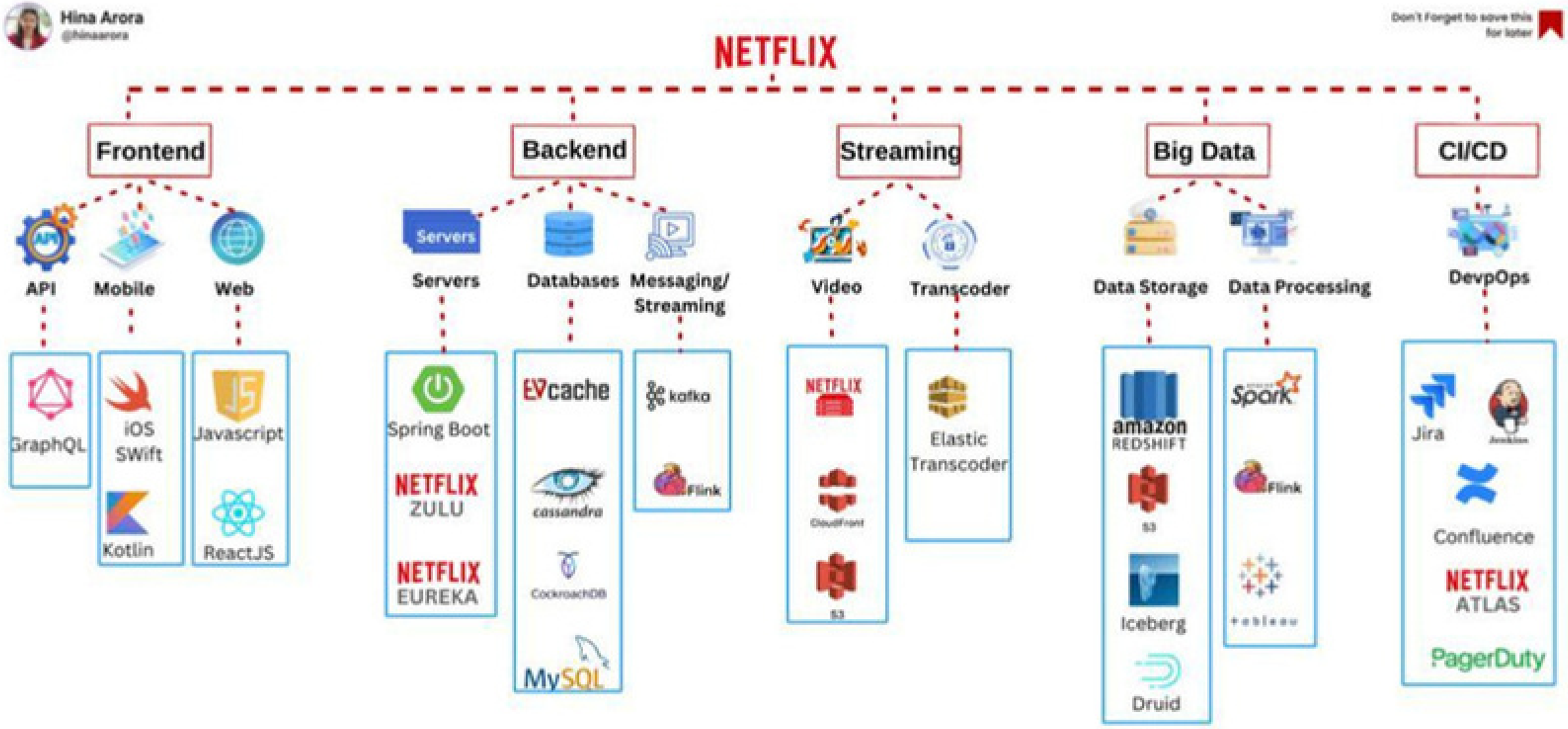
DevOps

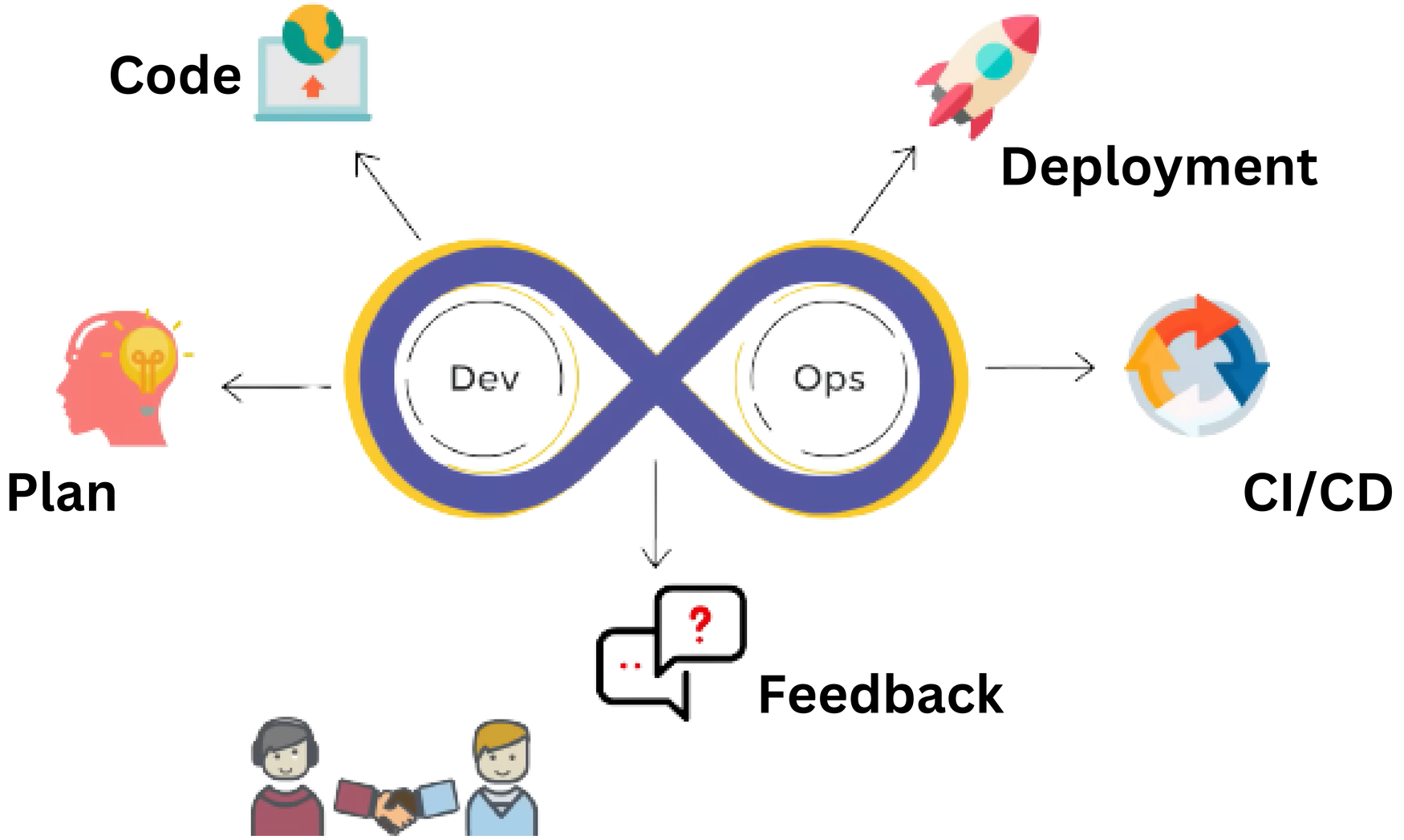
