

# Module 1- Introduction to CI/CD

# Agenda

- Overview of DevOps
- DevOps Cycle
- CI/CD in DevOps
- Introduction to CI/CD
- Jenkins Introduction & Overview
- Installing Jenkins
- Continuous Integration with Jenkins
- Continuous Inspection with Jenkins
- Continuous Delivery with Jenkins
- Security with Jenkins

# Module 1 - Overview of DevOps

# Agile & DevOps

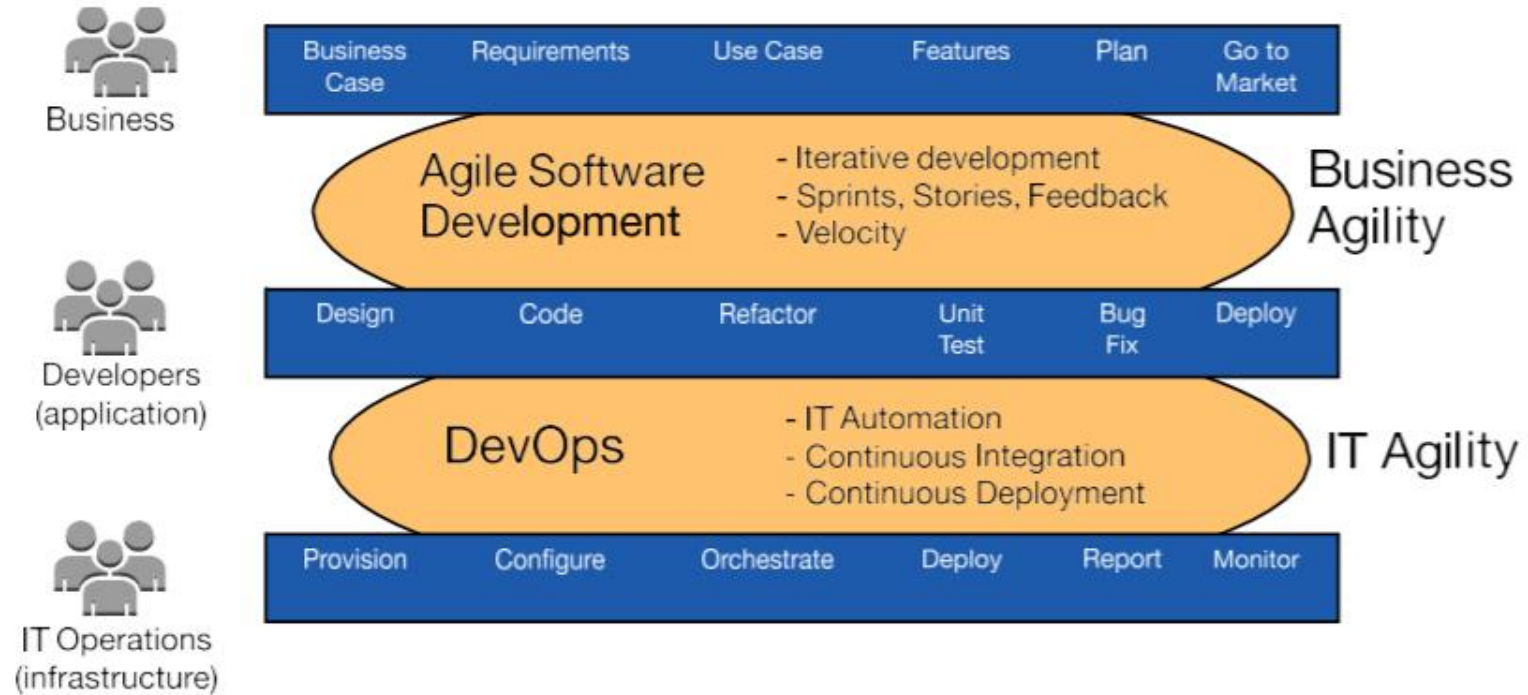


Figure 2: The coevolution of agile software development and DevOps

# What is DevOps?

DevOps is a term that primarily focuses on improved collaboration, communication, and integration between software developers and IT operations. It's an umbrella term that some describe as a philosophy, cultural change, and paradigm shift.

