



# DevOps Plus Training

# About Cognixia

Cognixia- A Digital Workforce Solutions Company is dedicated to delivering exceptional trainings and certifications in digital technologies. Founded in 2014, we provide interactive, customized training courses to individuals and organizations alike, and have served more than 130,000 professionals across 45 countries worldwide.

Our team of more than 7000 industry experts facilitate more than 450 comprehensive digital technologies courses, along with state-of-the-art infrastructure, to deliver the best learning experience for everyone. Our comprehensive series of instructor-led online trainings, classroom trainings and on-demand self-paced online trainings cover a wide array of specialty areas, including all of the following:

- IoT
- Big Data
- Cloud Computing
- Cyber Security
- Machine Learning
- AI & Deep Learning
- Blockchain Technologies
- DevOps

Cognixia is ranked amongst the top five emerging technologies training companies by various prestigious bodies. We're also RedHat Enterprise Partner, Microsoft Silver Learning Partner and an authorized training partner for ITIL, Automation Anywhere and ISC2.





# OUR AWARDS & AFFILIATIONS



# AUTHORIZED TRAINING PARTNERS FOR



**Red Hat**



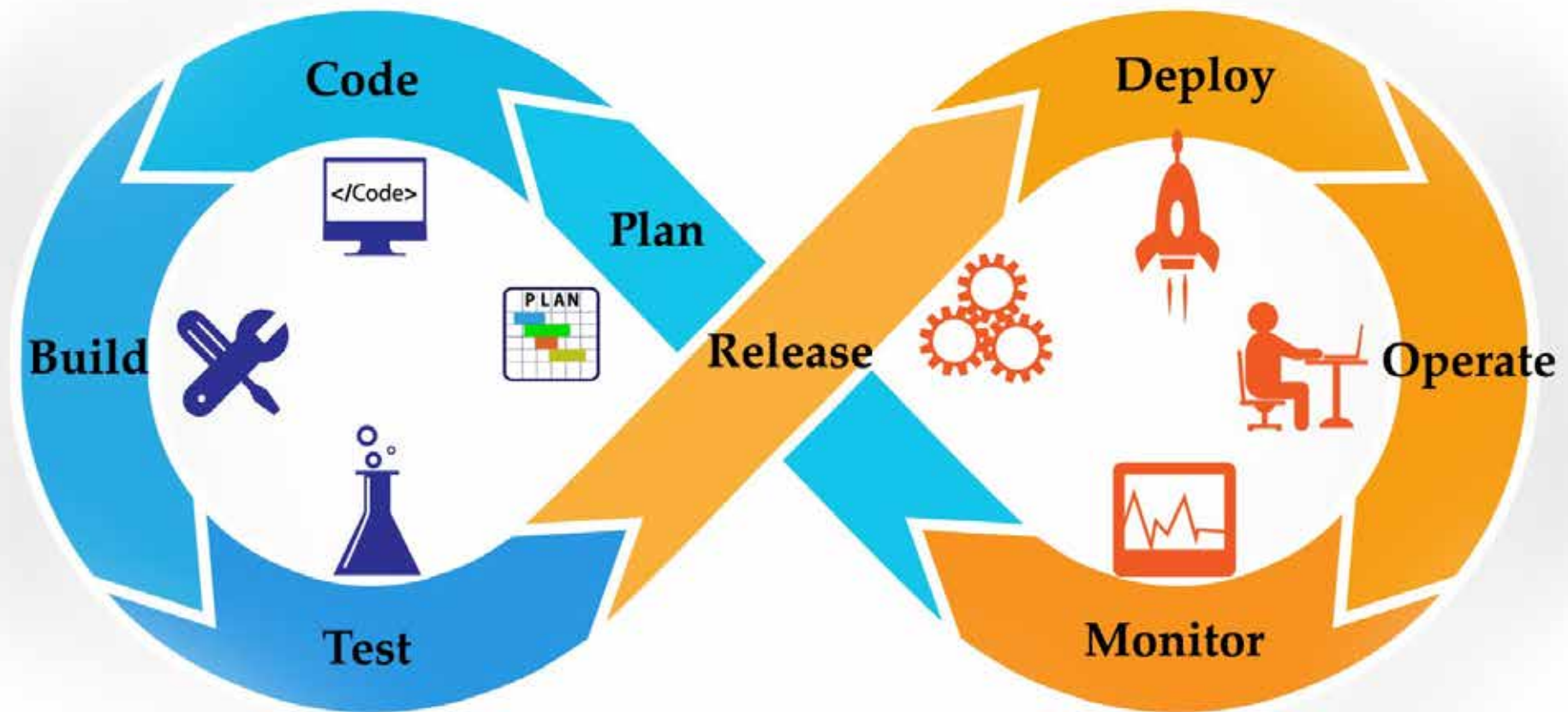
Silver  
**Microsoft  
Partner**



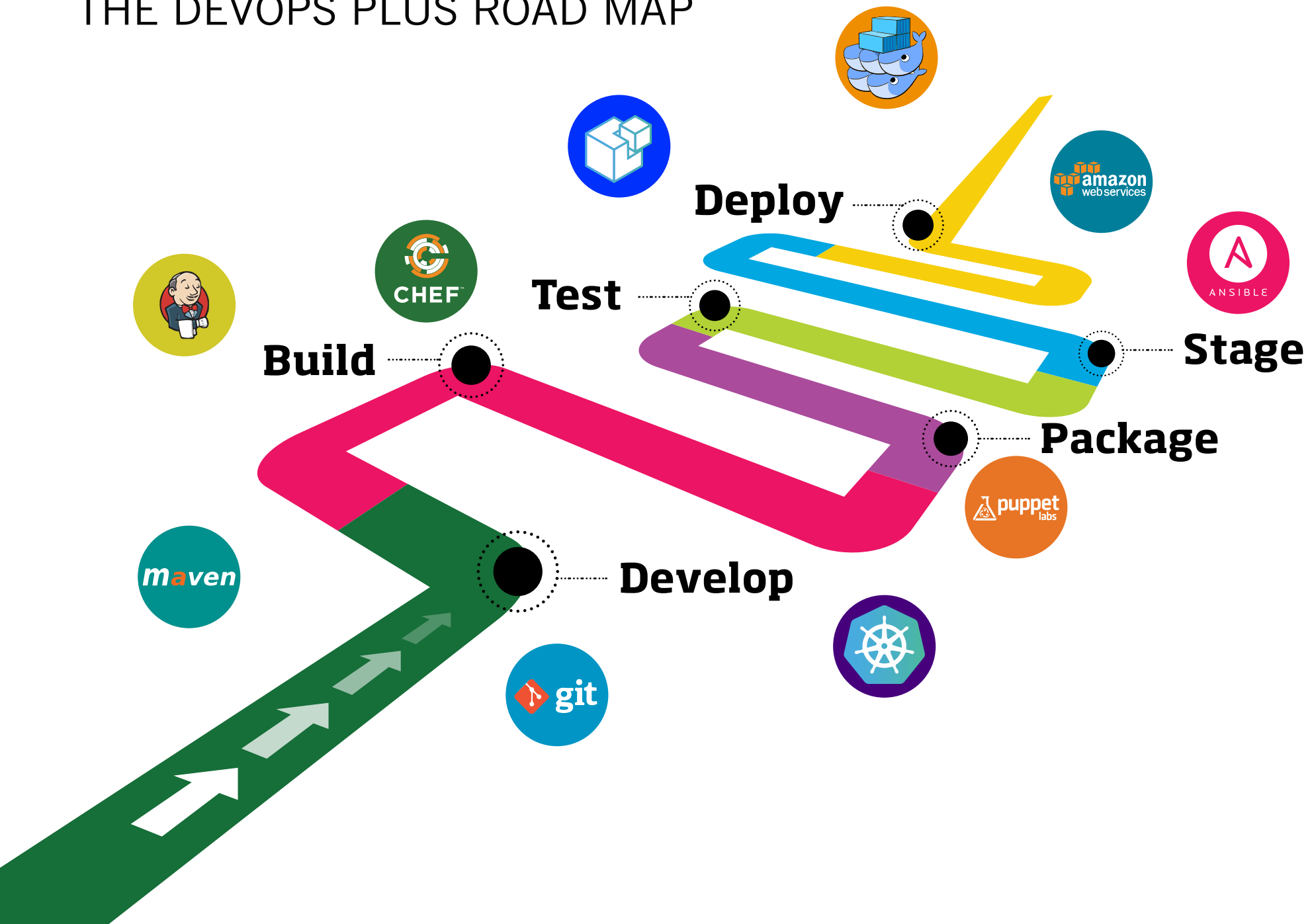
# THE WORLD OF DEVOPS

DevOps is a practice combining the Development Operations and the System Operations. "DevOps" as a term was first coined in 2009 by Patrick Debois, who became one of the chief proponents for DevOps. DevOps brings together software development and operations, amalgamating