
AUTOMATING SERVER SETUP WITH
ANSIBLE

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Ansible Labs and Used Modules :

- Ansible Run Any Scripts on Hosts
- Ansible Shell and Script and Command module and Compares
- Ansible DataBase Modules
  - Create Databases
  - Create Users and Password
  - Create PRIVILEGES and Grant
  - Import into DataBase
- Create Variable User_List in vars Directory and Used in to task Directory
- Ansible Notifications Handlers
- Ansible Waiting for events and search_regex
- Create a to-do-list with include tasks Module
- Using filters with conditionals and using When Module
- Insert to File Module
- Find Module in any directory and Deleted and using wildcard

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Install Project

- Install Apache
- Install Nginx
- Install Mariadb and import Databases
- Change Password for all hosts
- Install zabbix Agent
- Install VSFTP with htpasswd
- Install zabbix server with Compile Model (Optional)

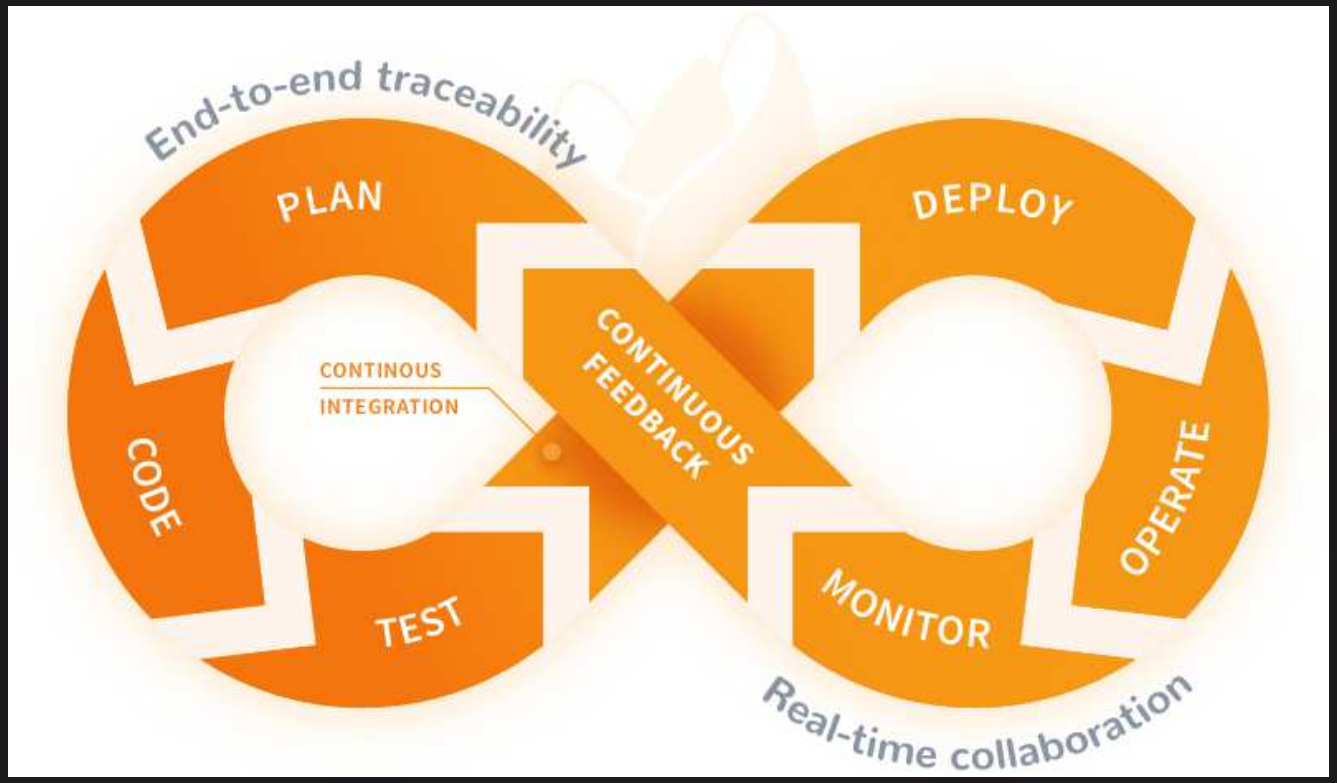
INTRODUCTION DEVOPS AND DEVSECOPS

WHAT IS DEVOPS?

IT'S NOT A TEAM OR TITLE … IT'S A PROCESS.
BECAUSE CUSTOMER OF THE KINGS

INTRODUCTION DEVOPS AND DEVSECOPS

DevOps Lifecycle



INTRODUCTION DEVOPS AND DEVSECOPS

DevOps Timeline

2007 — Patrick Debois start's assessing IT Value Chain

2008 — Agile System Administrators Group is launched on Google

Google

Agile2008 Conference

Andrew Clay Shafer and Patrick Debois meet at Agile Conference 2008

2009 — Inaugural "DevOps Days" are held in Ghent, Belgium

DEVOPS

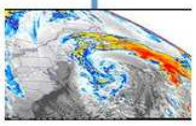
CHEF

Open Source toolsets rip up the legacy playbook.

O'REILLY Velocity Web Performance & Operations CONFERENCE

John Allspaw and Paul Hammond present "10 Deploys per day" at Velocity

2010



The "Perfect Storm" of adjacent methodologies occurs

2011 — Industry leading software vendors increase market presence with "Enterprise" class DevOps tools

IBM

hp

ca technologies

Industry leading software vendors increase market presence with "Enterprise" class DevOps tools

2012

Gene Kim releases "The Phoenix Project"

2013

DevOps begins to provide positive impact to "Enterprise" IT

2014 — *devX* is born and Xceed launches the "12 days of DevOps"

2015

What does the future of DevOps hold for your organisation?

