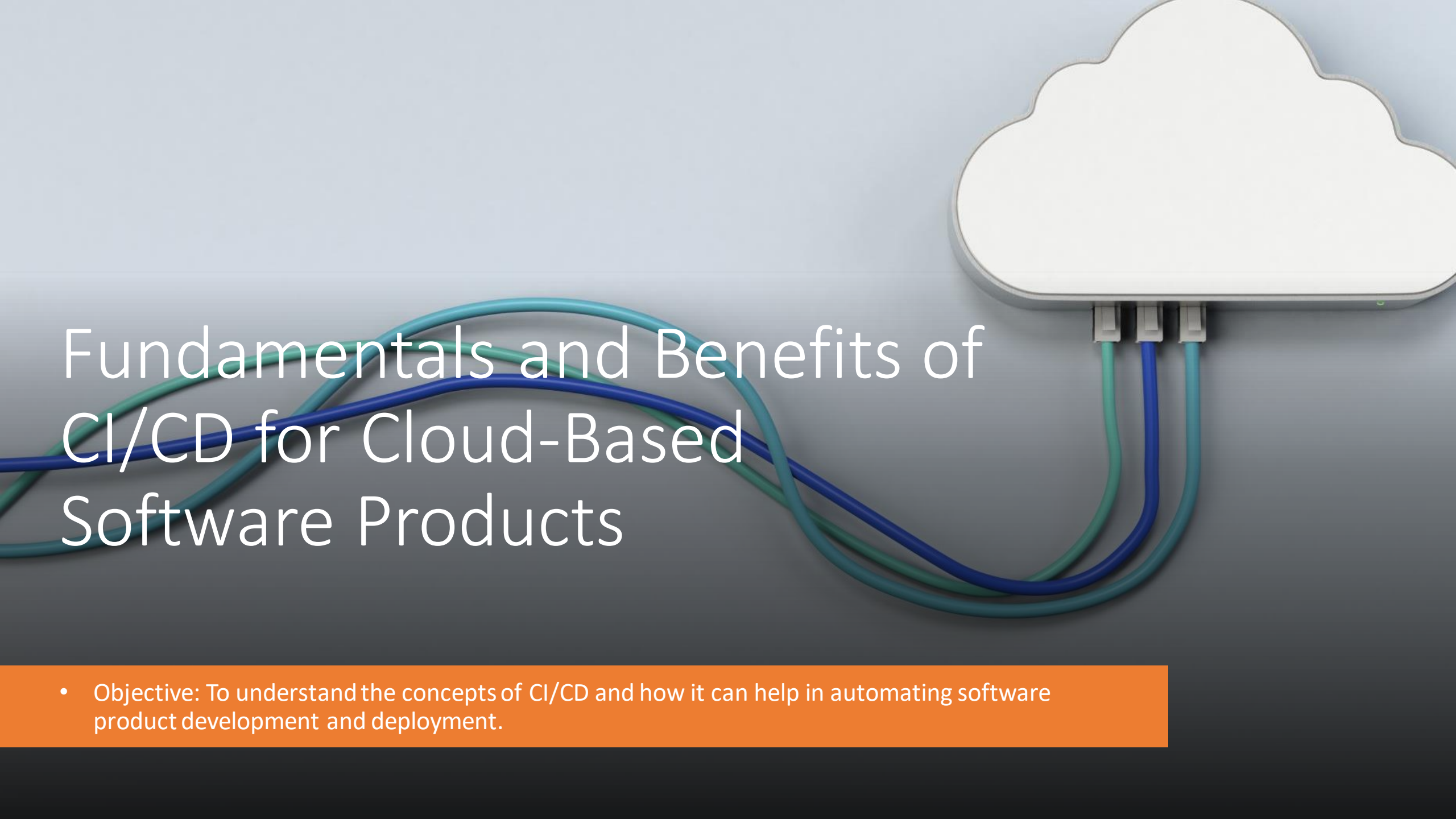
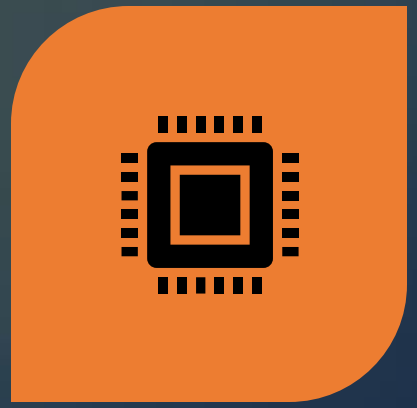