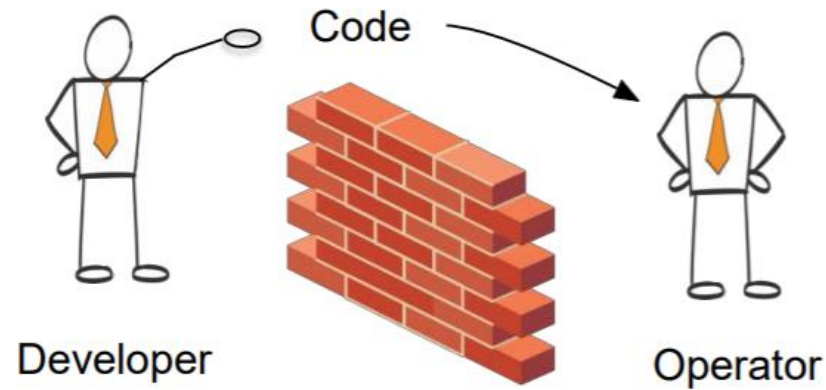
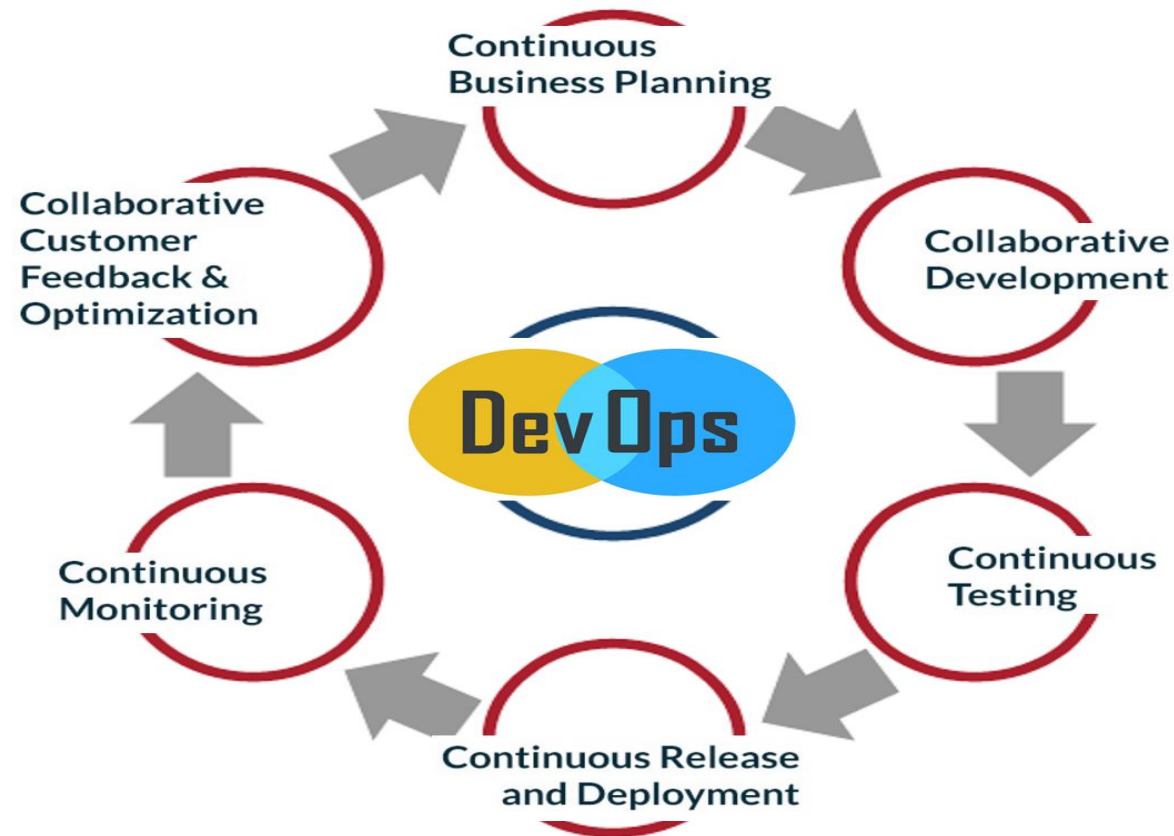