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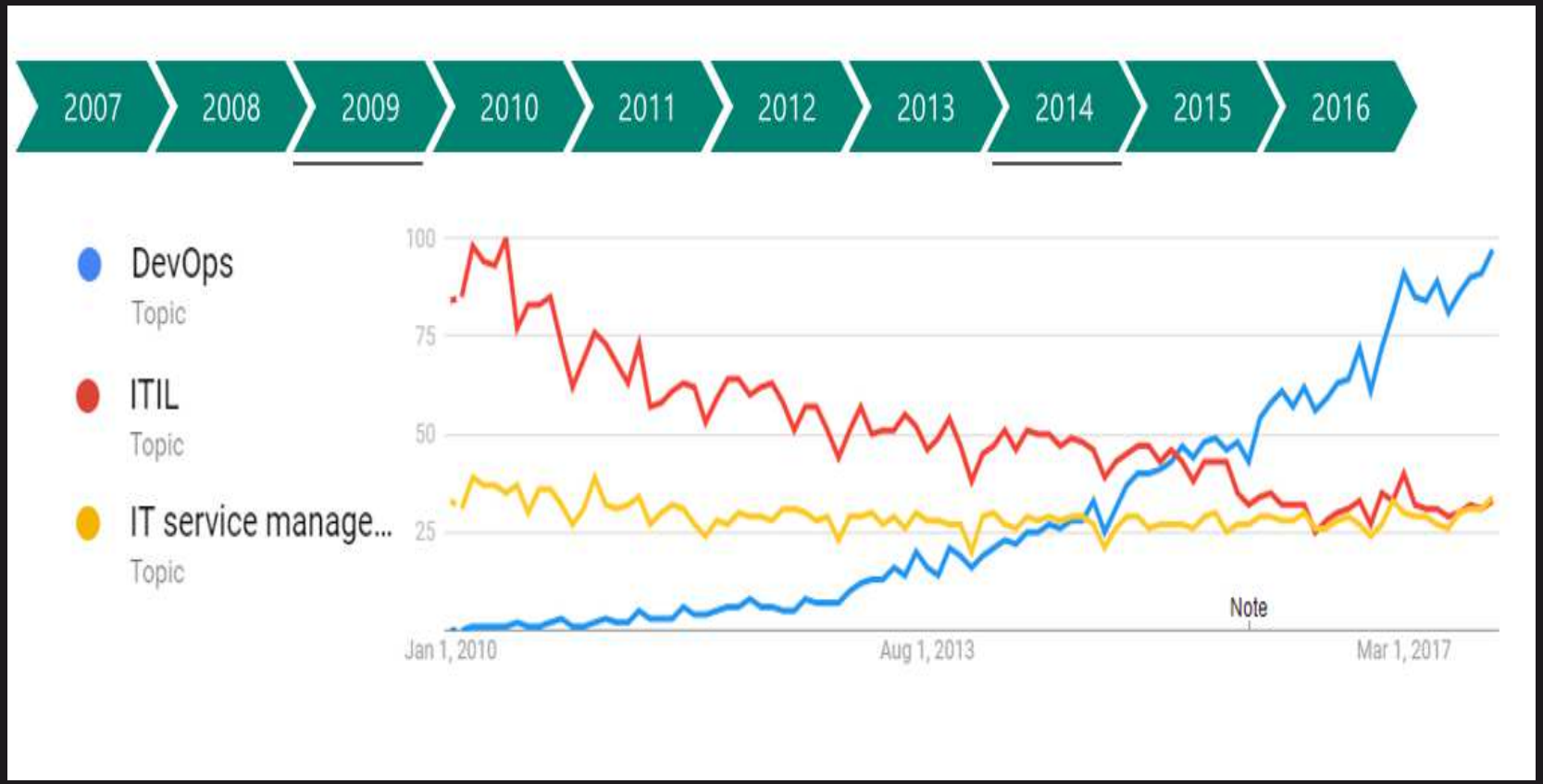


INTRODUCTION DEVOPS AND DEVSECOPS

WHAT IS DEVSECOPS ?

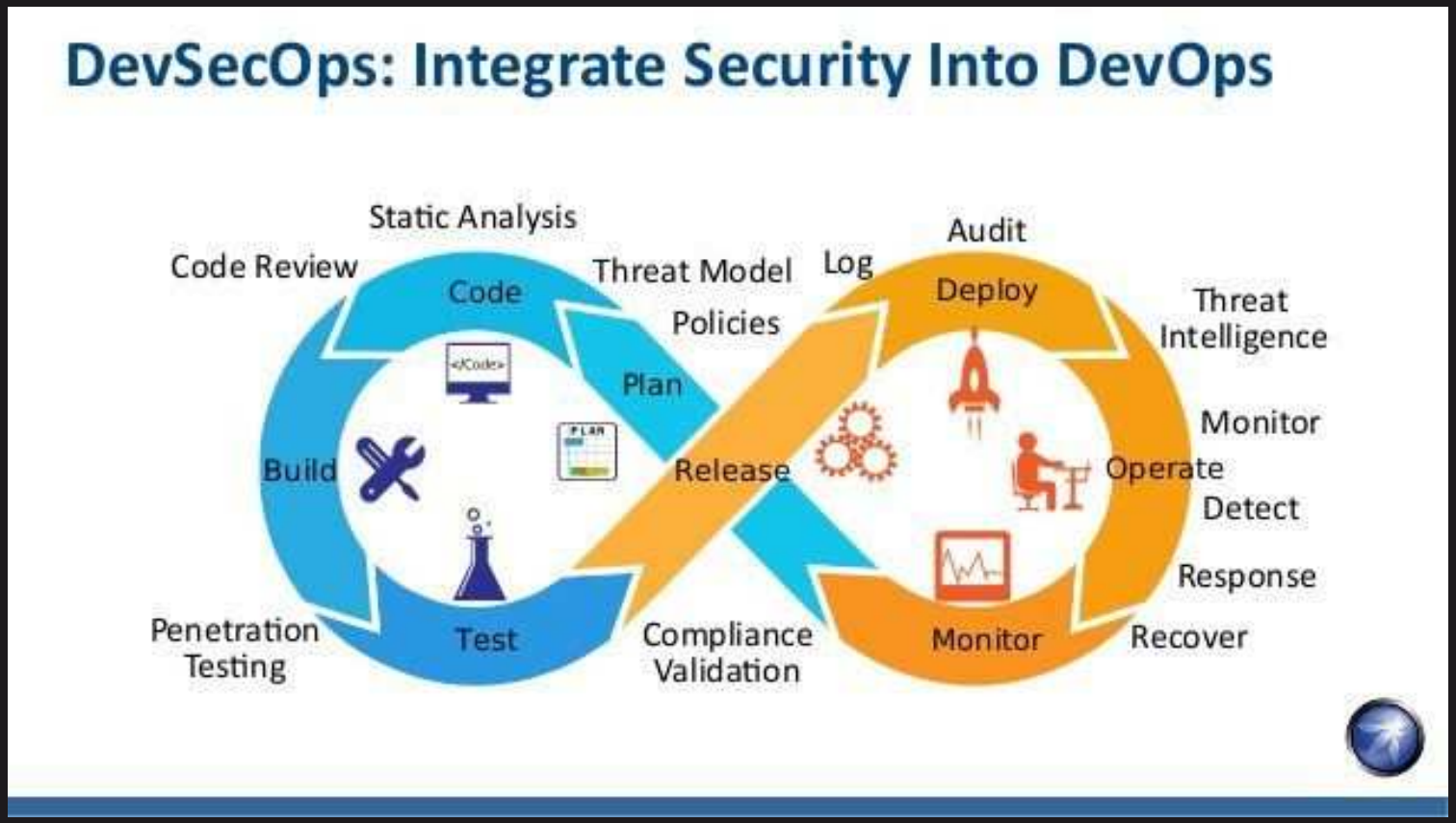
IT IS SHORT FOR :