Fundamentals and Benefits of CI/CD for Cloud-Based Software Products

- Objective: To understand the concepts of CI/CD and how it can help in automating software product development and deployment.

What is CI/CD



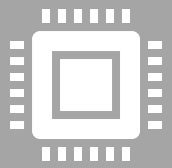
CI/CD IS A SOFTWARE DEVELOPMENT PRACTICE THAT ENABLES FREQUENT AND AUTOMATED BUILDING, TESTING, AND DEPLOYMENT OF SOFTWARE PRODUCTS.

CI: CONTINUOUS INTEGRATION - AUTOMATING THE BUILD AND TESTING PROCESS TO ENSURE THAT THE CHANGES MADE TO THE CODEBASE ARE WORKING CORRECTLY.

CD: CONTINUOUS DELIVERY/DEPLOYMENT - AUTOMATING THE DEPLOYMENT PROCESS TO MAKE THE CHANGES AVAILABLE TO END-USERS.

Why is CI/CD important?

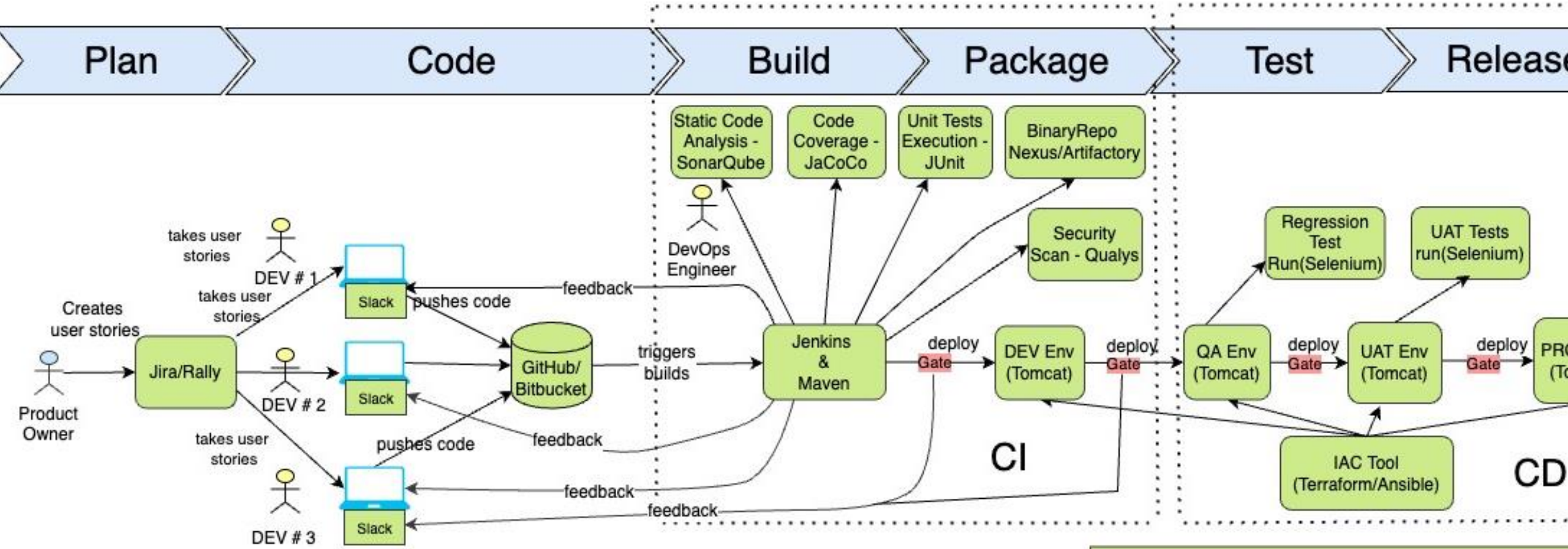
Faster Time-to-Market: CI/CD enables faster delivery of software products, resulting in a shorter time-to-market.



