



DevOps



Did you finish DevOps pre-class activity?



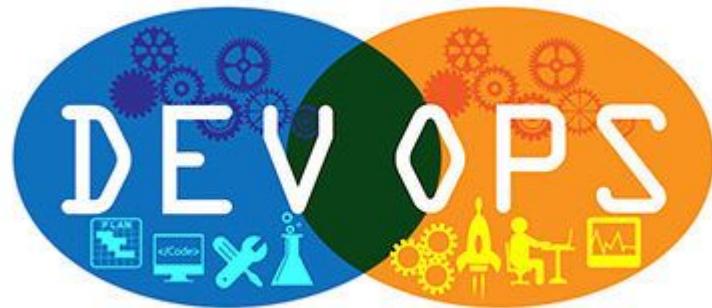
Students choose an option

BEFORE (in-class session)



What do you know about DevOps.

(Please write shortly on PEAR DECK slide)



USWAY[©]
REINVENT YOURSELF

Students, write your response!



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- ▶ What is DevOps?
- ▶ DevOps Model
- ▶ DevOps Phases
- ▶ DevOps Processes
- ▶ Advantages
- ▶ Disadvantages



What does DevOps focus on?



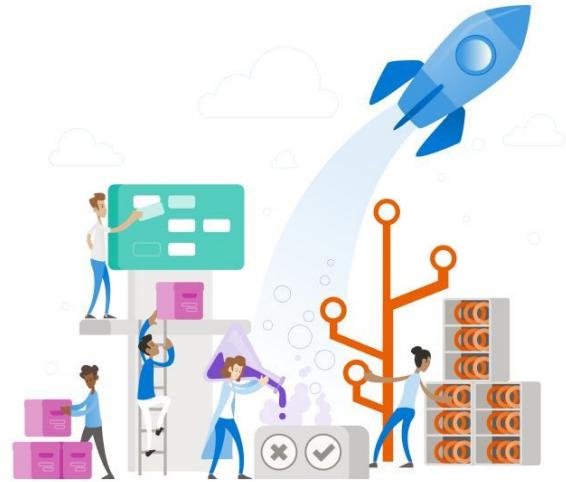
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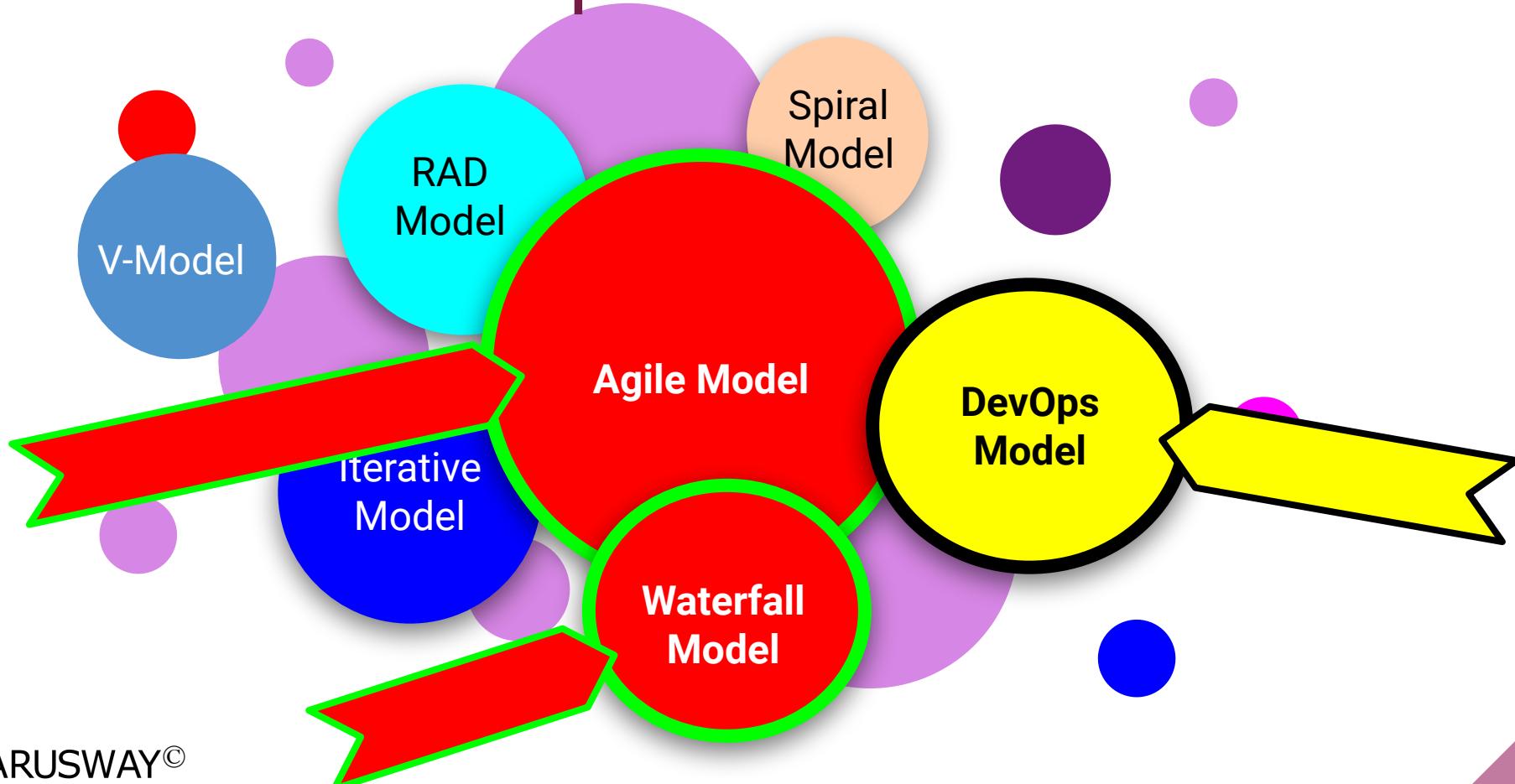
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What is DevOps





What is DevOps

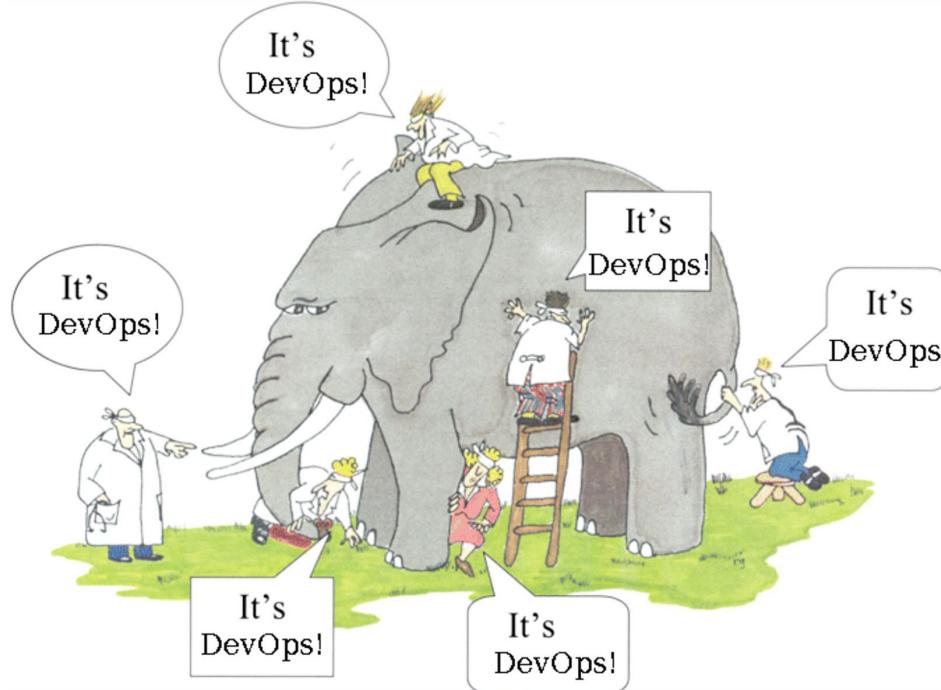




What is DevOps

What DevOps is Not...

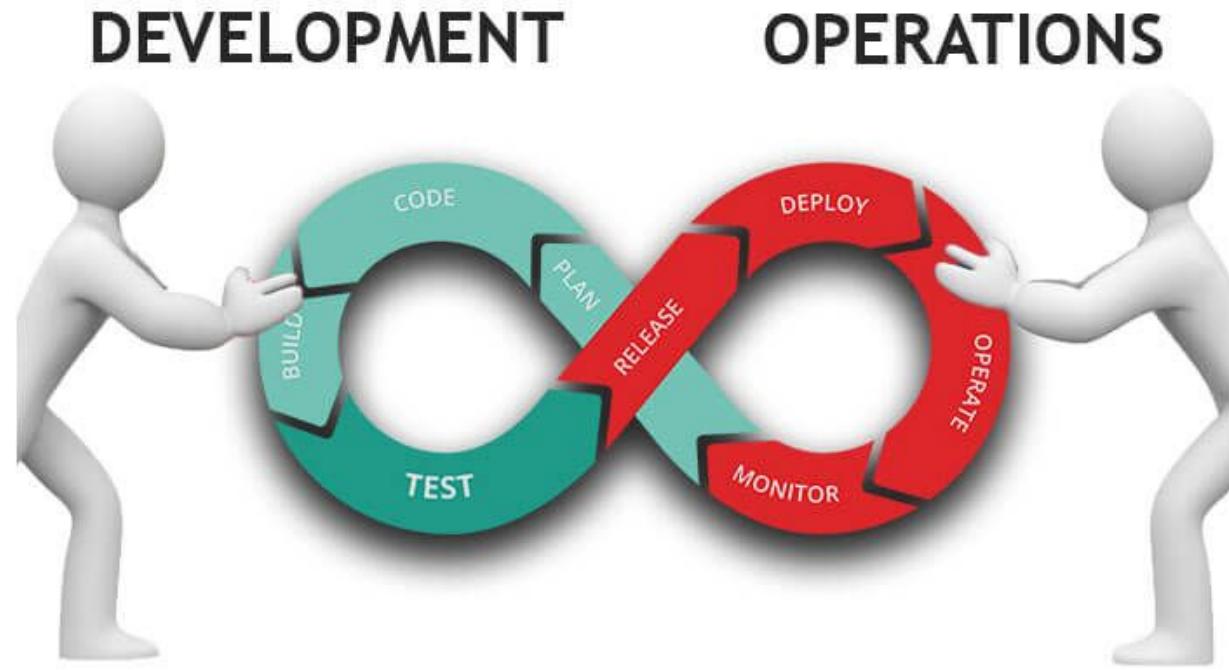
- a tool
- a role
- a team
- something that can be purchased or simply switched on





What is DevOps

The beginning of wisdom is
the definition of terms.
— Socrates



What is DevOps



- **DevOps** is a set of practices that combines software **development** (Dev) and IT **operations** (Ops).
- It aims to **shorten** the systems development life cycle and provide **continuous delivery** with **high software quality**.
- DevOps is complementary with Agile software development; several DevOps aspects came from the Agile methodology.
- DevOps addressed the **gap** between Developers and Operations.





What is DevOps

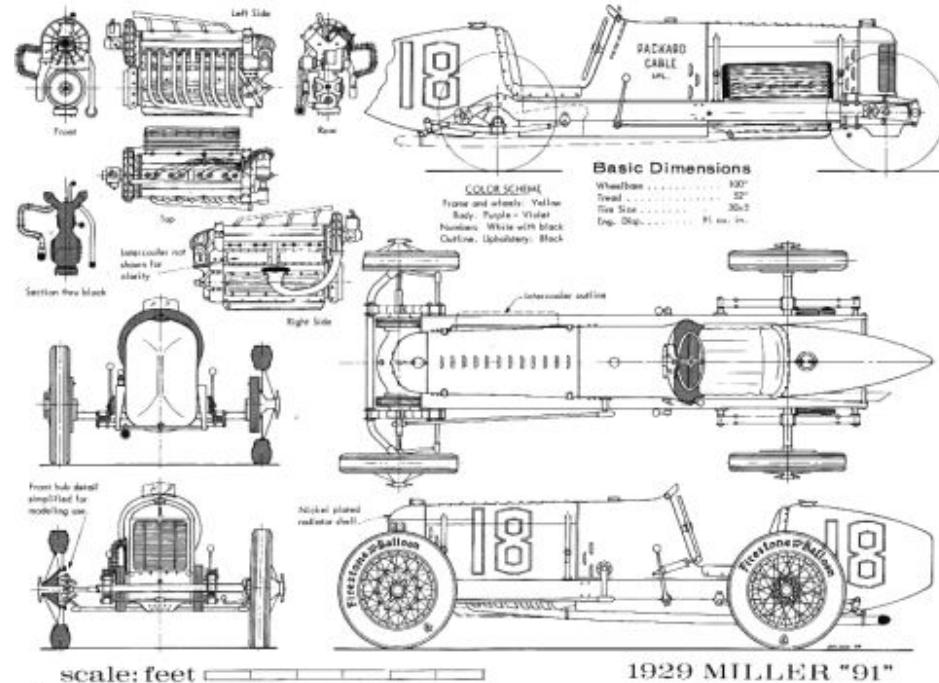
Traditional Development

The Inventors;

