tasks in progress, "DONE" items and the daily Sprint Burndown chart.
- Scrum meeting best held around task board
- Visible to everyone

Artifacts

Product Backlog - (PB)

- List of all desired product features
- List can contain bugs, and non-functional items
- Product Owner responsible for prioritizing
- Items can be added by anyone at anytime
- Each item should have a business value assigned
- Maintained by the Product Owner

Sprint Backlog – (SB)

- To-do list (also known as Backlog item) for the Sprint
- Created by the Scrum Team
- Product Owner has defined as highest priority

Burndown Chart – (BC)

- Chart showing how much work remaining in a Sprint
- Calculated in hours remaining
- Maintained by the Scrum Master daily

Release Backlog – (RB)

- Same as the Product Backlog. May involve one or more sprints dependent on determined Release date

"DONE"= Potentially Shippable!

FAQ

- ***Who decides when a Release happens?*** At the end of any given Sprint the PO can initiate a Release.
- ***Who is responsible for managing the teams?*** The teams are responsible for managing themselves.
- ***What is the length of a task?*** Tasks should take no longer than 16 hours. If longer then the task should be broken down further.
- ***Who manages obstacles?*** Primary responsibility is on the Scrum Master. However, teams must learn to resolve their own issues. If not able then escalated to SM.
- ***What are two of the biggest challenges in Scrum?*** Teams not self-managing, Scrum Master managing not leading.

Meetings

Sprint Planning – Day 1 / First Half

- Product backlog prepared prior to meeting
- First half – Team selects items committing to complete
- Additional discussion of PB occurs during actual Sprint

Sprint Planning – Day 1 / Second Half

- Occurs after first half done – PO available for questions
- Team solely responsible for deciding how to build
- Tasks created / assigned – Sprint Backlog produced

Daily Scrum

- Held every day during a Sprint
- Lasts 15 minutes
- Team members report to each other not Scrum Master
- Asks 3 questions during meeting
- *"What have you done since last daily scrum?"*
- *"What will you do before the next daily scrum?"*
- *"What obstacles are impeding your work?"*
- Opportunity for team members to synchronize their work

Sprint Review

- Team presents "done" code to PO and stakeholders
- Functionality not "done" is not shown
- Feedback generated - PB maybe reprioritized
- Scrum Master sets next Sprint Review

Sprint Retrospective

- Attendees – SM and Team. PO is optional
- Questions – What went well and what can be improved?
- SM helps team in discovery – not provide answers

Visibility + Flexibility = Scrum

Glossary of Terms

- **Time Box** - A period of time to finish a task. The end date is set and can not be changed
- **Chickens** – People that are not committed to the project and are not accountable for deliverables
- **Pigs** – People who are accountable for the project's success
- **Single Wringable Neck** – This is the Product Owner!

Estimating

User Stories

- A very high level definition of what the customer wants the system to do.
- Each story is captured as a separate item on the Product Backlog
- User stories are NOT dependent on other stories
- **Story Template**:
- "As a <User> I want <function> So that <desired result>
- **Story Example**:
- As a user, I want to print a recipe so that I can cook it.

Story Points

- A simple way to initially estimate level of effort expected to develop
- Story points are a relative measure of feature difficulty
- Usually scored on a scale of 1-10. 1=very easy through 10=very difficult
- **Example**:
- "Send to a Friend" Story Points = 2
- "Shopping Cart" Story Points = 9

Business Value

- Each User Story in the Product Backlog should have a corresponding business value assigned.
- Typically assign (L,M,H) Low, Medium, High
- PO prioritizes Backlog items by highest value

Estimate Team Capacity

- Capacity = # Teammates (Productive Hrs x Sprint Days)
- Example – Team size is 4, Productive Hrs are 5, Sprint length is 30 days.
- Capacity = 4 (5 x30) = 600 hours
- **NOTE**: Account for vacation time during the Sprint!

Velocity

- The rate at which team converts items to "DONE" in a single Sprint – Usually calculated in Story Points.