Agile, Scrum, and Version Control System

You Already Know

Course(s):

1. Agile Scrum Foundation

1. Git Training Course

Recap

- Describe Agile manifesto
  - Principles of Agile

- Distinguish between the Waterfall and Agile approaches
  - Focus on consumers
  - Customer involvement
  - Multidisciplinary teams

- Describe Scrum and Scrum roles
  - Scrum teams
  - Sprints
  - Events of a sprint

Recap

- Explain the events of the Sprint
  - Stand-up meeting
  - Sprint backlog
  - Time-boxing

- Explain the fundamentals of Git
  - Basic setup and configurations

- Explain the creation of a Git repository
  - Git add
  - Git commit
  - Git push

A Day in the Life of a Test Engineer

Joe is hired as a Test Engineer in Abq Inc. They have decided to restructure their website similar to Netflix's so that the requests from the clients to their servers can be minimized. Experts suggested that Angular framework would be the best-fit to build such sites. Abq Inc. adopted Scrum methodology to develop their product and release it incrementally.

Joe has been assigned a few tasks during the sprint planning. Pushing the Angular application to the GitHub repository is one of the tasks assigned to him. At the daily stand-up meeting, he is asked to complete this task with certain conditions so that the storage can be used effectively.

In this lesson, we will learn how to solve this real-world scenario to help Joe complete his task effectively and quickly.

Learning Objectives

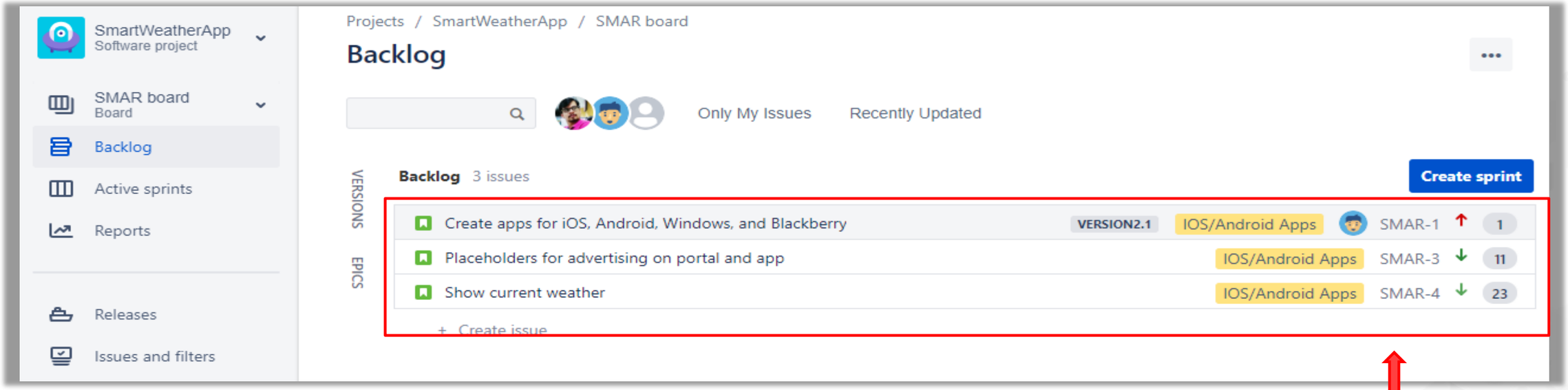
By the end of this lesson, you will be able to:

- Enumerate the scrum practices
- Explain the workflow of agile and scrum practices
- Structure your GitHub repositories
- Interact with your GitHub via Git

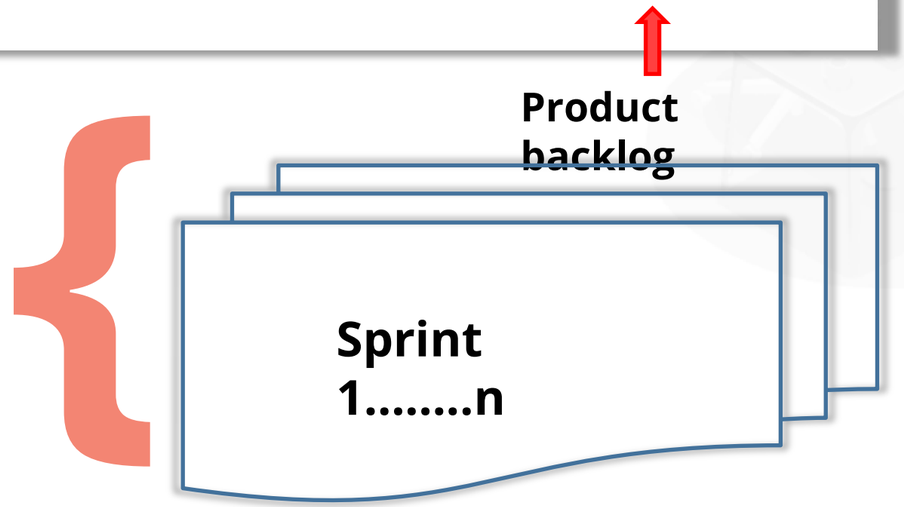
Scrum Practices

Product Backlog

Product backlog is an ordered list of tasks to be done in the product.



- It is a single source of requirements to be added to a product
- It is a living document
- Tasks are prioritized and ordered accordingly
- The product owner is responsible for the backlog



User Stories

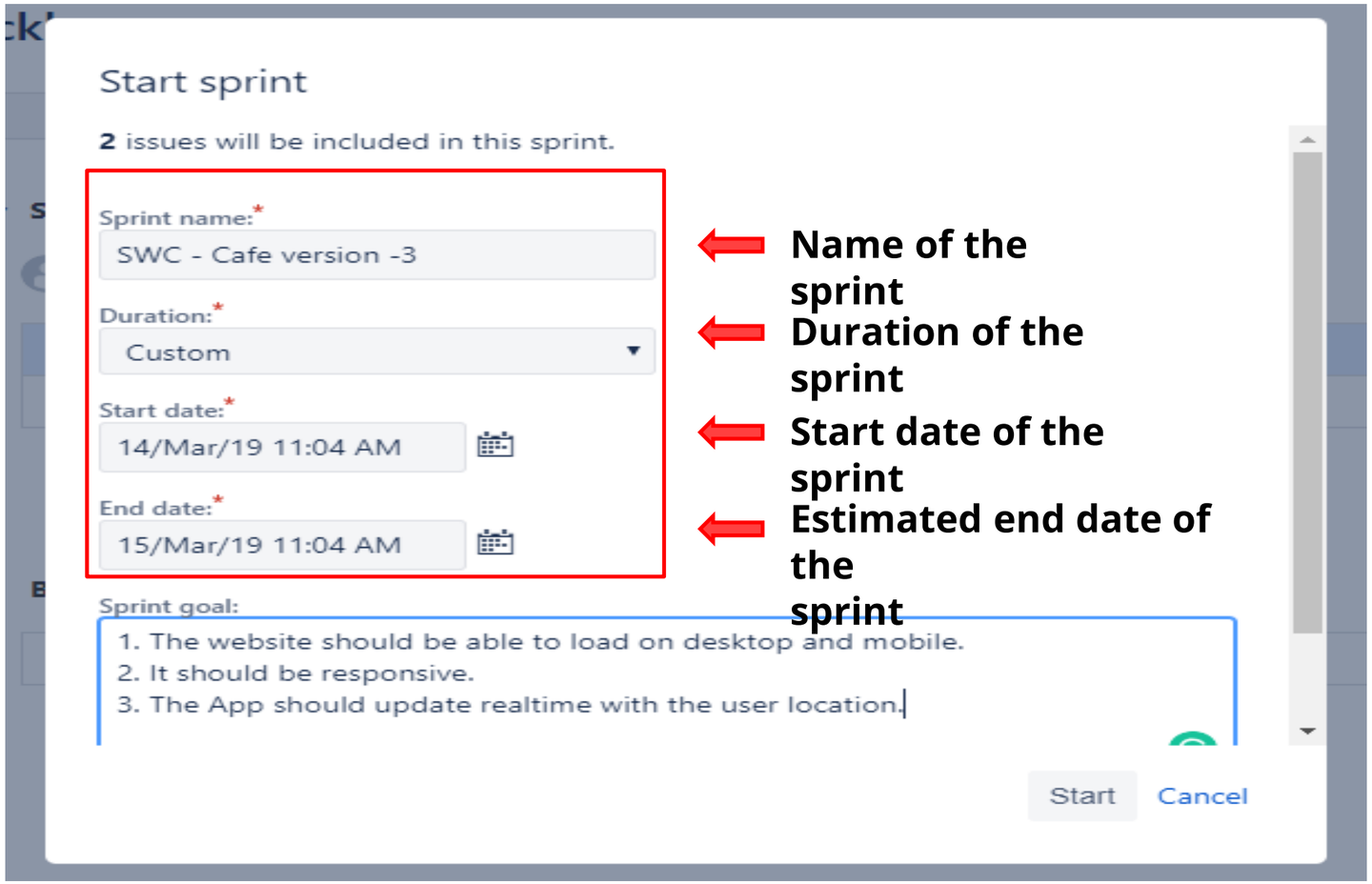
The purpose of a user story is to describe the task which will deliver a particular value to the customer.