- Create new features and functionality in “dev” environment
- Occasionally deliver new product to operators, along with instructions
- May incorporate feedback from operators in future deliveries
- Rewarded for delivering new features



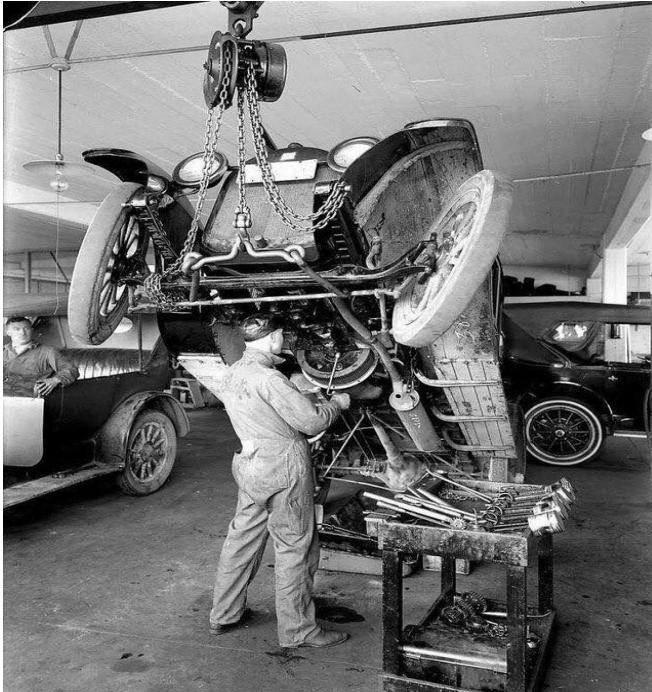
“The inventors are responsible for changing the system”



What is DevOps



Traditional Operations



The Mechanics;

- Receive new product from developers to be installed and operated
- Expected to keep production systems up and running
- May provide feedback to the inventors for future consideration
- Penalized for downtime

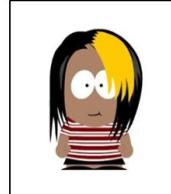


“The mechanics are responsible for keeping the system in operation”



What is DevOps

Roles:



DEVELOPMENT TEAM



OPERATION TEAM

- Project Manager
- Software Architects
- Developers
- Testers/QA, etc.
- System Administrators
- Database Administrators
- Release Engineers
- Network Engineers
- Security Professionals, etc

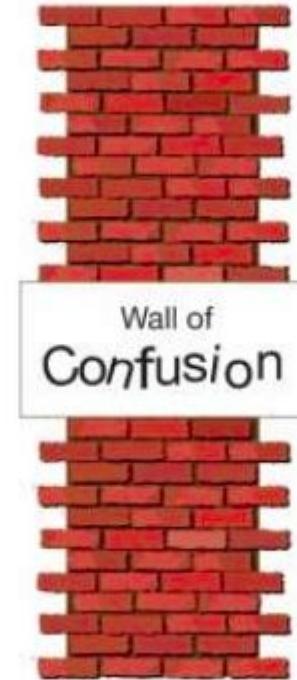
What is DevOps



Responsibilities:



DEVELOPMENT

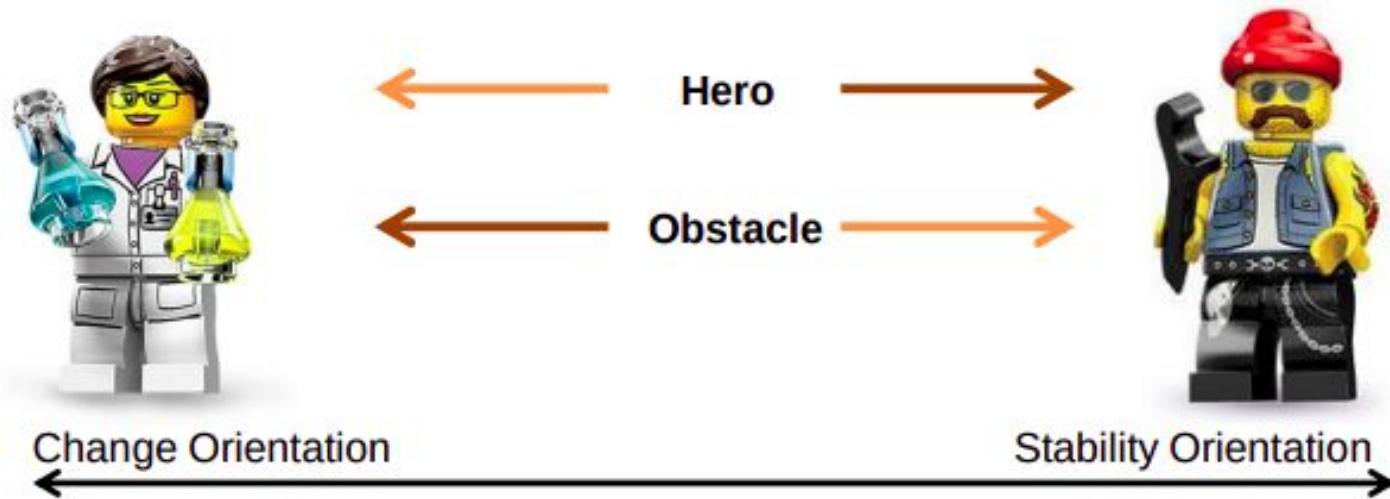


OPERATIONS

What is DevOps



What is the problem?





What is DevOps

What is the problem?



@rahuldighe

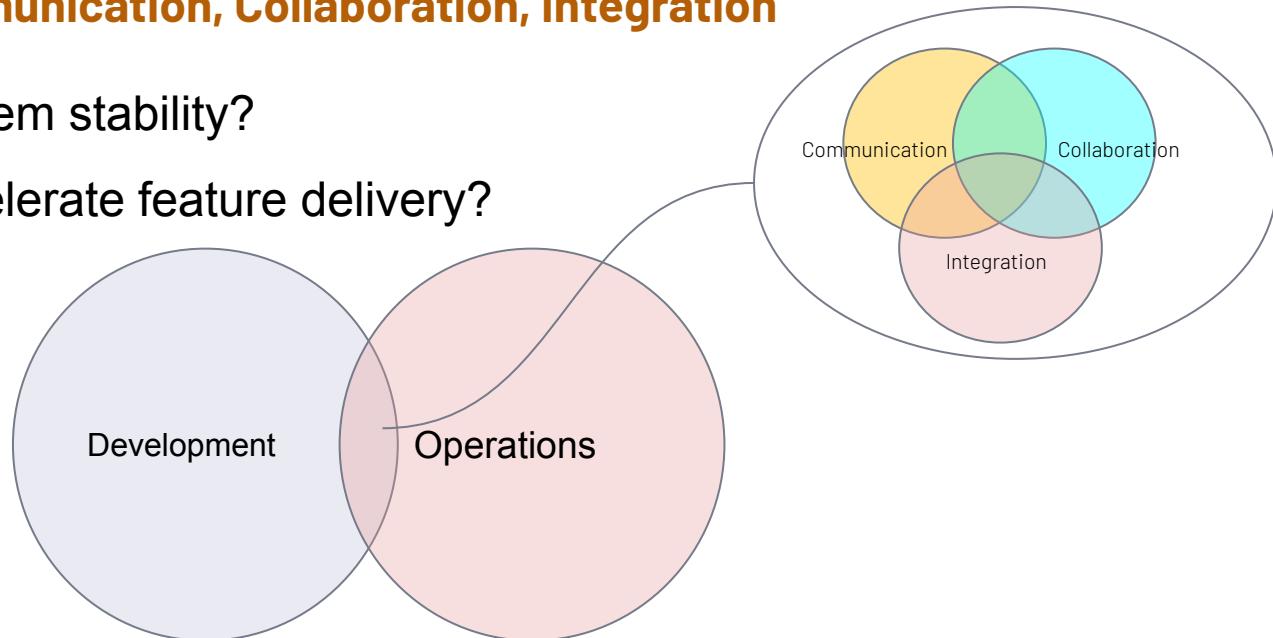




What is DevOps

Breaking the Silos: Communication, Collaboration, Integration

- How can dev help system stability?
- How can ops help accelerate feature delivery?

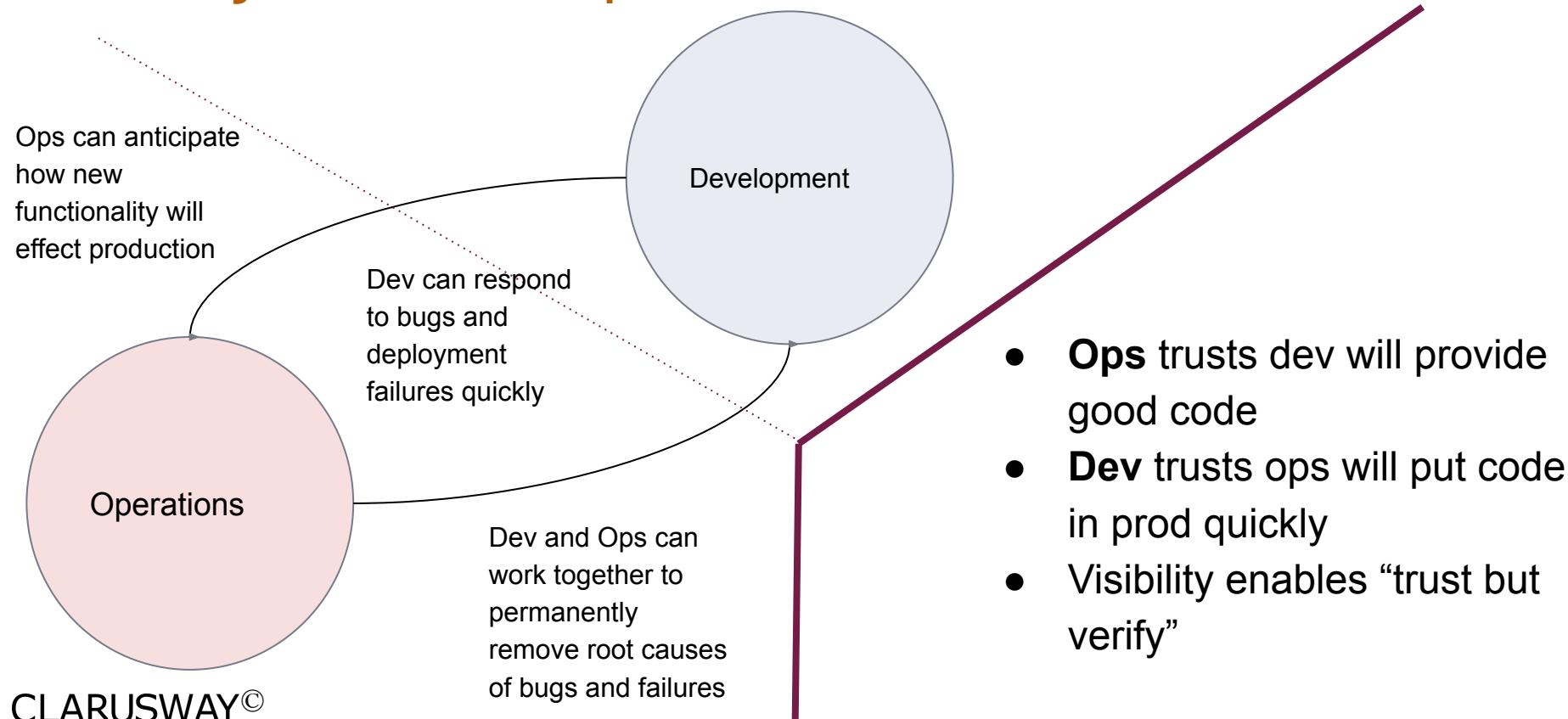


“We can build cross-functional teams around “knowledge overlaps” – people with experience on both sides and “Ops Devs””



What is DevOps

Breaking the Silos: Dev and Ops





What is DevOps

Dev and Ops Working Together

- Create feedback loops between inventors and mechanics
- Expose real-time metrics from ops enabling dev to learn from the system running under real world conditions
- Expose real-time metrics from dev enabling ops to anticipate production needs and provide early input
- Cross-functional teams collaborate to deliver whole working systems including all infrastructure, software code, and configurations

