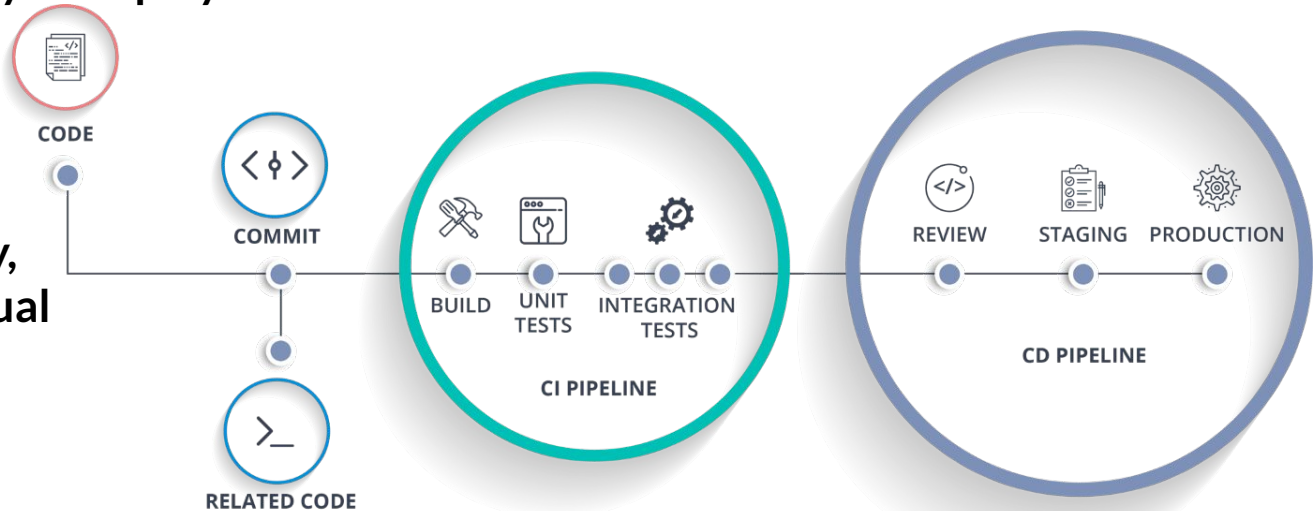# CI/CD

Fundamentals and benefits of CI/CD

What is CI/CD ?

Continuous Integration(CI) is based on the idea that teams of programmers who make frequent releases involving small changes to code produce reliable and easily debugged output.

Continuous delivery(CD) means a developer's changes to an application are automatically bug tested and uploaded to a repository (like GitHub or a container registry), where they can then be deployed to a live production environment by the operations team.

Organizations that adopt continuous integration have a competitive advantage because of the ability to deploy faster. Organizations that have implemented CI are making revenue on the features they deploy, not waiting for manual code checks.

CODE

COMMIT

RELATED CODE

BUILD UNIT TESTS INTEGRATION TESTS

CI PIPELINE

REVIEW STAGING PRODUCTION

CD PIPELINE

CI Benefits

- **Iterate faster**: Smaller code changes allow teams to iterate faster and are easier to manage.

- **Find problems easily**: Teams can find problems in code because all code is managed and tested in smaller batches.

- **Have better transparency**: Continuous feedback through frequent testing helps developers see where bugs are.

- **Reduce costs**: Automated testing frees up time for developers by reducing manual tasks, and better code quality means fewer errors and less downtime.

- **Make users happy**: Fewer bugs/errors make it into production, so users have a better experience.

CI/CD Business Benefits

Reduce Cost   Less developer time on issues from new developer code

Avoid Cost   Less bugs in production and less time in testing

Increase Revenue   Less time to market

Protect Revenue   Reduced downtime from a deploy-related crash or major
                               bug

End.