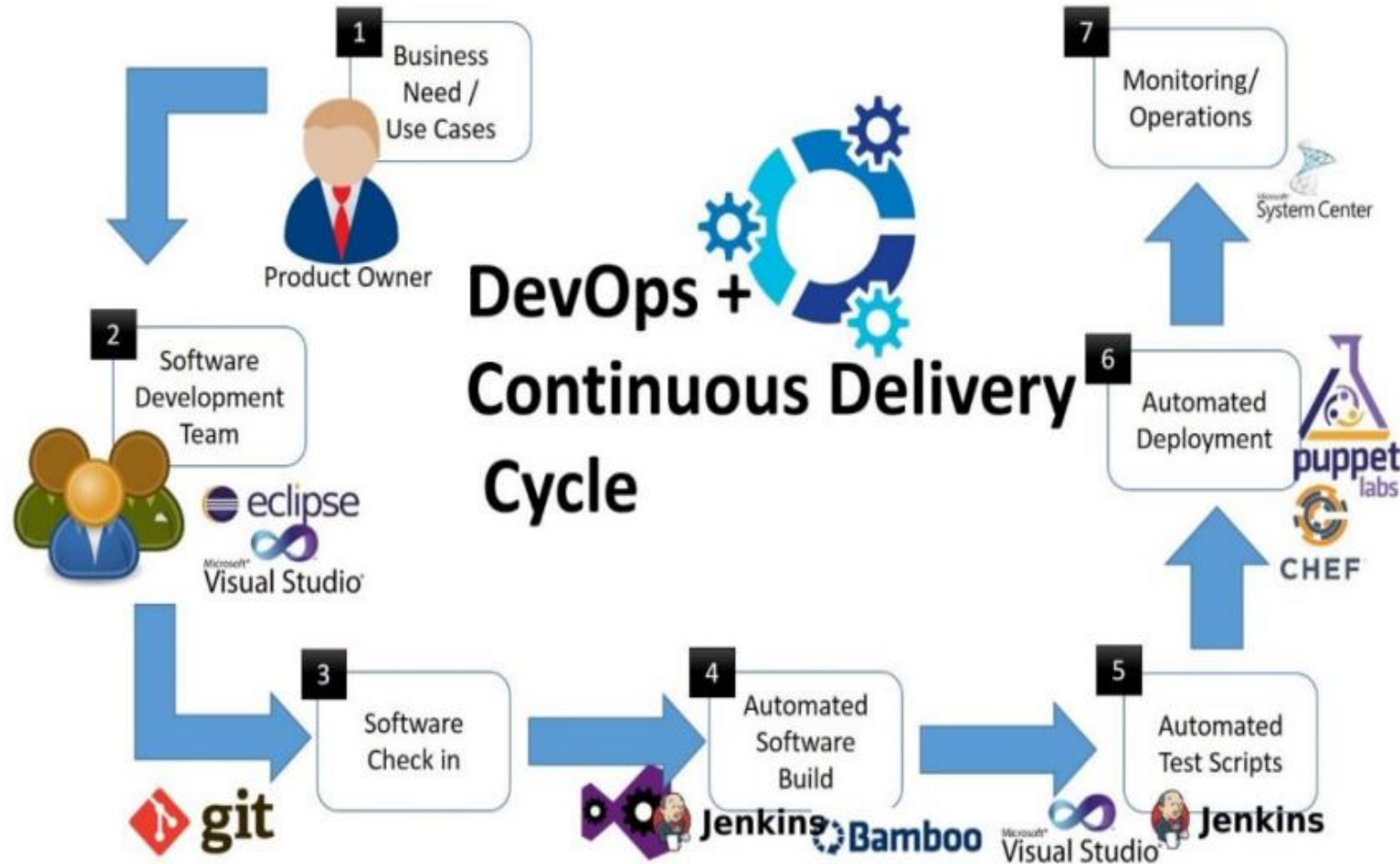