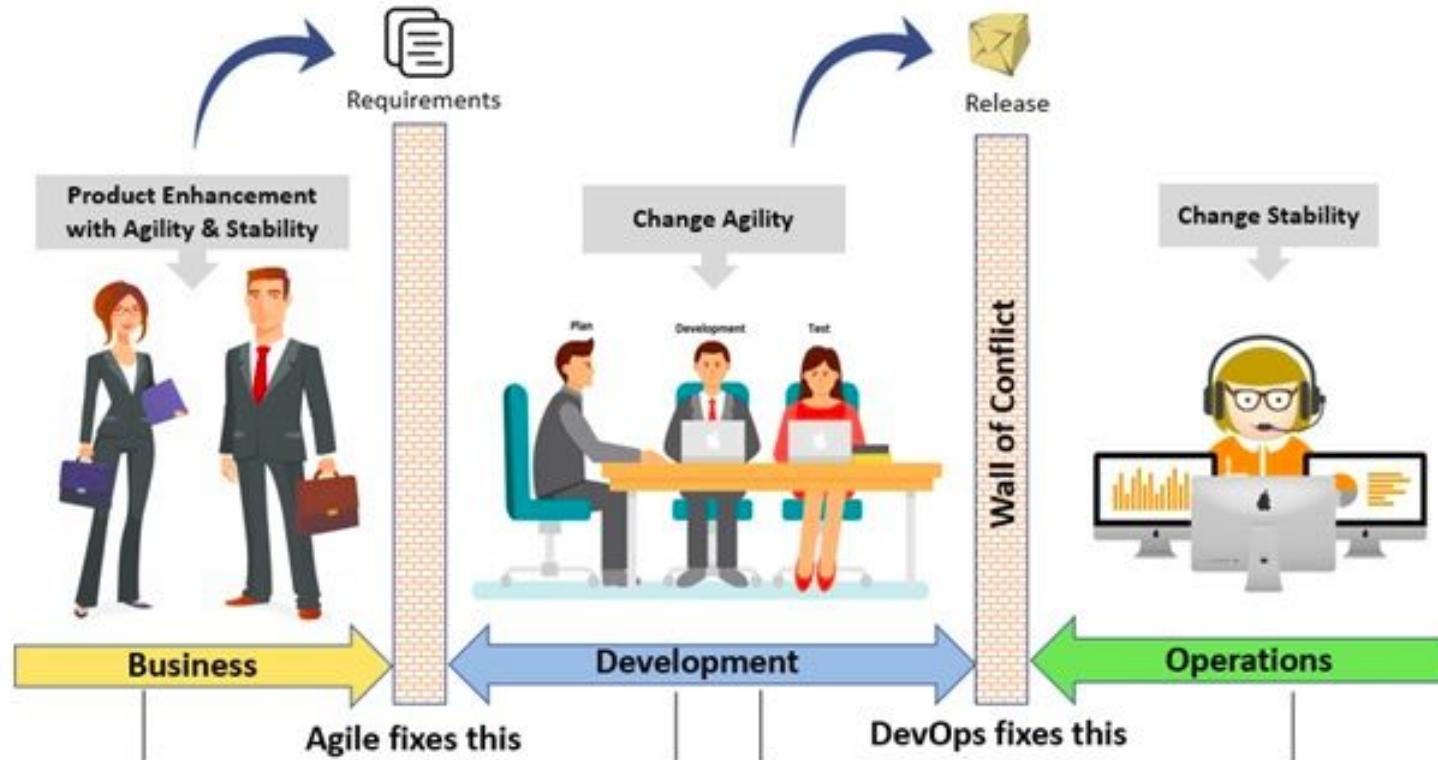


“ Feature delivery + stability become shared goals”



What is DevOps

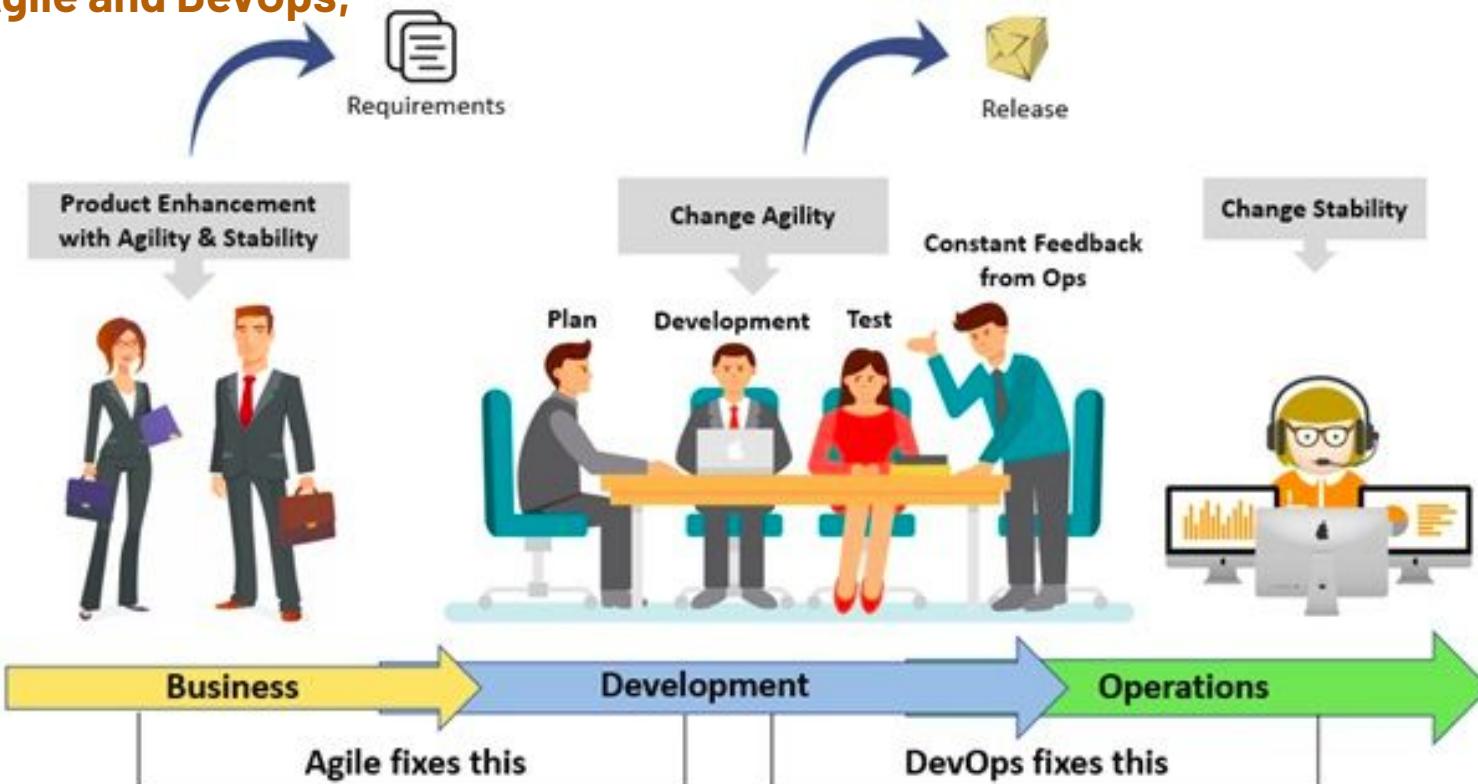
Before Agile and DevOps;





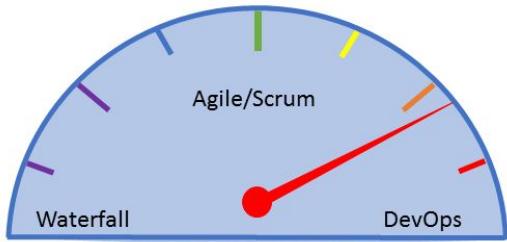
What is DevOps

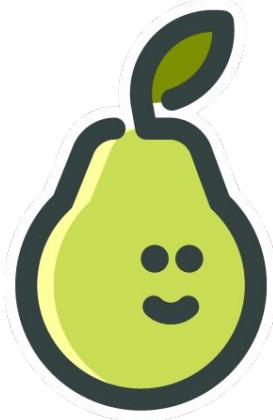
After Agile and DevOps;



What is DevOps

DevOps Culture:





What is DevSecOps?

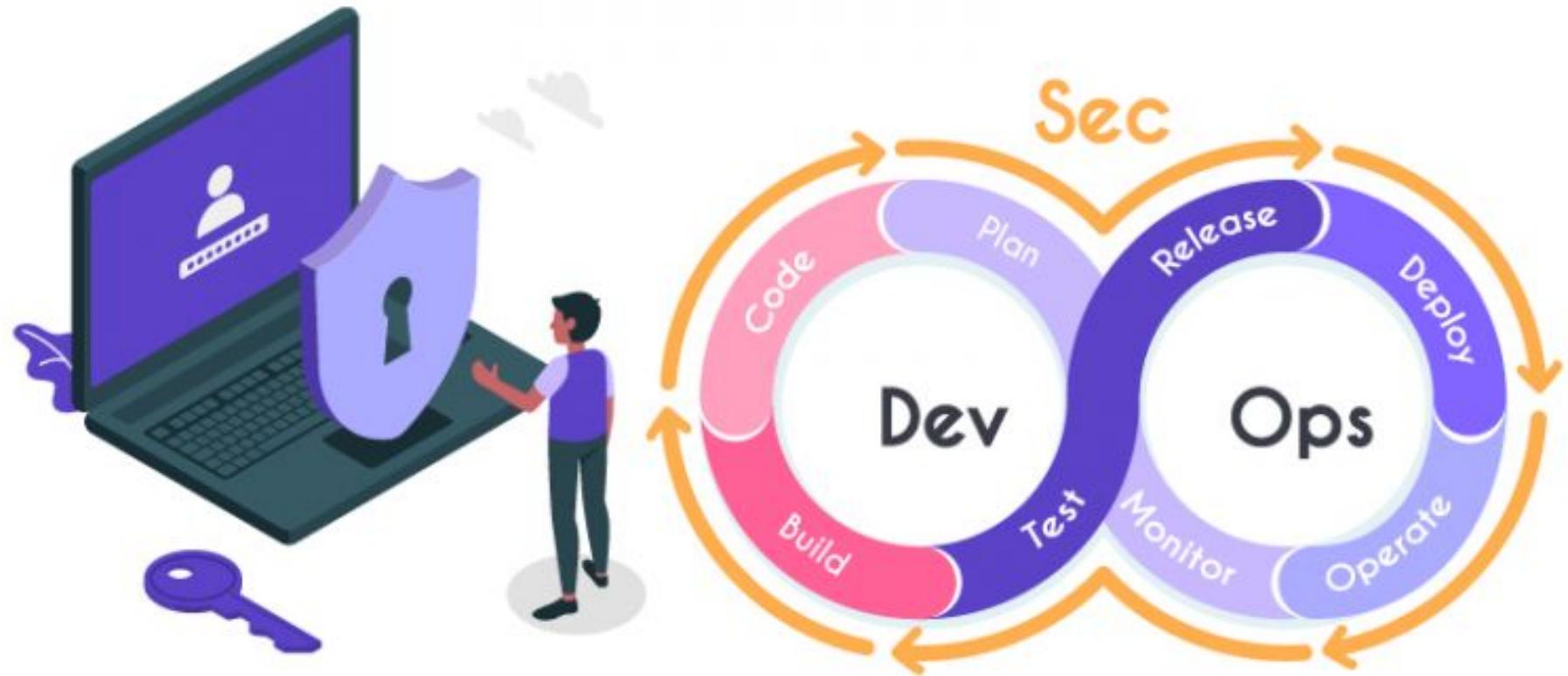


JSWAY[©]
REINVENT YOURSELF

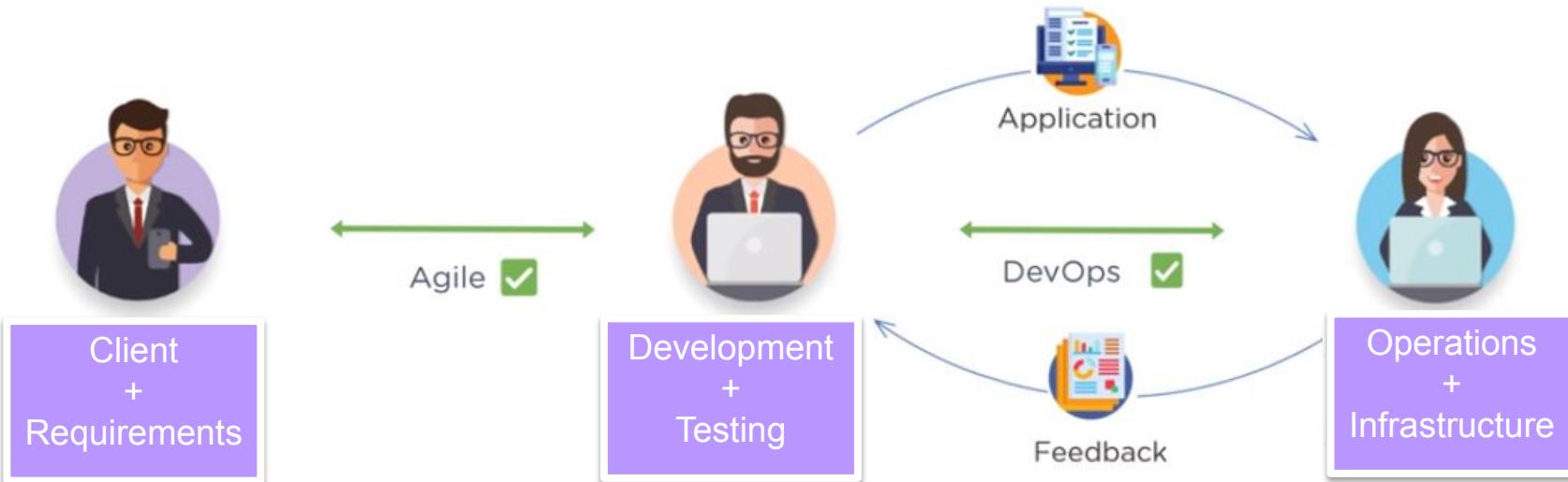
Students, write your response!



