

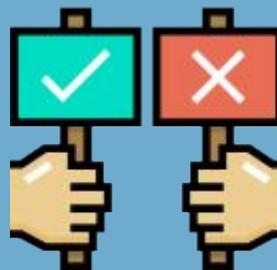


DevOps



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

Did you finish DevOps pre-class activity?



Students choose an option

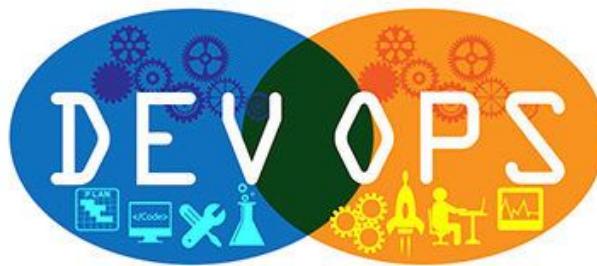
Pear Deck Interactive Slide
Do not remove this bar

BEFORE (in-class session)



What do you know about DevOps.

(Please write shortly on PEAR DECK slide)



Students, write your response!

Pear Deck Interactive Slide
Do not remove this bar

3



Table of Contents

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



What does DevOps focus on?



Students choose an option

Pear Deck Interactive Slide
Do not remove this bar

5

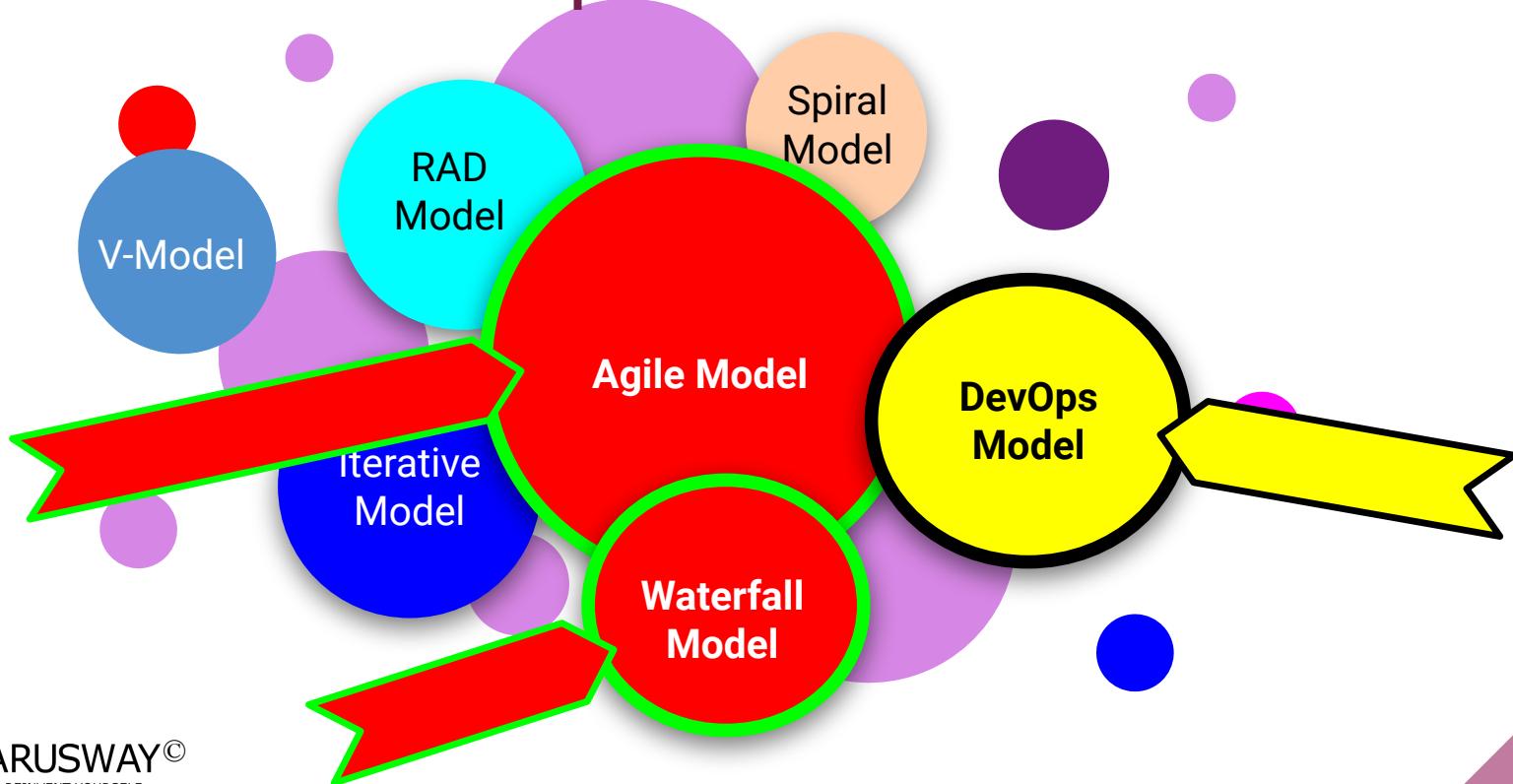
1 What is DevOps



1



What is DevOps

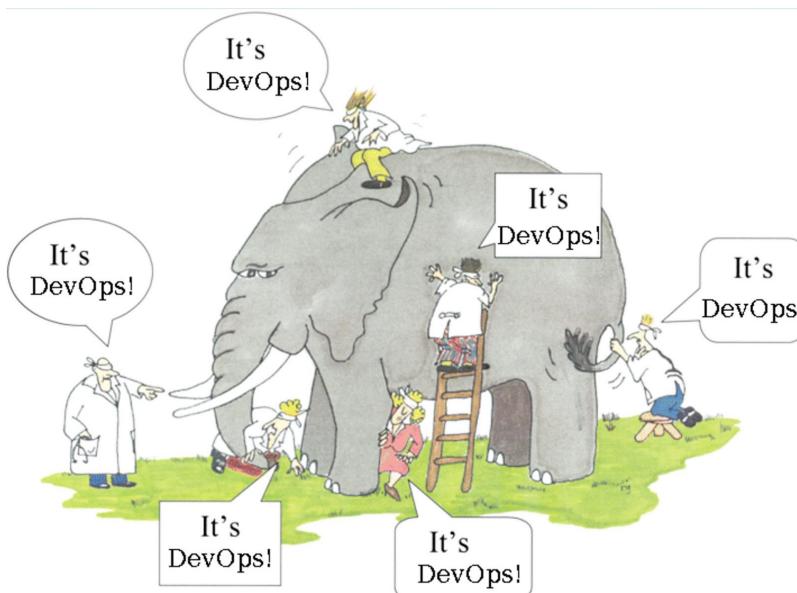


CLARUSWAY[©]
WAY TO REINVENT YOURSELF

What is DevOps

What DevOps is Not...

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

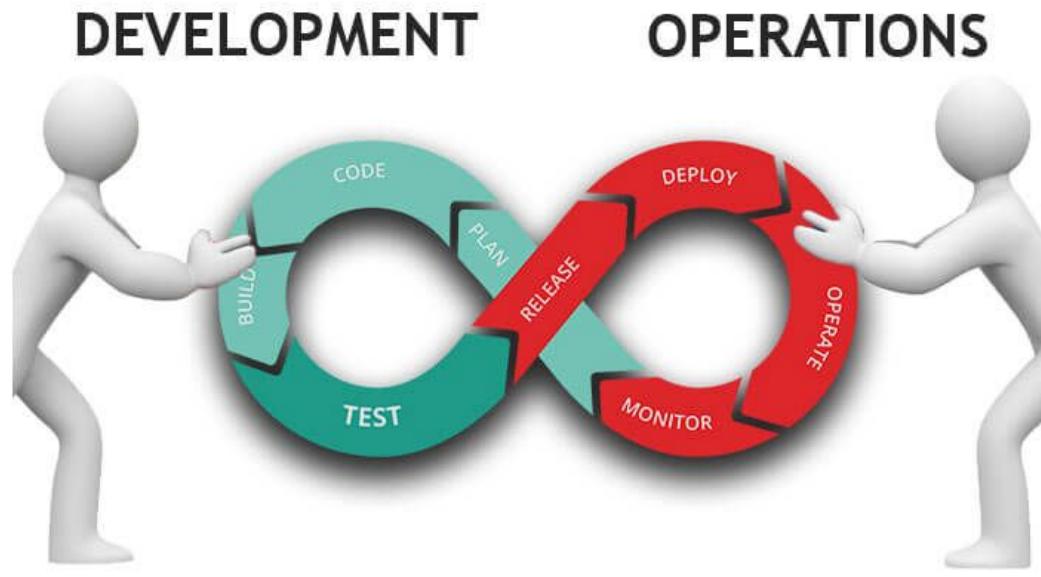


CLARUSWAY[©]
WAY TO REINVENT YOURSELF



What is DevOps

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



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

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.