Figure 1: Developer throwing code "over the wall"

# Continuous Everything in DevOps



# DevOps Cycle



# Introduction to CI /CD



# What is Continuous Integration (CI)?

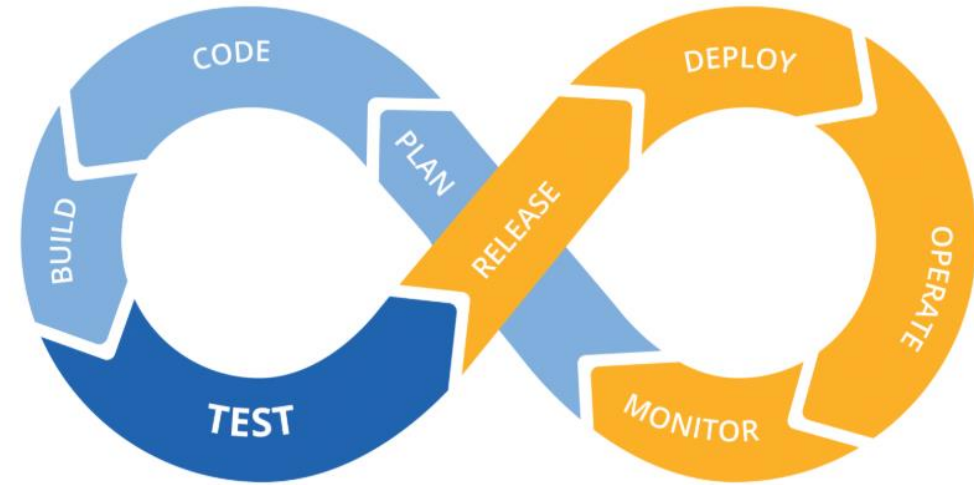
- Continuous Integration is a development practice in which the developers are required to commit changes to the source code in a shared repository several times a day or more frequently.
- Every commit made in the repository is then built. This allows the teams to detect the problems early.
- Continuous Integration tool is also used for automating building and testing applications
- Using CI , helps companies to save time on debugging and gives more time to add new features

# What is Continuous Delivery (CD)?

- Continuous delivery (CD) is a software release approach in which software can be released to production rapidly with a high degree of automation
- CD is the ability to have new features, configuration changes, bug fixes and experiments into production environment in a sustainable way.
- Low Risk Releases, Faster time to Market , Lower costs and Higher quality are the important benefits which companies can get using Continuous Delivery principles. E.g.: Blue-Green Deployments

# Benefits of CI/CD

- Smaller Code Changes
- Faster Mean time to Resolution (MTTR)
- Faster Releases
- Effective Tests
- Customers are happy
- Reduce Costs
- Increase Team Transparency and Accountability