User stories should include:

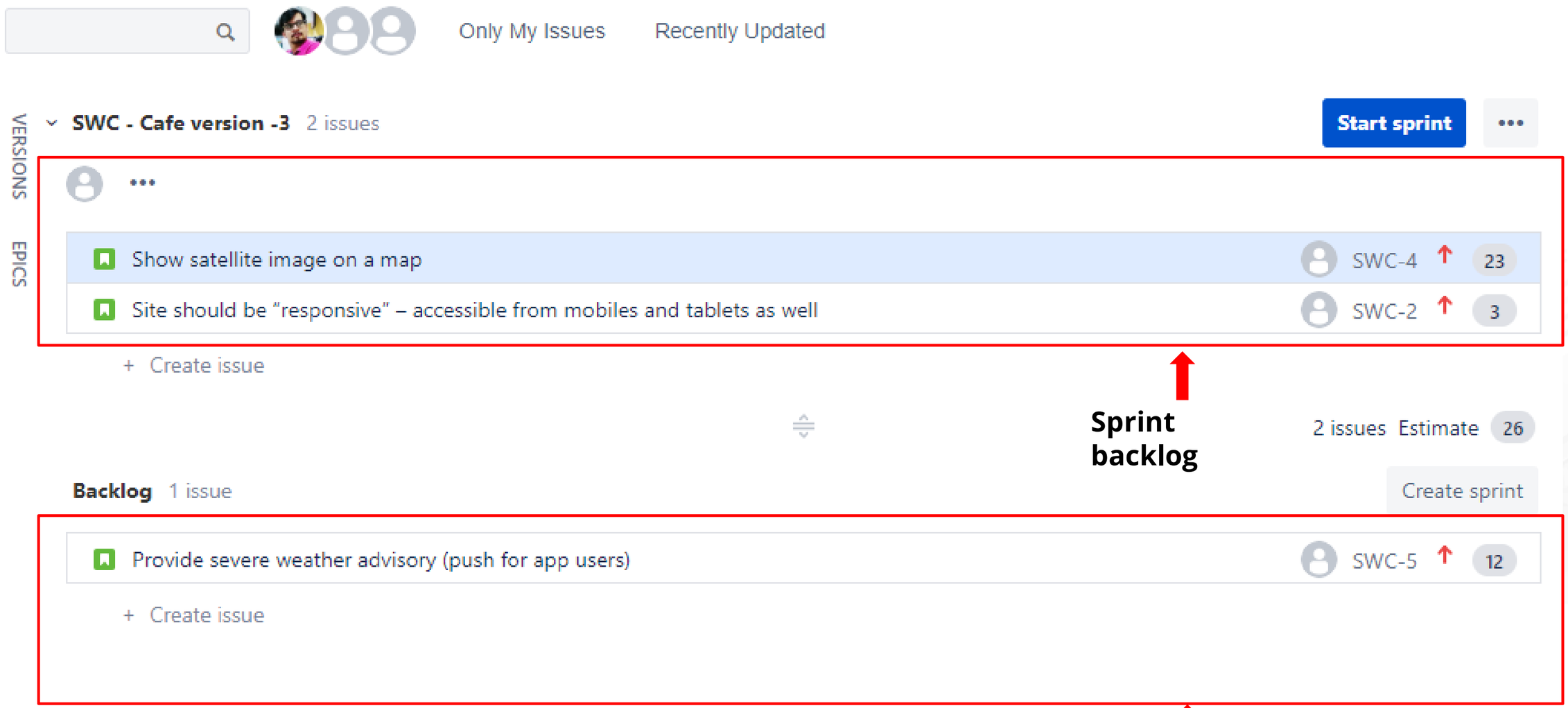
- An identifier and a name
- A description
- An estimated value
- An estimated effort
- Associated risks, dependencies, and acceptance tests

Sprint Backlog

The sprint backlog is a list of tasks identified by the scrum team which has to be completed within the estimated time, also know as a sprint. It is maintained by the development team.



Sprint Backlog



Timeboxing

The goal of timeboxing is to define and limit the amount of time dedicated to a task.

Benefits:

Efficient development process

Less overheads

High velocity for teams

Importance of Timeboxing

- Establishes work-in-progress limit
- Prioritizes the tasks
- Tracks the progress
- Improves predictability
- Improves time management