CLARUSWAY[©]
WAY TO REINVENT YOURSELF



What is DevOps

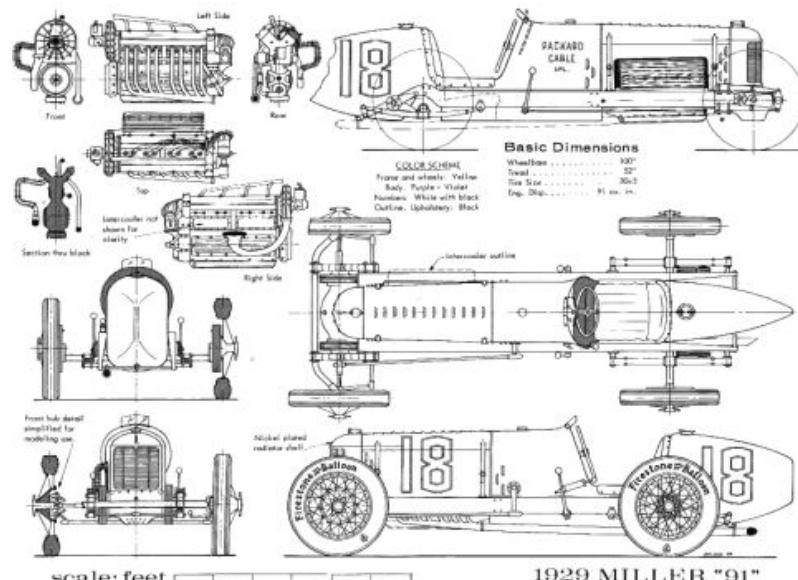
Traditional Development

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”

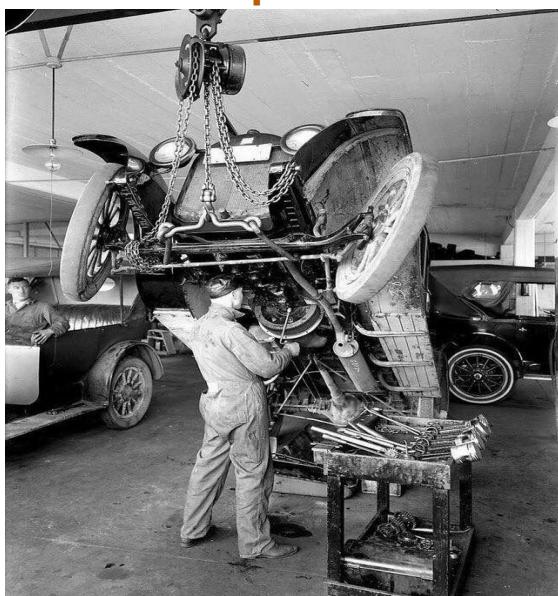


CLARUSWAY®
WAY TO REINVENT YOURSELF

11

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”

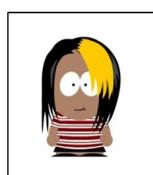
CLARUSWAY®
WAY TO REINVENT YOURSELF

12



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

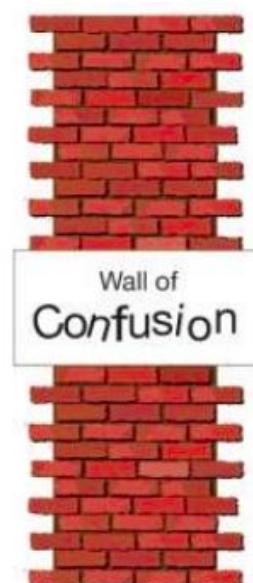
CLARUSWAY[©]
WAY TO REINVENT YOURSELF

What is DevOps

Responsibilities:



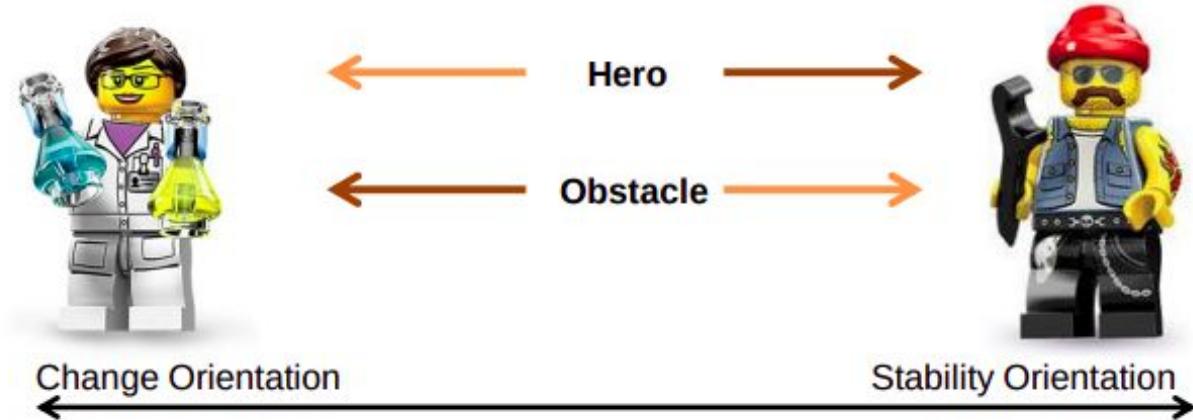
DEVELOPMENT



OPERATIONS

What is DevOps

What is the problem?



What is DevOps

What is the problem?



@rahuldighe

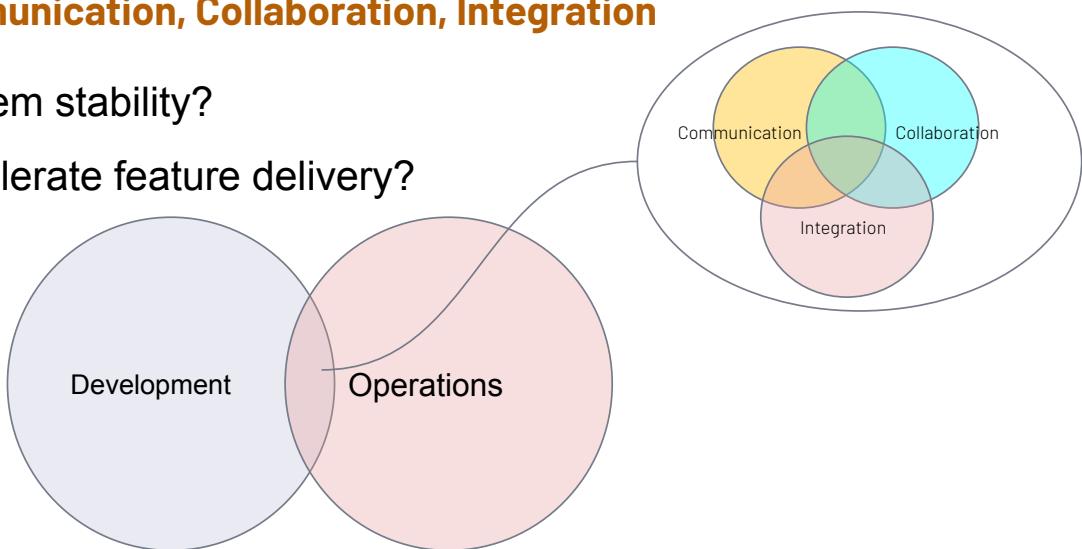


What is DevOps



Breaking the Silos: Communication, Collaboration, Integration

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

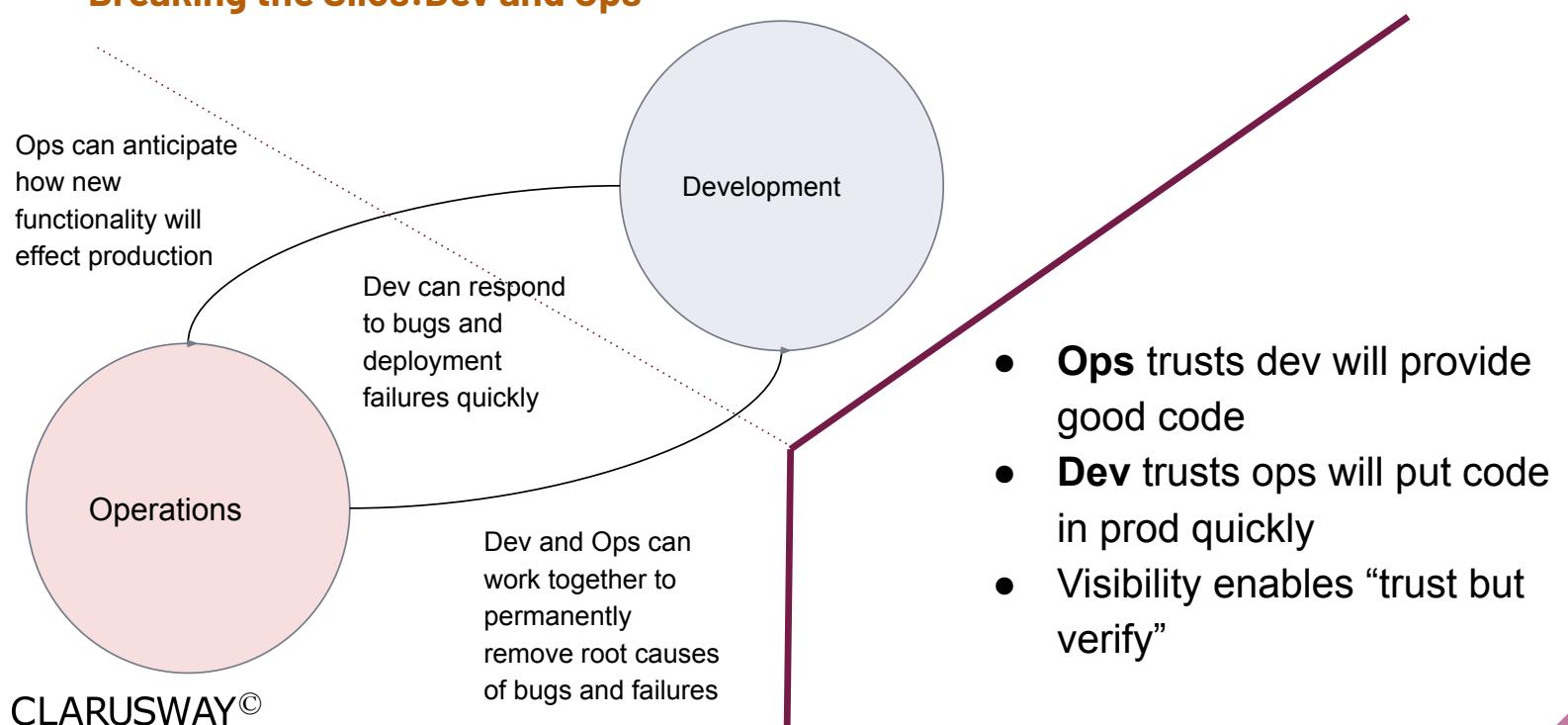


"We can build cross-functional teams around "knowledge overlaps" – people with experience on both sides and "Ops Devs""