# CI /CD Features

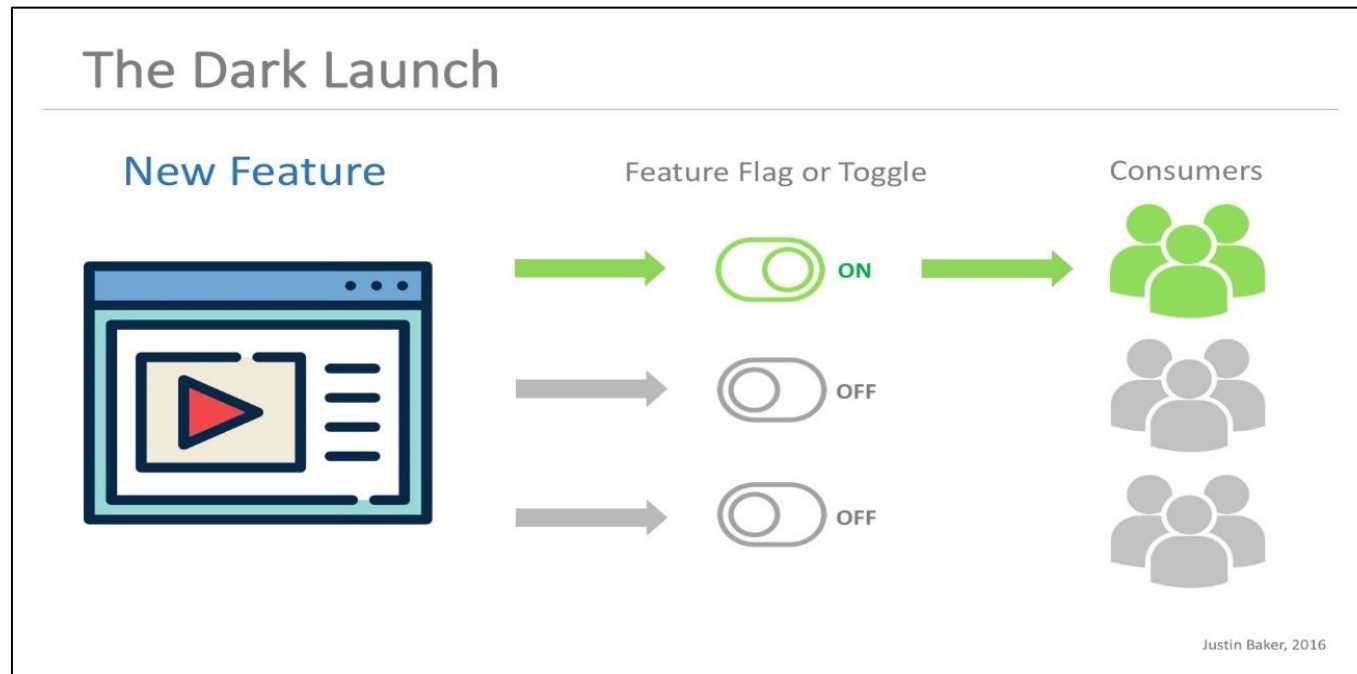
- End-to-end security
- Ability to rollback with a fully reproducible audit trail
- Built-in observability and alerting
- A fast Mean Time to Deployment as well as a Fast Mean Time to Recovery
- Simple developer experience and workflows

