



# CI/CD BENEFITS PROPOSAL

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## 1. Continuous Integration (CI)

- A process of continually validating and merging code from different developers into a central repository through automated testing several times a day.
- CI works best with version control.

## 2. Continuous Delivery

- A process of building, testing and delivering improvements in code.
- Continuous Delivery is an extension of CI to ensure that new changes can be automatically released to customers quickly at any time in a substantial manner.

## 3. Continuous Deployment

- An extension to Continuous delivery and involves automatically releasing any developer changes from development or testing environment to production.
- It eliminates any human intervention and accelerates the feedback loop with customers.

# CURRENT PROBLEMS FACING OUR COMPANY

1. Current manual processes are error-prone and not repeatable.
2. Fixing errors is time consuming which in turn leads to delays or postponement of deployment to production and also poor quality software since developers spend most of their time fixing errors.
3. Deployments are the responsibility of a small experts and would be disastrous should they fall sick or are unavailable at a short notice. There are no smoke tests and rollback mechanism.
4. Feedback about the system comes too late and does not assure application or code quality.

# BENEFITS OF CI/CD

1. Deployments become less error-prone and much more repeatable since compiling, testing, code analysis, infrastructure creation are all automated.
  - This results in cost reduction because of less human errors and faster deployments.
2. Anyone in the team can deploy and release software and not only small subset of people. Also any breaking changes could be found and fixed quickly for the whole deployment process. Automation also involves smoke tests and rollback mechanisms.
  - Rollbacks and smoke tests in the automation process helps to protect revenue because there will be reduced downtimes when deployment fails and also automated rebuilds to get system up and running.

1. Automated deployments have less overhead, thus teams can deliver features to users more often and in incremental steps.
  - This helps to gather continuous feedback from users and teams can adapt their approach to increase customer satisfaction. When customers are delighted and happy, they will use our product, recommend other users which in turn may increase revenue for the company.

# Challenges of CI/CD

- Setting up CI/CD comes with a set-up overhead and high learning curve.
- Working with CI/CD pipelines is not a one-off job but requires continuous support and maintenance since one main advantage of CI/CD pipelines is continuous improvement.
- Overall, CI/CD will exponentially reduce costs and improve our business processes in the long run.