DEVELOPMENT

SECURITY

OPERATIONS

INTRODUCTION DEVOPS AND DEVSECOPS



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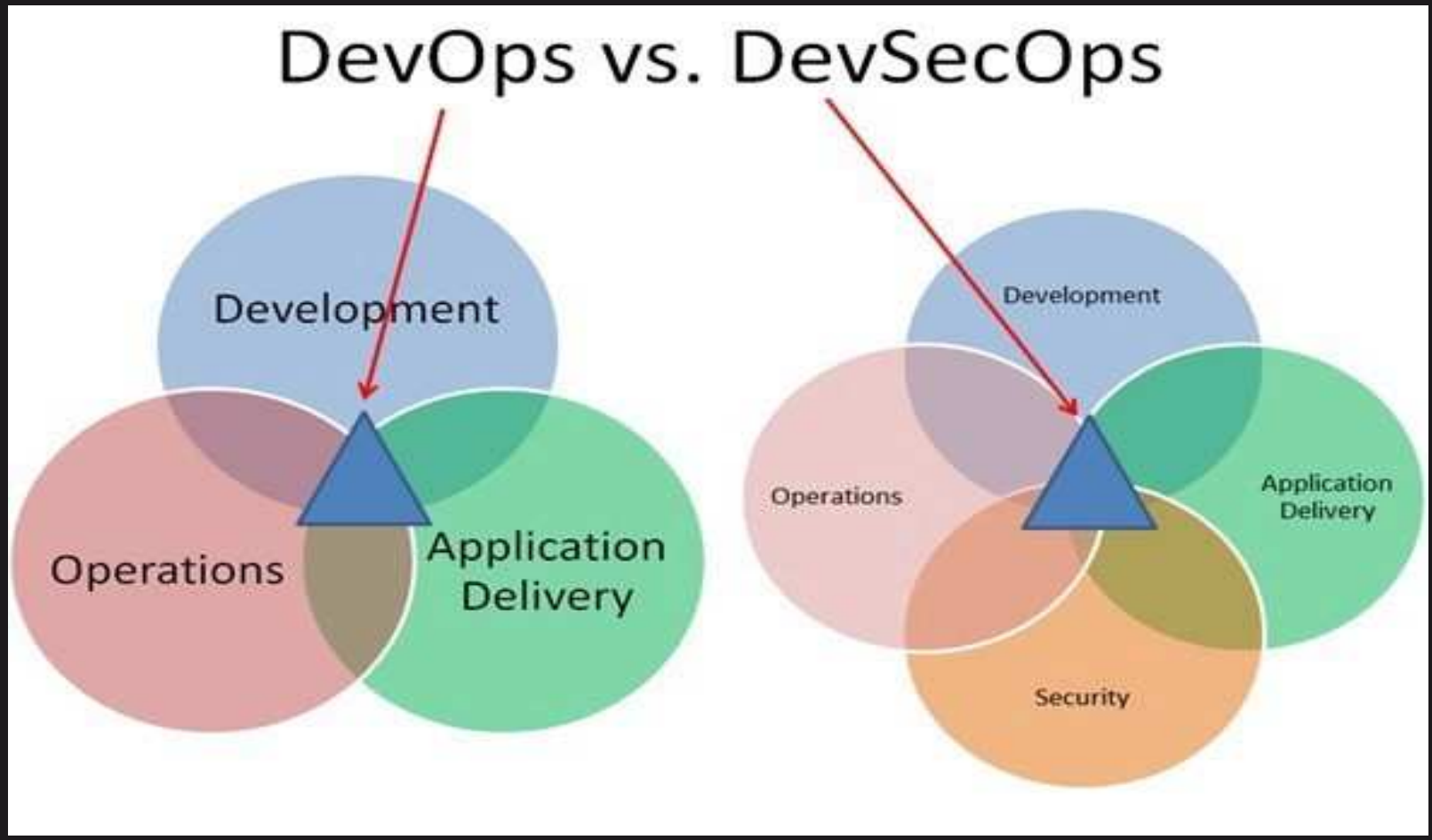


INTRODUCTION DEVOPS AND DEVSECOPS

TARGET :

New versions of the product, very Quick to final Customers

Improve Speed to Market

PROBLEM :

Seeing any Problem in the operation

Each Team attributed it to the Other Team

SOLUTION :

Collaboration

Remove the wall between Operation and Developer

DevOps Engineering Tools

BENEFITS :

TrubleShooting Speed

Isolation Environment

Performance Tuning

Fail Over

Resource & Cost Reduction

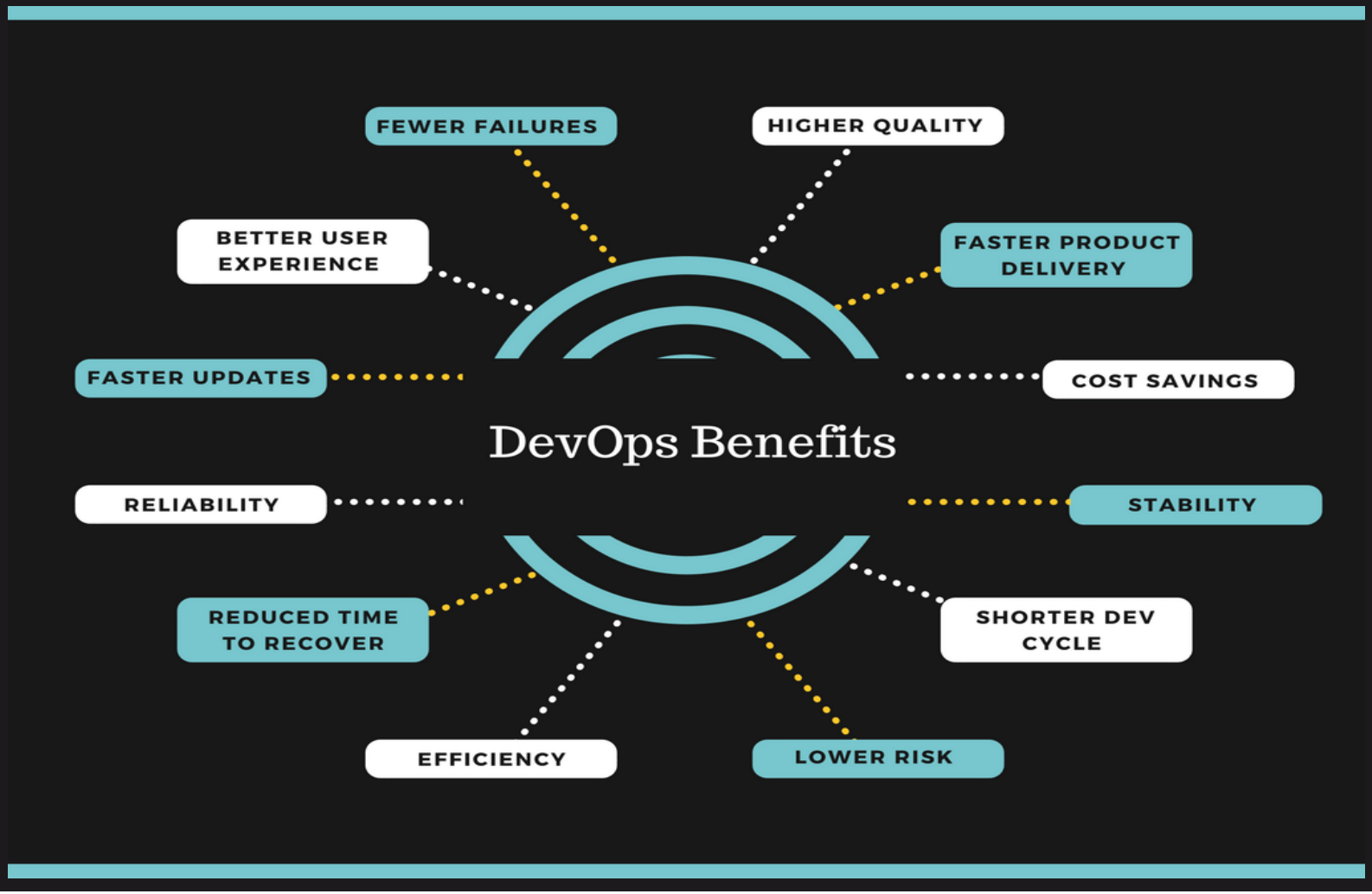
Increased Performance

Job Satisfaction

RESULT :