# Use Cases

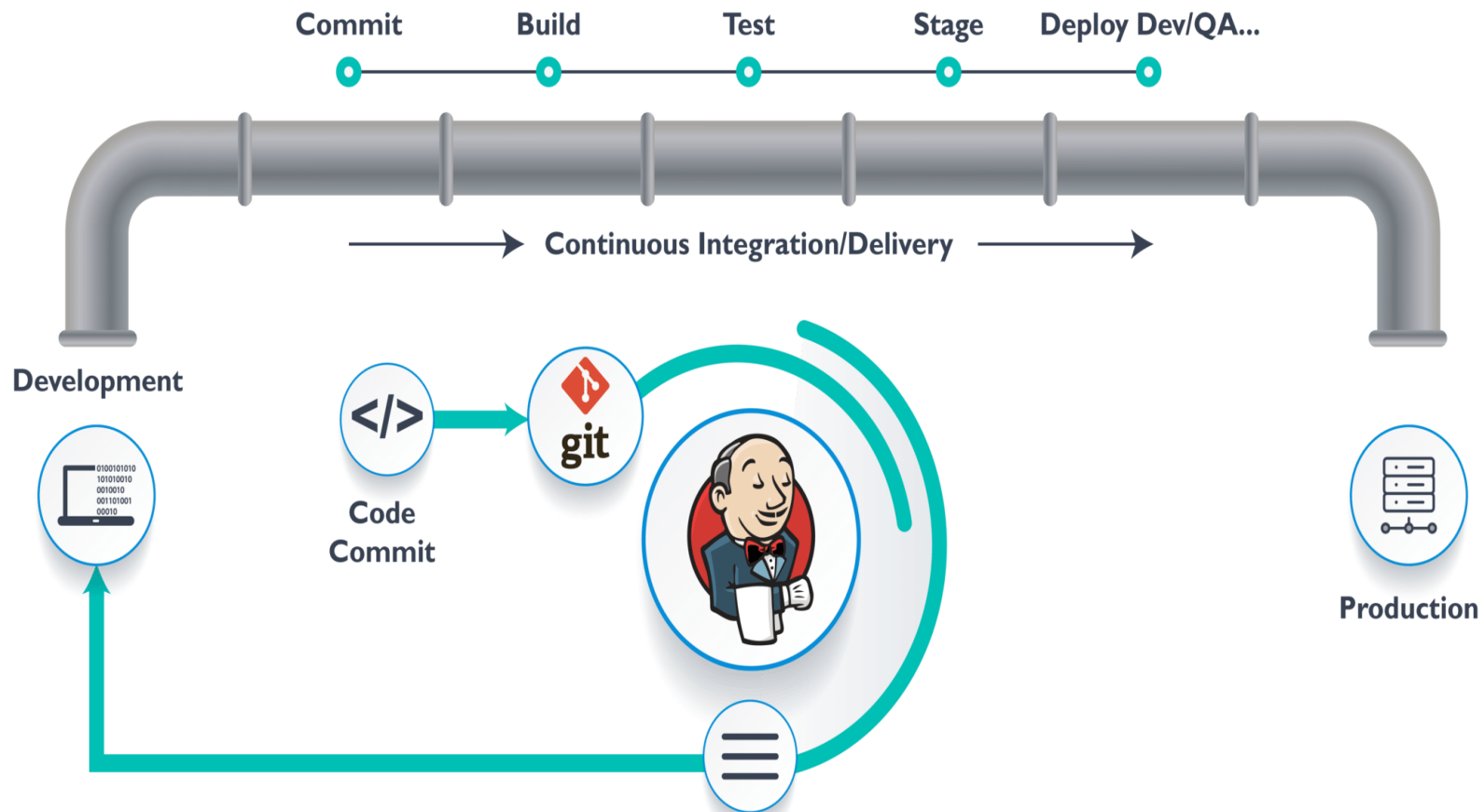
- Jenkins lowers the Effort of repeated coding
- Integration of Individual Jobs
- Effortless Auditing & Troubleshooting
- Code deployment to Production using Pipelines

# Use Case

In 2011, Facebook rolled out a slew of new features –timeline, ticker and music functionalities –to its 500 million users spread across the globe. The huge traffic that was generated on Facebook following the release led to a server meltdown. The features that were rolled out garnered mixed response from users which led to inconclusive results of the effectiveness of the new features, leaving them with no actionable insights.