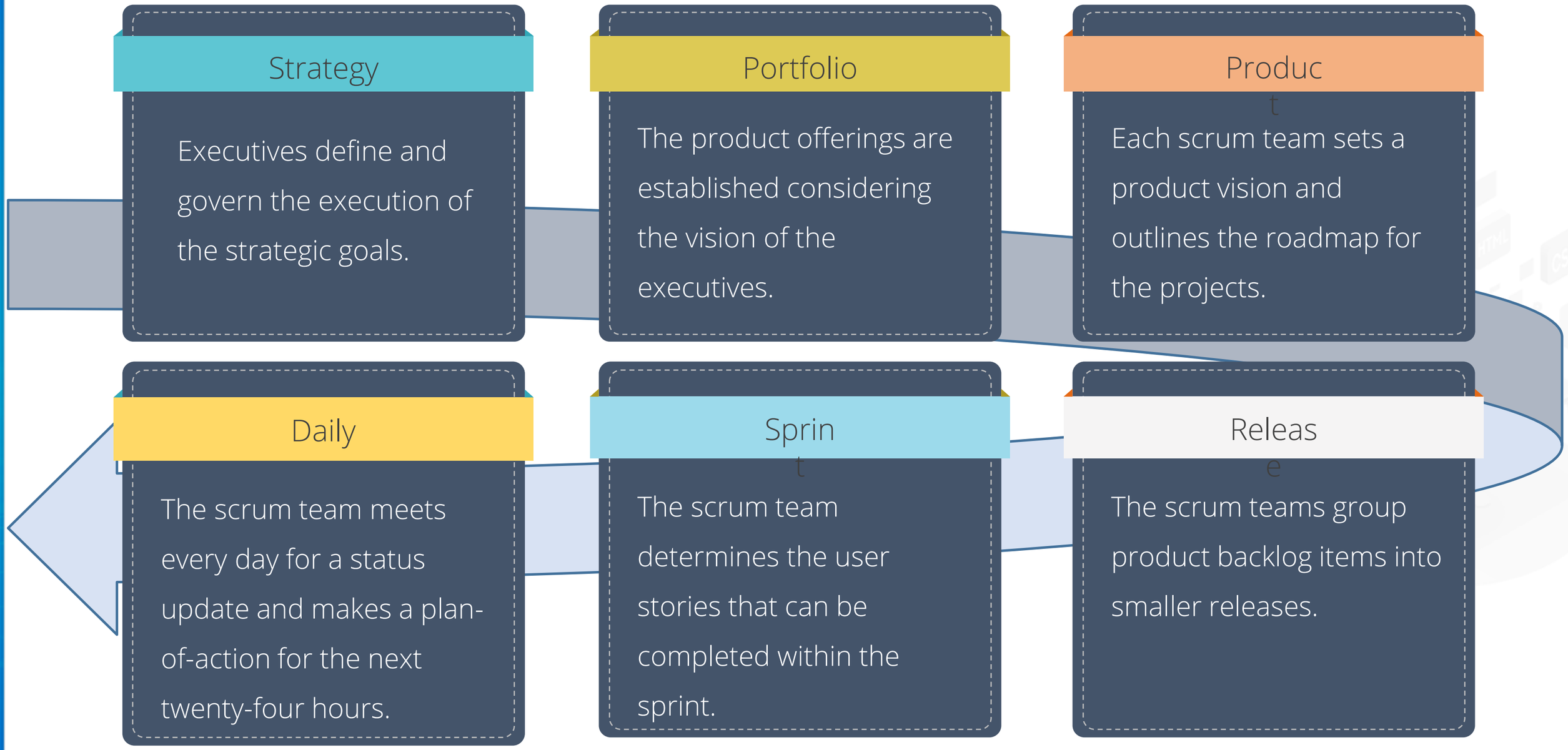
Definition of Done

A checklist of things that must be verified before an item or a story is marked as completed. It evolves as the scrum team matures. It can applied to:

- A user story
- A sprint
- A release
- A project

Scrum Planning

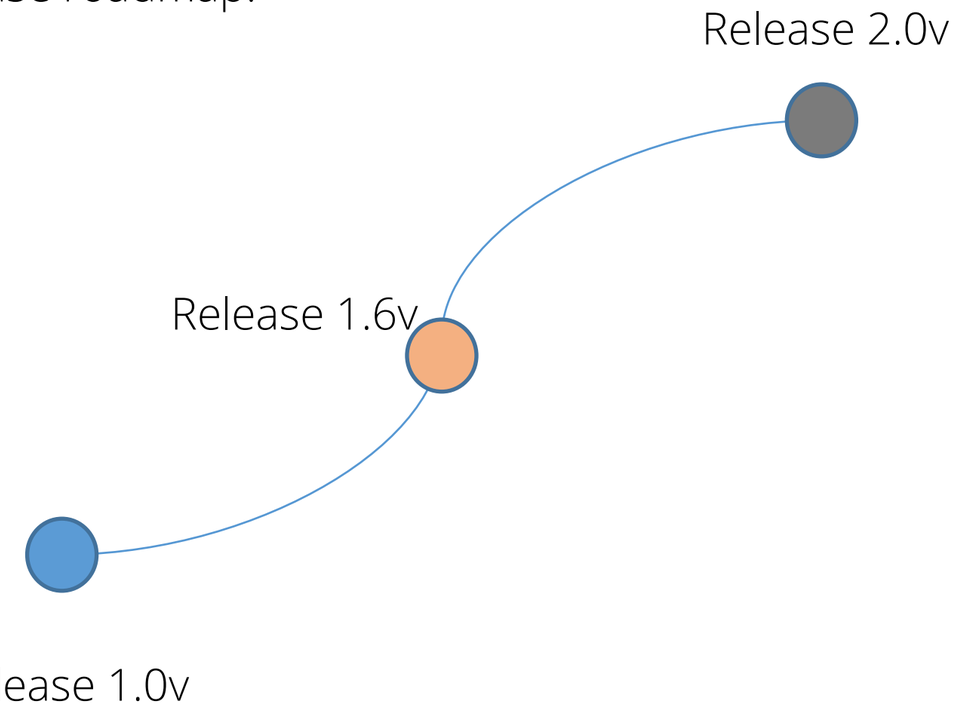
Planning Layers and Product Roadmaps



Releases Supporting Product Roadmaps

A prioritized backlog of product features must match the product roadmap.

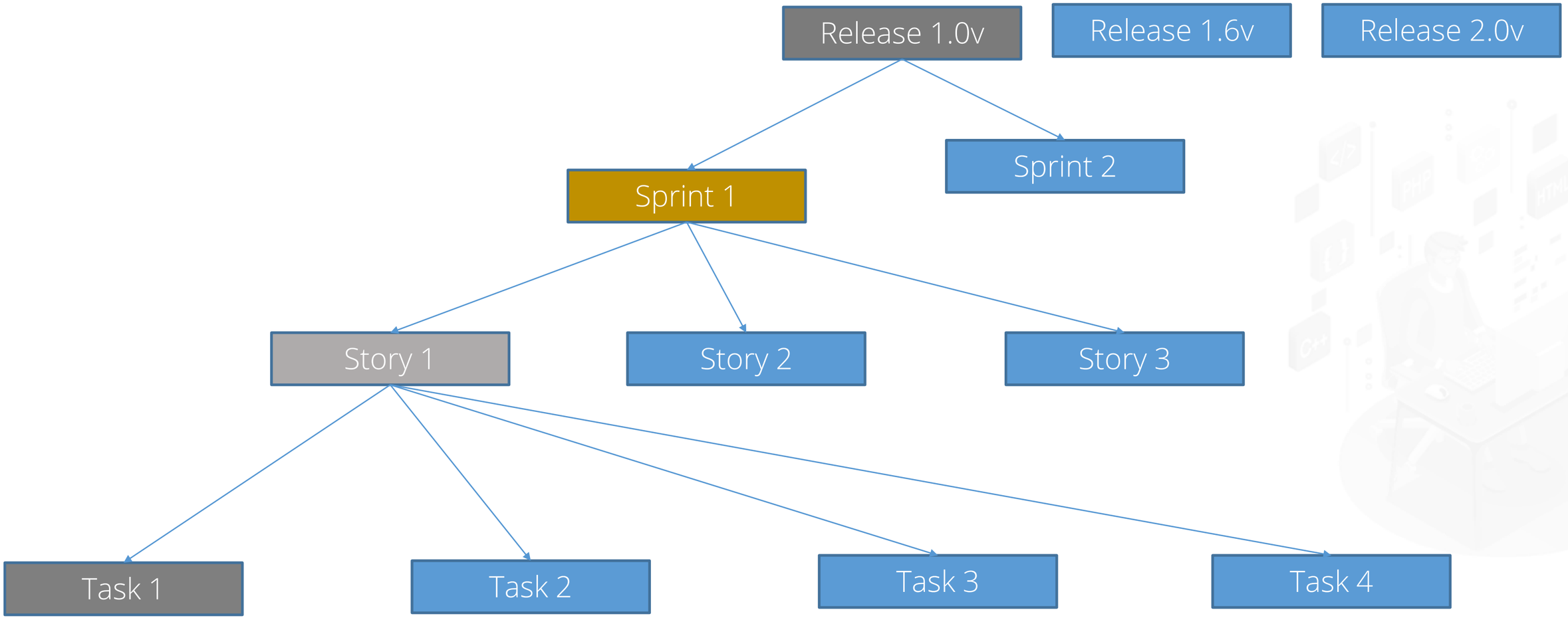
Release roadmap:



Example:

- First version is available to all the registered members
- Second version is available to premium members only
- Third version is available to all the members

Releases Supporting Product Roadmaps



Sprint Planning and Objectives

Scrum projects can be accomplished through:

- Themes and epics
- Releases
- Sprints
- User stories

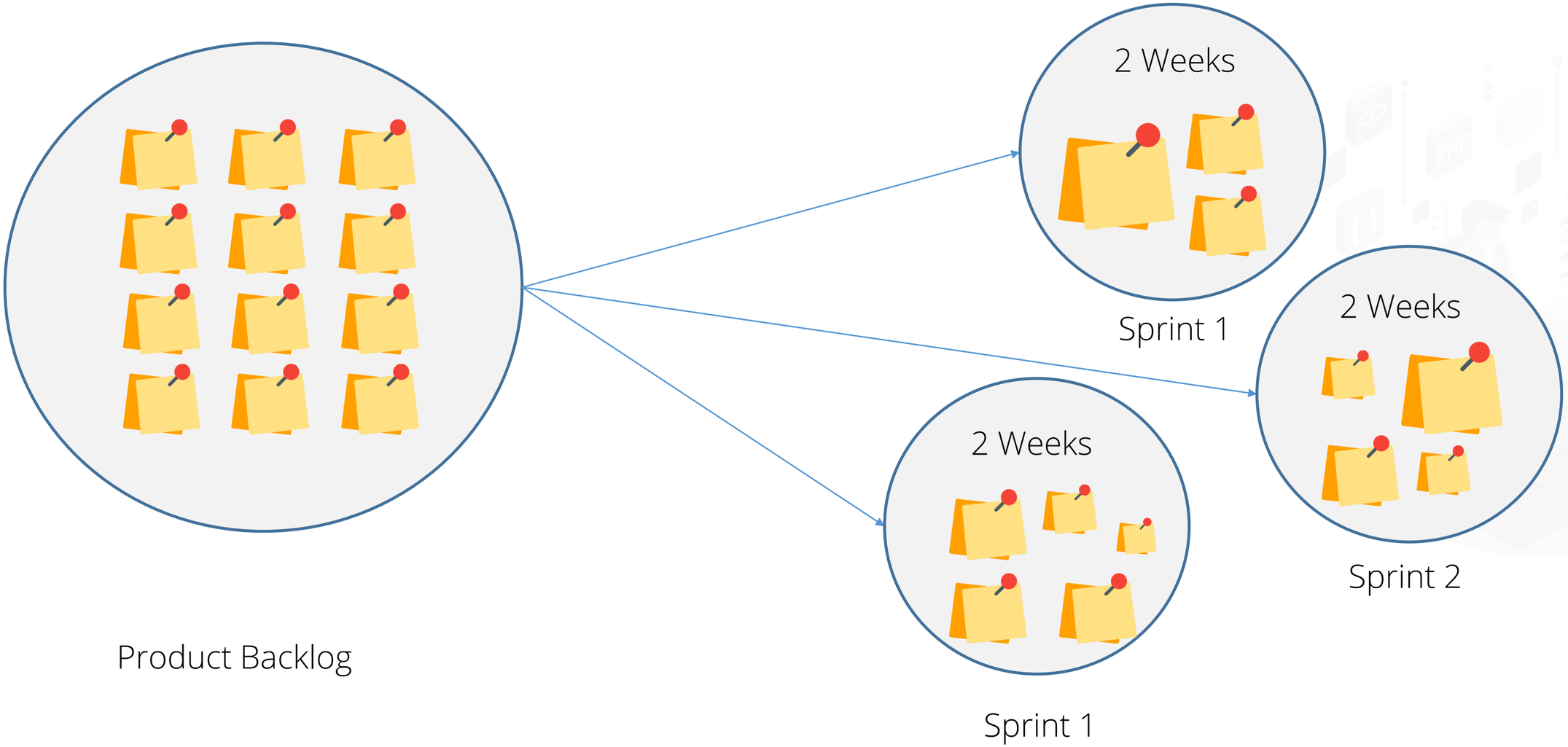
Sprint planning meeting is attended by the scrum team which consists of:

- Scrum Master
- Product Owner
- Development team
- End users and executives (Optional)

Small Projects	Large Projects
Three to six sprints	More than six sprints
Six to twelve weeks	More than six months
Single team	Multiple teams
Story level: • Release • Sprint	Story level: • Business area • Theme or Epic • Features

Sprint Planning and Objectives

Each sprint planning is scheduled to last two hours for each week of the sprint's duration.