The NETFLIX Usecase



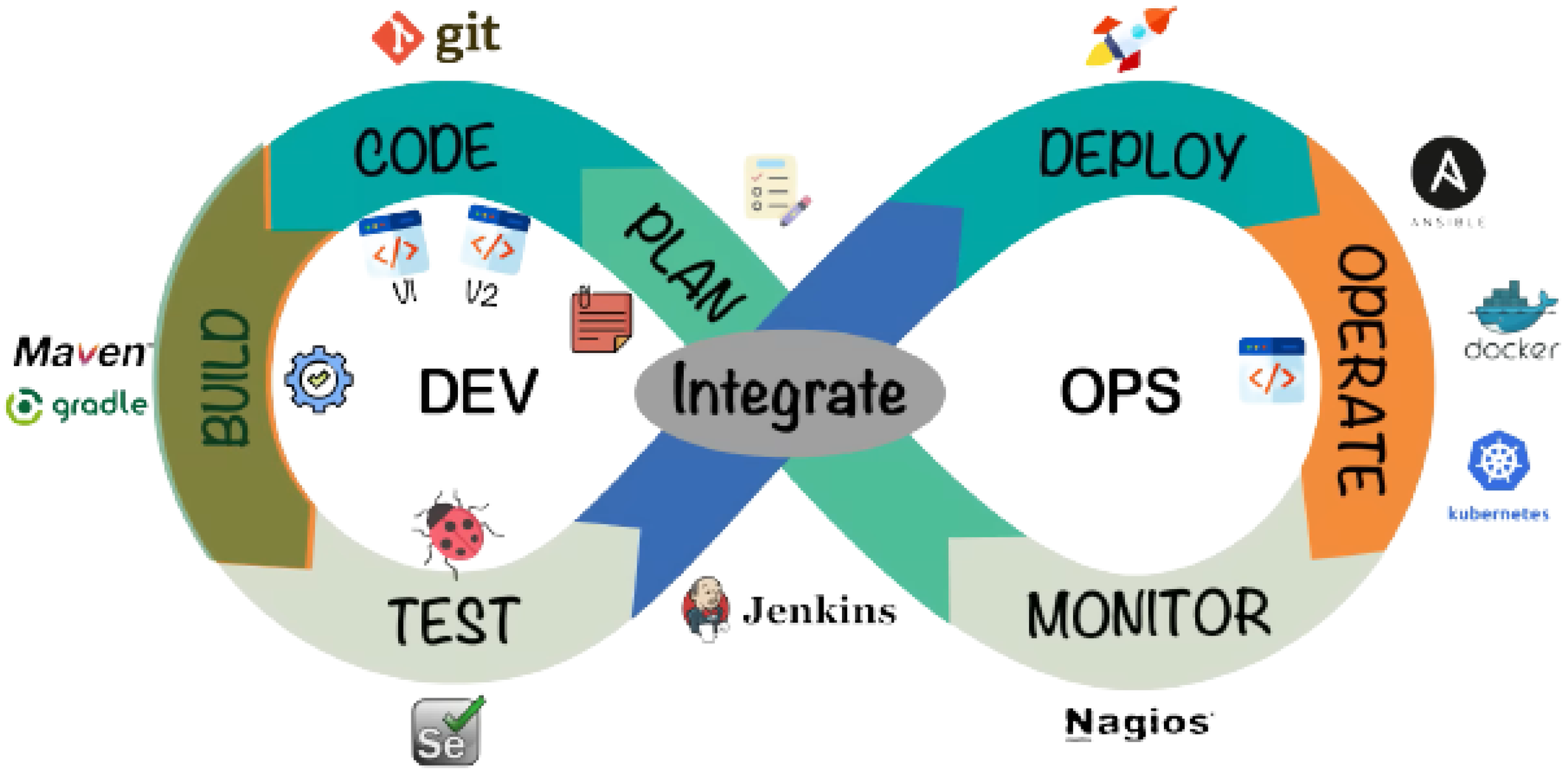
Before DevOps

This undoubtedly extended timelines