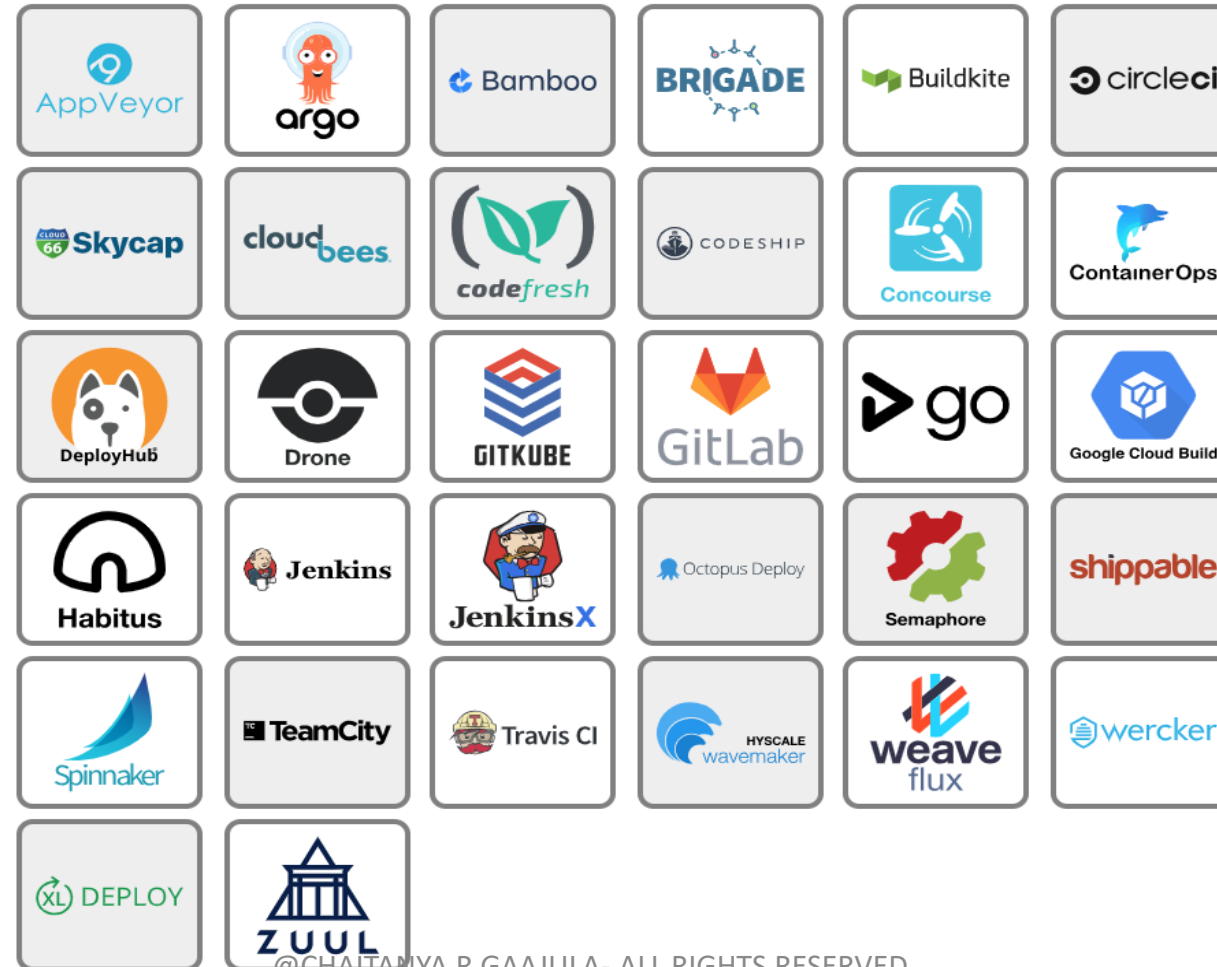


# Continuous Integration / Continuous Delivery (CI/CD)








# CI/CD tools in the Market

## Continuous Integration & Delivery





# Comparison of CI/CD Tools

	 Jenkins	 circleci	 TeamCity	 Bamboo	 GitLab
<b>Open source</b>	Yes	No	No	No	No
<b>Ease of use &amp; setup</b>	Medium	Medium	Medium	Medium	Medium
<b>Built-in features</b>	3/5	4/5	4/5	4/5	4/5
<b>Integration</b>	★ ★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★
<b>Hosting</b>	On premise & Cloud	On premise & Cloud	On premise	On premise & Bitbucket as Cloud	On premise & Cloud
<b>Free version</b>	Yes	Yes	Yes	Yes	Yes
<b>Build Agent License Pricing</b>	Free	From \$39 per month	From \$299 one-off payment	From \$10 one-off payment	From \$4 per month per user
<b>Supported OSs</b>	Windows, Linux, macOS, Unix-like OS	Linux or MacOS	Windows, Linux, macOS, Solaris, FreeBSD and more	Windows, Linux, macOS, Solaris	Linux distributions: Ubuntu, Debian, CentOS, Oracle Linux

Ref: <https://www.katalon.com/resources-center/blog/ci-cd-tools/>

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# THANKS