the two disciplines, encouraging communication, collaboration and cohesion between the traditionally separate developers and IT operations teams.

The DevOps methodology recognizes the interdependence of the development group and operations group and integrates it into one department/team, thereby helping an organization deploy software a lot more frequently while also maintaining service stability as well as gaining the pace required to breed innovation.



# THE DEVOPS PLUS ROAD MAP





# WHO SHOULD STUDY DEVOPS?

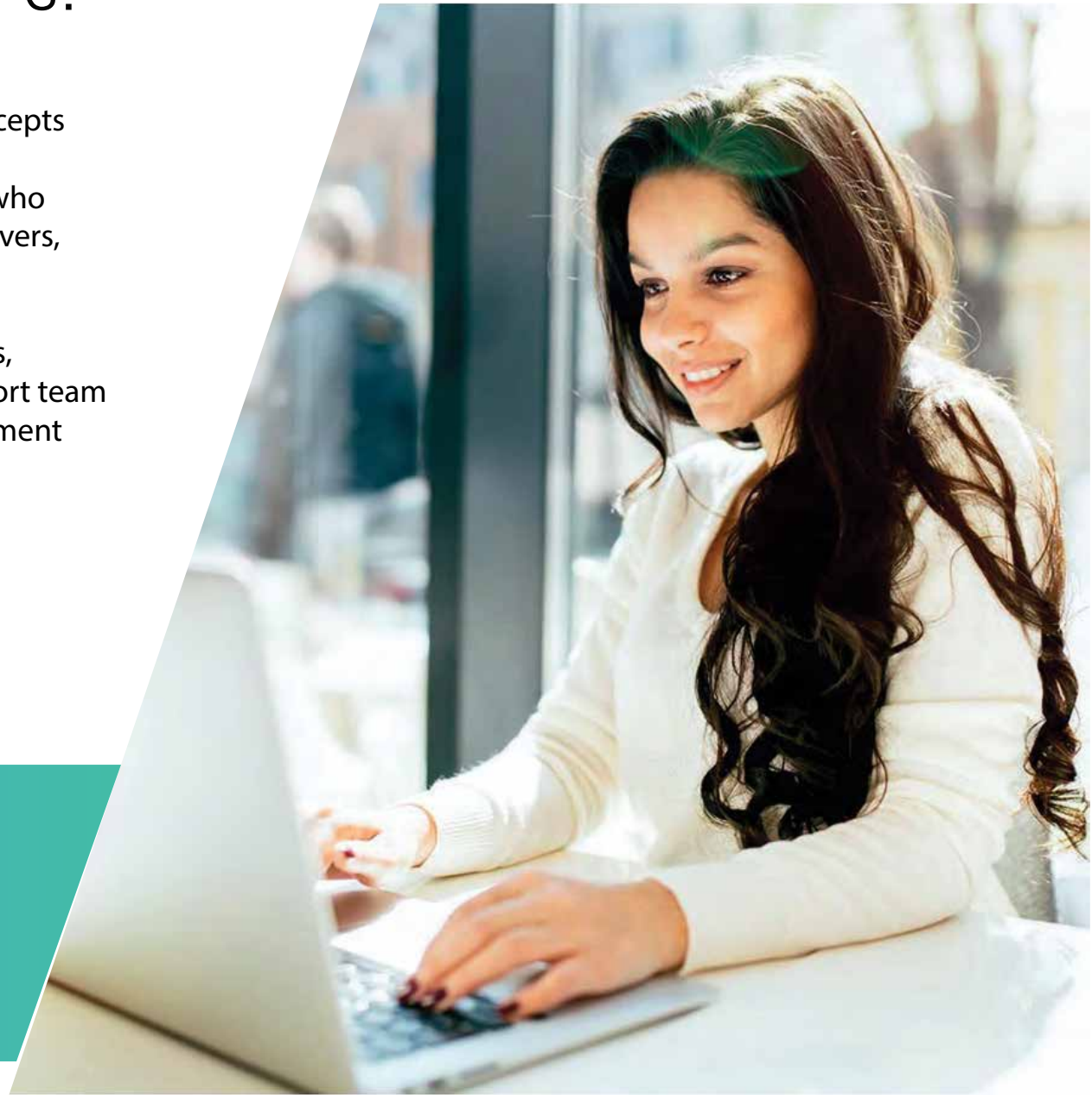
DevOps is for anybody who wants to grasp how the concepts of DevOps can help an organization focus on value and streamline the delivery process. It is also for individuals who are keen to learn more about common infrastructure servers, scalability and availability.