The transformation of the IT industry

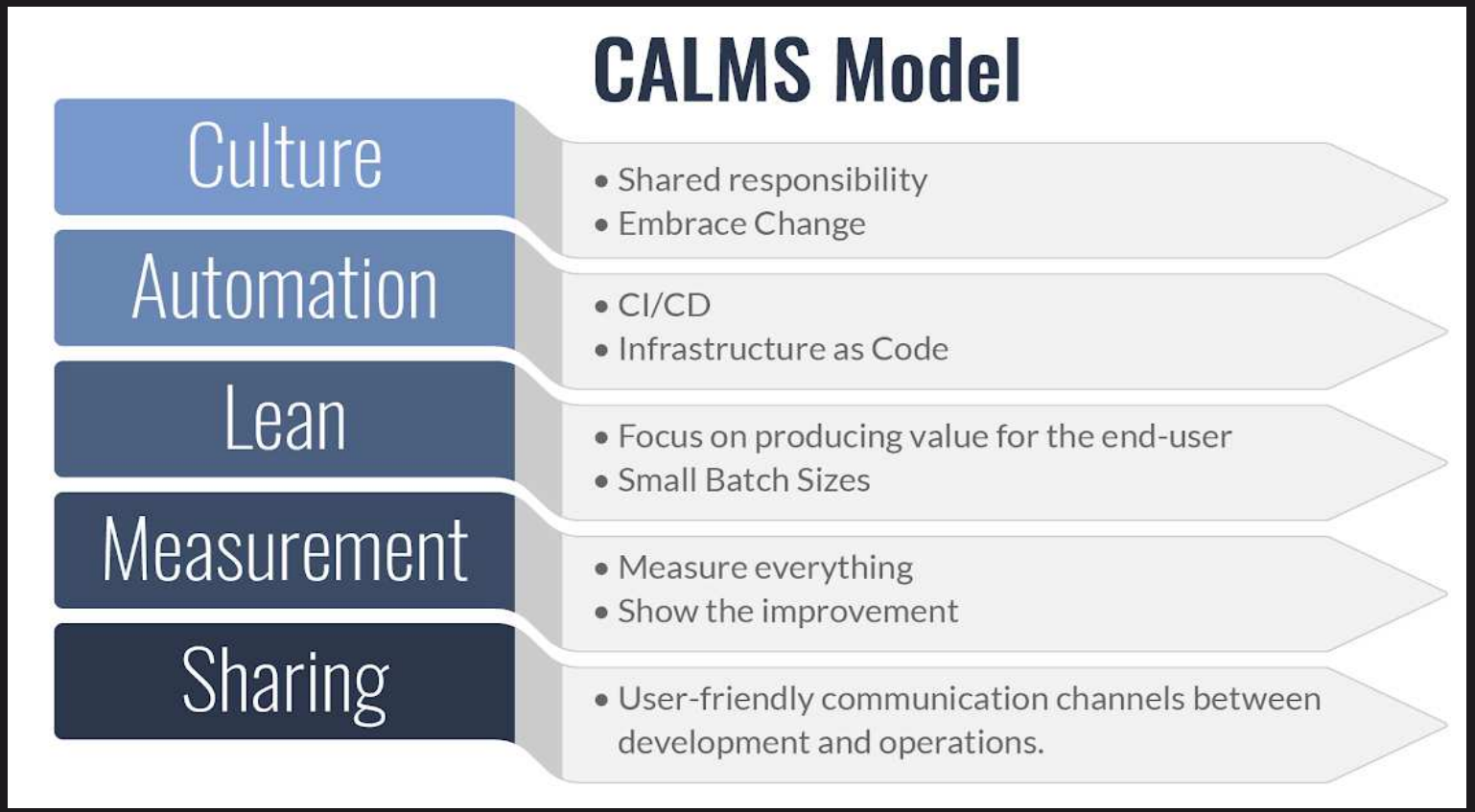
INTRODUCTION DEVOPS AND DEVSECOPS



INTRODUCTION DEVOPS AND DEVSECOPS

DevOps is Process

Approach to reach DevOps with CALMS



INTRODUCTION DEVOPS AND DEVSECOPS

DevOps is Process

Approach to reach DevOps with CALMS

Culture : Delete Wall between Developers Team and Operations Team

Automation : Continuous Delivery – Continuous Integration – Continuous Deployment

Use tools (Configuration Management and Virtualization , …)

Lean : Delete Redundant work and Useless

Measurement : Unless we know where we are, we will not know where we want to go

Infrastructure Monitoring

Log Management

Application and Performance Management

→ TPS and Response Time , …

Sharing : Share Information and Result with Coworker

DevOps Use cases :