Improved Quality: Automated testing and deployment ensure that the software product is of high quality and free from errors.

Efficient Workflow: CI/CD promotes collaboration among team members and enables a smooth workflow.

Agile Development with DevOps - CICD Process Flow Diagram



Continuous integration?

1. Continuously integrate and merge code changes frequently
2. Find out bugs early in software development stages
3. Make frequent releases possible
4. Make Continuous testing possible
5. Encourage good coding practices

Sample Gating Criteria for DEV/QA/UAT/PROD deployment

1. 100% unit test executions pass
2. At least 80% code coverage
3. No critical defects/vulnerabilities in code

Milestones:

1. Automated builds
2. Automated unit tests execution
3. Automated code quality checks
4. Automated code coverage checks
5. Automated security scanning
6. Automated deployments with gating
7. Automated feedback to prod teams
8. Automated Binary storage into Repo manag
9. Automated Infrastructure setup

CI/CD Tools:

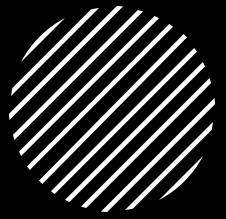
CircleCI

- CircleCI is a cloud-based CI/CD tool that is widely used in agile development.
- Features: Docker-based builds, parallel testing, and deployment workflows, and integration with various tools and technologies.
- Benefits: Speed, scalability, and flexibility.

GitLab CI/CD

- GitLab CI/CD is an open-source CI/CD tool that is integrated with GitLab, a popular code repository.
- Features: Automation of software builds, testing, and deployment, support for multiple programming languages, and integration with various tools and technologies.
- Benefits: Integration with GitLab, ease of use, and scalability.

CI/CD Tools:



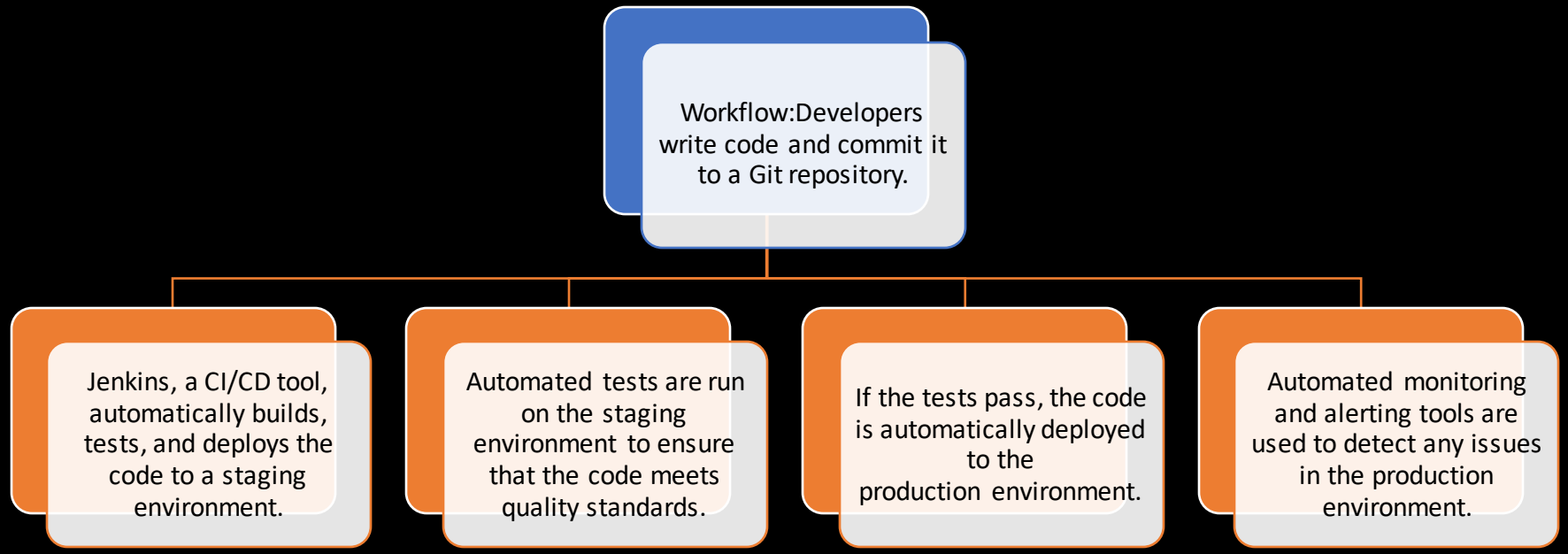
Jenkins

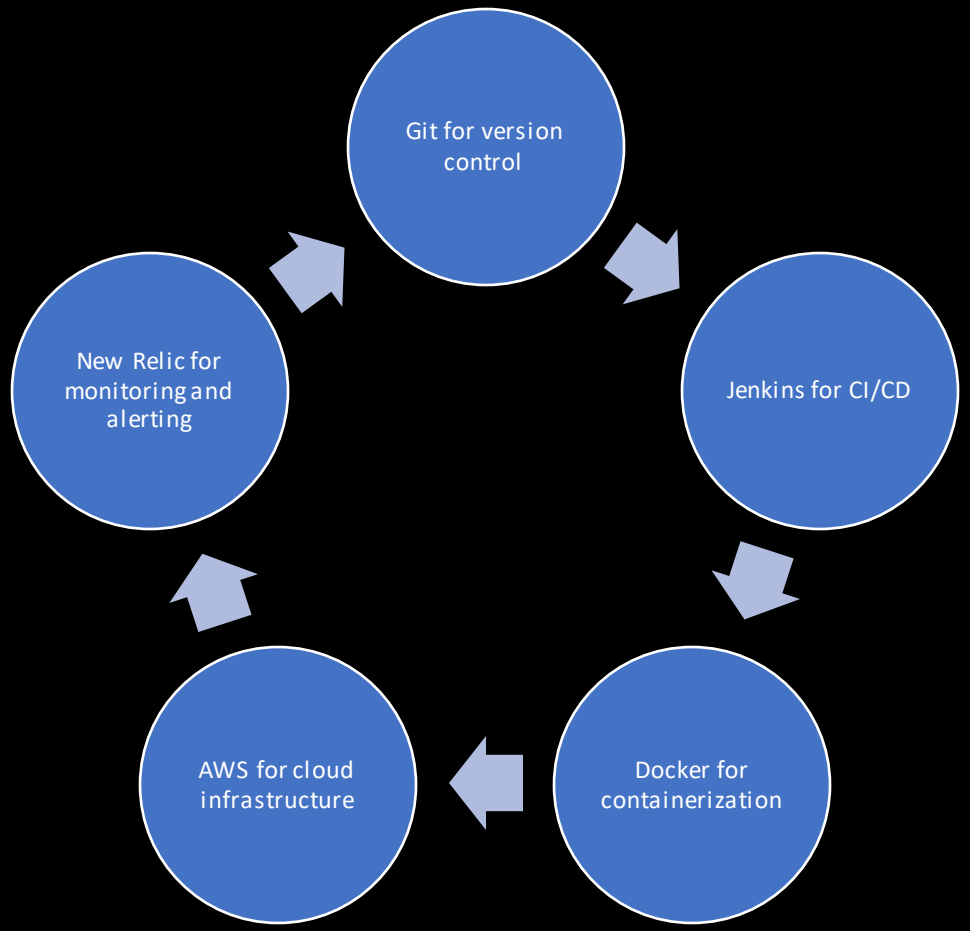
- Jenkins is an open-source CI/CD tool that is widely used in DevOps.
- Features: Automation of software builds, testing, and deployment, extensible through plugins, and integration with various tools and technologies.
- Benefits: Flexibility, scalability, and ease of use.