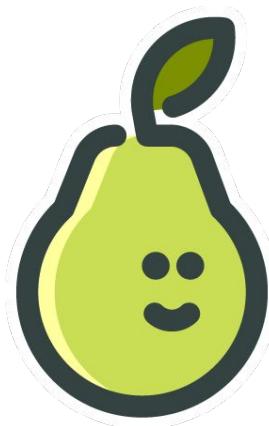
What is DevSecOps



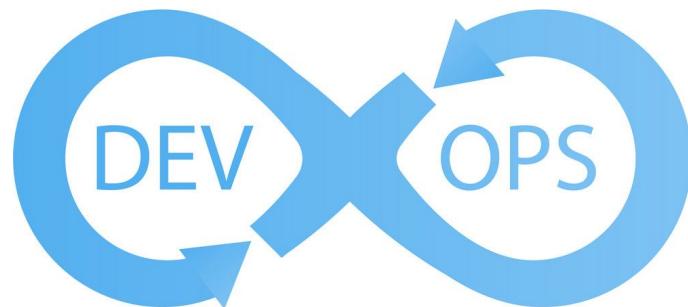
What is DevOps (Summary)



- **DevOps** is an evolution from the Agile Model of software development
- DevOps addressed the gap between Developers and Operations
- The development team will submit the application to the operations team for implementation
- The operations team will monitor the application and provide relevant feedback to developers



What are the DevOps phases?



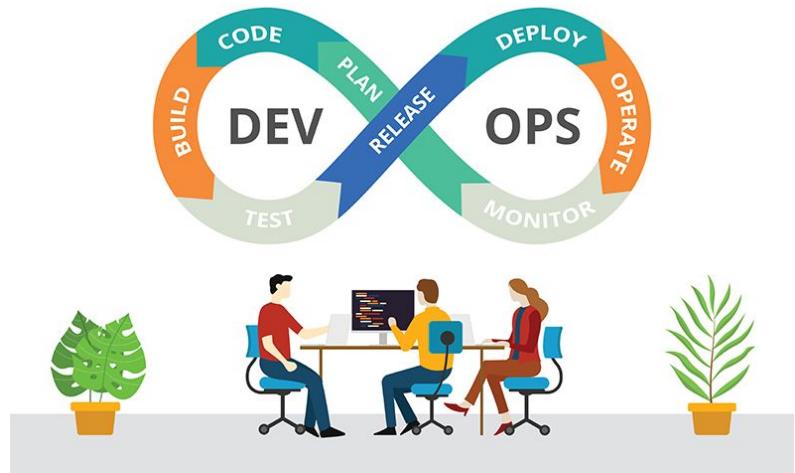
Students, write your response!

REINVENT YOURSELF

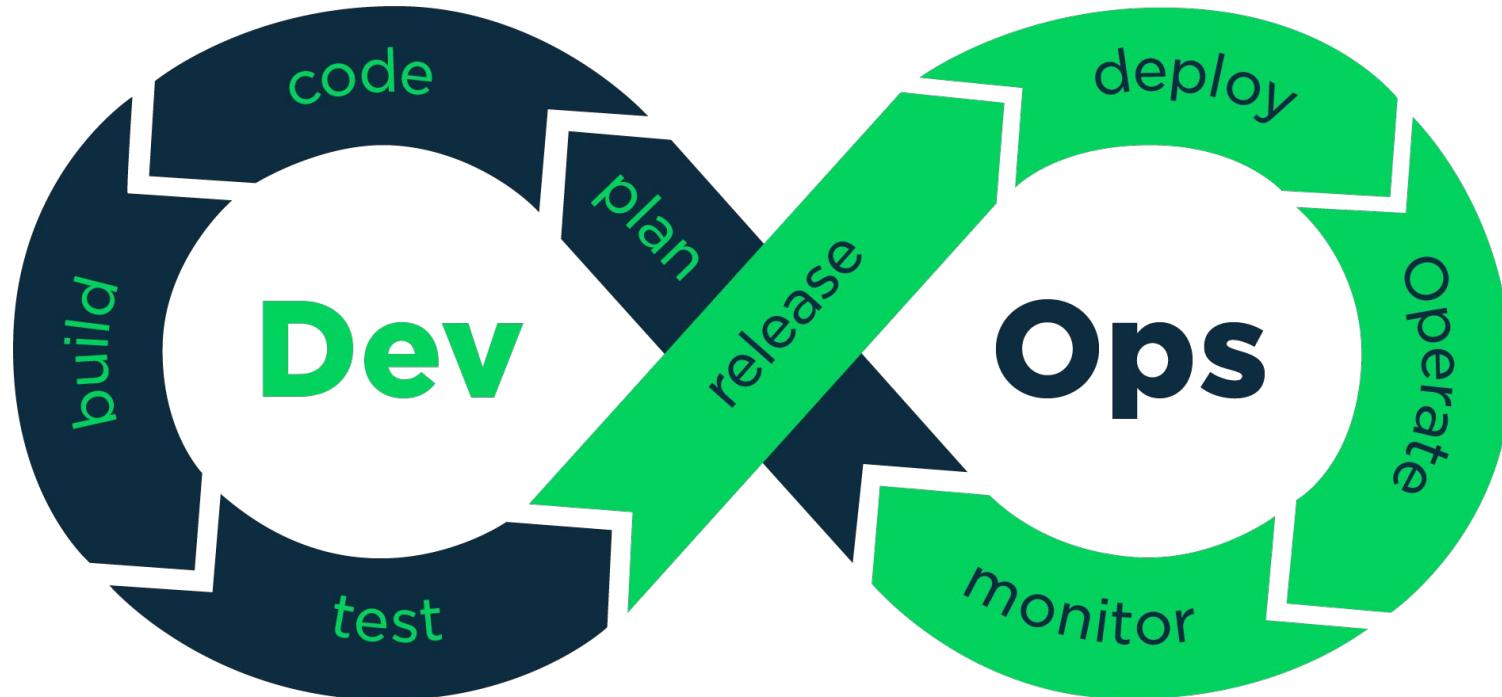


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DevOps Phases



DevOps Phases





DevOps Phases

PLAN PHASE



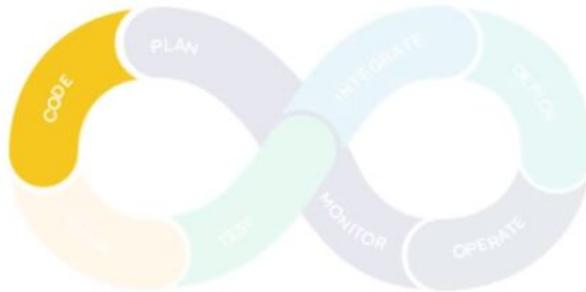
Plan

Business owners and software development team discuss project goals and create a plan

DevOps Phases



CODE PHASE

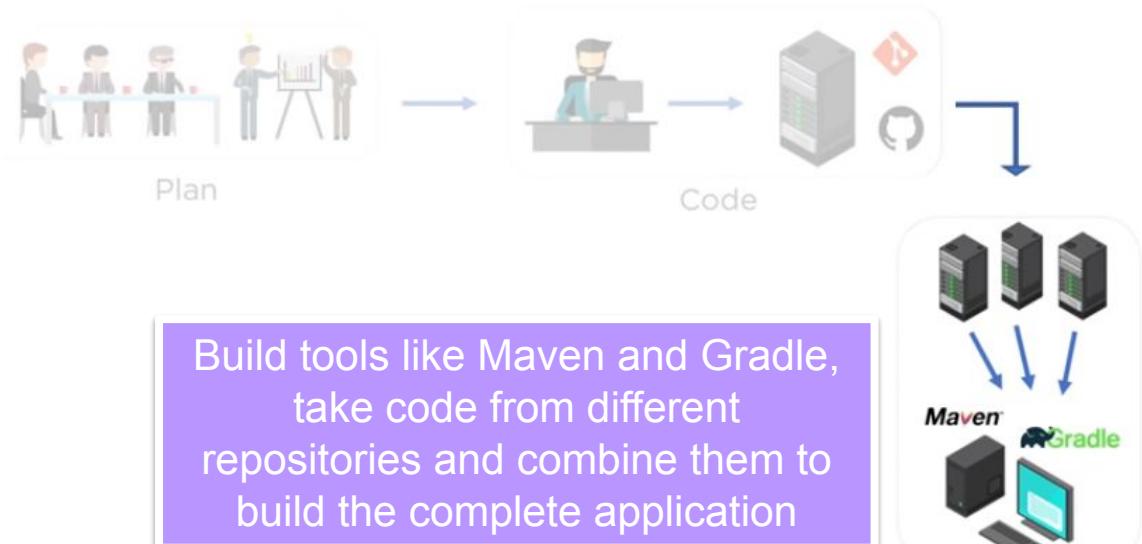
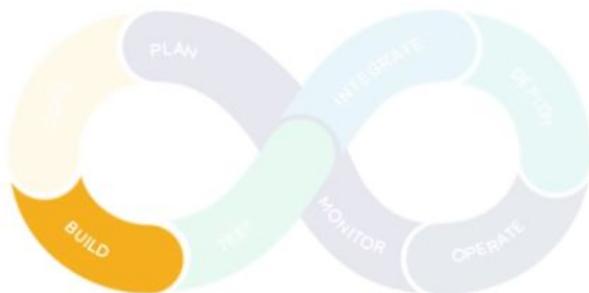


Programmers then design and code the application and use tools like **Git** to store application code