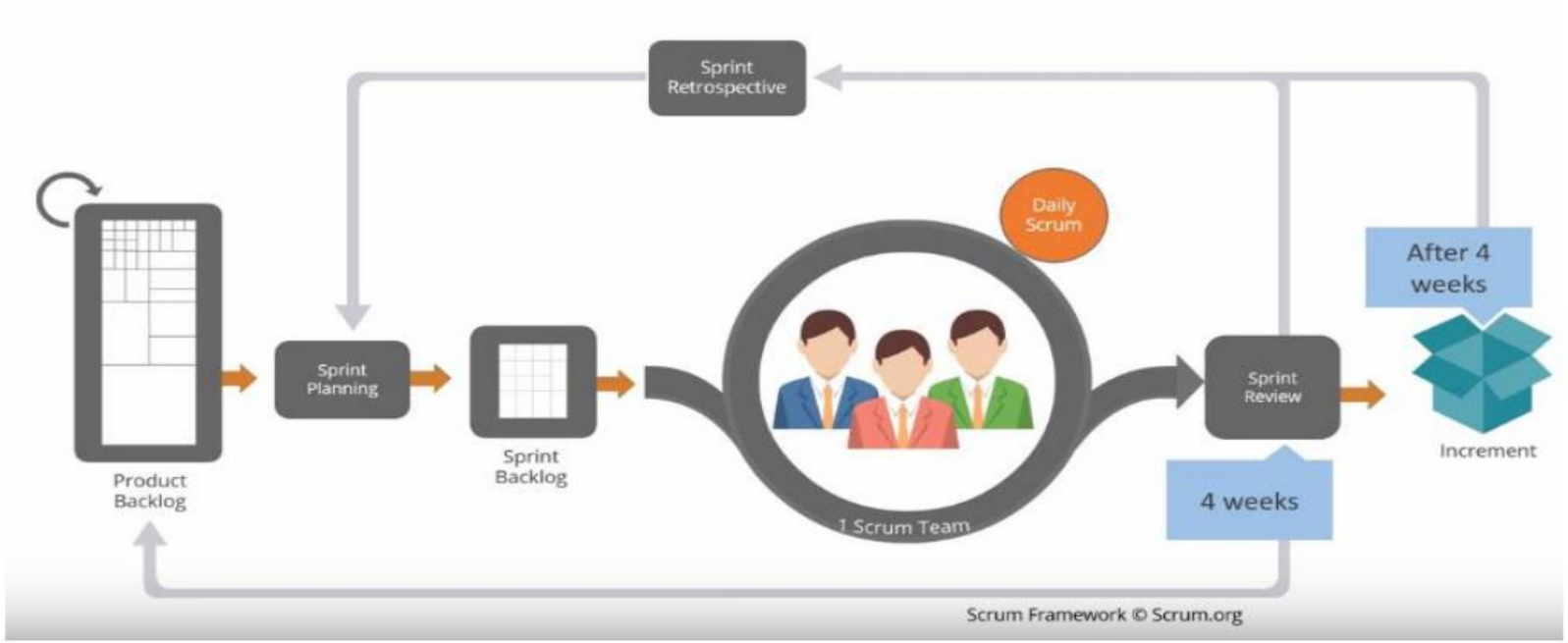


Sprint Planning Meeting

Inputs from stakeholders

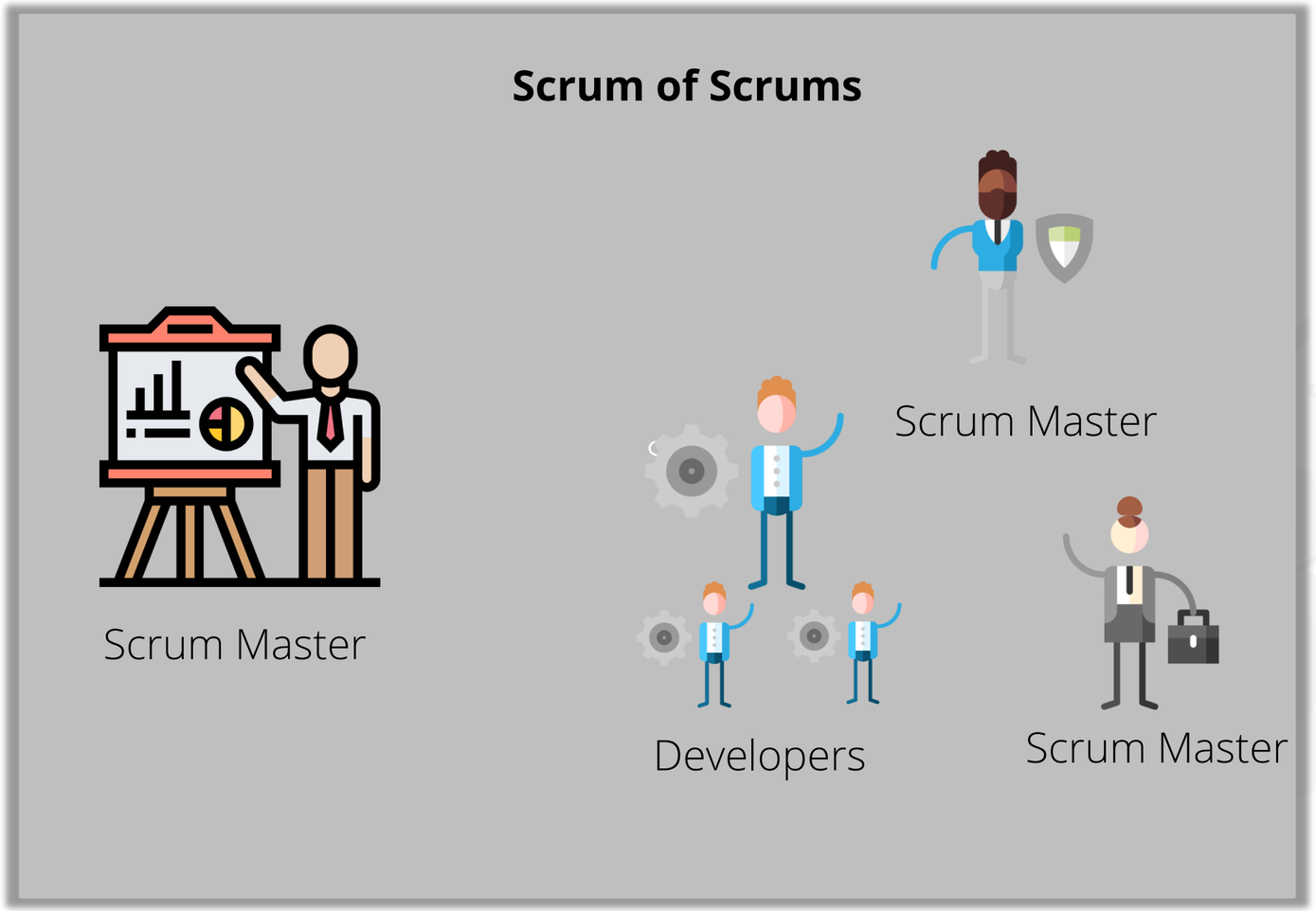
Product owner prioritizes the product backlog

Release plan followed by Sprint planning



Scrum of Scrums

- Scrum of scrums is a scaling mechanism
- The scrum masters and developers need to deliver the scrum of scrums collaborative which is the ***Definition of Done.*** They meet and communicate to discuss:
  - The impediments
  - Progress
  - Cross-team coordination



Agile Approach for QA

Agile in Software Testing

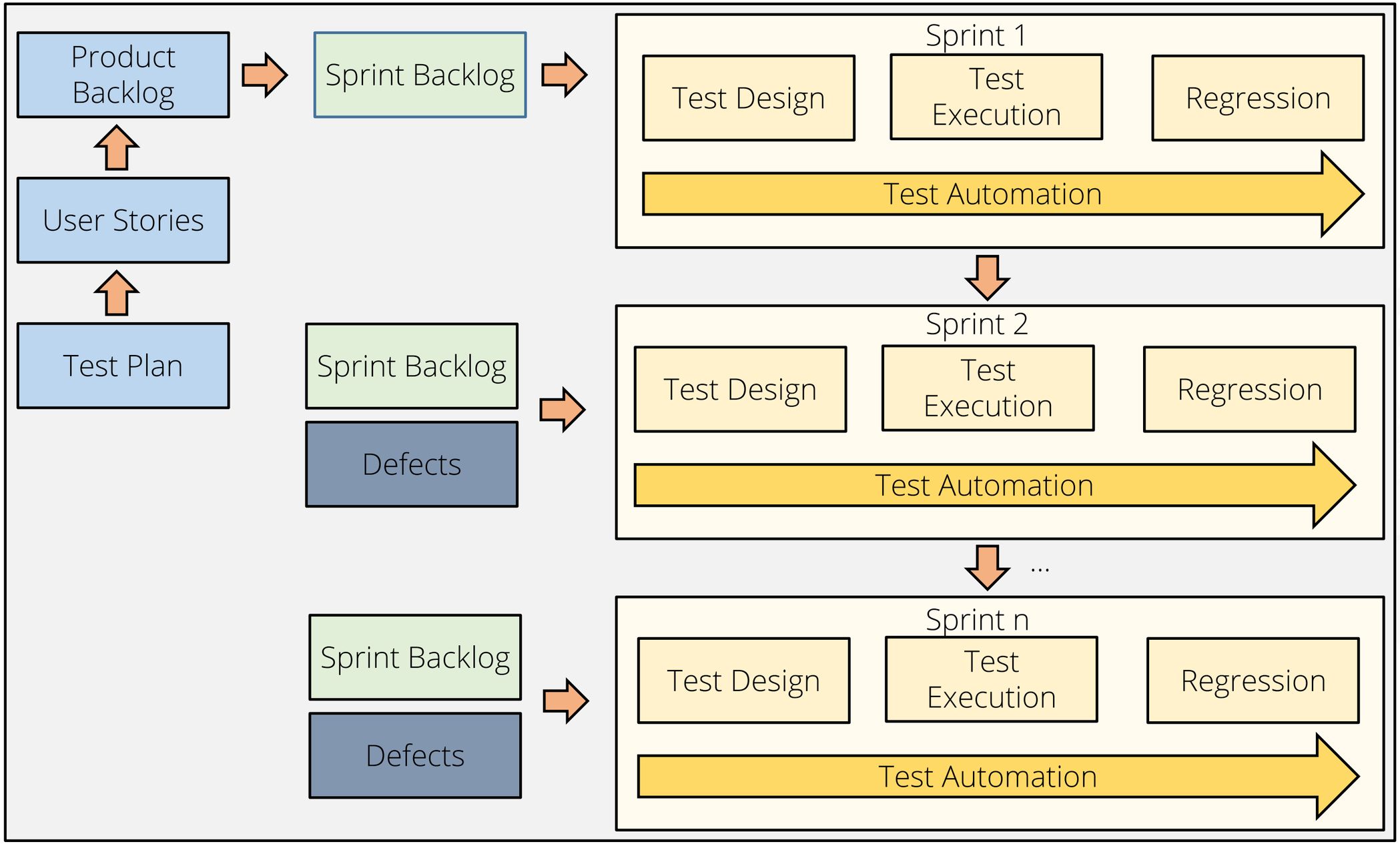
Agile testing is a software testing practice that follows the principles of agile software development. Agile begins at the start of the project with continuous integration of testing and development.