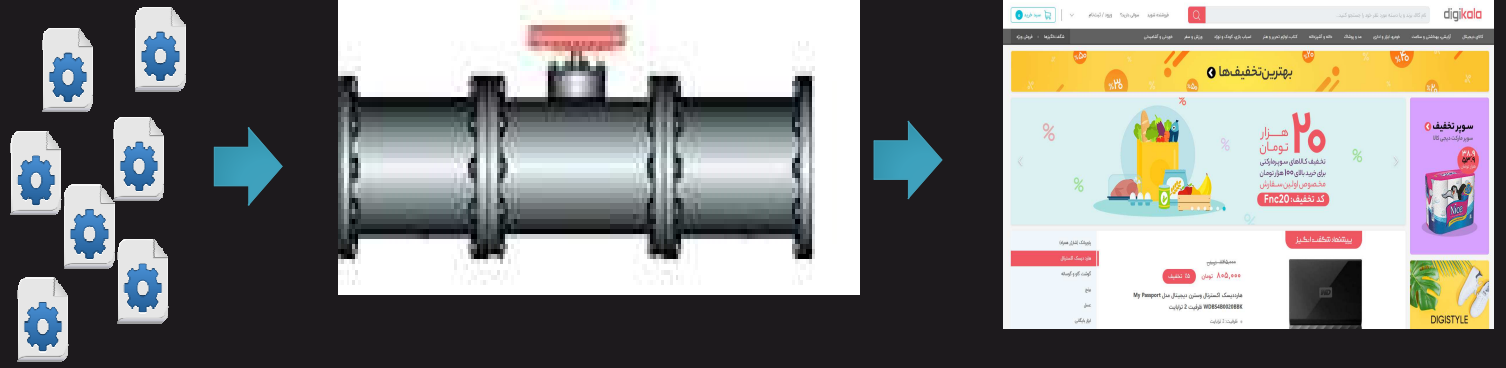
High changes in product

Add More Features

Competitive products

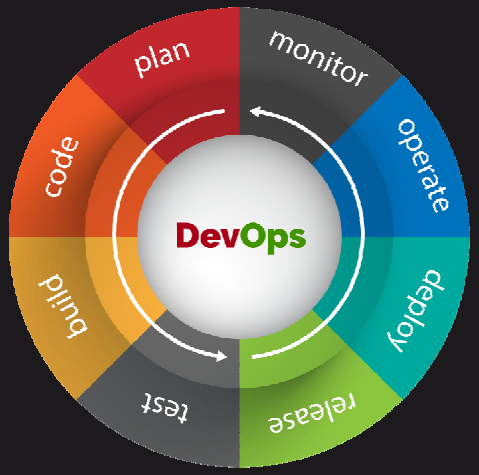
INTRODUCTION DEVOPS AND DEVSECOPS

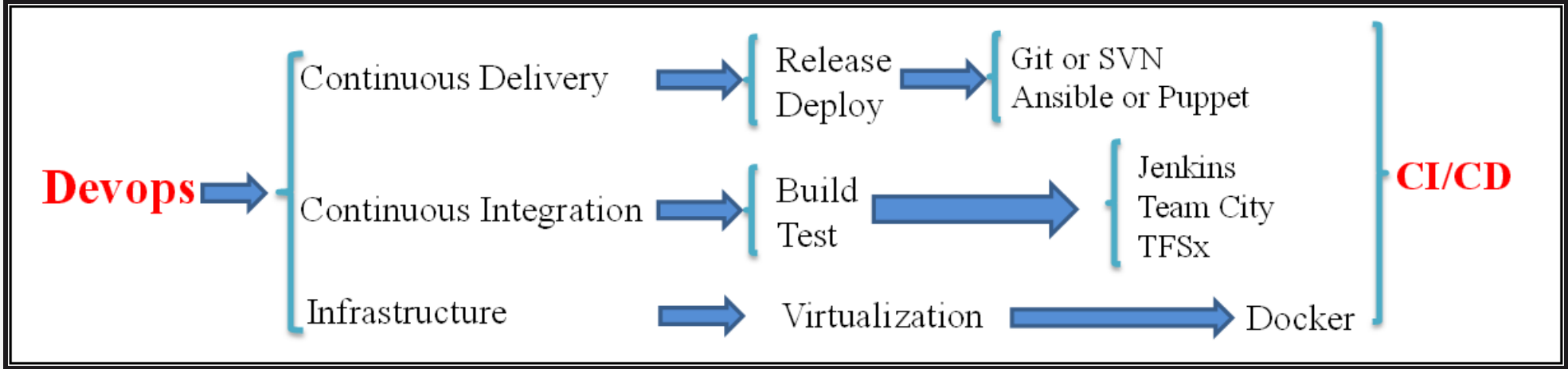
DevOps Pipline



INTRODUCTION DEVOPS AND DEVSECOPS

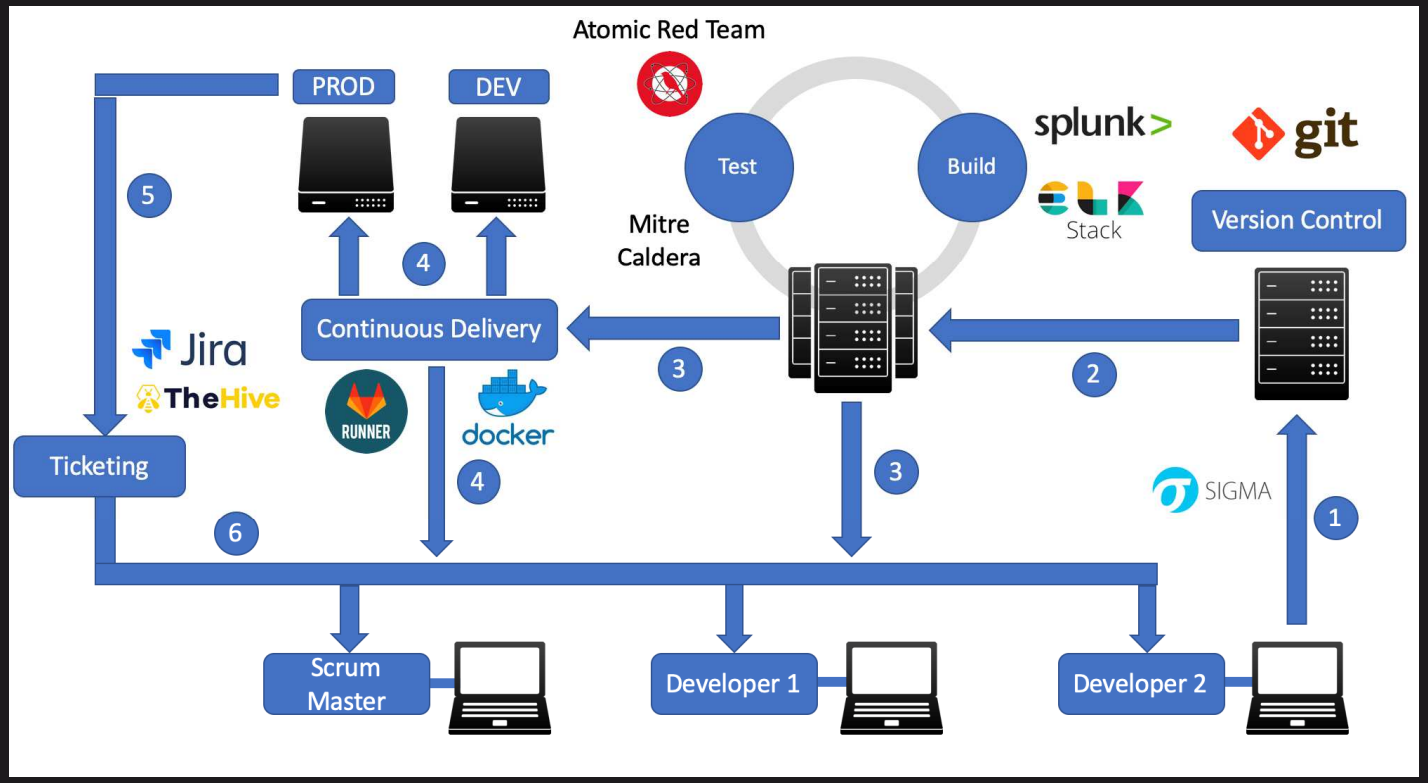
