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Proposal for the Implementation of Continuous Integration and Continuous Deployment (CICD) for Udapeople Product

Continuous Integration (CI)

Continuous Integration, CI is the merging of new lines of code into our products or existing body of code after a series of fail-safe checks is performed.

The process ensures the code written by developers meets both functional and non-functional requirement of Udapeople product. Its aim will be to produce high quality and deployable artifacts.

CI process may include the following:

- Build
- Compile
- Dependency vulnerability testing
- Store artifact
- Unit test
- Static analysis

Continuous Deployment (CD)

This refers to the automatic deployment of our market ready products to production. This stage manages everything related to deployment of artifacts.

CD related stages may include the following:

- Infrastructure and workloads provisioning
- Configuration management
- Deployment to production
- Smoke tests
- Roll backs

The integration of CI and CD processes creates a CICD pipeline which manages and deploy the code at after developer updates the code repository. This eliminates or bring to barest minimum human errors, bugs, security vulnerability and increases our time to market among other benefits.

Benefits of CICD

- Increase overall product time to market.
- Reduces up to 90% of the deployment cost incurred by the business per time.
- Eliminates up to 80% cost on fixing bugs because human interaction is eliminated.
- The time to market required for new features and latest updates is greatly enhanced.
- Reduce cost as developers spend less time on issues from new developers' code.
- Avoid cost as there are less bugs in production and time is spent testing and debugging.
- Mitigates and reduce cost incurred by security breaches on the product.
- Avoid cost as it reduces human error and enable faster deployments.
- Reduces needless infrastructure costs as unused resources can be removed automatically.
- Increase revenue by releasing new value generating features quickly.
- Protect revenue by reducing downtime from a failed development.
- Improves the business RPO and RTO by quickly making deployment during a disaster recovery.
- Protect Revenue as it enables going back to previous working state If something goes wrong.

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