Learning DevOps would be ideal for software developers, technical project managers, architects, Operations support team members, deployment engineers, IT managers, development managers, etc.

By getting trained in DevOps one would be much better placed to build a career as a DevOps engineer or a service engineer in the enterprise infrastructure arena.

## ELIGIBILITY/ PRE-REQUISITES

- Knowledge of software development, preferably in Java, and the UNIX/Linux command line tools is essential for this

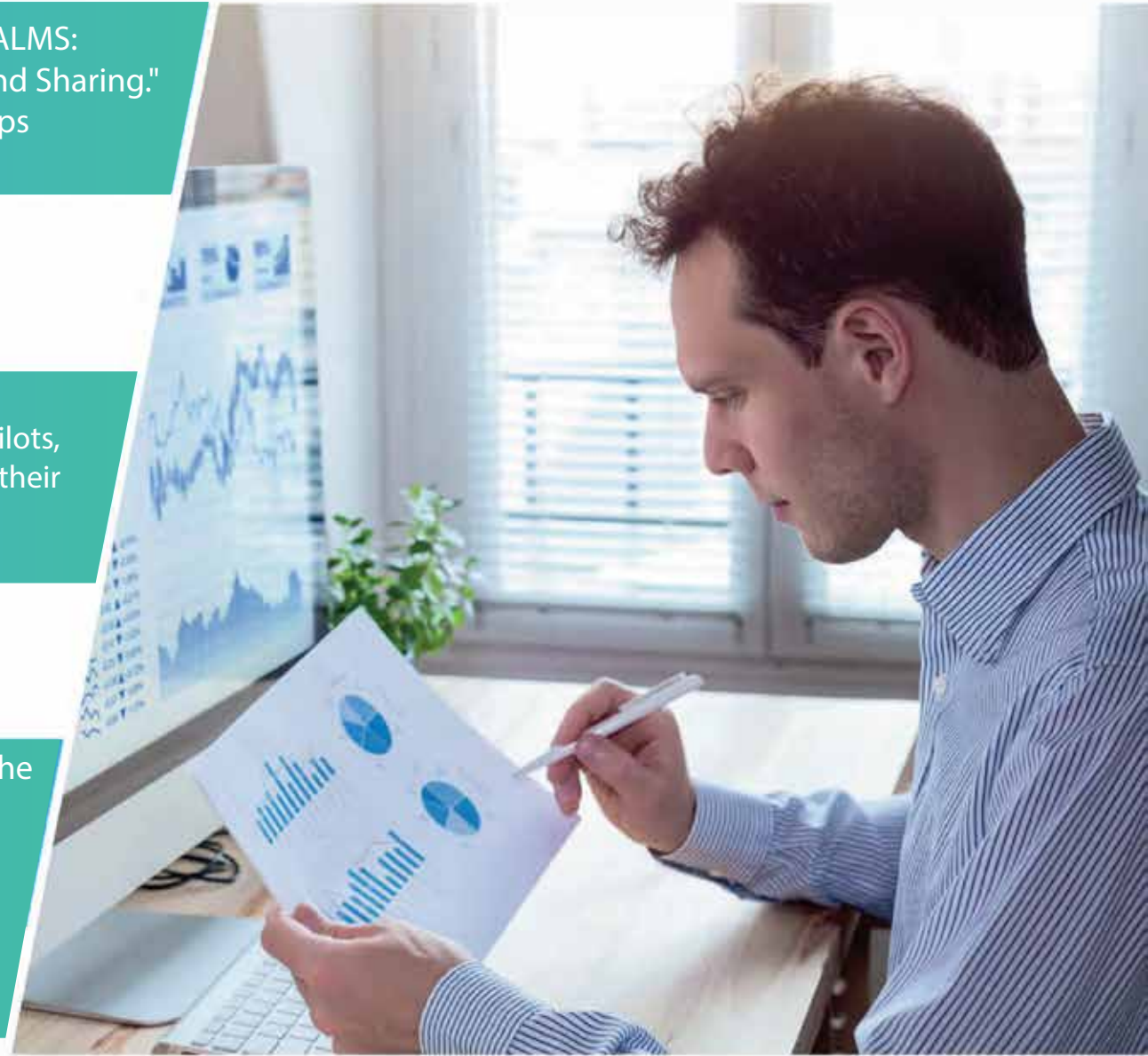


# DEVOPS TRENDS & INDUSTRY VIEW

"When we talk about what DevOps is, it is CALMS: Culture, Automation, Lean, Measurement, and Sharing."  
- Nicole Forsgren, CEO of Consultancy DevOps Research and Assessment

"Although many organizations are in the experimentation stage with single or multiple pilots, they all are transitioning toward DevOps across their entire enterprise."  
- Forrester

"We need to understand how this effort and the investment we're making in DevOps transformations is actually improving the bottom line of our business, and the way you do that is by looking at the data."  
- Tim Buntel, Vice President of Products at XebiaLabs





# DEVOPS PLUS PROGRAM STRUCTURE



Total 36 hours spread  
over 12 days  
(3 hours per day) of  