DevOps Pipline





INTRODUCTION DEVOPS AND DEVSECOPS

DEVSECOPS PIPELINE IS COMPLETED

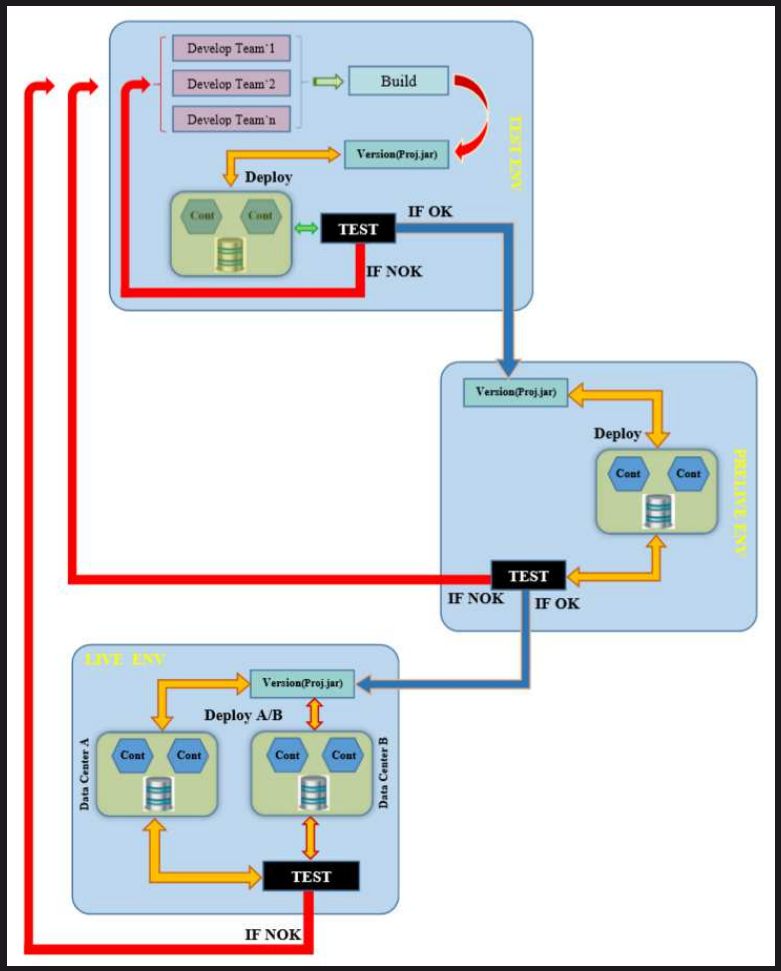


INTRODUCTION DEVOPS AND DEVSECOPS

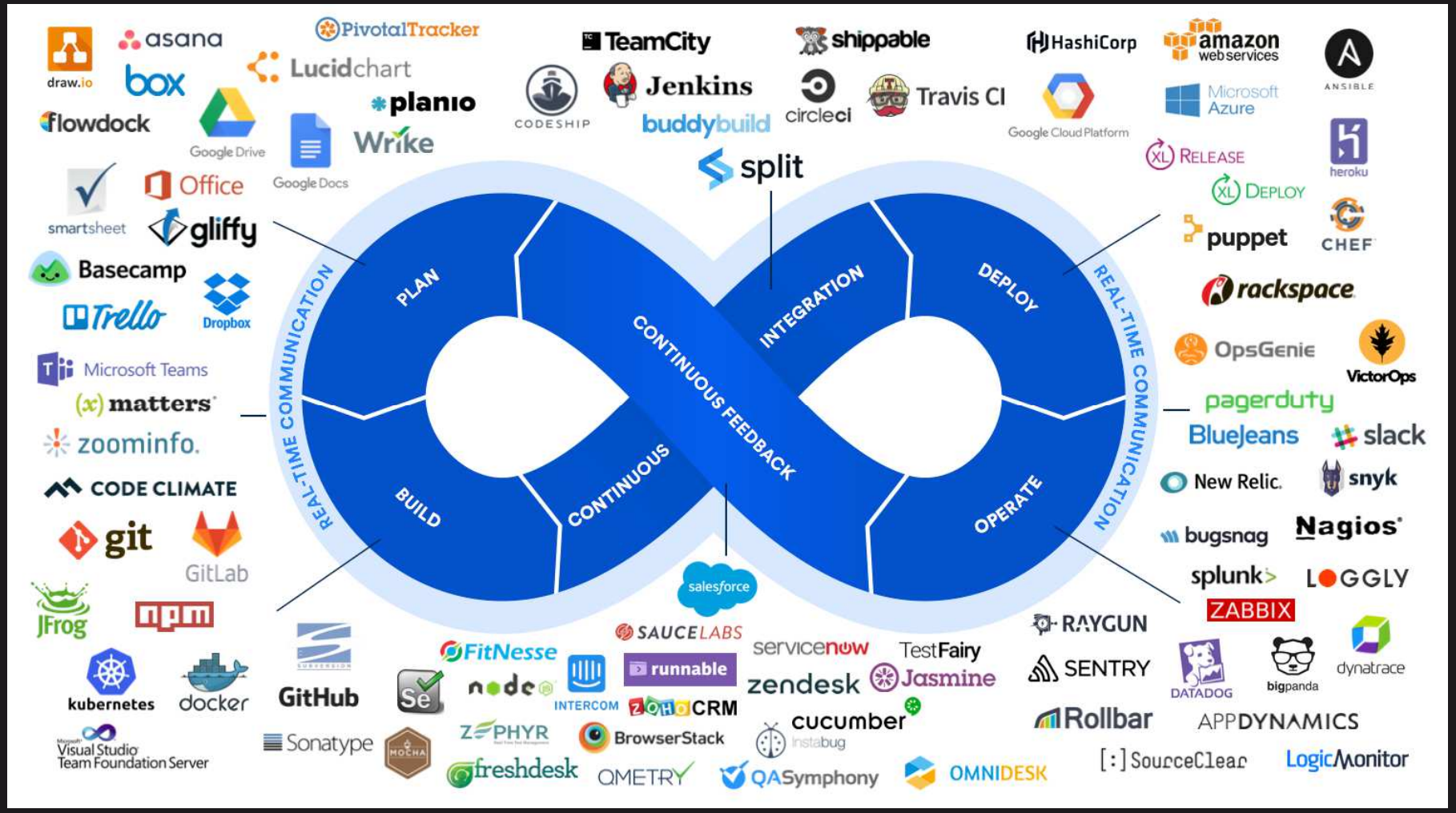
Building Application Deployment Pipelines and Environments

Environment :