Advantages

- Less documentation
- Regular feedback from the end user
- Daily meetings help determine the issues in advance

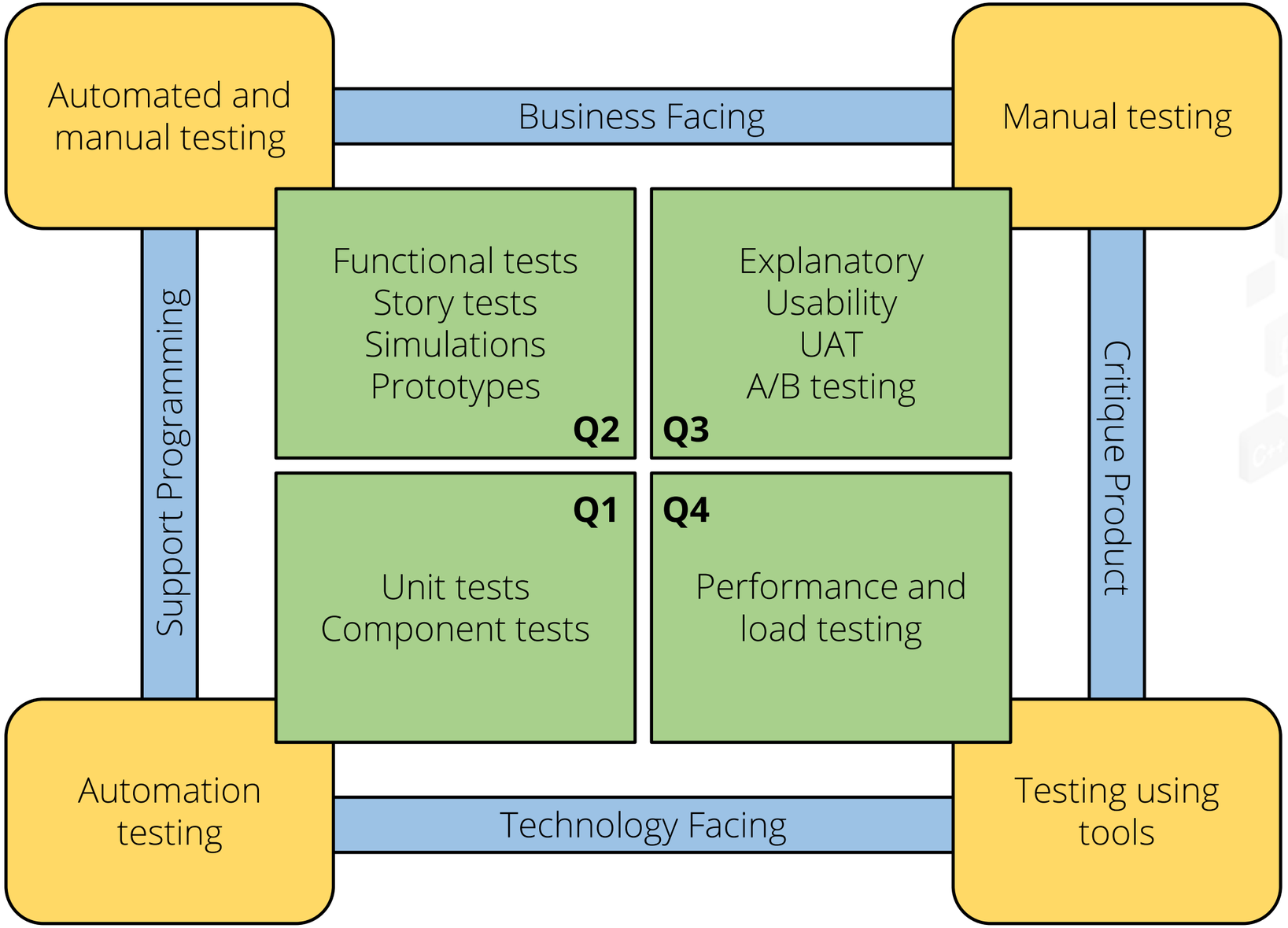
Agile testing is continuous, not sequential.

Agile Testing



Agile Testing Quadrants

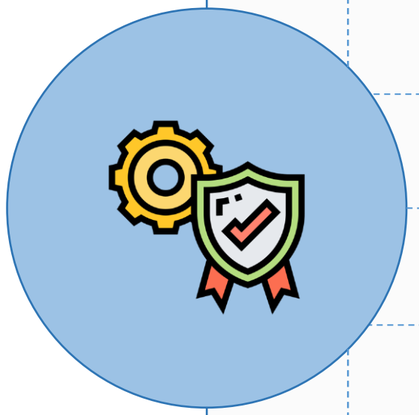
Agile testing quadrants separate testing processes and provide clarity on how agile testing is performed.



Agile Testing Principles

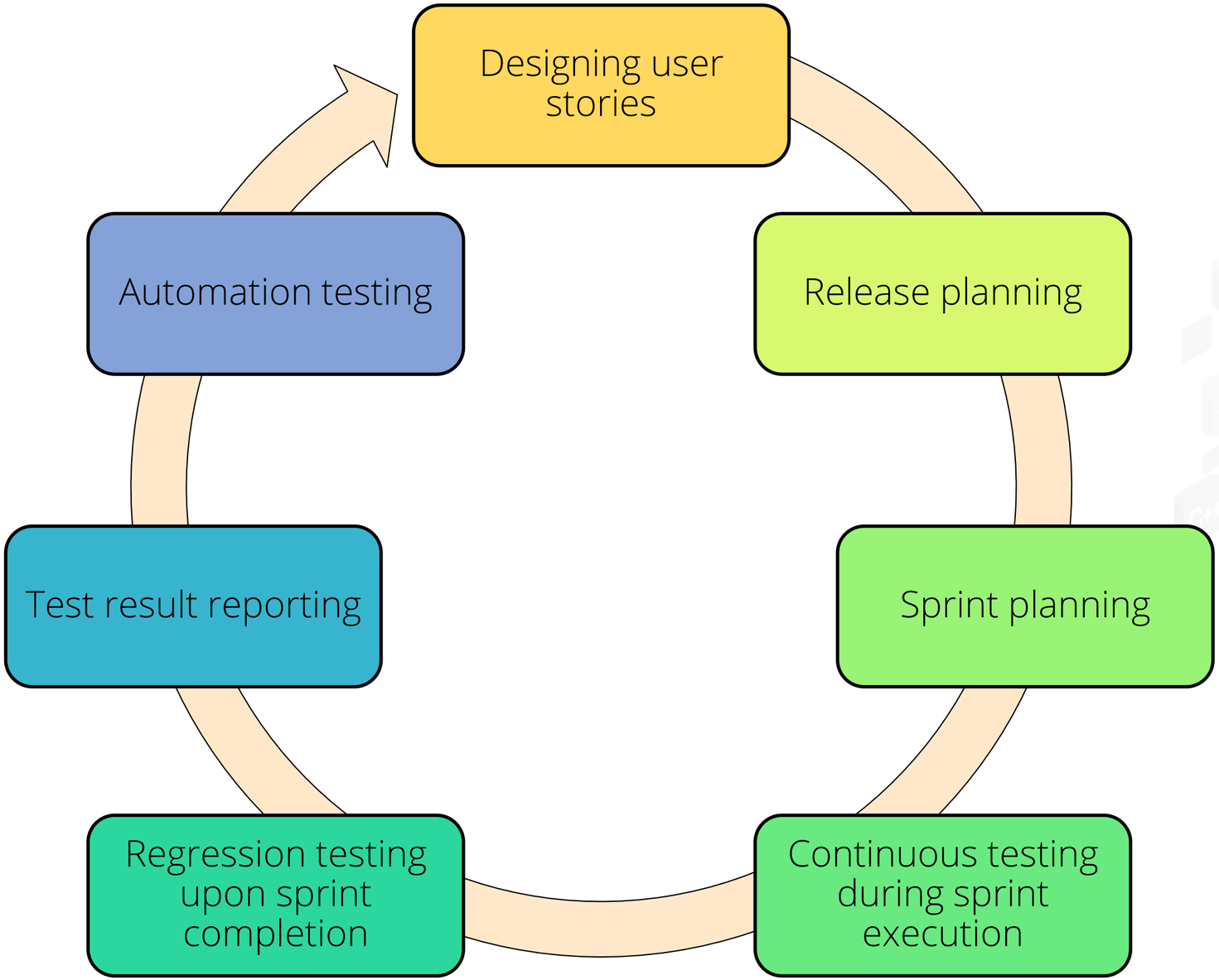
- Testing is not a phase, but a continuous process
- Project is test-driven
- Tests are performed by the whole team
- Clean and simplified code
- Reduce feedback response time
- Reduce test documentation