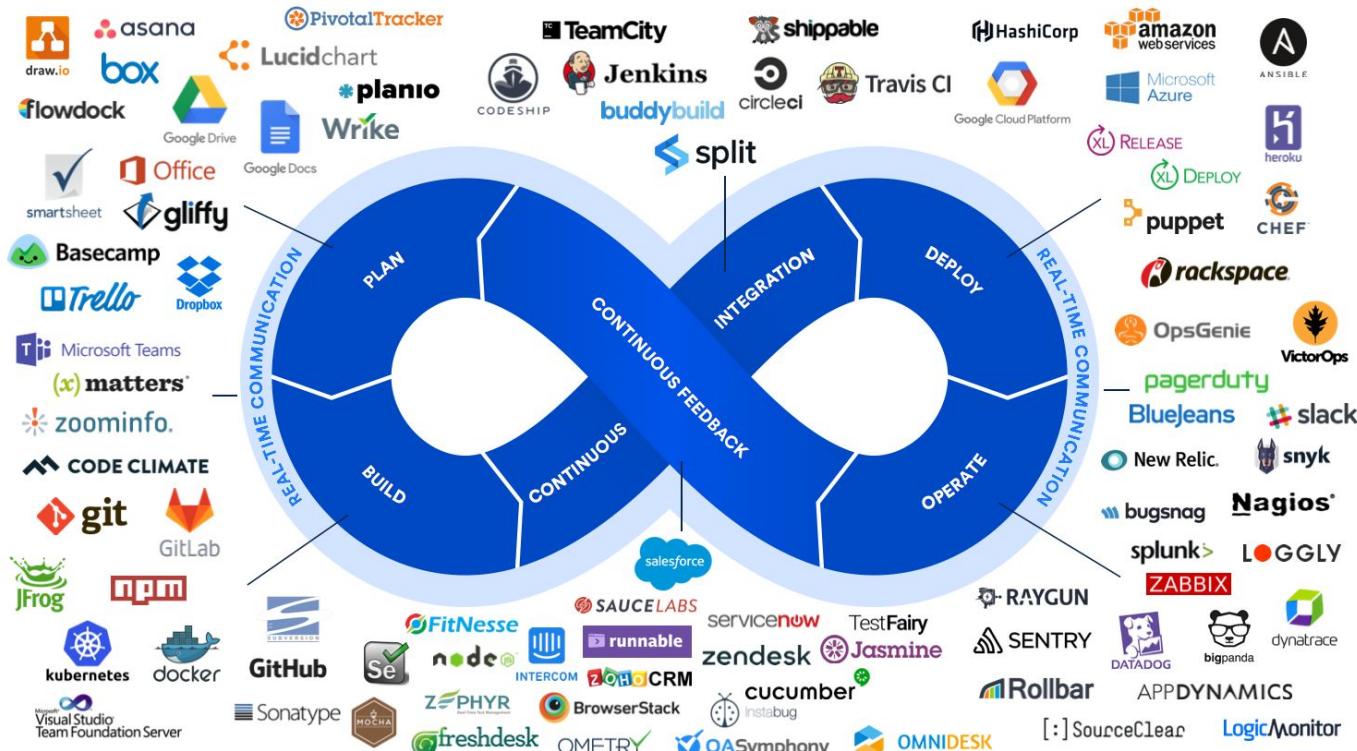


DevOps Phases

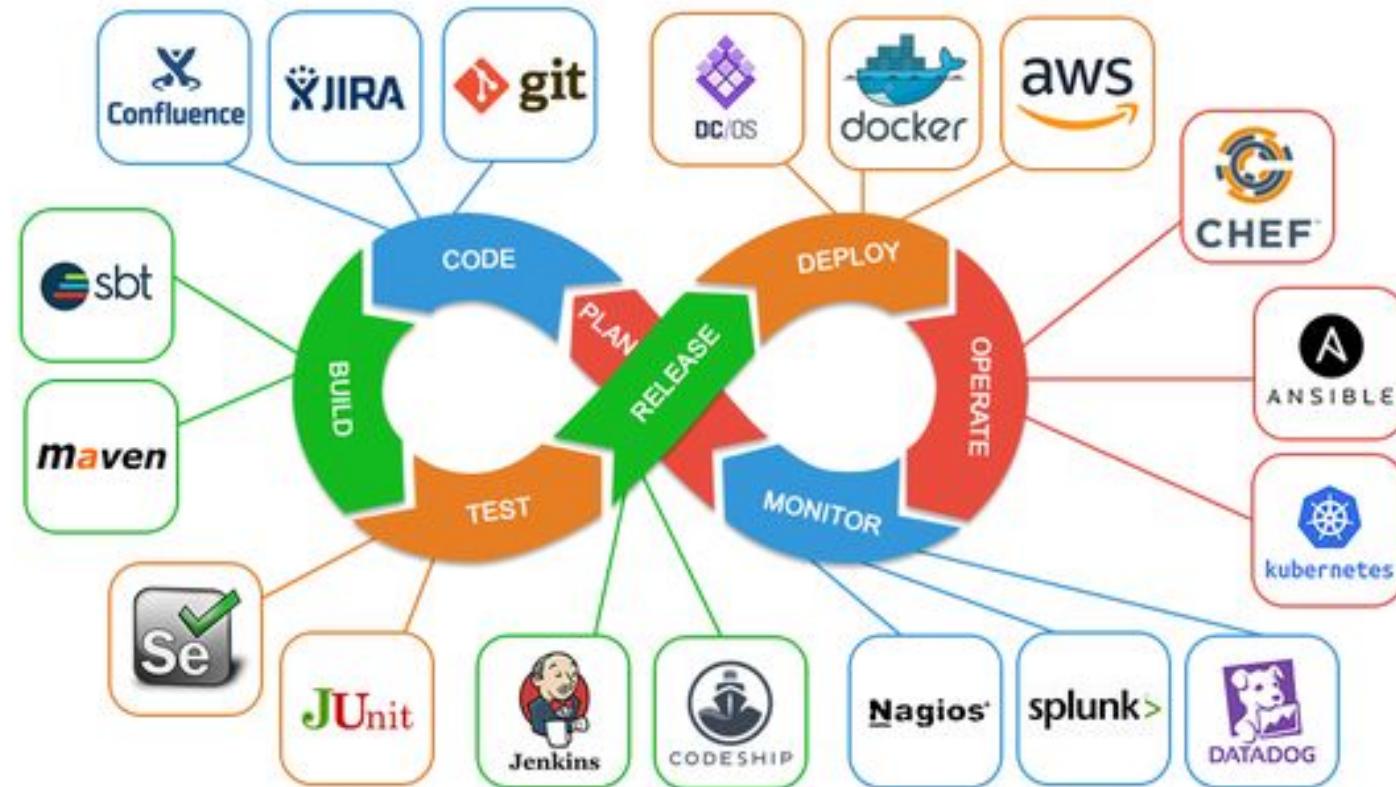
BUILD PHASE



DevOps Phases



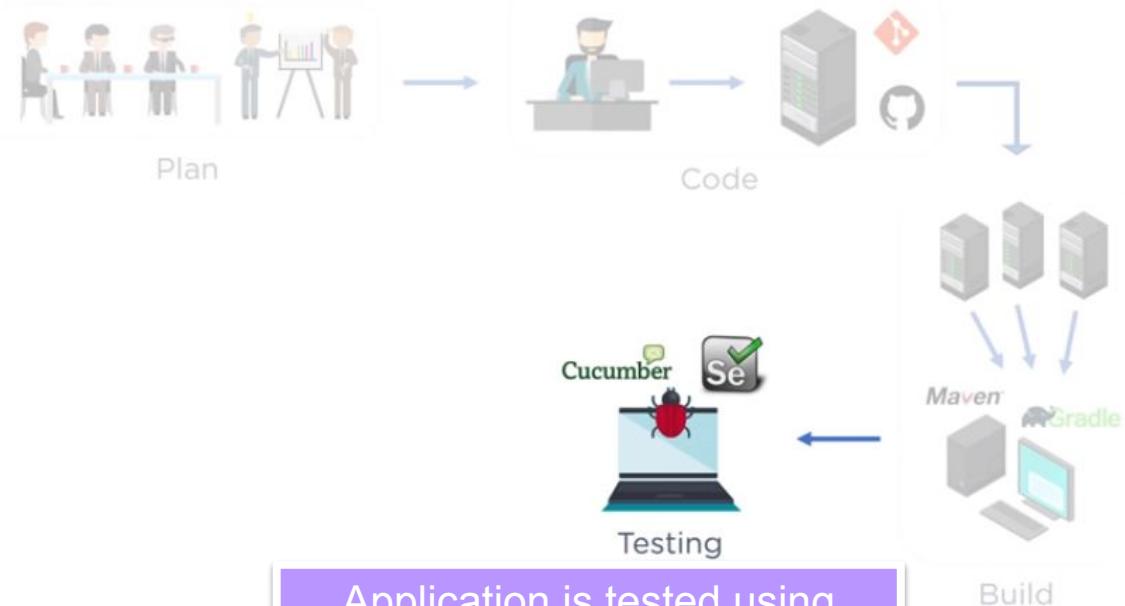
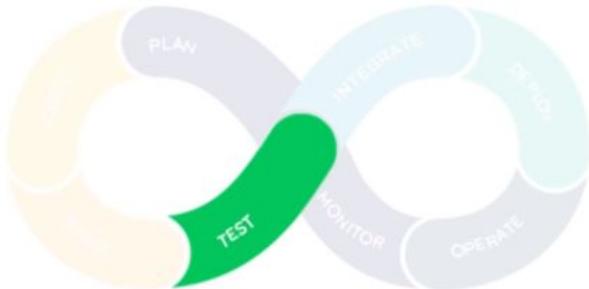
DevOps Phases





DevOps Phases

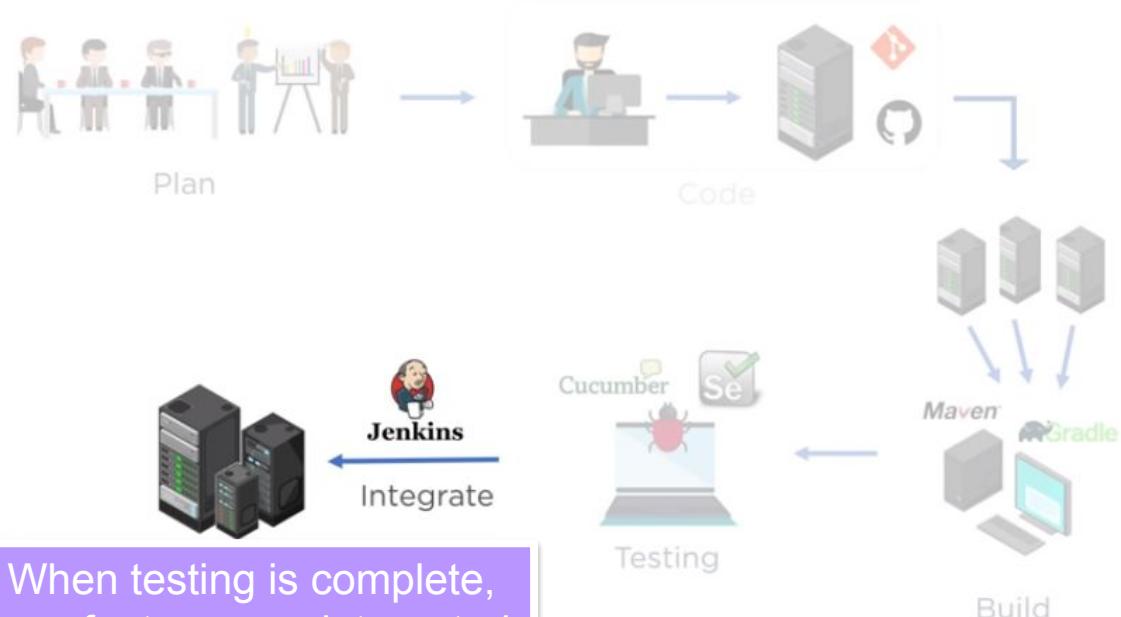
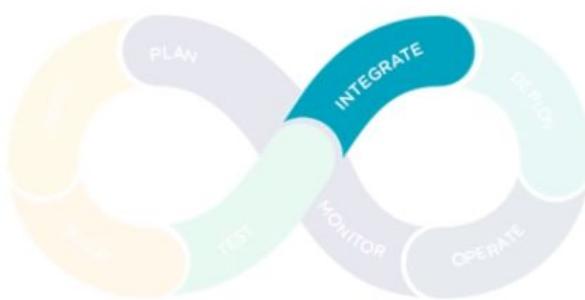
TEST PHASE



Application is tested using automation testing tools like Selenium and Junit to ensure software quality

DevOps Phases

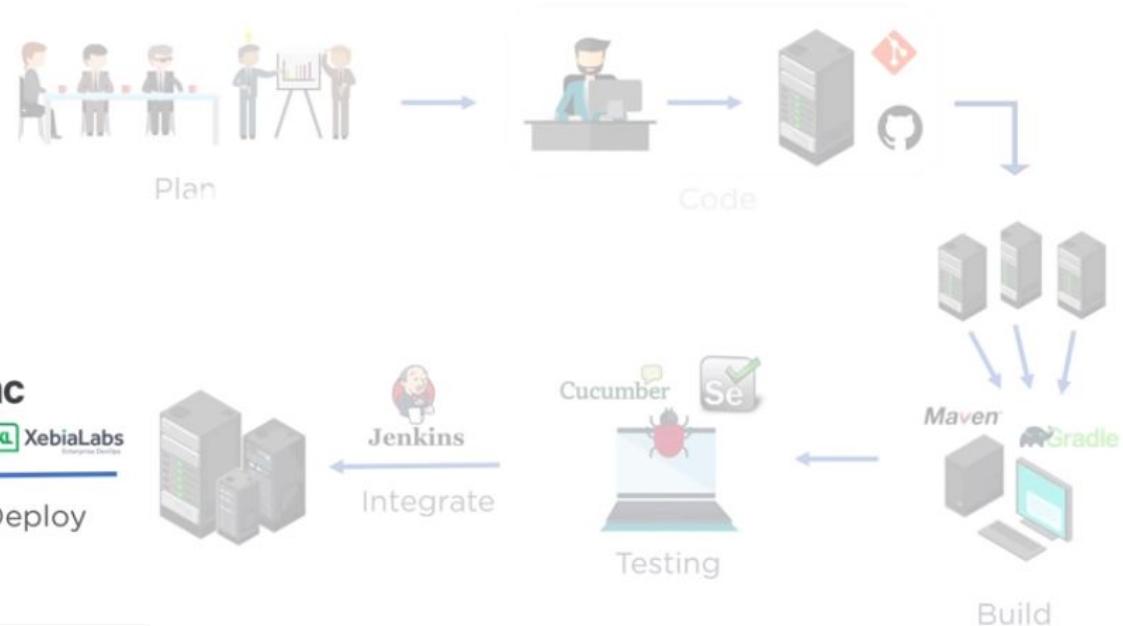
INTEGRATE PHASE



When testing is complete,
new features are integrated
automatically to the already
existing codebase

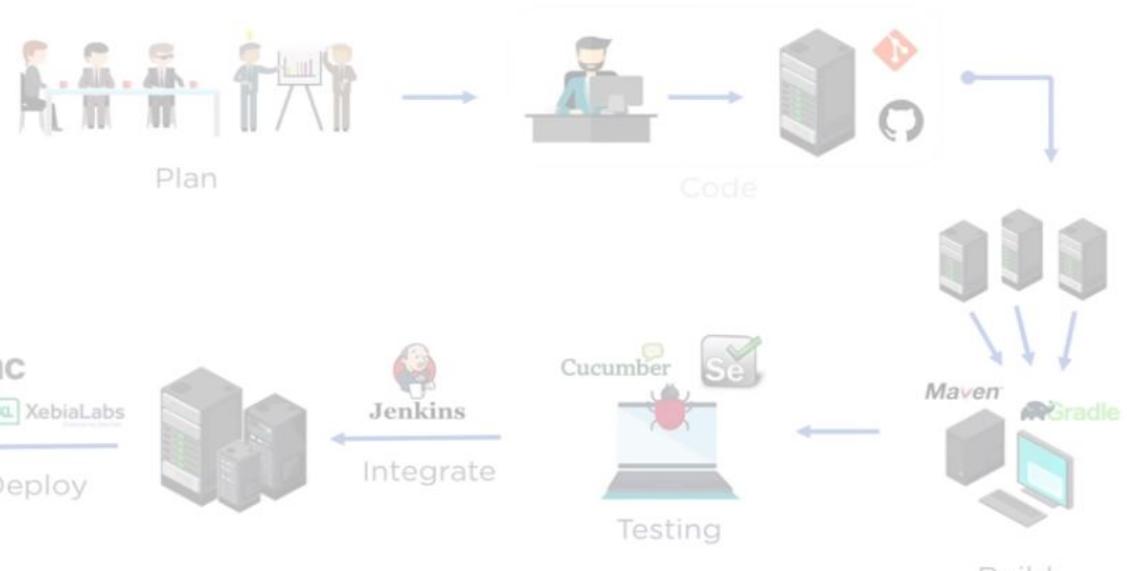
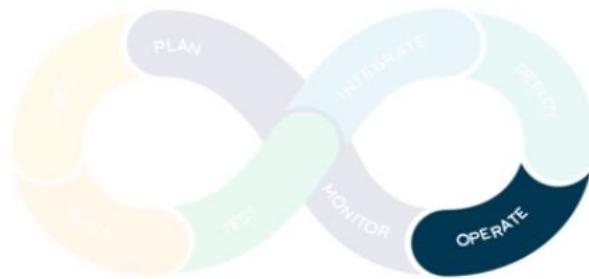
DevOps Phases