Travis CI

- Travis CI is a cloud-based CI/CD tool that is widely used in open-source projects.
- Features: Integration with various code repositories, support for multiple programming languages, and automated testing and deployment.
- Benefits: Ease of use, community support, and continuous updates.

Case Study: Akara FC
Product: A cloud-based project management tool

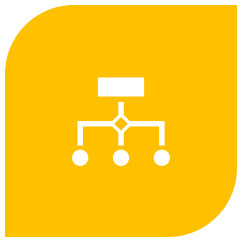




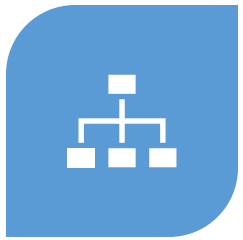
Akara FC: Tools Used

FASTER DEPLOYMENT: WITH CI/CD, THE TIME BETWEEN WRITING CODE AND DEPLOYING IT TO PRODUCTION IS SIGNIFICANTLY REDUCED, ALLOWING FOR FASTER FEEDBACK AND MORE RAPID ITERATION.

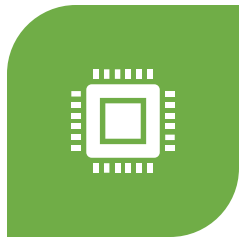
BETTER QUALITY: THE AUTOMATED TESTING AND MONITORING TOOLS HELP TO CATCH ISSUES EARLIER IN THE DEVELOPMENT PROCESS, RESULTING IN BETTER QUALITY SOFTWARE.



GREATER EFFICIENCY: THE AUTOMATION OF THE BUILD, TEST, AND DEPLOYMENT PROCESS REDUCES THE NEED FOR MANUAL INTERVENTION, RESULTING IN GREATER EFFICIENCY AND FEWER ERRORS.



IMPROVED COLLABORATION: WITH ALL CODE CHANGES BEING PUSHED TO THE SAME REPOSITORY, THE DEVELOPMENT TEAM IS ABLE TO COLLABORATE MORE EFFECTIVELY AND EASILY TRACK CHANGES OVER TIME.



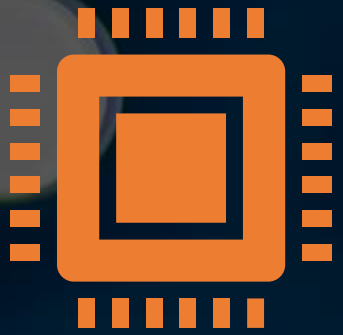
OVERALL, IMPLEMENTING CI/CD HAS HELPED XYZ INC. TO IMPROVE THE QUALITY AND SPEED OF THEIR SOFTWARE DEVELOPMENT PROCESS, RESULTING IN A BETTER PRODUCT FOR THEIR CUSTOMERS.

Benefits to Akara FC

Benefits of CI/CD for Cloud-Based Software Products

- Scalability: Cloud-based infrastructure allows for easy scaling of resources as needed.
- Flexibility: Cloud-based infrastructure allows for flexible deployment options such as multi-region or multi-cloud deployments.
- Cost-Effective: Cloud-based infrastructure reduces the cost of hardware, maintenance, and deployment.

Summary



CI/CD is a crucial practice in automating software development and deployment.

Cloud-based infrastructure enhances the benefits of CI/CD and enables efficient and cost-effective development and deployment of software products.