QA: Things to Remember

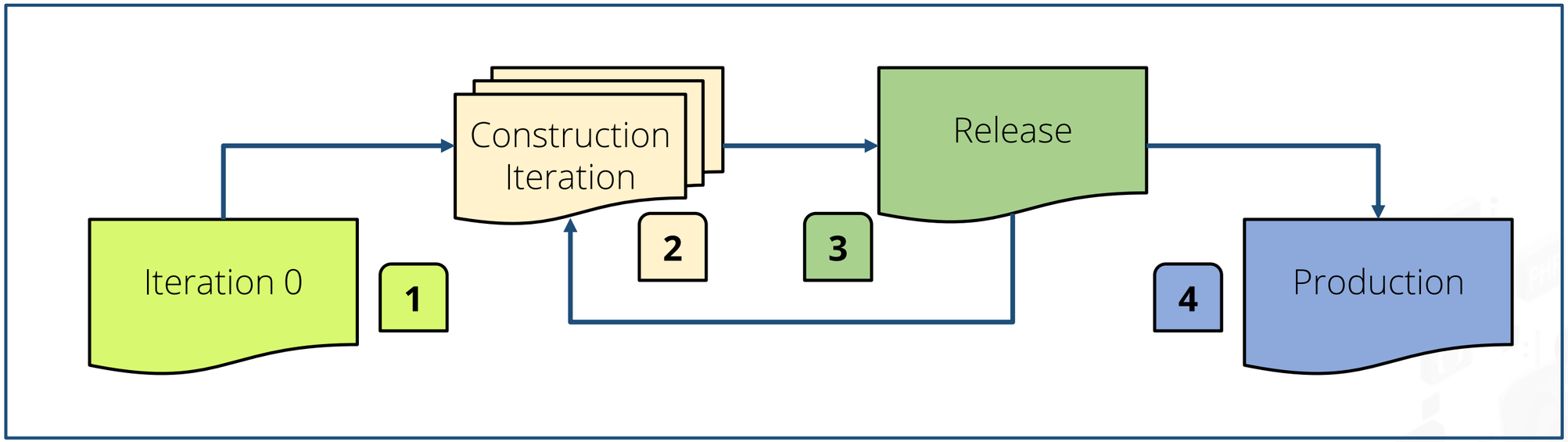


- Understand the agile QA process
- Know the audience
- Test early and test often
- Document test cases
- Attend daily stand-ups
- Attend sprint planning sessions
- Automate when feasible

Testing Lifecycle in Agile Projects



Agile Testing Strategy



1. Perform initial setup tasks, including testing tools installation and scheduling usability testing

2. Carry out a set of iterations and build solutions in increments; most tests are implemented in this phase

3. Deploy the system into production

4. System goes live

Agile Test Plan

A test plan is written for each release in an agile model and is revised at every sprint planning.

Agile test plan includes:

- Scope
- New functionalities being tested
- Deliverables
- Types of testing based on the complexity of features
- Load and performance testing
- Infrastructure consideration
- Risk or mitigation plan
- Resources

Testing and Agile Methodology

In agile methodology, tests are implemented in two ways: along with the development or with a lag of one sprint.

Models

- Create parallel backlogs with the development team
- Integrate development and testing backlogs
- Launch tests during the backlog prioritization and project review phases

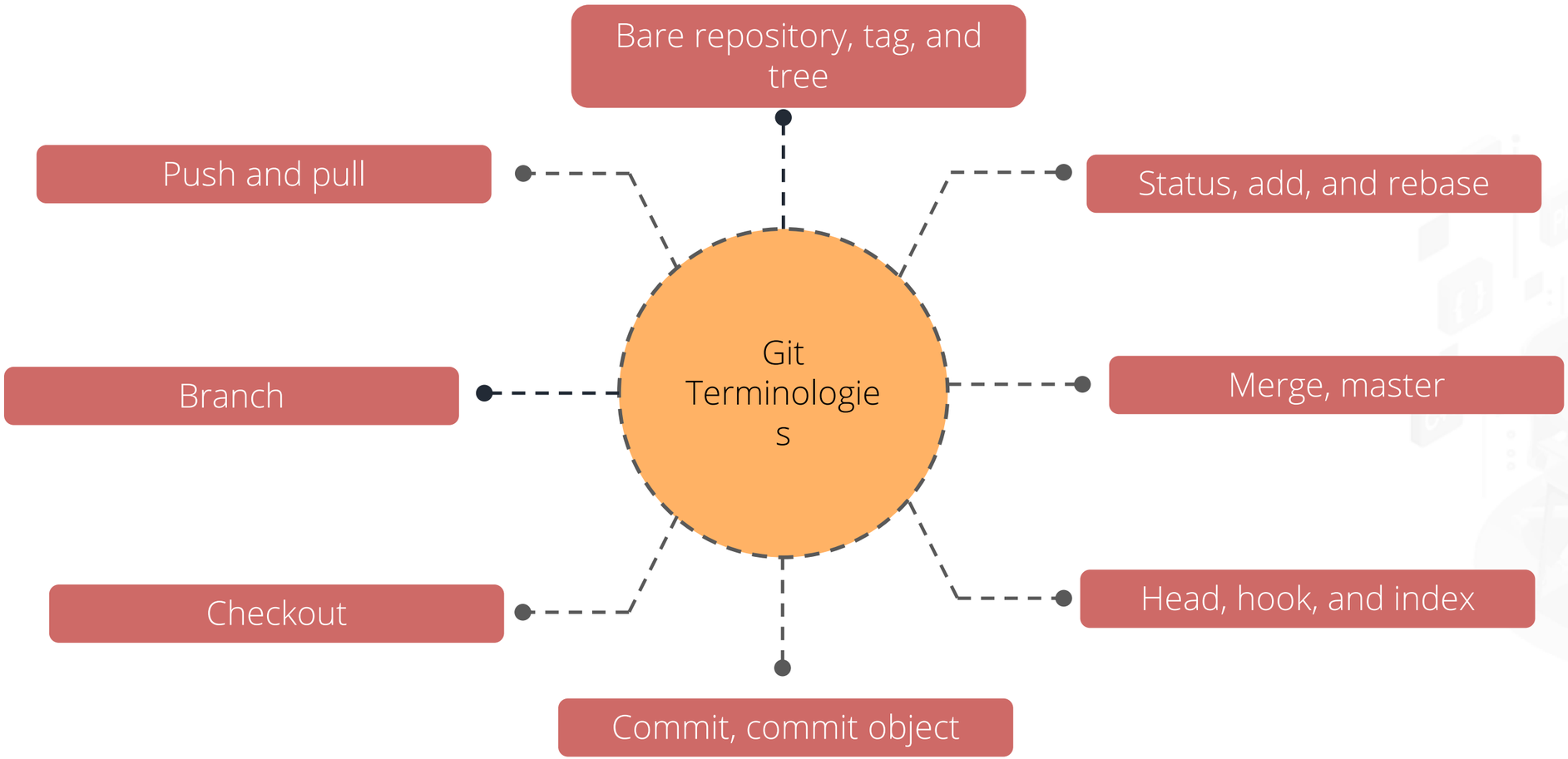
Agile in testing

- Test fixed number of features in a sprint
- Push any additional features to backlog
- In the succeeding sprint, along with the features to be tested for the sprint, test the features in the backlog as additional features

Adopting agile in a testing environment introduces **shift left approach** to testing.