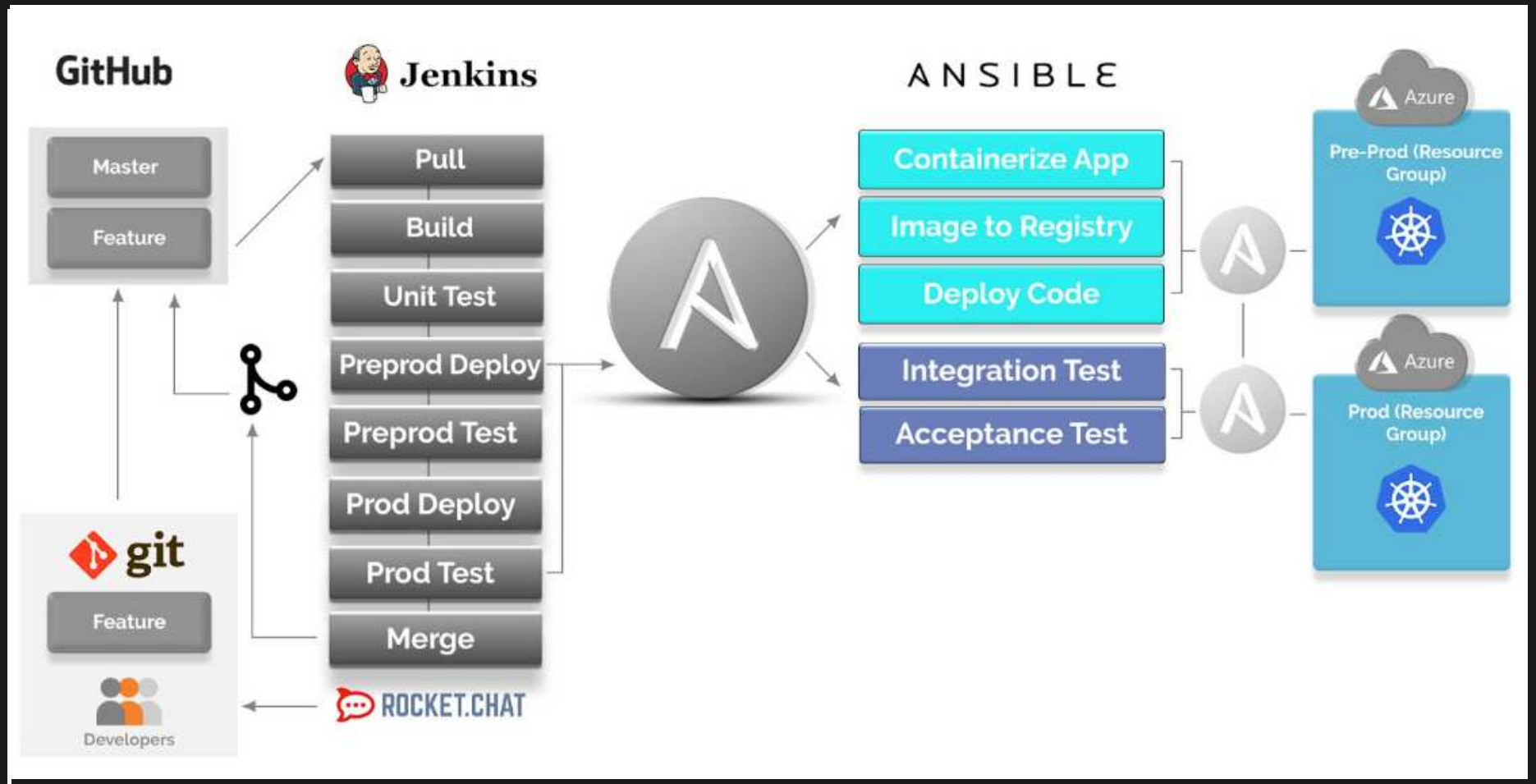
- Test Env
- Prelive Env
- Live Env



DEVOPS ENGINEER TOOLS



CONFIGURATION MANAGEMENT ROLE IN CI/CD ARCHITECTURE



CONFIGURATION MANAGEMENT AND ORCHESTRATION ROLES IN DEVOPS

Configuration Management in DevOps is

coined as "comprehensive configuration management" and is made up of

1- Source Code Repository : only Development phase

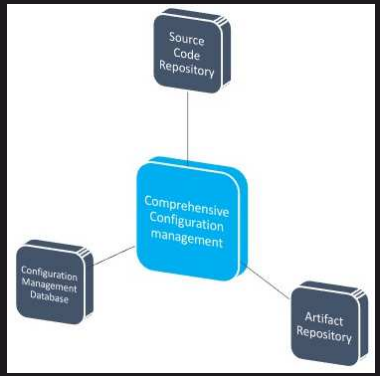
the source code repository is a database of source code which developers use.

This database serves as :

A container for all the working code

Source code aside

It stores a number of useful components including various scripts and configuration files.



2- Artifact Repository : Development and Operation phase

An artifact repository is meant to store machine files.

This can include :

binaries files

test data files

libraries files . Effectively, it’s a database for files that people don’t generally use.

3- Configuration Management Database : Development and Operation phase

configuration management database or (CMDB) is a relational database multiple systems and applications related to configuration management

including services, servers, applications, and databases to name a few.

INFRASTRUCTURE ENVIRONMENT AS A CODE TO MARKET

Results of Properly Managed Configurations

1- Infrastructure-as-a-Code : (Install)

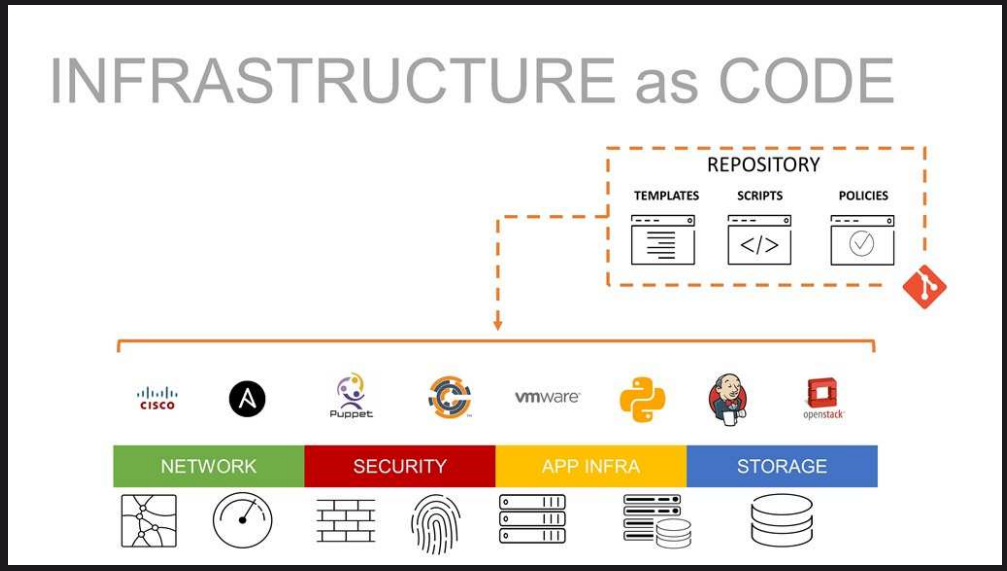
Automatically Create Environments and Infrastructures

Include :

servers , networks of configurations and other resources.

For Example :

Install and Configure Kubernetes Cluster with Configuration Management



INFRASTRUCTURE ENVIRONMENT AS A CODE TO MARKET

Results of Properly Managed Configurations

2- Configuration-as-a-Code : (Change and Deployment Configuration)

Automatically Change management and Central Configuration and Delpoyment Application

Include :

servers , networks of configurations and other resources.