DEPLOY PHASE



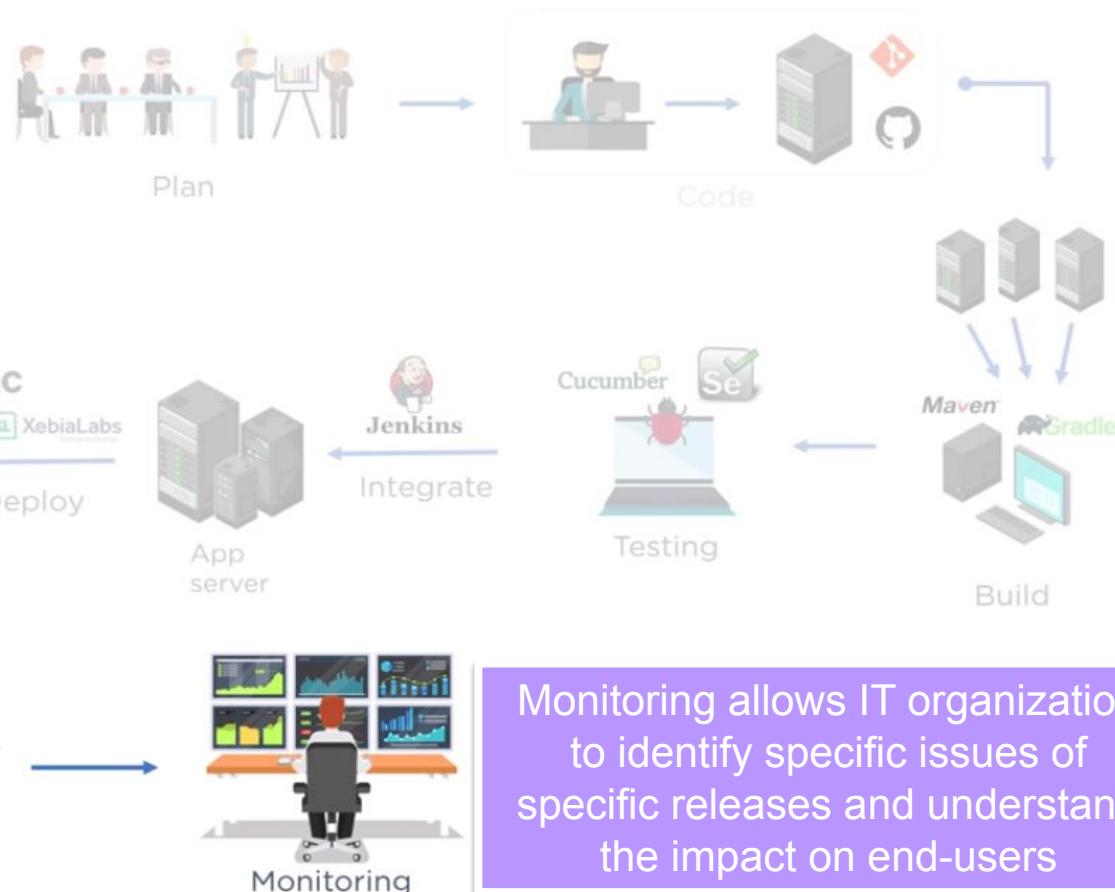
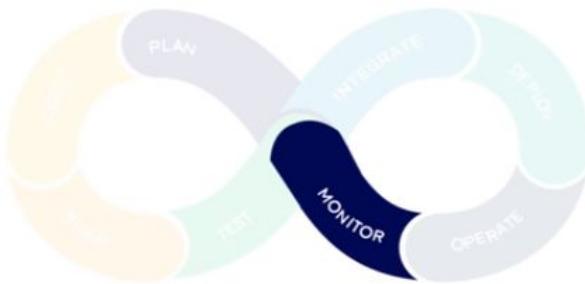
Application is packaged after release and deployed from development server to production server

DevOps Phases



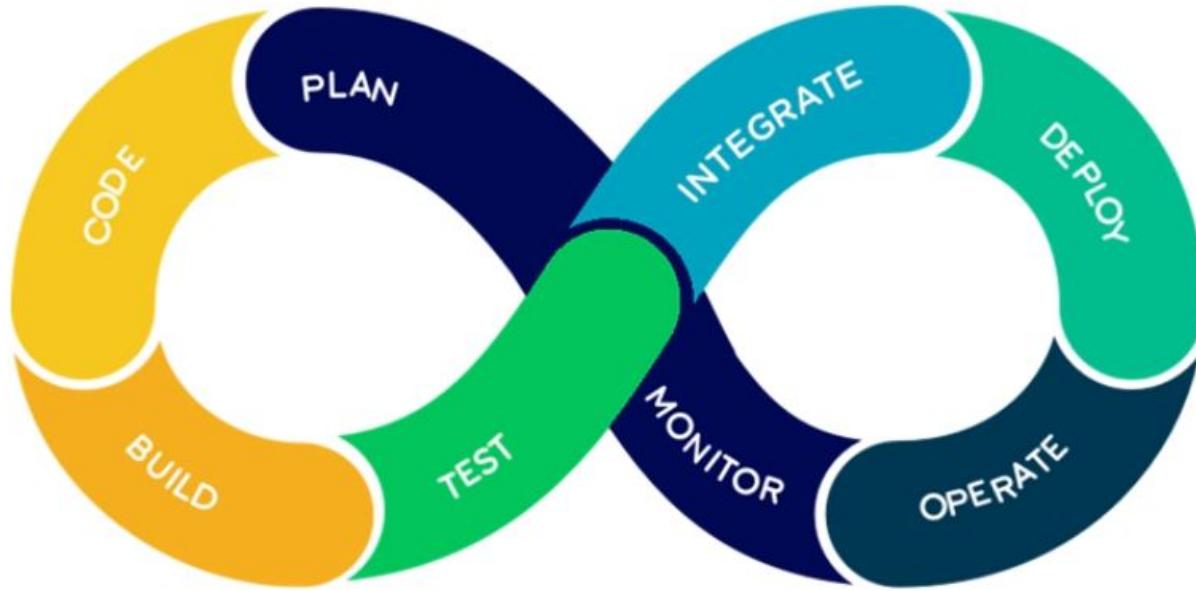
Once the software is deployed, the operations team perform activities such as configuring servers and provisioning them with the required resources

DevOps Phases



Monitoring allows IT organization to identify specific issues of specific releases and understand the impact on end-users

DevOps Phases (Summary)

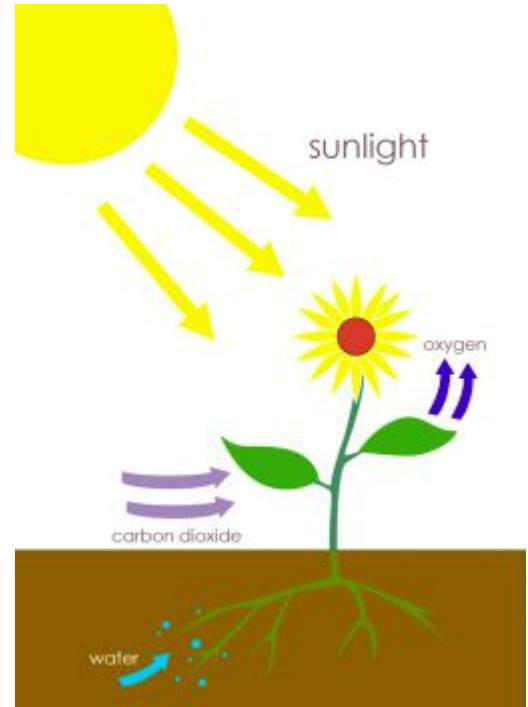






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DevOps Processes

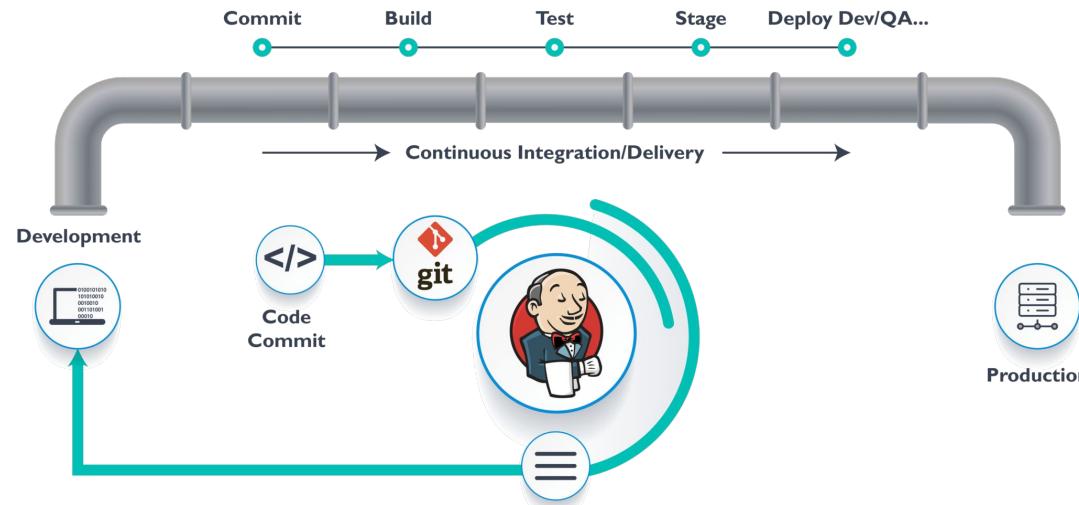


DevOps Processes

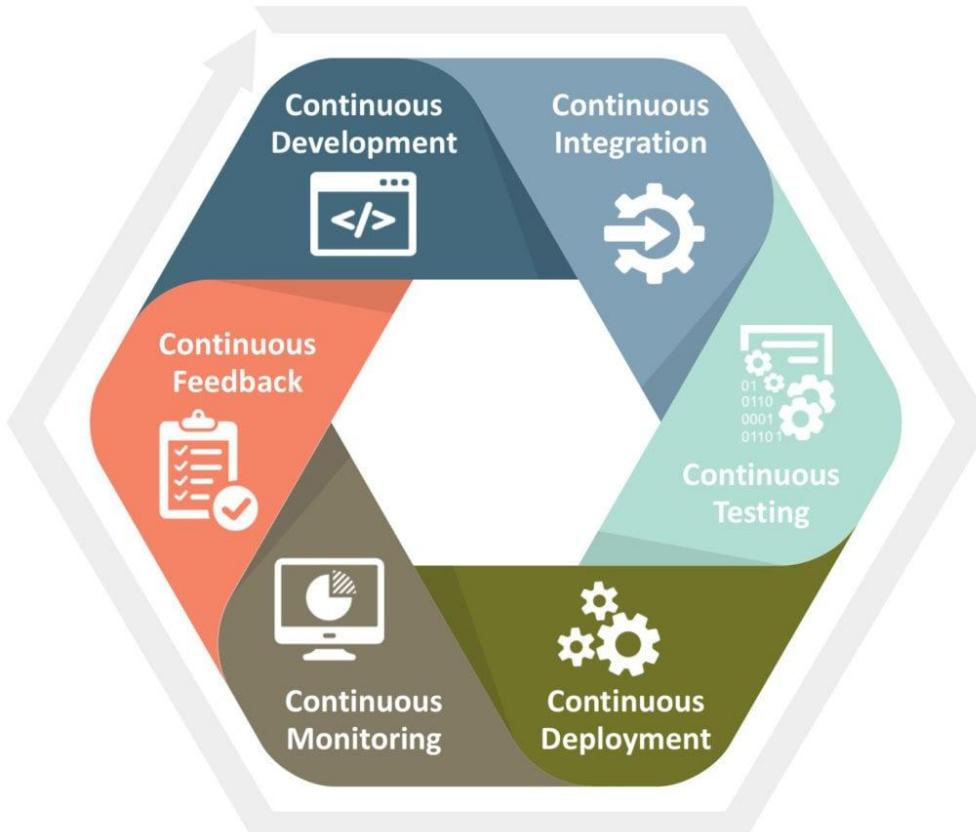


Pipelines;

- A **Pipeline** is a **chain** of **tasks** that can be **automated**.
- Integration tools use pipelines to perform tasks repetitively and continuously
- Pipelines keep work flowing forward in our DevOps system



