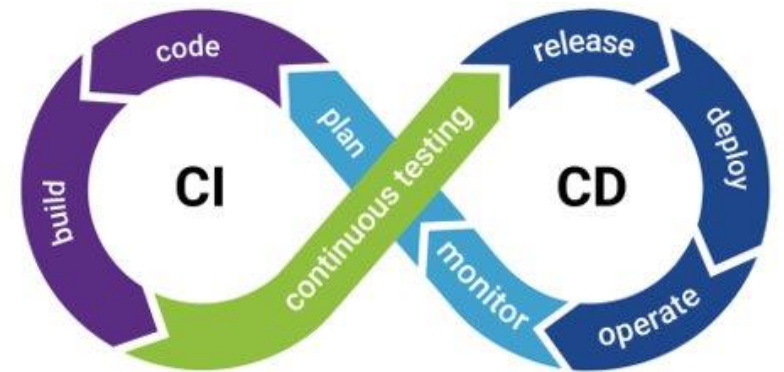# UdaPeople

Jean Eric TUYISHIMIRE

Why we need to adopt CI/CD to achieve build and deploy automation

- **What is CI?**

  "CI (Continuous **I**ntegration**)** is a software development practice where members of a team integrate their work frequently." --Martin Fowler

  Everything related to the code fits here.

- **What is CD?**

  "CI (Continuous **D**eployment**)** is software development discipline where you build software in such a way that the software can be released to production at any time." --Martin Fowler

  Everything related to deploying the artifact fits here.

Continuous Integration (CI)

With CI, each change in code triggers an automated build-and-test sequence for the given project, providing feedback to the developer(s) who made the change.

Some common CI-related phases might include:

Build: producing an artifact which can be used and deployed without any modification.

Test and **Analyze:** make sure the code that produced the artifact is of the right level of quality.

Continuous Deployment (CD)

CD includes creating and provisioning infrastructure, ideally, we do this with infrastructure as code (IAC). CD may consist of multiple stages but what is important is that all these processes are fully automated.
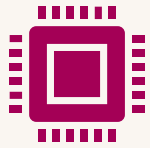
Some common CI-related phases might include:

Creating and **configuring infrastructure:** setting up servers and resources.

Promoting to production

Benefits of CI/CD at the Business Level

Catch compile errors after merge

This will help us to **reduce cost** because developers will spend less time on issues from new developer code and focus on working on the new emerging features.

Catch unit test failures

This will help us to **avoid cost** because developers will spend less time testing the code and the code promoted in production will have fewer bugs hence saving on repair bills.

Detect security vulnerabilities

This will help us to **avoid cost** because we will be preventing embarrassing or costly security holes that can lead to data breaches which would lead to facing lawsuits.

"Save money, save face"

Automate infrastructure creation

This will help us to **avoid cost** because we will have fewer human errors during infrastructure creation and this will lead to faster and more consistent deployments.

Benefits of CI/CD at the Business Level

Automate infrastructure cleanup

This will help us to **reduce cost** because we will be cleaning up unused resources and this will reduce drastically the cost spent on unused infrastructure resources.

Faster and More Frequent Production Deployments

This will help us to **increase revenue** because we will be able to release new features which will be generating value quickly and frequently.

Deploy to Production Without Manual Checks

This will help us to **increase revenue** because the features will take less time to reach the market.

This will also be beneficial on the developers' side because they will be spending less time doing time consuming manual checks.

Automated Smoke Tests

This will help us to **protect revenue** because we will have tested our new code before deployment and this will lead to reduced downtime from a deployment-related crash.

Automated Rollback Triggered by Job Failure

This will help us to **protect revenue** because this will enable us to do a quick undo and return production to the previous working state.