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

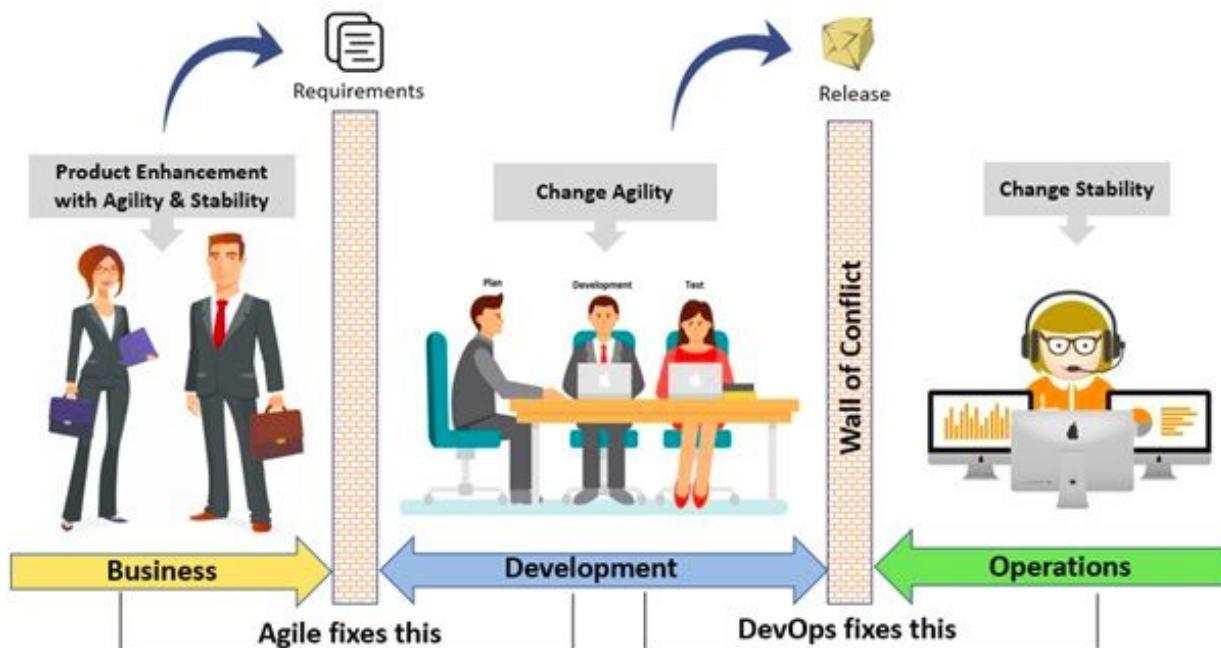


“ Feature delivery + stability become shared goals”

19

What is DevOps

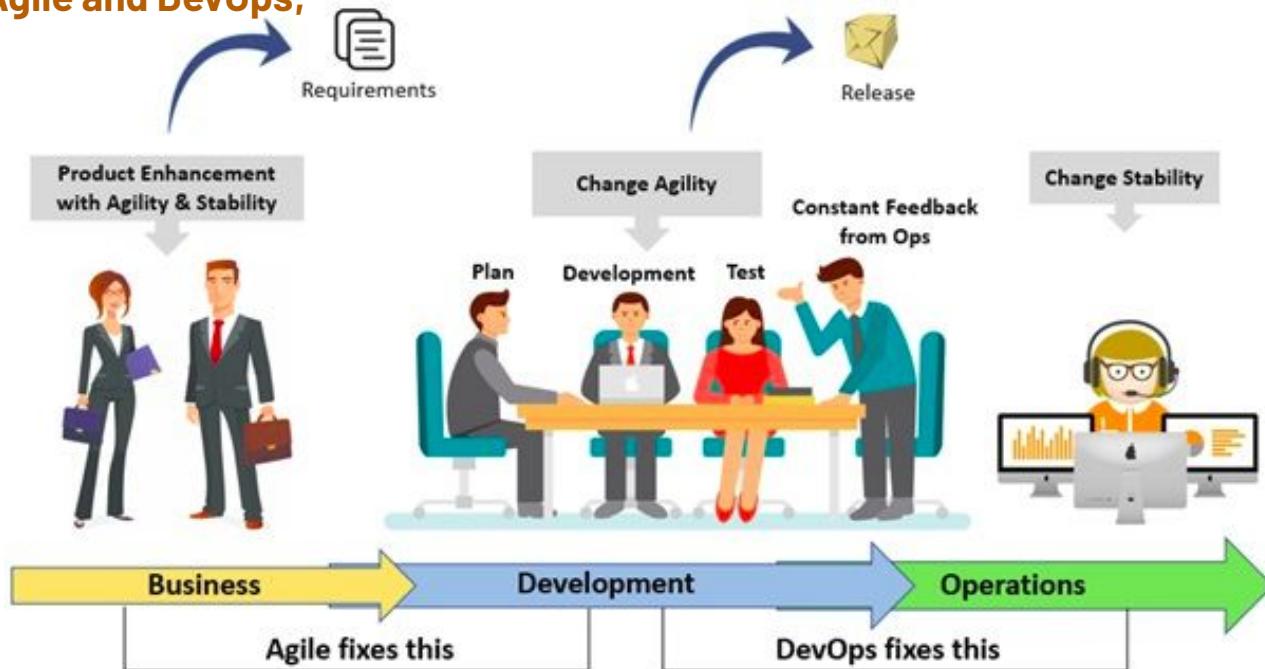
Before Agile and DevOps;





What is DevOps

After Agile and DevOps;

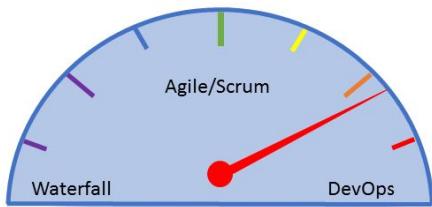


CLARUSWAY[©]
WAY TO REINVENT YOURSELF

21

What is DevOps

DevOps Culture;



CLARUSWAY[©]
WAY TO REINVENT YOURSELF



What is DevSecOps?

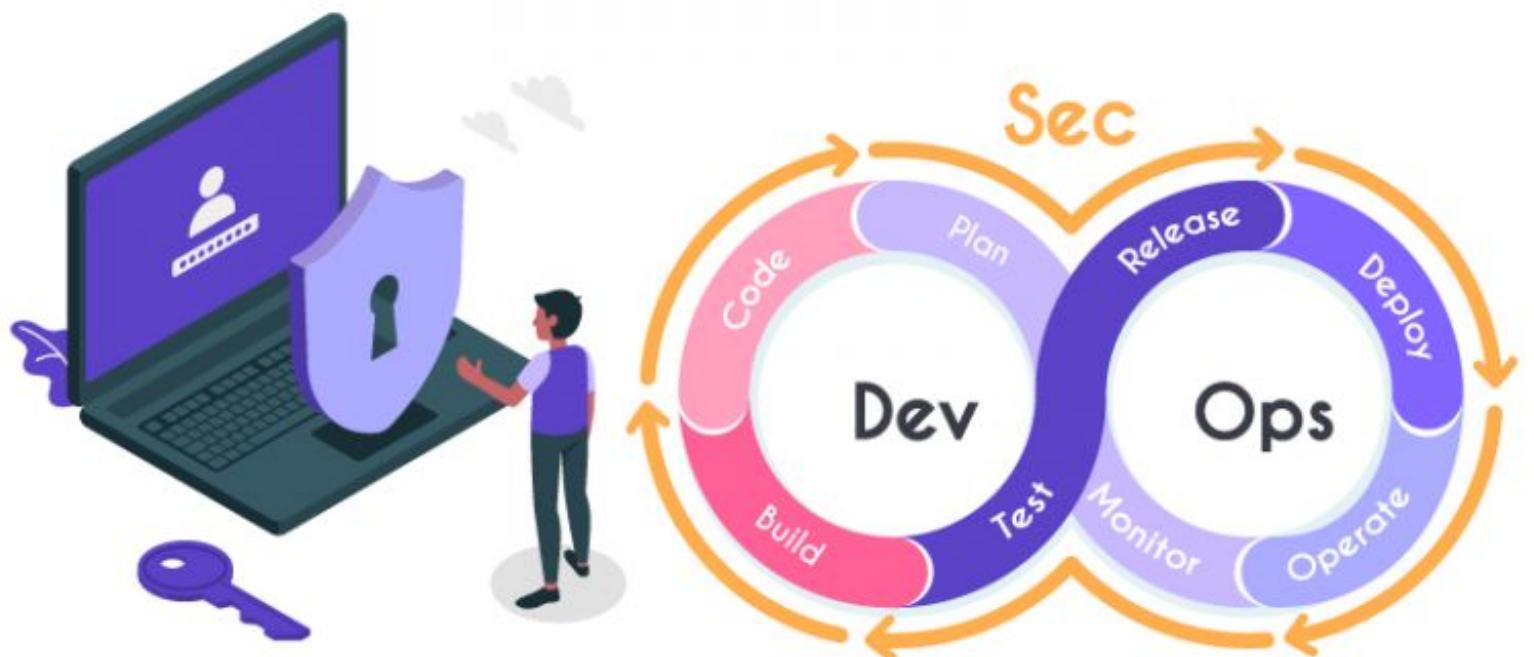


SWAY[©]

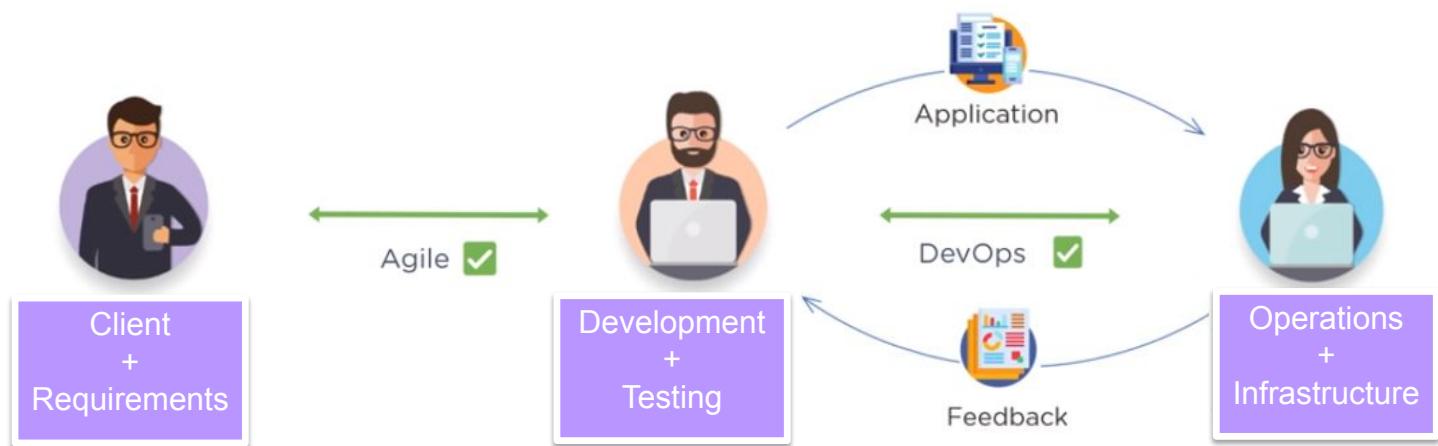
Students, write your response!