Overview of Git and Git Rebase

Popular Terminologies



Git Workflow

1

git init

2

git status

3

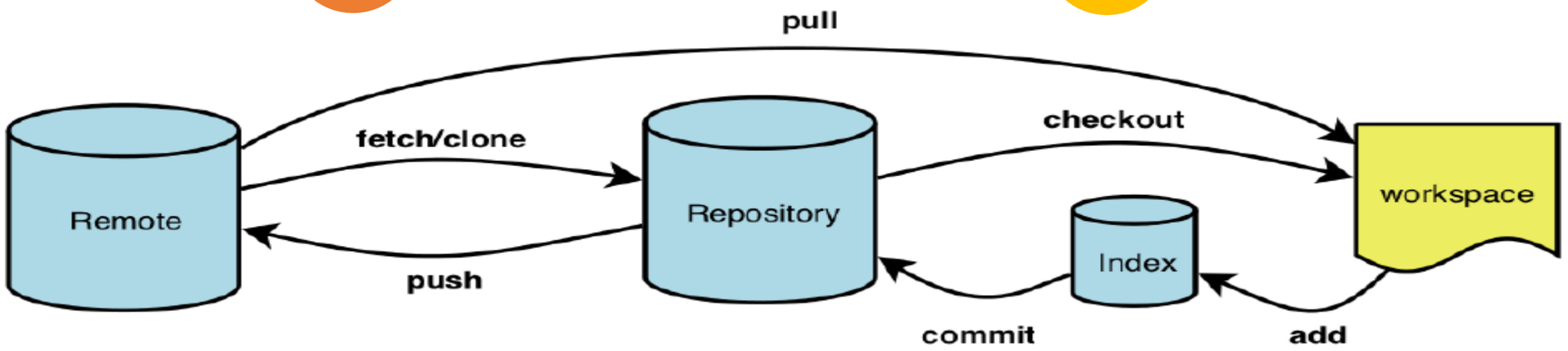
git add <files>
git commit <files>

4

git push origin master

5

git rebase <parameters>
git checkout <references>
git merge <references>



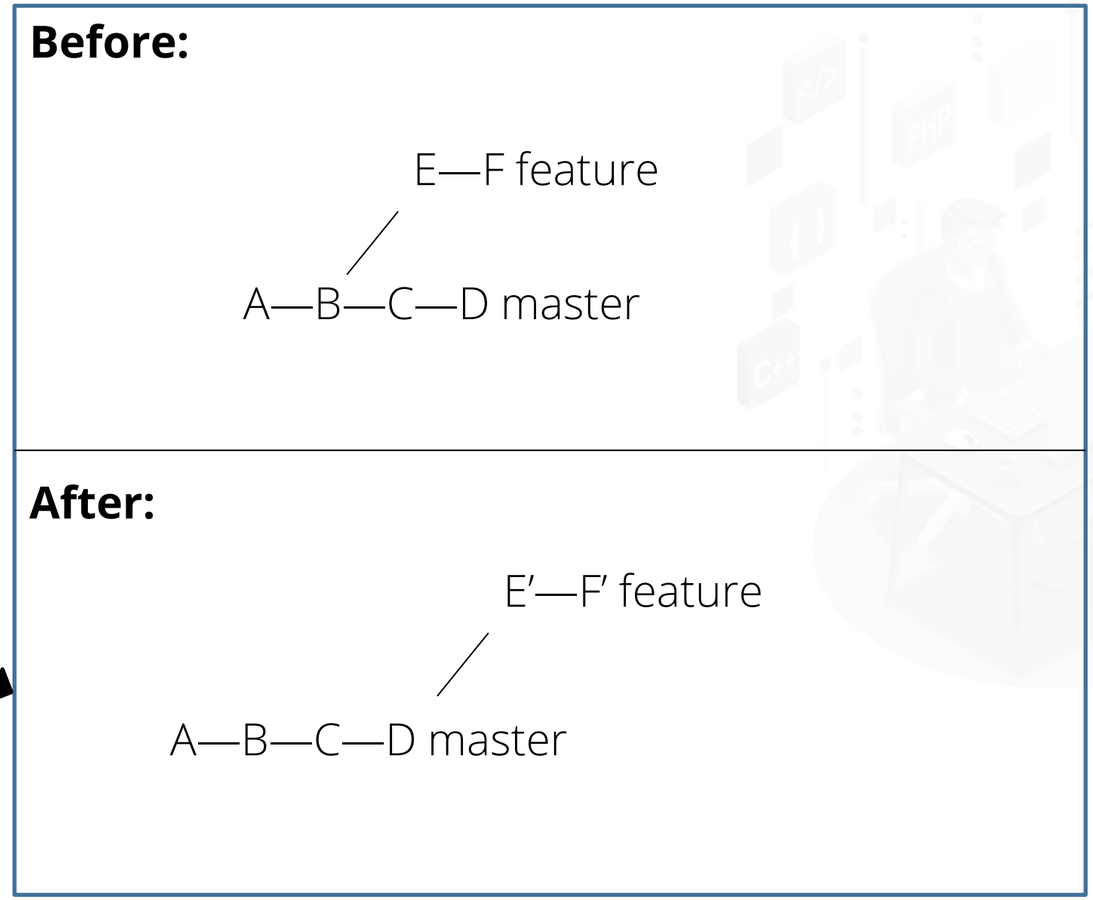
Git Rebase

Git rebase is one of the ways to integrate changes from one branch to another. It transfers the completed task from one branch to another.

Commands used to achieve the result:

git rebase master

git rebase master feature



Set up and Create a Git Repository

Duration: 20 min.

Problem Statement:
You are given a project to demonstrate the initial set up and the uses of Git.

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to set up and create Git repository:

1. Download Git from the official site.
2. Install Git in the system.
3. Confirm the installation, and check the version installed.
4. Execute the basic commands to familiarize yourself with the use of terminal.
5. Generate random files and initialize the .git file.
6. Commit the files.

CRUD Operations in Git

Duration: 40 min.

Problem Statement:

You are given a project to demonstrate the following:
1. Reverting the earlier commits
2. Deleting and ignoring files in Git
3. Pulling the commits and collaborating between the local and remote repositories

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to perform CRUD operations in Git:

1. Navigate to the folder of early commits.

2. Execute the command to revert the commits.

3. Generate random files and add to the initialized Git repository.

4. Ignore few of the files while adding the rest to the .git file.

5. Delete the files added to the .git file.

Overview of GitHub

GitHub and Its Features

GitHub is a web-based hosting service for a version control system using Git.

Features:

- Access Control
- Bug Tracking
- Feature Requests
- Task Management

Developed Projects:

- Atom: A free and open-source text and source code editor
- Electron: An open-source framework to use JavaScript-based websites as desktop applications

Set up and Configure GitHub Account

Duration: 40 min.

Problem Statement:
You are given a project to demonstrate the following:
1. Create your GitHub account
2. Connect from local Git repository to remote GitHub via SSH
3. Initiate the first push

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to set up and configure GitHub account:

1. Create an account with GitHub.
2. Set up an SSH connection with your GitHub account.
3. Navigate to the folder where the initial commits are made.
4. Add the remote origin.
5. Push the files to the GitHub account.

Key Takeaways

- Scrum is an agile process that encourages us to deliver the highest business values
- Definition of Done (DoD) is a comprehensive collection of mandatory value-added deliverables that focuses on quality of the product and not the functionality of the product
- Git is an open source version control system that supports branching, merging, and rewriting repository history
- GitHub is a web-based hosting service for a version control system using Git

Create and Deploy Files to GitHub via Git

Duration: 30 min.

Problem Statement:

Create a directory which includes multiple files: index.js, index.html, inherit.java, angularcli.json, and component.ts. Perform the following:

- Initialize the Git repository
- Commit the files: index.js, index.html, and inhert.java
- Ignore the files: angularcli.json and component.ts
- Create a folder in your GitHub account
- Push the committed files to the repository

LESSON-END PROJECT

Before the Next Class

Course: Core Java

You should be able to:

- Explain the fundamentals of Java language
- Set up Java and Eclipse on your machine
- Demonstrate initialization of a variable
- Explain data types and their declarations
- Demonstrate operators in Java
- Use conditional statements, loops, break statements, and continue statements
- Explain classes and objects
- Demonstrate the uses of *final*, *static*, and *this* core keywords in Java