Introduction to DevOps

WEEK 4-3

Today

What is DevOps

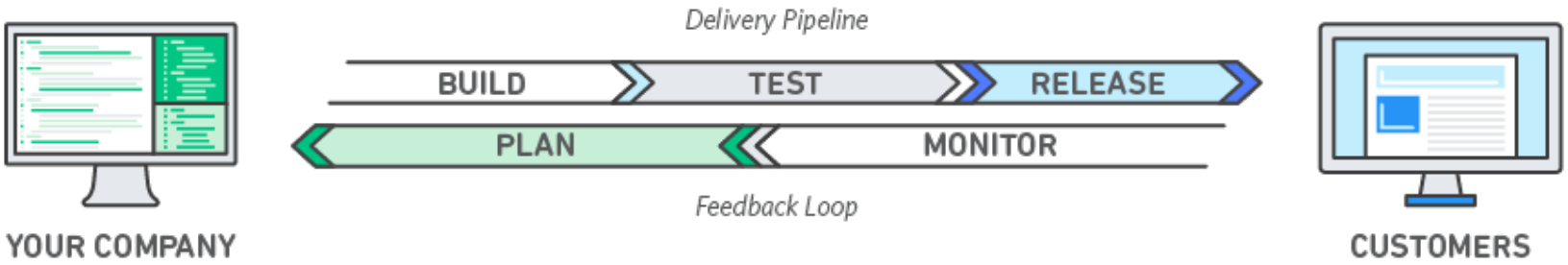
Benefits of DevOps

DevOps Practices

(Materials taken from: https://aws.amazon.com/devops/what-is-devops/)

What is DevOps

DevOps is the combination of cultural philosophies, practices, and tools that increases an organization's ability to deliver applications and services at high velocity



DevOps Culture 1/2

Development and operations teams are no longer siloed

Engineers work across the entire application lifecycle

- from development and test
- to deployment
- to operations

DevOps Culture 2/2

Team members develop a range of skills not limited to a single function

Quality assurance and security teams also become more tightly integrated with development and operations

Benefits of DevOps 1/2

Speed	(Micorservices + Continuous Delivery)
Rapid Delivery	(Continuous Integration + Continuous Delivery)
Reliability	(Monitoring and Logging Practices)

Benefits of DevOps 2/2

Scale	(Automation + Infrastructure as Code)
Improved Collaboration	(Ownership + Accountability)
Security	(Policy as Code)

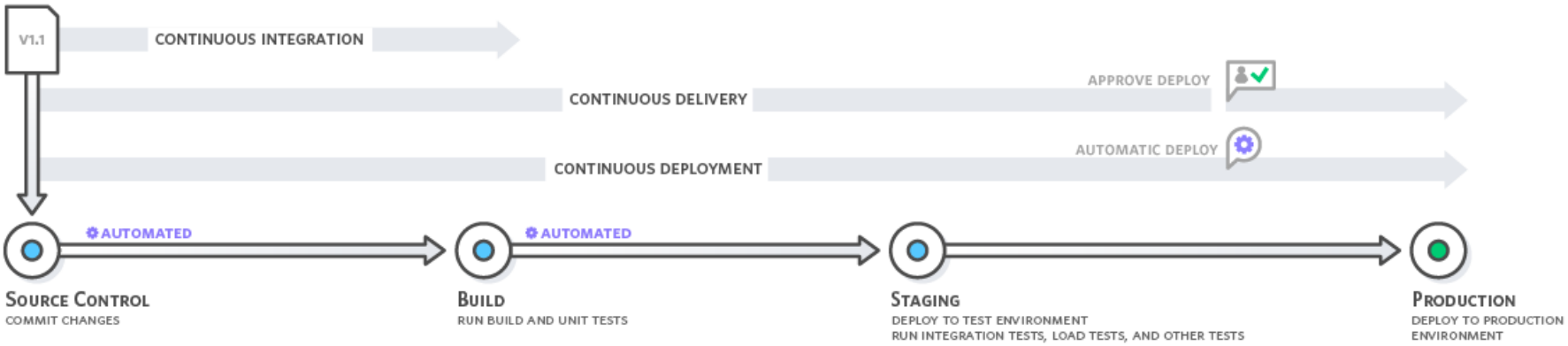
DevOps Practices

One fundamental DevOps practice is to perform very frequent but small updates

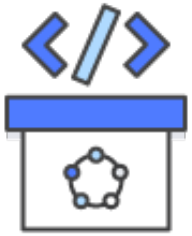
In the following slides, we will discuss some of the other key practices

Continuous Integration

A practice where developers regularly merge their code changes into a central repository, after which automated builds and tests are run

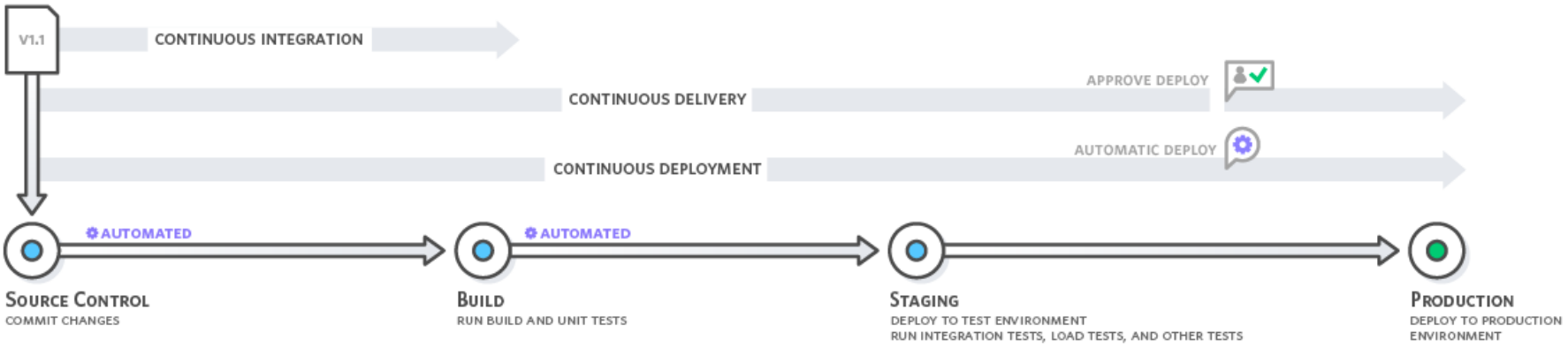


Continuous Delivery



Practice where code changes are automatically built, tested, and prepared for a release to production

It expands upon continuous integration by deploying all code changes to a testing environment and/or a production environment after the build stage



Microservices

A design approach to build a single application as a set of small services

Each service runs in its own process and communicates with other services through a well-defined interface using a lightweight mechanism (typically HTTP)

More on this when we discuss Service-Oriented Architecture

Infrastructure as Code

A practice in which infrastructure is provisioned and managed using code and software development techniques, such as version control and continuous integration

Tools used: Chef, Puppet, and Ansible are the popular ones

A few more …

Policy as Code

Monitoring and Logging

Communication and Collaboration

Next …

Concepts

- Continuous Integration and Continuous Delivery (Monday)
- Publish-Subscribe (Thursday)

Things Due

- Assignment 5 (Today by 11:55 pm)
- Assignment 6 (Monday by 11:55 pm)
- **Exam 1 (In-Class Exam on Tuesday)**