Pear Deck Interactive Slide
Do not remove this bar

What is DevSecOps



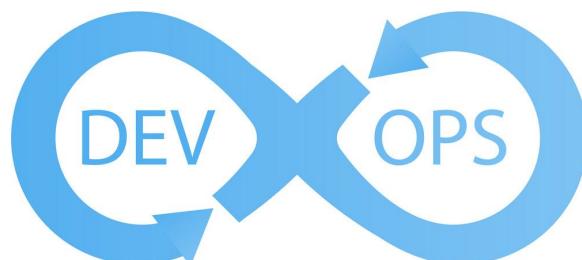
What is DevOps (Summary)



- **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



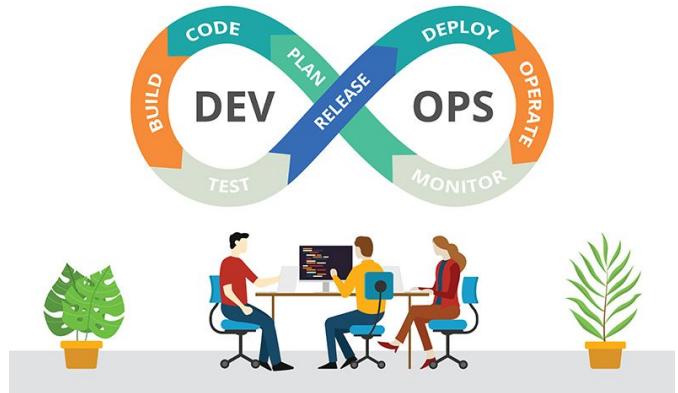
What are the DevOps phases?





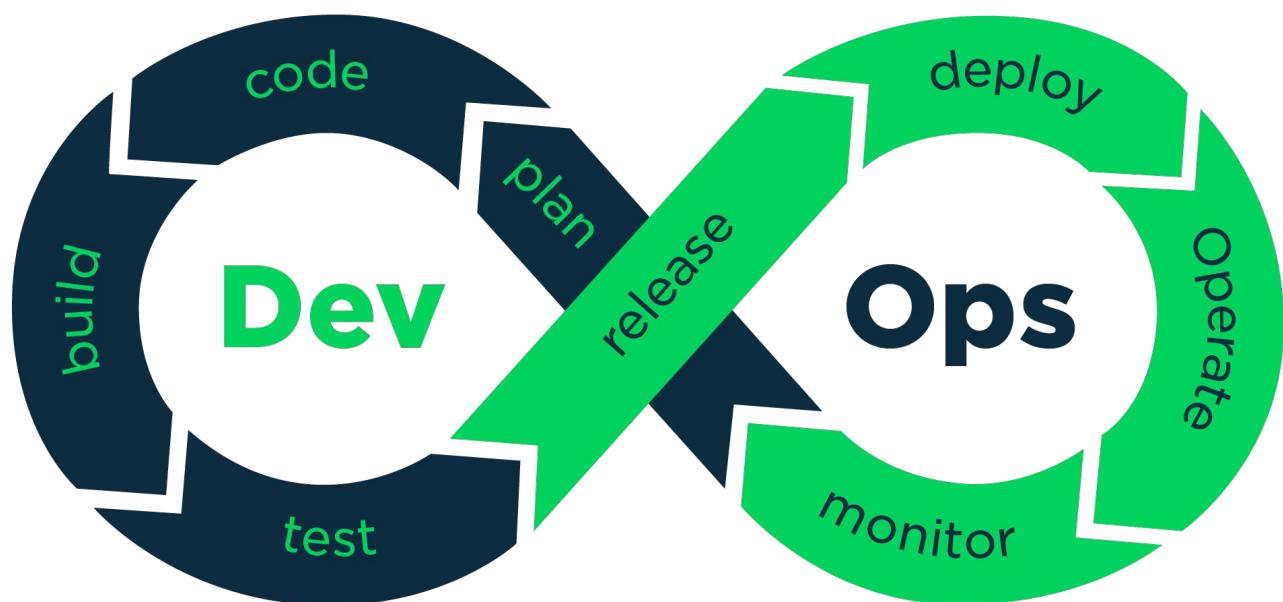
2

DevOps Phases



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

DevOps Phases



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

DevOps Phases

PLAN PHASE



Plan

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

DevOps Phases

CODE PHASE



Plan



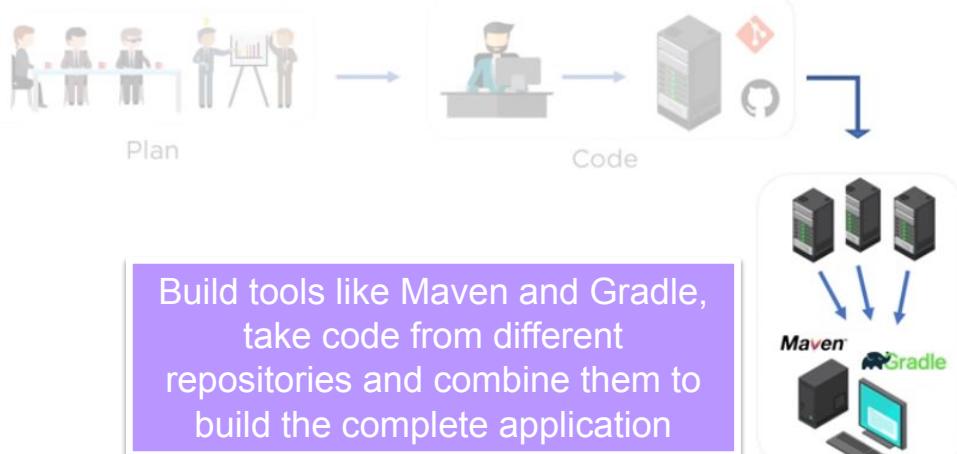
Code

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

DevOps Phases



BUILD PHASE

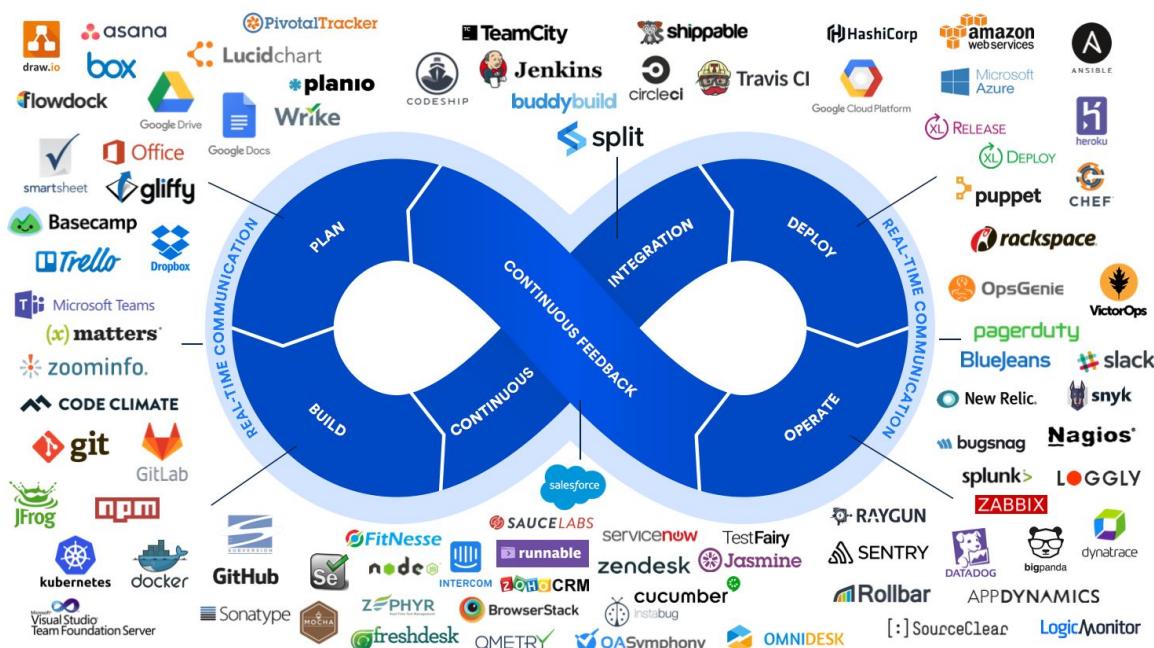


Build tools like Maven and Gradle, take code from different repositories and combine them to build the complete application