live online training  
with industry experts



POC support and  
hands-on assignments  
to gain an in-depth  
understanding



# DETAILED CURRICULUM : MODULES

## **Introduction to Devops**

- Define Devops
- What is Devops
- SDLC models, Lean, ITIL, Agile
- Why Devops?
- History of Devops
- Devops stakeholders
- Devops goals
- Important terminology
- Devops perspective
- Devops and Agile
- Devops tools
- Configuration management
- Continuous integration and deployment

## **GIT: Version Control**

- Introduction
- Version control systems
- Local, Centralized and distributed
- Installing Git
- Installing on Linux
- Installing on Windows
- Initial setup
- Git essentials
- Creating a repository
- Cloning, checking-in and committing
- Fetch, pull and remote
- Branching

## **Maven**

- Overview
- Environment Setup
- POM
- Build Life Cycle
- Build Profiles
- Repositories
- Plug-ins
- Creating Project
- Build & Test Project
- External Dependencies
- Build Automation
- Manage Dependencies
- Deployment Automation
- Web Application
- Eclipse IDE
- Maven Plugin in Jenkins

## **Docker – Containers**

- Overview
- Introduction
- What is a Docker
- Use case of Docker
- Platforms for Docker
- Dockers vs Virtualization
- Architecture
- Docker Architecture
- Important Docker components