For Example :

CI/CD

INFRASTRUCTURE ENVIRONMENT AS A CODE TO MARKET

Results of Properly Managed Configurations

3- Benefits of IaaC and CaaC

- Automation of the infrastructure environment provides standardization
- Setups are free of human error
- Collaboration is enhanced between operations and development
- Makes infrastructure more flexible, ready to scale
- Each step is consistent across all resources
- Version control is a given

INTRODUCTION TO ANSIBLE

ANSIBLE IS IT AUTOMATION PLATFORM THAT MAKES YOUR APPLICATIONS AND SYSTEMS EASIER TO DEPLOY.

IT SUPPORT CONFIGURATION MANAGEMENT WITH EXAMPLES AS BELOW.

- INSTALL AND CONFIGURATION OF SERVERS
- APPLICATION DEPLOYMENT
- CONTINUOUS TESTING OF ALREADY INSTALL APPLICATION
- ORCHESTRATION
- AUTOMATION OF TASKS

WHY ANSIBLE

Ansible Configuration Management For Automation :

- It is a free open source application
- Agent-less – No need for agent installation and management
- Phython/yaml based
- Highly flexible and configuration management of systems.
- Large number of ready to use modules for system management
- Custom modules can be added if needed
- Configuration roll-back in case of error
- Simple and human readable
- Self documenting

WHY AUTOMATION?

- Tasks in code
- Collaboration
- Eliminate errors
- Write once
- Laziness
- Etc….

ANSIBLE VS. OTHER CM TOOLS

The Best DevOps tools for 2019

- ✓ **Configuration Management Tools :**
  - ❑ **CFEngine**
  - ❑ **Puppet :** master-slave architecture.
  - ❑ **CHEF**
  - ❑ **Ansible**
  - ❑ **Salt**

LPI Exam 701: DevOps Tools Engineer

Topic 704: Configuration Management

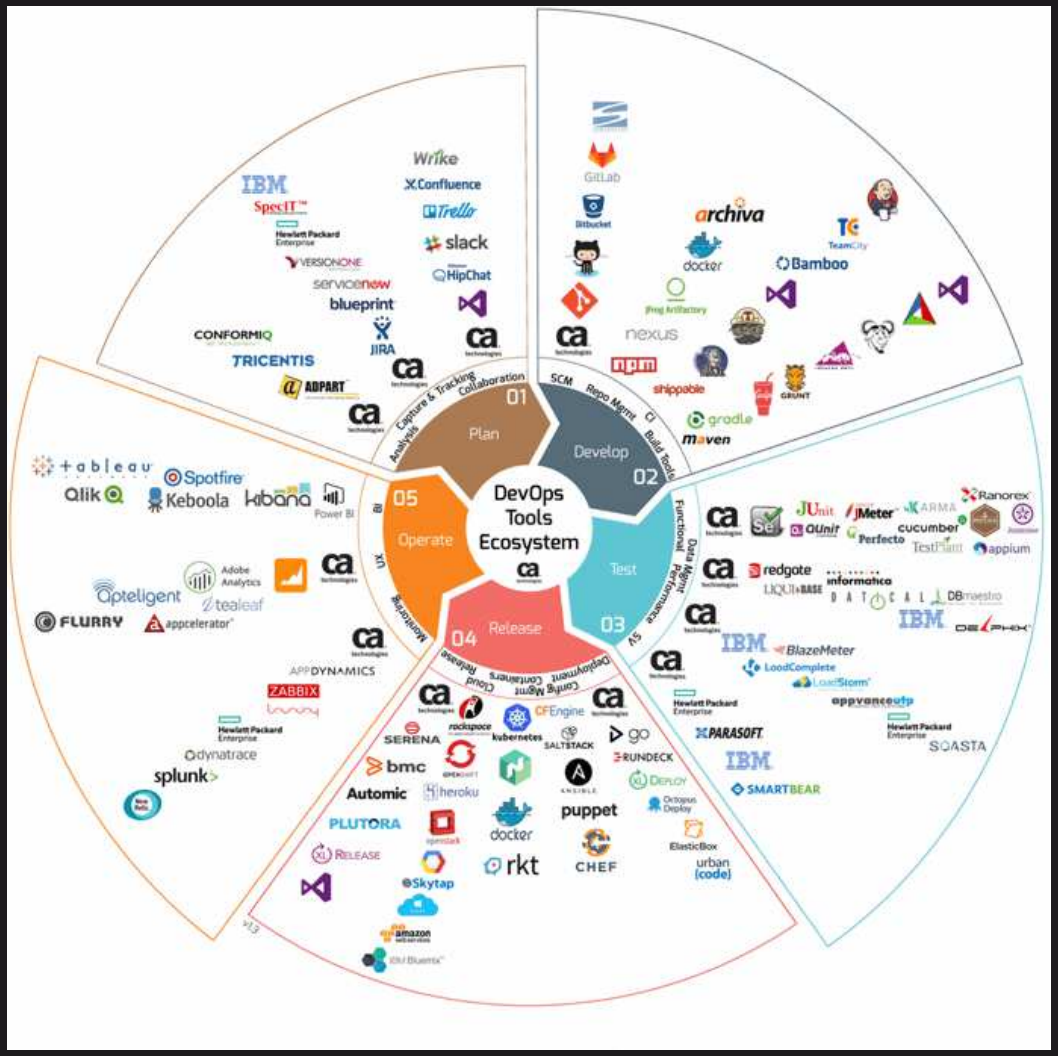
Ansible : ansible.cfg , ansible-playbook , ansible-vault , ansible-galaxy , ansible-doc

Other Configuration Management Tools :

CHEF , Puppet

	Language	License	Mutual auth	Encrypts	Verify mode	Agent-less	Have a GUI	First release	Latest stable release
Ansible	Python	GPLv3+	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	2012-03-08	2018-12-13 2.7.5[4][5][6]
Chef	Ruby, Erlang	Apache 2.0	Yes[14]	Yes[15]	Yes[16][17]	No	Yes	2009-01-15 0.5.0	2019-01-28 14.10.9 (client),[18] 2018-02-13 12.17.33 (server)[19]
CFEngine	C[20]	GPLv3[21]	Yes[1]	Yes[22]	Yes[23][24]	No	Yes[25]	1993	2019-07-01 3.14.0,[26] 2019-05-20 3.12.2,[27] 2019-05-10 3.10.6[28]
Puppet	C++ & Clojure from 4.0,[45] Ruby before then	Apache from 2.7.0, GPL before then	Yes[46]	Yes[9]	Yes[47][48]	No	Yes[49]	2005-08-30[50]	2019-01-15 6.0.5[51]
Salt[72]	Python[73]	Apache 2.0[74]	Yes[75]	Yes[75]	Yes	Both[76][77]	Yes[78][79]	2011-03-17 0.6.0[80]	2019-02-25 v2019.2.0[81]

ANSIBLE IN DEVOPS



INTRODUCTION TO YAML

YAML includes a markup language with important construct

The Design Goals and features of YAML are given below :

- Matches native data structures languages such as Perl, Python, PHP, Ruby and JavaScript
- YAML data is portable between programming languages
- Includes data consistent data model
- Easily readable by humans
- Supports one-direction processing
- Ease of implementation and usage