CLARUSWAY[©]
WAY TO REINVENT YOURSELF

31

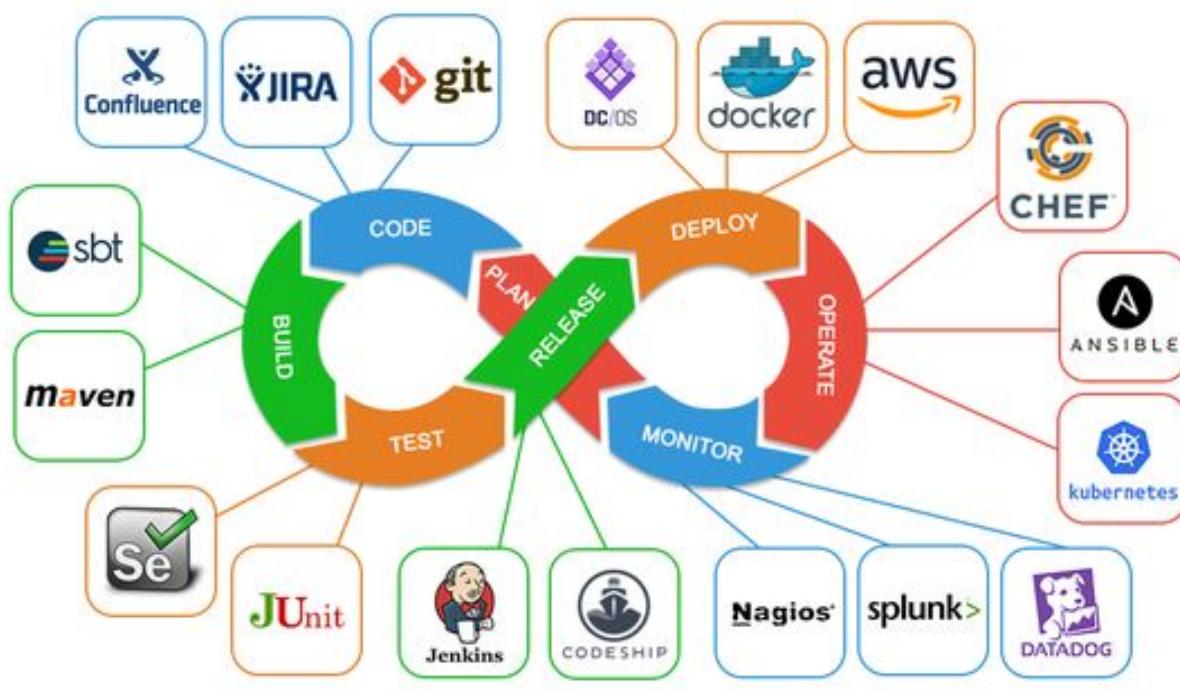
DevOps Phases



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

32

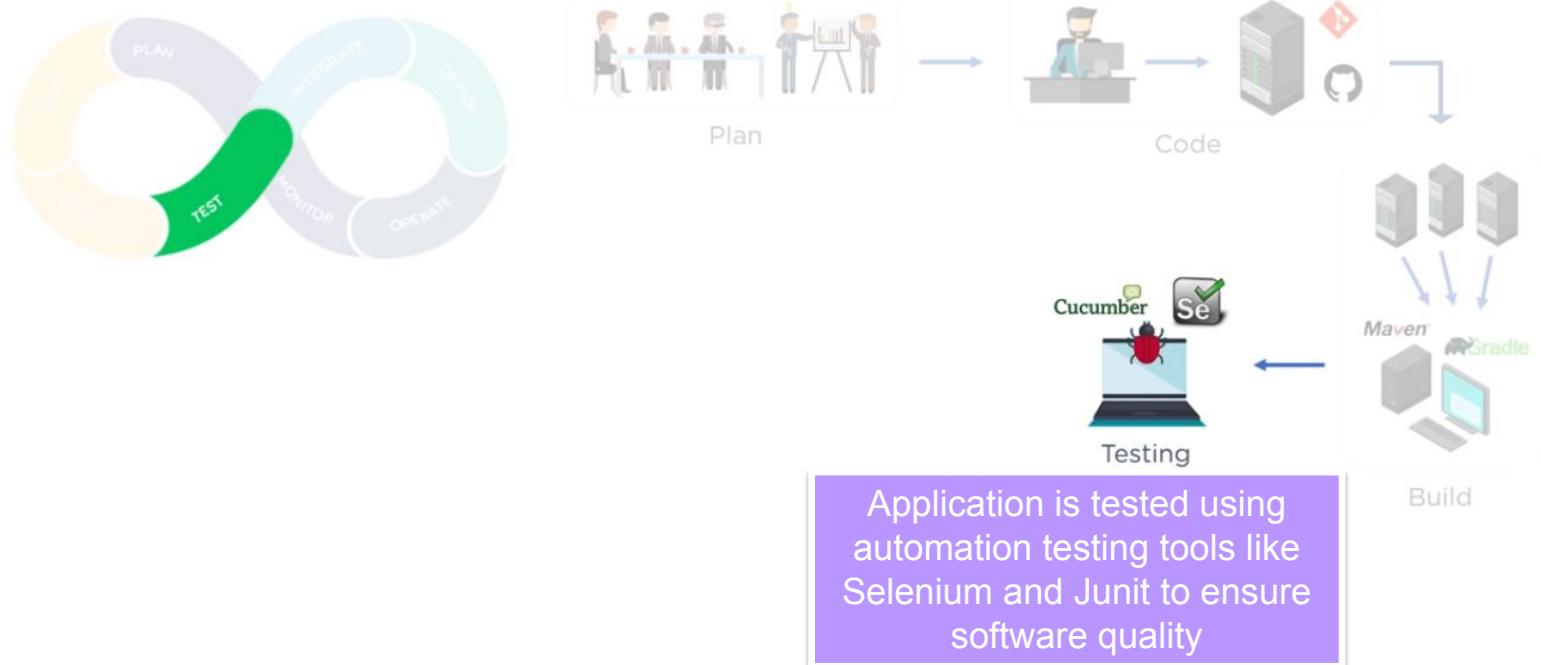
DevOps Phases



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

DevOps Phases

TEST PHASE

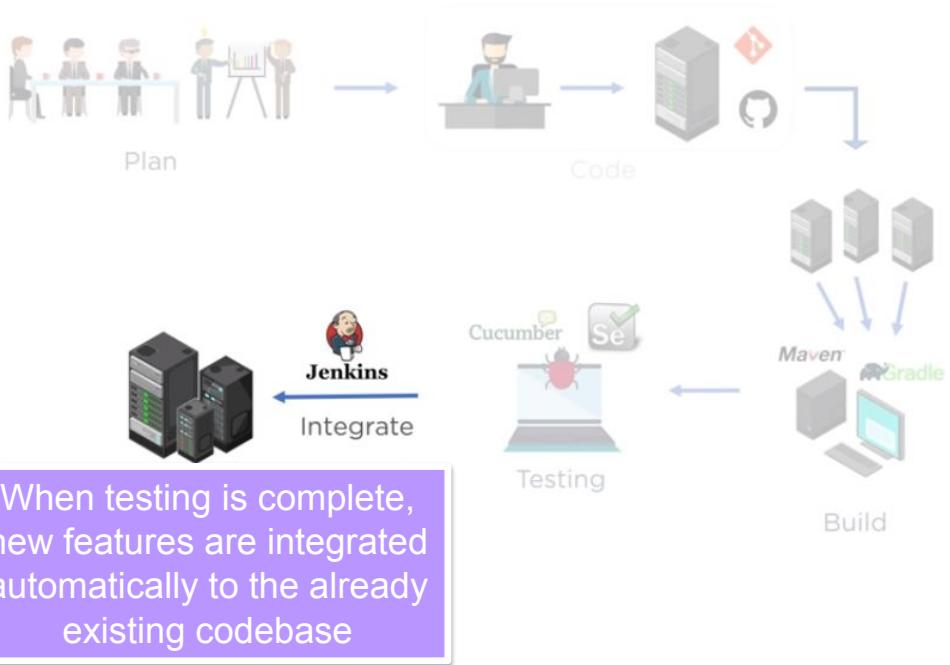
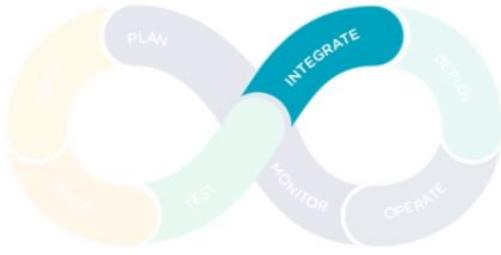


CLARUSWAY[©]
WAY TO REINVENT YOURSELF



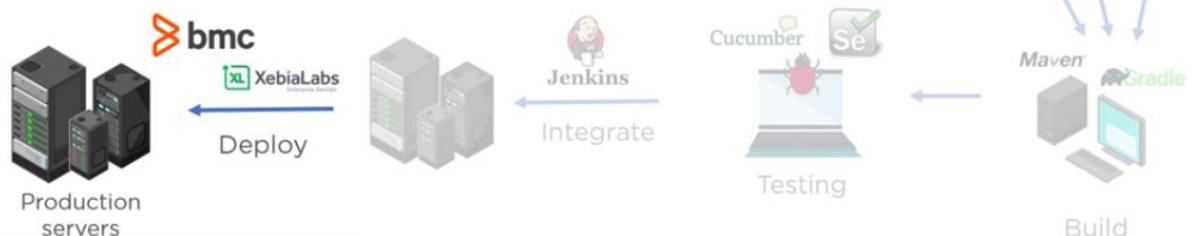
DevOps Phases

INTEGRATE PHASE



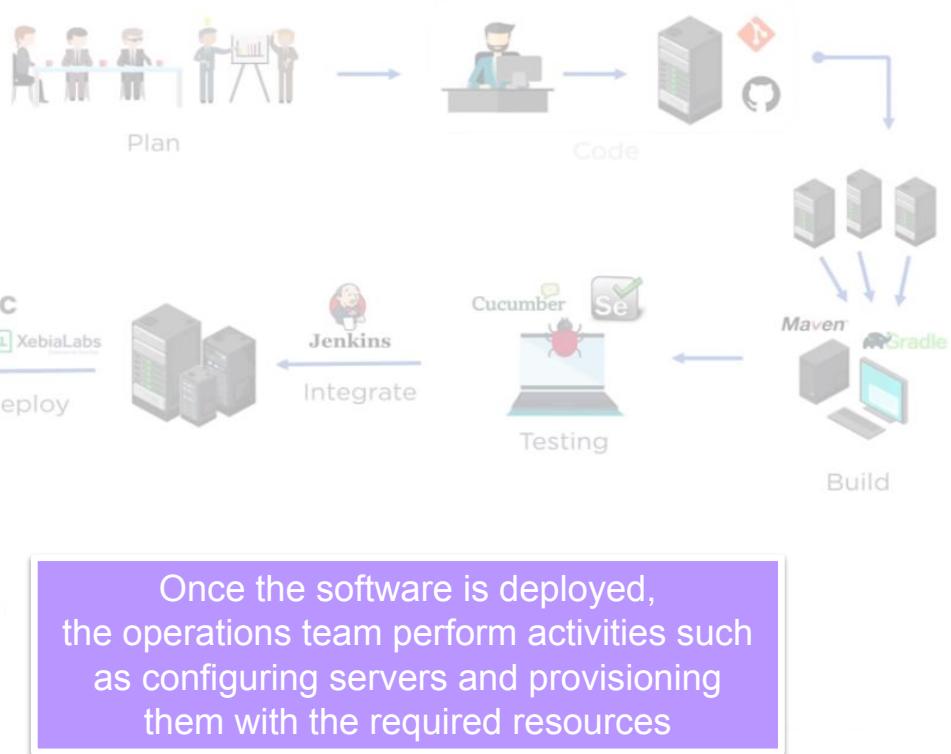
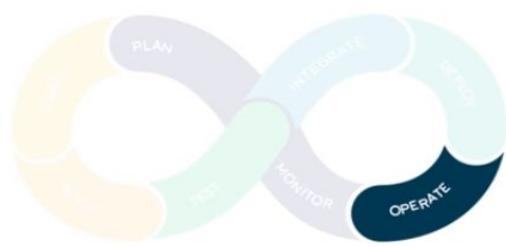
DevOps Phases