# DETAILED CURRICULUM : MODULES

- Overview
- Understanding the Docker components
- Installation
- Installing Docker on Linux.
- Understanding Installation of Docker on Windows.
- Some Docker commands.
- Provisioning
- Docker Hub.
- Downloading Docker images.
- Running Docker images
- Running commands in container.
- Running multiple containers.
- Custom images
- Creating a custom image.
- Running a container from the custom image.
- Publishing the custom image.
- Docker Networking
- Accessing containers
- Linking containers
- Exposing container ports
- Container Routing
- Docker Compose

## **Puppet for configuration management**

- What is Puppet?
- How puppet works
- Puppet Architecture
- Master and Agents

- Configuration Language
- Resource Abstraction Layer
- Transactional Layer
- Installation and Configuration
- Installing Puppet
- Configuring Puppet Master and Agent
- Connecting Agents
- Puppet Master
- Puppet configuration tree
- Puppet configuration files
- Puppet Language Basics
- The declarative language
- Resources
- Resource Collectors
- Virtual Resources
- Exported Resources
- Manifests
- Relationships and Ordering
- Modules and Classes
- Class Parameters
- Defined Types
- Puppet Language Advanced
- Facter
- Variables
- Conditional statement
- If Else
- Case and Selectors
- More Conditionals and Logic
- Resource relationship
- Templates



# DETAILED CURRICULUM : MODULES

## **Ansible**

- Introduction to Ansible
- Ansible architecture
- Ansible terminology
- Ansible commands
- Adding nodes to server
- Ansible installation and configuration
- Installing ssh on nodes
- Generating the keys
- Components of Ansible
- Inventory
- Configuration
- Modules
- Playbooks
- Global configuration
- Roles
- Tags
- Writing playbooks
- Ansible modules
- Ansible Roles
- Ansible Galaxy
- Download playbooks from Galaxy
- Realtime playbooks

## **Nagios: Monitoring**

- Introduction and Installation
- Obtaining Nagios
- Compiling and installing Nagios

- Basic configuration
- Creating a new host and service
- Creating a new e-mail contact
- Verifying configuration
- Creating a host group and service group
- Creating a new contact group
- Creating a new time period
- Plugins and commands
- Finding and installation of a Plugin
- Removing a plugin
- Creating a new command
- Customizing commands
- Using Nagios GUI
- Scheduling downtimes
- Generating reports
- Configuring notification
- Configuring checks
- Managing Flapping
- NRPE Monitoring
- Enabling Remote Execution
- Monitoring local services on a remote machine with NRPE
- Setting the listening address for NRPE
- Creating new NRPE command definitions securely
- Creating a custom NRPE script.

## **Jenkins – Continuous Integration**

- Introduction.
- Understanding continuous integration
- Introduction about Jenkins

# DETAILED CURRICULUM : MODULES

- Build Cycle
- Jenkins Architecture
- Installation
- Obtaining and installing Jenkins
- Installing and configuring GIT
- Java installation and configuration
- Maven Installation
- Exploring Jenkins Dashboard.
- Creating Jobs
- Running the Jobs
- Adding and updating Plugins
- Disabling and deleting jobs
- Build Deployments
- Understanding Deployment.
- Tomcat installation and configuration
- Deployment Plugins
- Deploying a war file from Jenkins to Tomcat
- Securing Jenkins
- How to integrate Jenkins with Ant
- How to integrate Jenkins with Maven
- Authentication
- Jenkins Plugin
- Authorization
- Confidentiality
- Creating users
- Best Practices for Jenkins
- Jenkins Parameterized build
- Environment inject plugin

- Use of Jenkins environment variables
- Deploying a specific revision
- Customizing the Jenkins UI
- Project based Matrix plugin
- Parallel Execution
- Configuring Jenkins Hub and Node
- in the cloud (AWS)
- Configuring a Selenium Desktop node
- with a Linux Server (AWS)
- Case Study
- Real time implementation of Automated role back
- Multi branch Deployment.