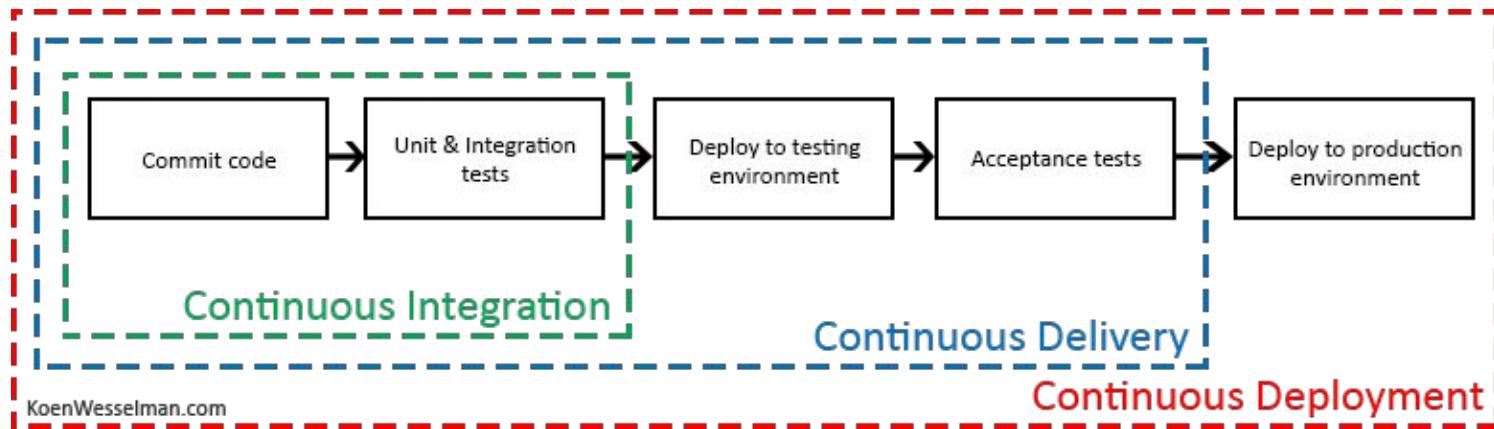
DevOps Processes



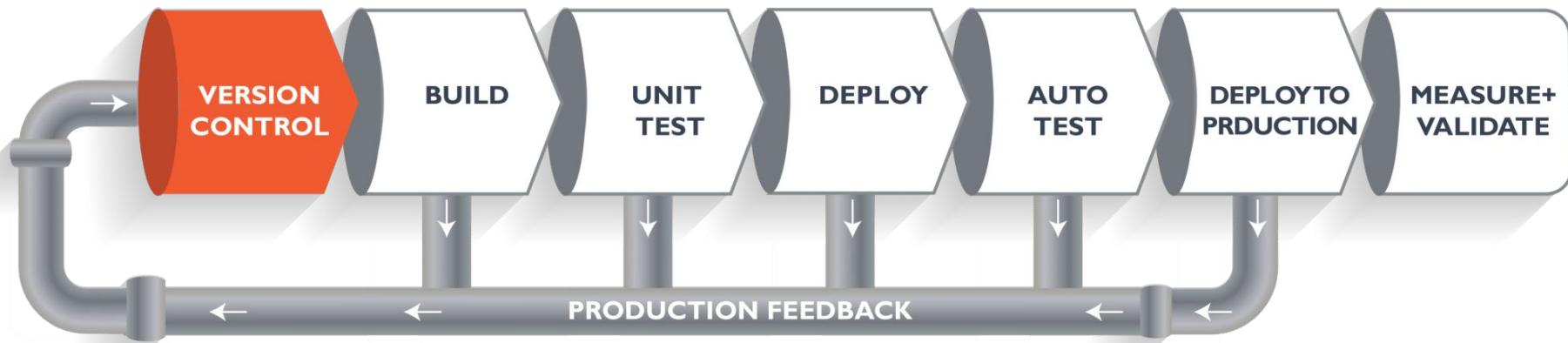
- A standardized set of environments
- Decreasing the failure rate of new releases
- Shortening lead-time between versions

DevOps Processes

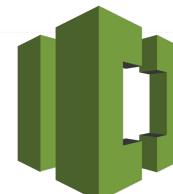
Automating an Integrated DevOps System



Introduction to DevOps



Bitbucket
Atlassian



Codecommit
AWS



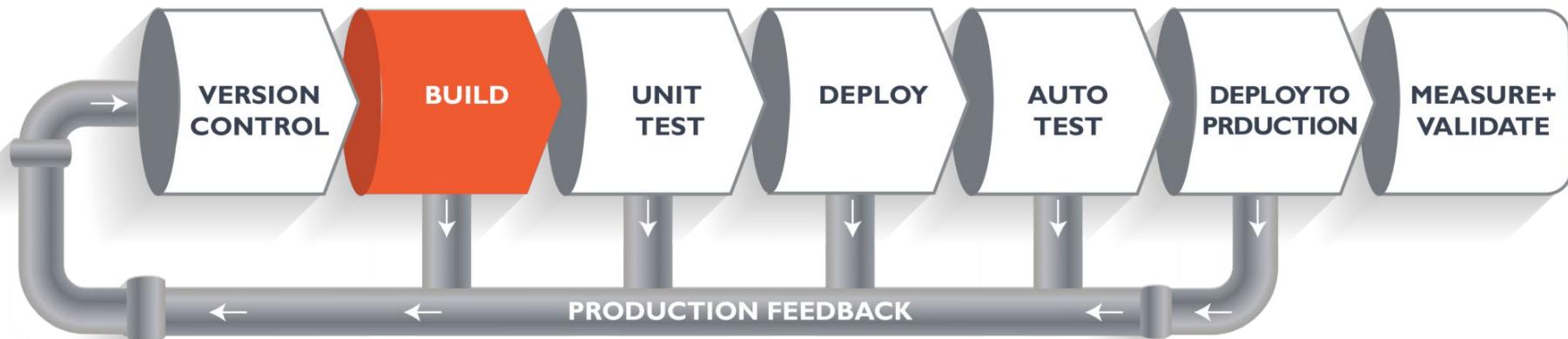
Gitlab
Gitlab

Introduction to DevOps

What is Continuous Integration



Jenkins



Maven™

npm

nuget

BASH
THE BOURNE-AGAIN SHELL



Xcode

Gradle



CMake

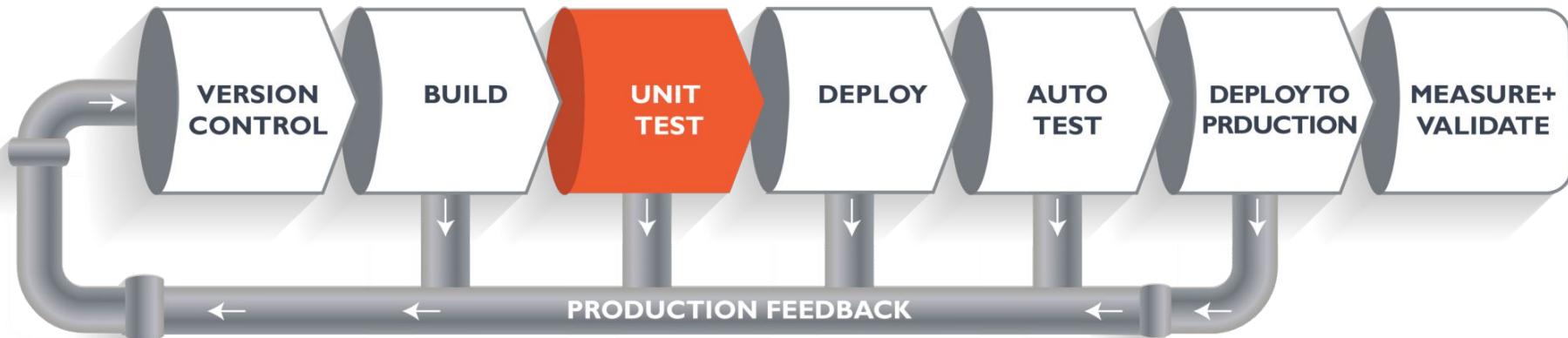


Introduction to DevOps

What is Continuous Integration



Jenkins



JUnit

JACOCO
Java Code Coverage

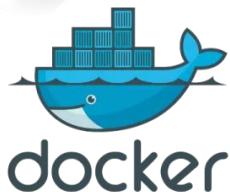
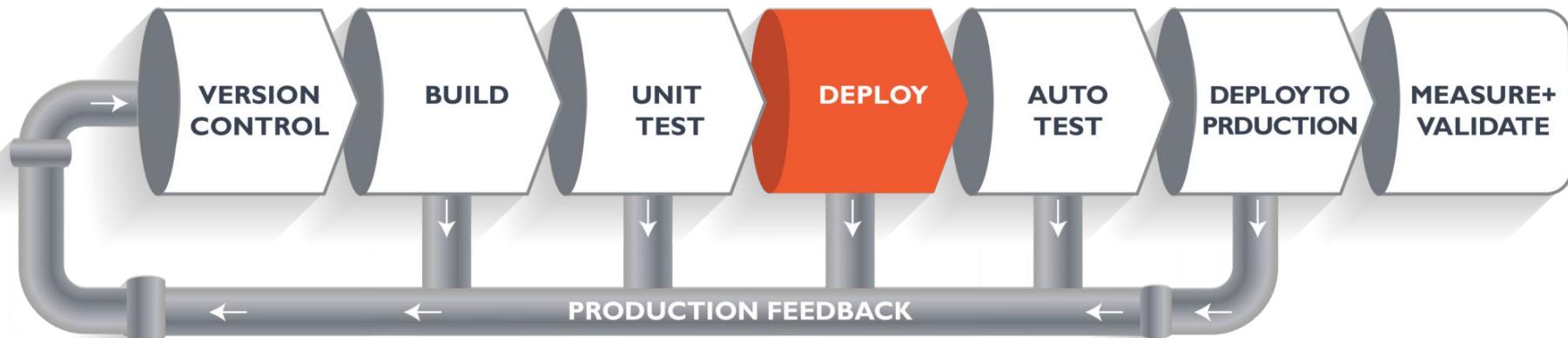
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Introduction to DevOps

What is Continuous Integration

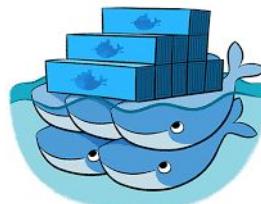


Jenkins



CLARUSWAY[©]

WAY TO REINVENT YOURSELF



kubernetes



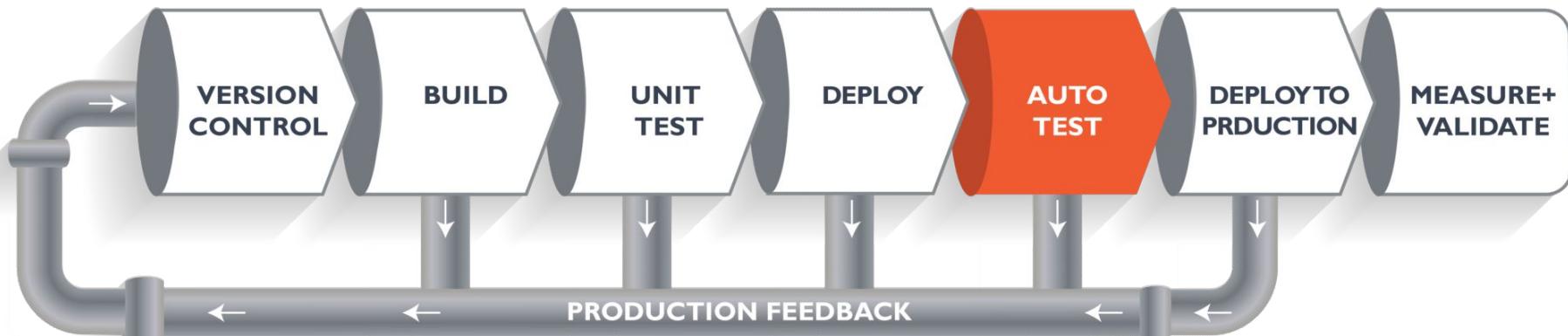
ANSIBLE

Introduction to DevOps

What is Continuous Integration



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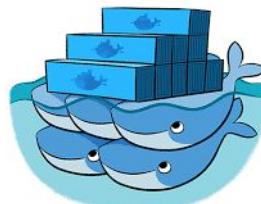
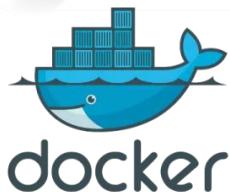
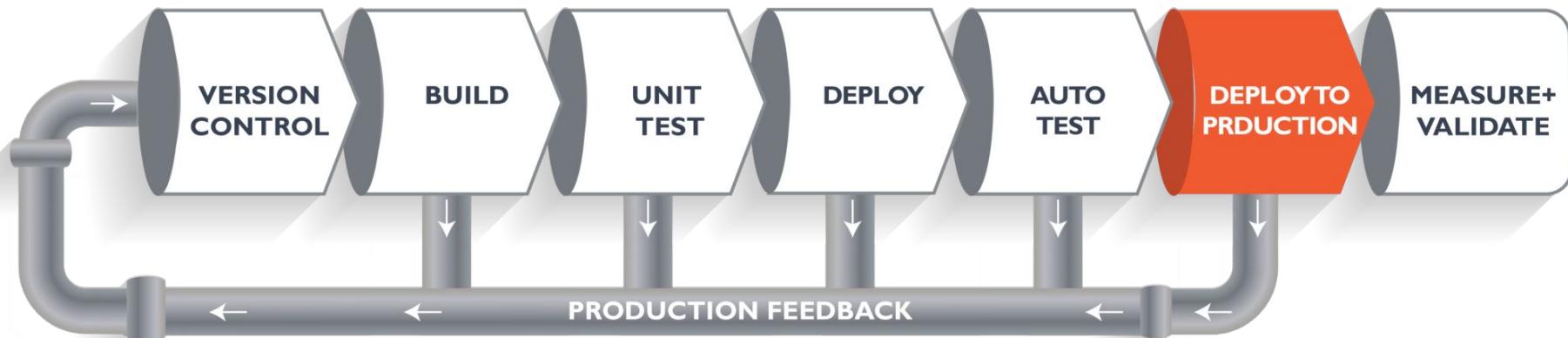