DEPLOY PHASE

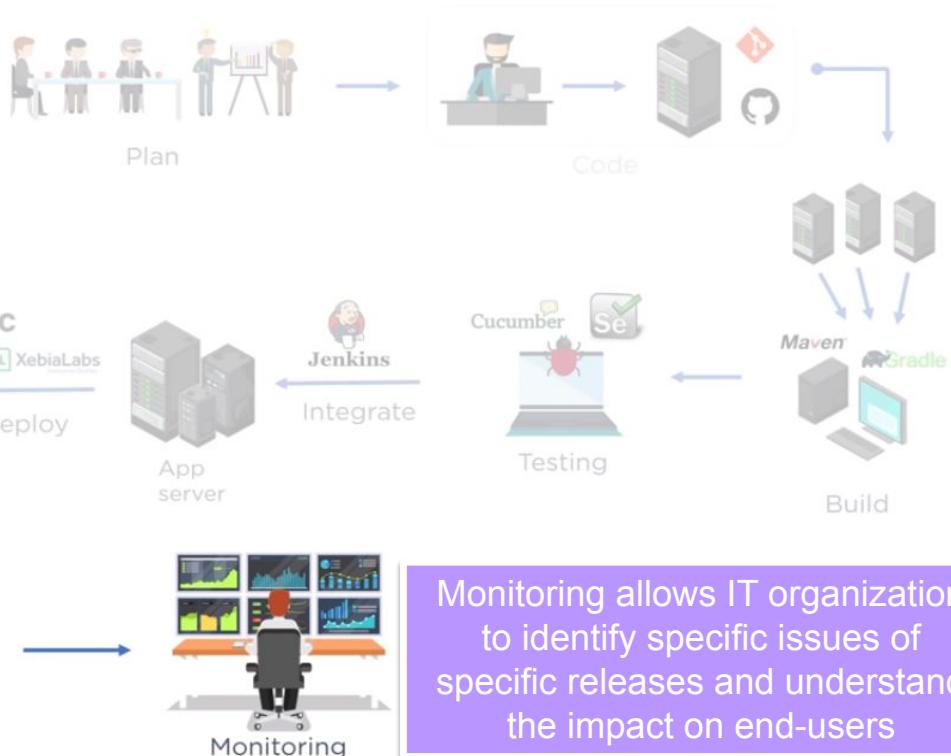
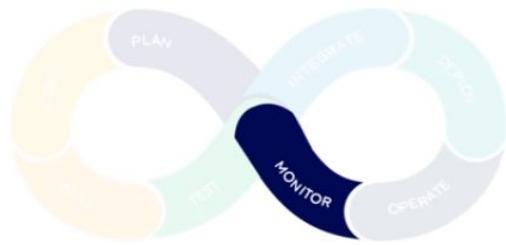


Application is packaged after release and deployed from development server to production server

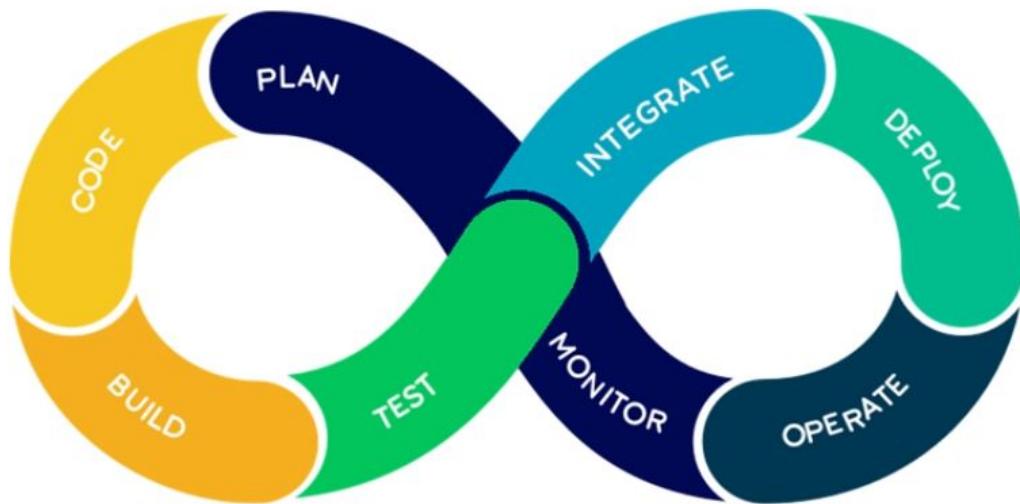
DevOps Phases



DevOps Phases



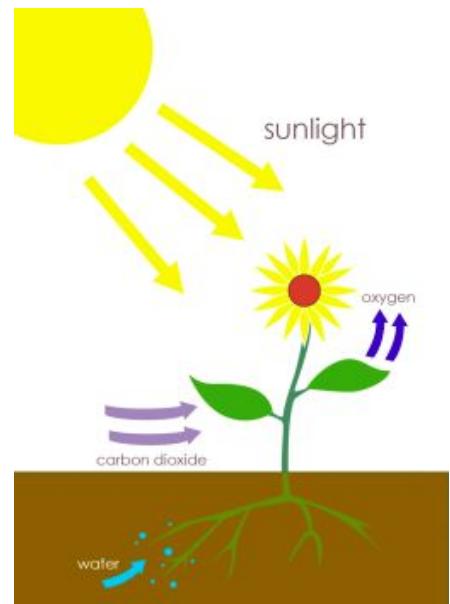
► DevOps Phases (Summary)





3

DevOps Processes

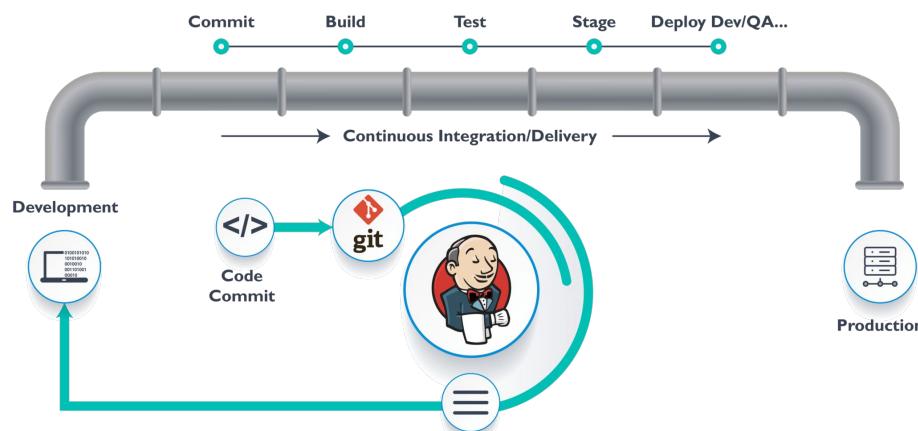


CLARUSWAY[©]
WAY TO REINVENT YOURSELF

DevOps Processes

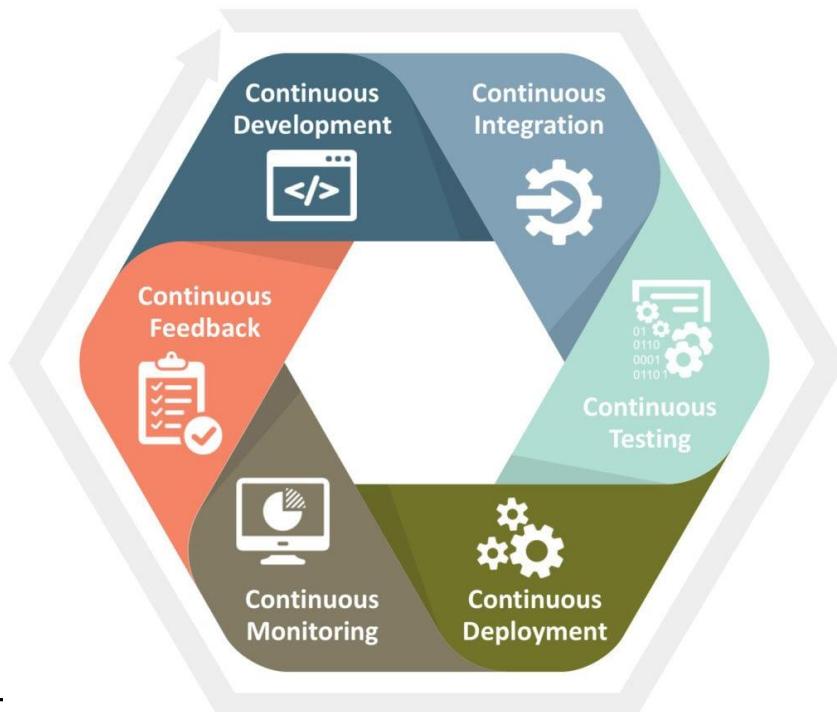
Pipelines;