## **Docker Container Clustering using Docker Swarm**

- Need for Clustering
- Setting up & Initializing Swarm
- Managing Docker Swarm
- Backup and Recovery
- Managing Services
- Docker Compose & Deploying Application
- Stack on Docker Swarm

## **Docker Container Clustering using Kubernetes**

- Introduction
- Kubernetes Ecosystem: Community, Contributions,
- Governance, and Integrations
- Kubernetes Architecture

# DETAILED CURRICULUM : MODULES

- Kubernetes Networking & Services
- Kubernetes Users Tools
- Configuring and Deploying an Application on Kubernetes

## **Advanced DevOps (CI/CD Pipeline Automation)**

- Jenkins Blue Ocean
- Pipeline as Code
- End-to-End CI/CD Pipeline Automation
- Automated deployment of code from repository to server with configuration management

# DEVOPS CASE STUDY

## **CAPSTONE PROJECT**

You have been Hired Sr. DevOps Engineer in Abode Software. They want to implement DevOps Lifecycle in their company. You have been asked to implement this lifecycle as fast as possible.

ABC Software's is a product-based company

Following are the specifications of the lifecycle:

1. Git Workflow has to be implemented
2. Code Build should automatically be triggered once commit is made to master branch or develop branch.
  - a. If commit is made to master branch, test and push to prod
  - b. If commit is made to develop branch, just test the product, do not push to prod



3. The Code should be containerized with the help of a Dockerfile. The Dockerfile should be built every time there is a push to Git-Hub. Use the following pre-built container for your application:

- a. The code should reside in '/var/www/html'

4. Once the website is built, you have to design a test-case, which will basically check if the website can be opened or not. If yes, the test should pass. This test has to run in headless mode, on the test server.

5. The above tasks should be defined in a Jenkins Pipeline, with the following Jobs Job

- a. Job 1 - Building Website
- b. Job 2 - Testing Website
- c. Job 3 - Push to Production

6. Since you are setting up the server for the first time, ensure the following file exists on both Test and Prod server in /home/ubuntu/config-management/status.txt. This file will be used by a third-party tool. This should basically have the info whether apache is installed on the system or not.

- a. The content of this file should be based on whether git is installed or not.
- b. If apache is installed => "Apache is Installed on this System"
- c. If apache is not installed => "Apache is not installed on this System"

7. Create a Monitoring Service for the website on the Production server Architectural Advice:

- a. Create 3 servers on AWS "t2.micro"
- b. Server 1 - should have Jenkins Master, Puppet Master and Nagios Installed
- c. Server 2 - Testing Server, Jenkins Slave
- d. Server 3 - Prod Server, Jenkins Slave

# COGNIXIA's KEY DIFFERENTIATORS



LIFETIME LMS ACCESS



24 x 7 SUPPORT



REAL-LIFE PROJECTS & CASE STUDIES



INDUSTRY EXPERTS AS TRAINERS



INDUSTRY STANDARD CERTIFICATE



# POTENTIAL CAREER OPTIONS

DevOps ENGINEER

DevOps ARCHITECT

ASSOCIATE DEVELOPER – DevOps

BUILD & RELEASE ENGINEER

CI/CD – RELEASE AUTOMATION ENGINEER





# TESTIMONIALS



**RAGHAV SINGH, BANGALORE, India**

*This course is very comprehensive. It covers both foundational as well as advanced concepts. I was able to grasp a number of concepts that focus on value and enhanced the overall delivery process.*



**AJINKYA KULKARNI, PUNE, India**

*Both the training and the technical teams were quite helpful and courteous. The course curriculum is also very informative.*



**HARSHIT KALMADY, CHENNAI, India**

*Excellent training with an all-inclusive curriculum. Would highly recommend it to my peers and other technology enthusiasts.*



**JOSH BLAINE, United States**

*It is one of the most wholesome courses on DevOps. It covers most of the cutting-edge tools and applications. The trainers are very professional and the support team was also very helpful.*



**JOE MARTIN, Australia**

*The DevOps Plus training offered by Cognixia is apt not only for beginners but also experienced professionals who want to make a transition from traditional methodologies to DevOps. The training and technical teams did a commendable job in providing prompt support.*

# DevOps Plus Training



To learn more visit  
<https://www.cognixia.com/>