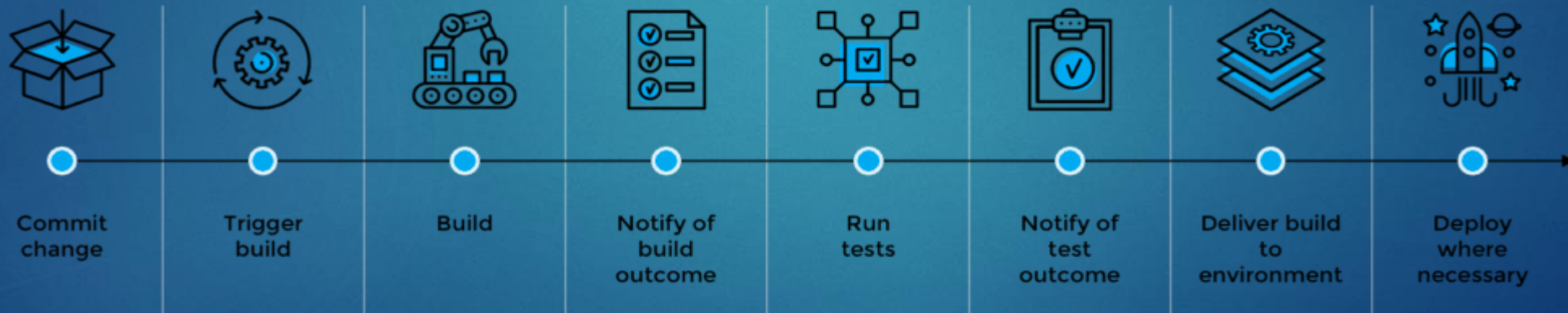# ADOPTING CI/CD

UDAPEOPLE PRODUCT

What is CI/CD?

- (**CI**) stands for **Continuous integration**. It is the practice of automating the integration of changes from multiple contributors into a single software project. It's a primary DevOps best practice, allowing developers to frequently merge code changes into a central repository where builds and tests are run. Automated tools are used to assert the new code's correctness before integration.

- **Devops** is a set of practices that works to automate and integrate the process between software development and IT teams.

- (**CD**) stands for either **Continuous delivery** or **Continuous deployment**.

- **Continuous delivery** is an approach where teams release quality products frequently and predictably from source code repository to production in an automated fashion. Depends on decision making.

- **Continuous deployment** goes a step further . With this approach, every change that passes all stages of your production pipeline is released to customers. There is no human intervention , and only a failed test will prevent a new change to be pushed to production.

What's a CI/CD pipeline?

► A pipeline is a process that drives software development through a path of building, testing, and deploying code, also known as CI/CD. By automating the process the objective is minimize error and maintain consistent process for how software is released. Tools that are included in the pipeline could include compiling code, unit tests, code analysis, security and binaries creation.

CI/CD Pipeline

| Commit change | Trigger build | Build | Notify of build outcome | Run tests | Notify of test outcome | Deliver build to environment | Deploy where necessary |

Benefits of CI/CD

▶ Releasing software can be painful and time-consuming process. One involved days of manual integration, configuration, testing while the ever-present risk of discovering a showstopper threatens to force everyone back to drawing board.

▶ The commitment, energy and sleepless night spent getting ready for a release can only lead to an outcome where a release is only done once a couple of months.

▶ This is where CI/CD comes into play, many organizations that have adopted this approach have been able to release software on a more frequent basis without compromising on quality. With CI/CD, code changes have integrated through an automated pipeline that handles the repetitive build, test and deployment tasks and alerts you about any issues.

▶ A walk-through some of the benefits of CI/CD:

❑ **Faster time to market:**

Constant release of new features and software's to customers on a regular basis, builds confidence and in turn leads to increase in revenue because an organization is able to stay ahead of its competition and to an extend it attracts more customers.

Benefits of CI/CD

❑ **Reduced risk:**

Early releases provides a platform whereby an organization can get early feedback from customers in a live environment which helps validate their approach before heavily investing. This can help prevent unplanned costs.

❑ **Detect security vulnerabilities:**

Code is run through a pipeline which has tests to check vulnerabilities and security breaches. Testing helps incurring security costs and also loss of confidence from customers which can lead to loss of revenue.

❑ **Automate infrastructure creation:**

Infrastructure comprises of IT tools such as servers, virtual private cloud, and databases. Automation of this process helps reduce costs which mainly occur due to errors in creation process, also saves on time.

Benefits of CI/CD

❑ **Automated Rollbacks:**

In an event of process failure, all resources such as servers are destroyed hence releasing of these resources saves on costs because organization will only pay for what they have utilized.

❑ **Zero manual checks**:

As all processes are automated, human intervention is cut off hence if pipeline builds successfully, code will be deployed and customers will receives changes to their software. Cutting of manual check s saves time for developers who can work on new features and also cuts costs which occur in review process.