- 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



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

DevOps Processes



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

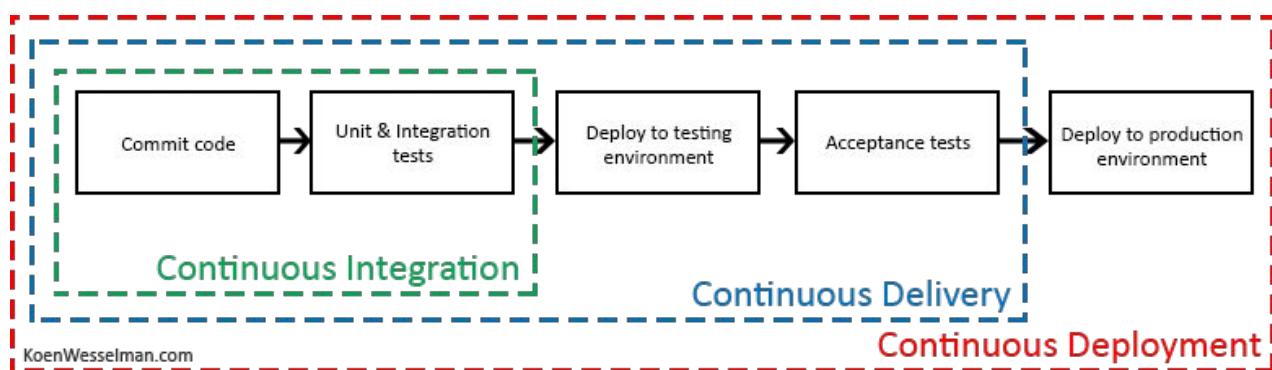
C
WAY TO REINVENT YOURSELF

43

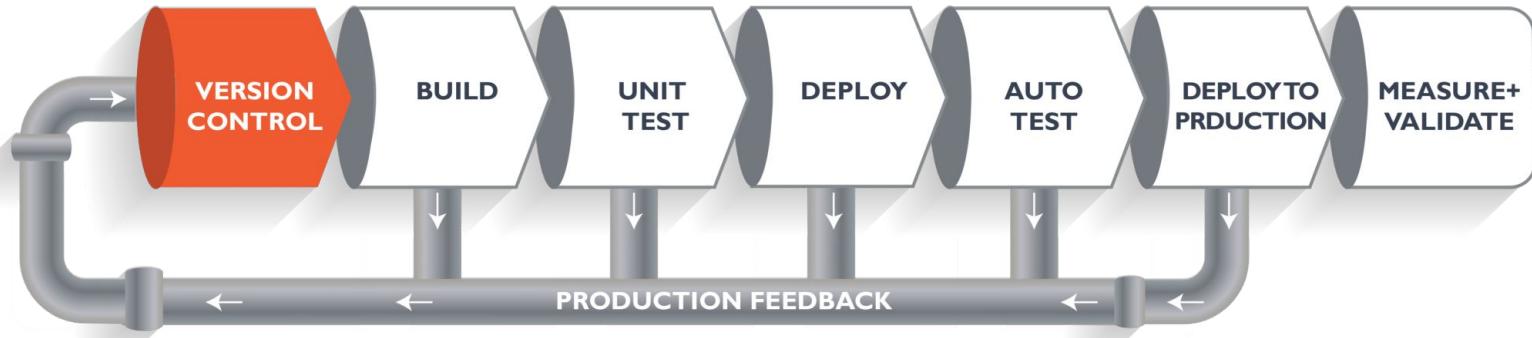
DevOps Processes



Automating an Integrated DevOps System



Introduction to DevOps



C
WAY TO REINVENT YOURSELF



Bitbucket
Atlassian



Codecommit
AWS



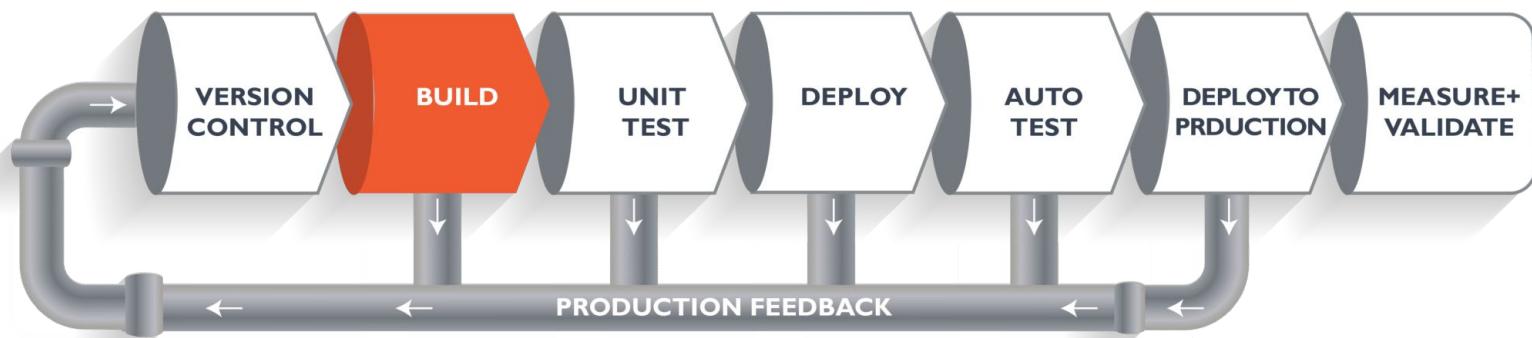
Gitlab
Gitlab

Introduction to DevOps

What is Continuous Integration



Jenkins



Maven™



nuget

BASH
THE BOURNE-AGAIN SHELL



Xcode

Gradle



CMake

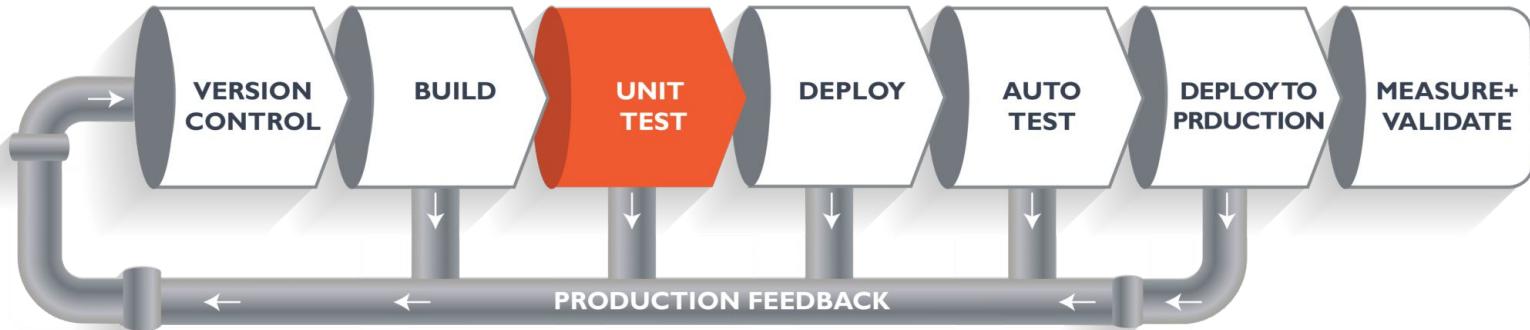


Introduction to DevOps

What is Continuous Integration



Jenkins



JUnit

JACOCO
Java Code Coverage

sonarqube

CLARUSWAY[©]
WAY TO REINVENT YOURSELF

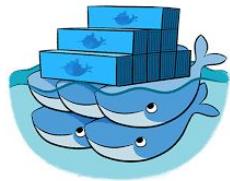
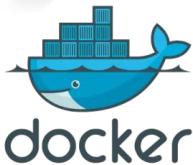
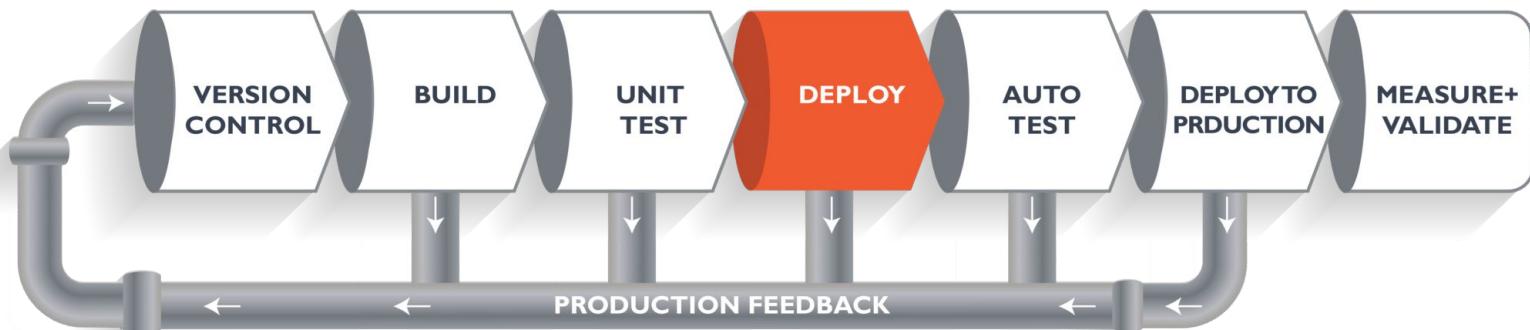
47

Introduction to DevOps

What is Continuous Integration



Jenkins



kubernetes

ANSIBLE

CLARUSWAY[©]
WAY TO REINVENT YOURSELF

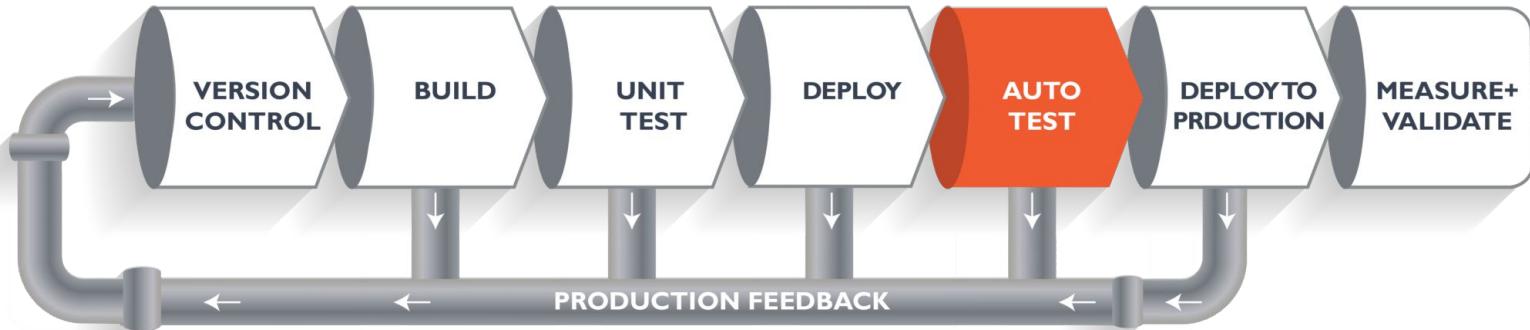
48

Introduction to DevOps

What is Continuous Integration



Jenkins



Protractor
end to end testing for AngularJS

cypress.io



CLARUSWAY
WAY TO REINVENT YOURSELF

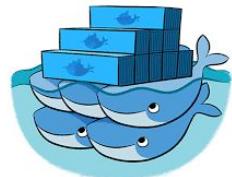
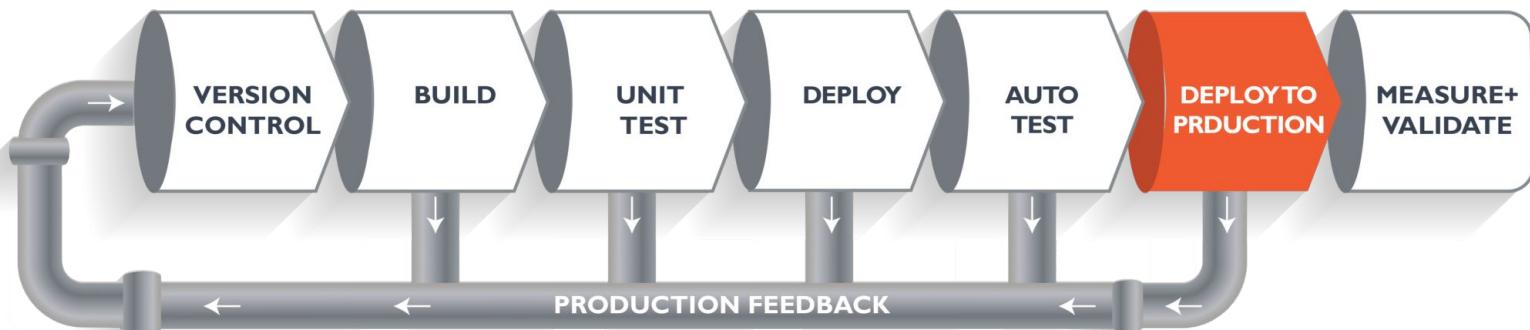
49