Introduction to DevOps

Continuous Delivery/Deployment



Jenkins

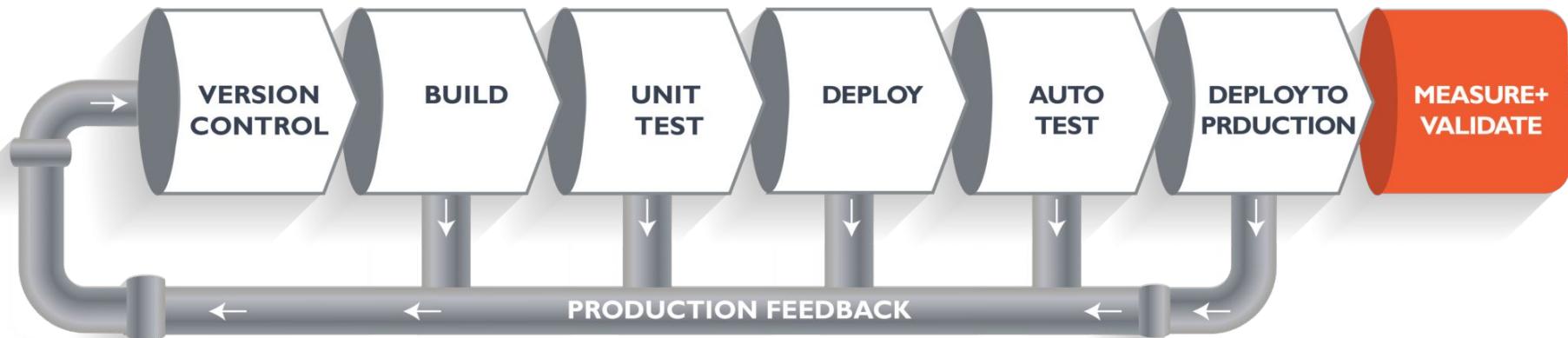


Introduction to DevOps

Continuous Delivery/Deployment ?



Jenkins



Nagios®

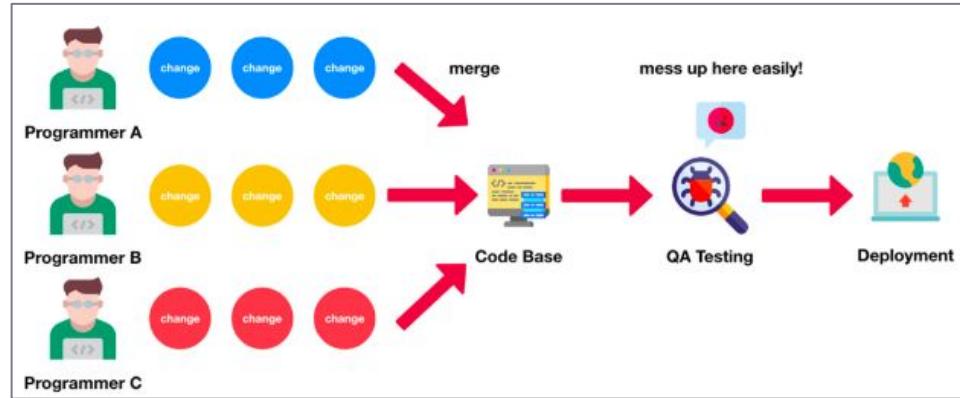
Prometheus

ATLASSIAN
Opsgenie

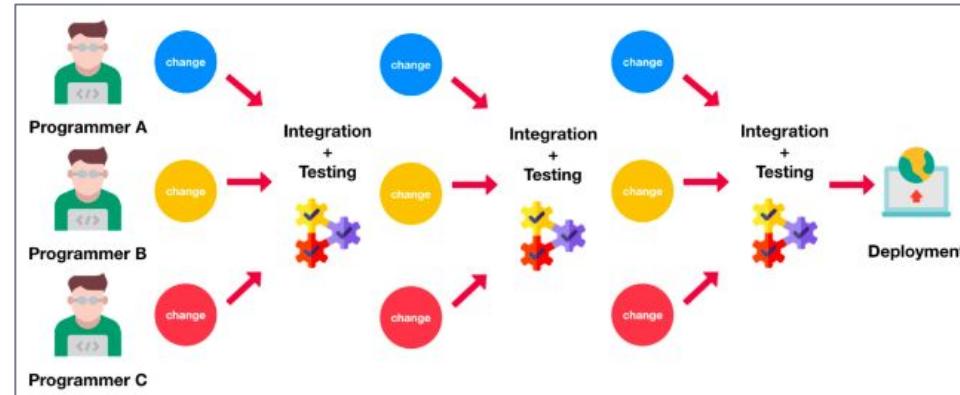
DevOps Processes



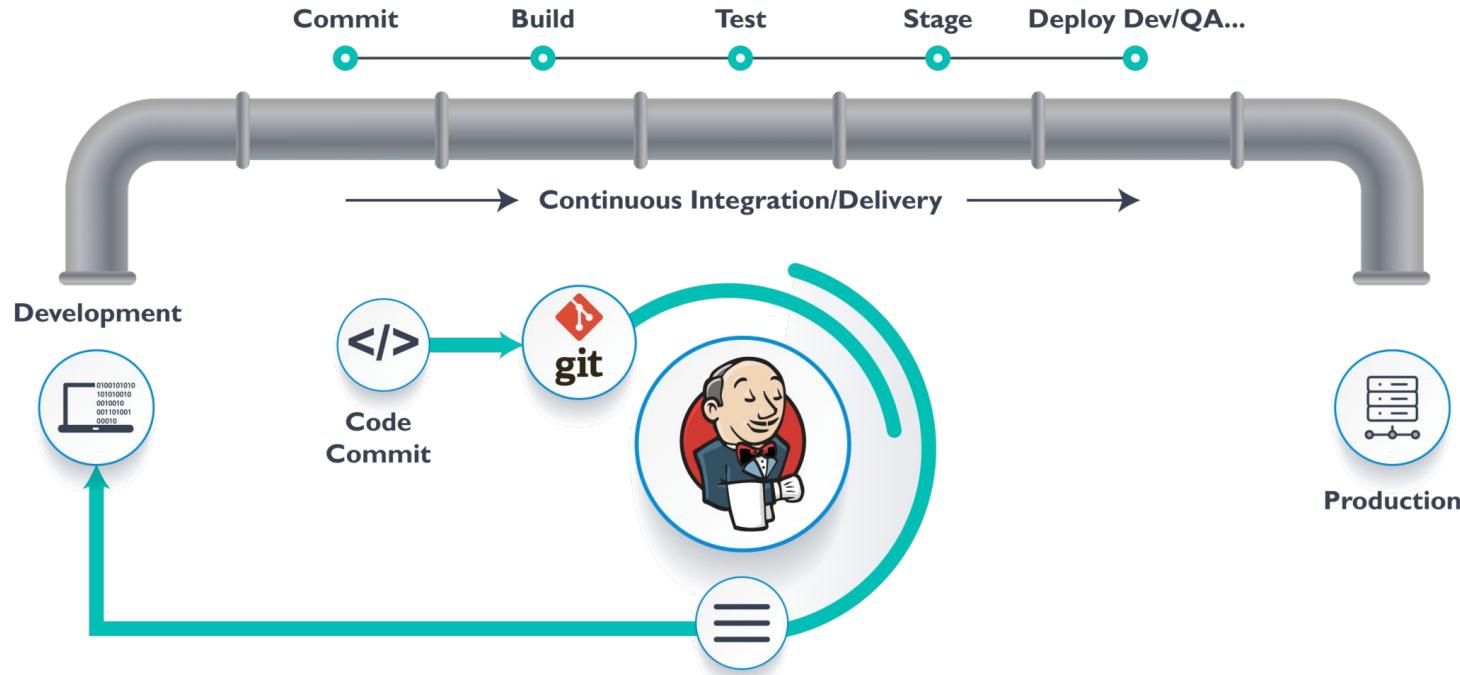
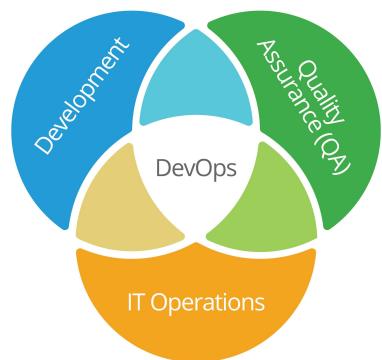
Traditional way



With CI & CD



DevOps Processes (Summary)





4

Advantages



Advantages



Time taken to create and deliver software is reduced



Complexity of maintaining an application is reduced



Improved collaboration between developers and operations team



Continuous integration and delivery ensure faster time to market



5

Disadvantages



Disadvantages



Budget



Lack of culture



Lack of skill

AFTER (in-class session)



What do you know about DevOps.

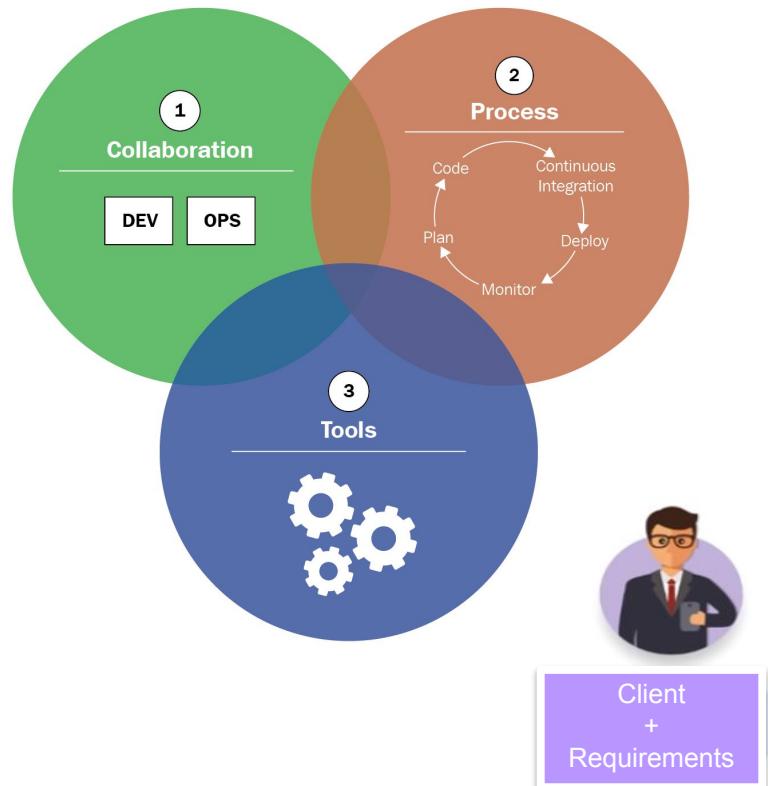
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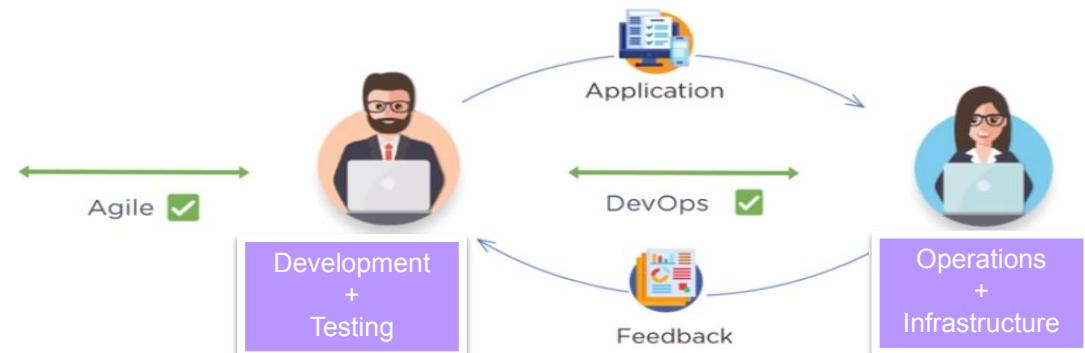


Summary (DevOps)

The DevOps culture



DevOps Engineer





THANKS!

Any questions?