Introduction to DevOps

Continuous Delivery/Deployment



Jenkins



kubernetes



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

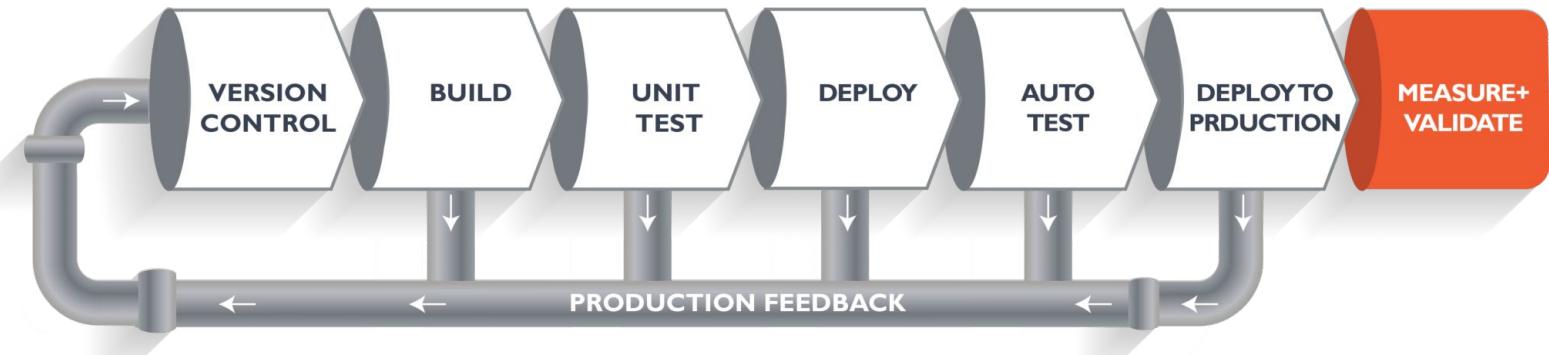
50

Introduction to DevOps

Continuous Delivery/Deployment ?



Jenkins



Nagios®

Prometheus

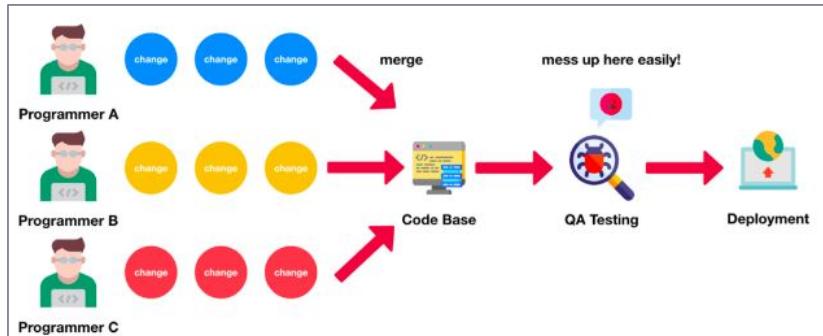
ATLASSIAN
Opsgenie

CLARUSWAY®
WAY TO REINVENT YOURSELF

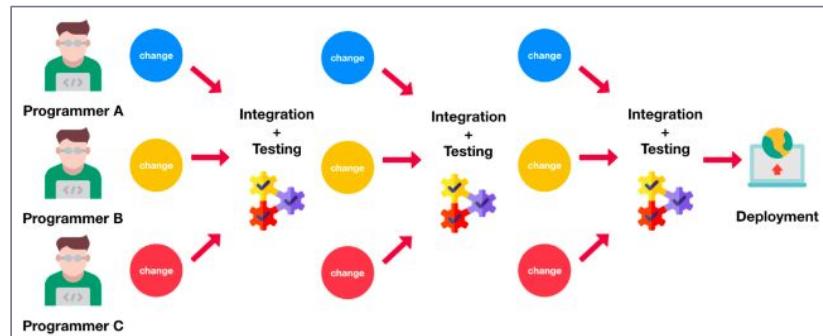
51

DevOps Processes

Traditional way



With CI & CD

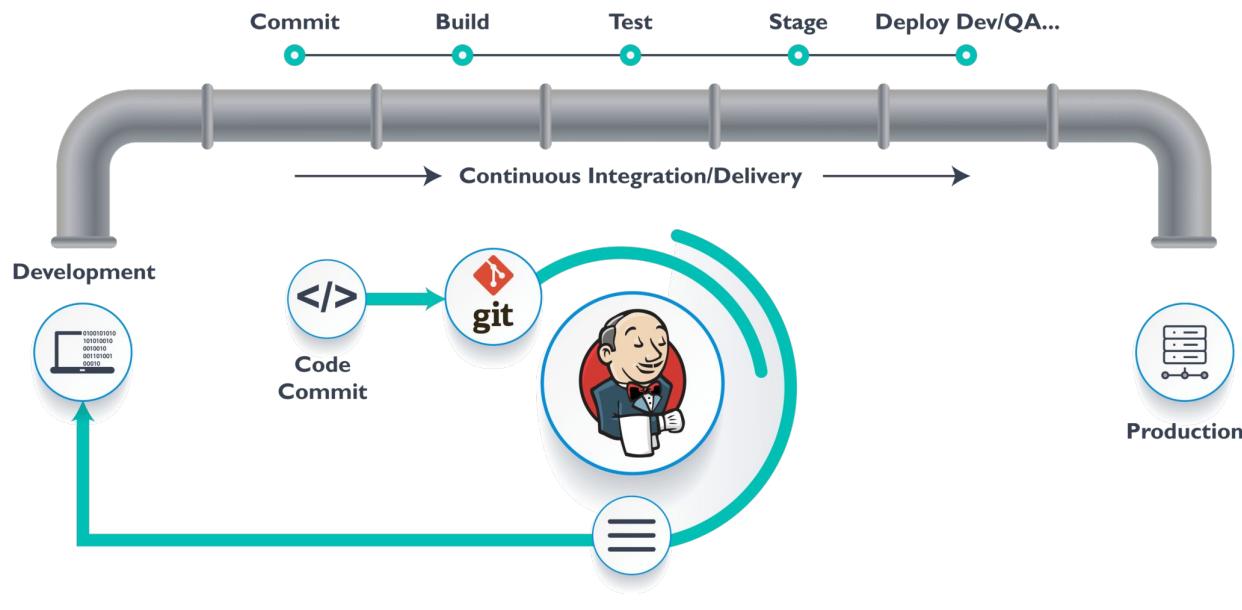
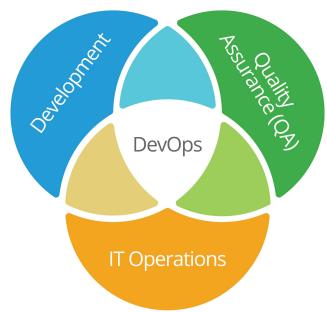


CLARUSWAY®
WAY TO REINVENT YOURSELF

52



DevOps Processes (Summary)



53

CLARUSWAY[©]
WAY TO REINVENT YOURSELF



4 Advantages



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

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



Disadvantages



Disadvantages



Budget



Lack of culture



Lack of skill

CLARUSWAY[©]
WAY TO REINVENT YOURSELF

AFTER (in-class session)

What do you know about DevOps.

(Please write shortly on PEAR DECK slide)

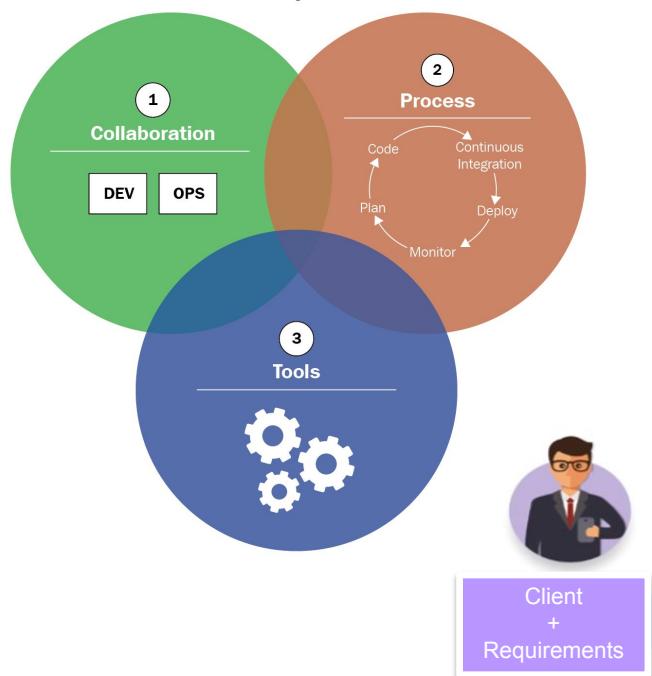


Students, write your response!
REINVENT YOURSELF



Summary (DevOps)

The DevOps culture



DevOps Engineer



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

59



THANKS!

Any questions?



CLARUSWAY[©]
WAY TO REINVENT YOURSELF

60