and delayed the entire software development cycle

The DevOps Culture

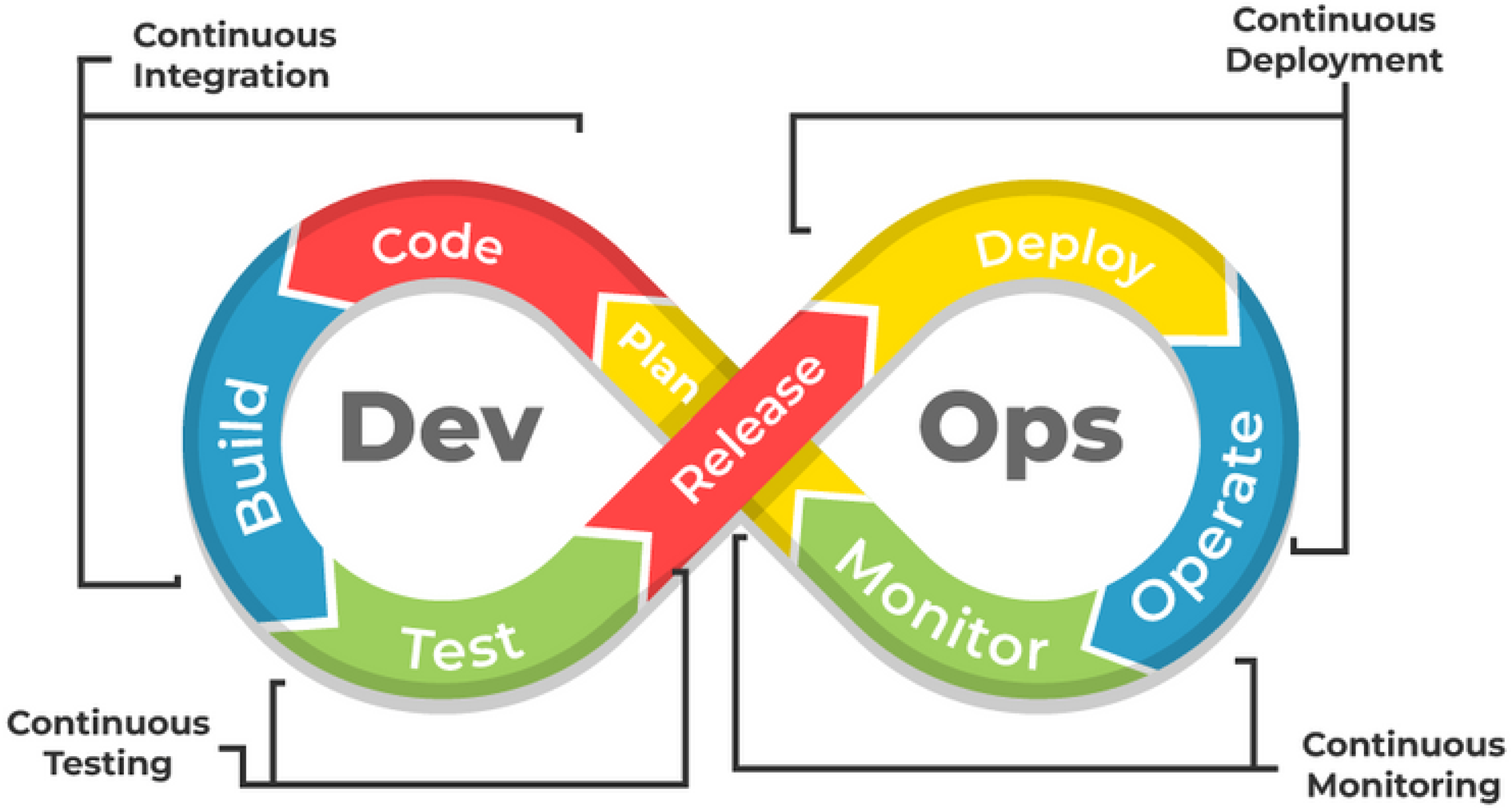


The DevOps culture is implemented in several phases with the help of several tools

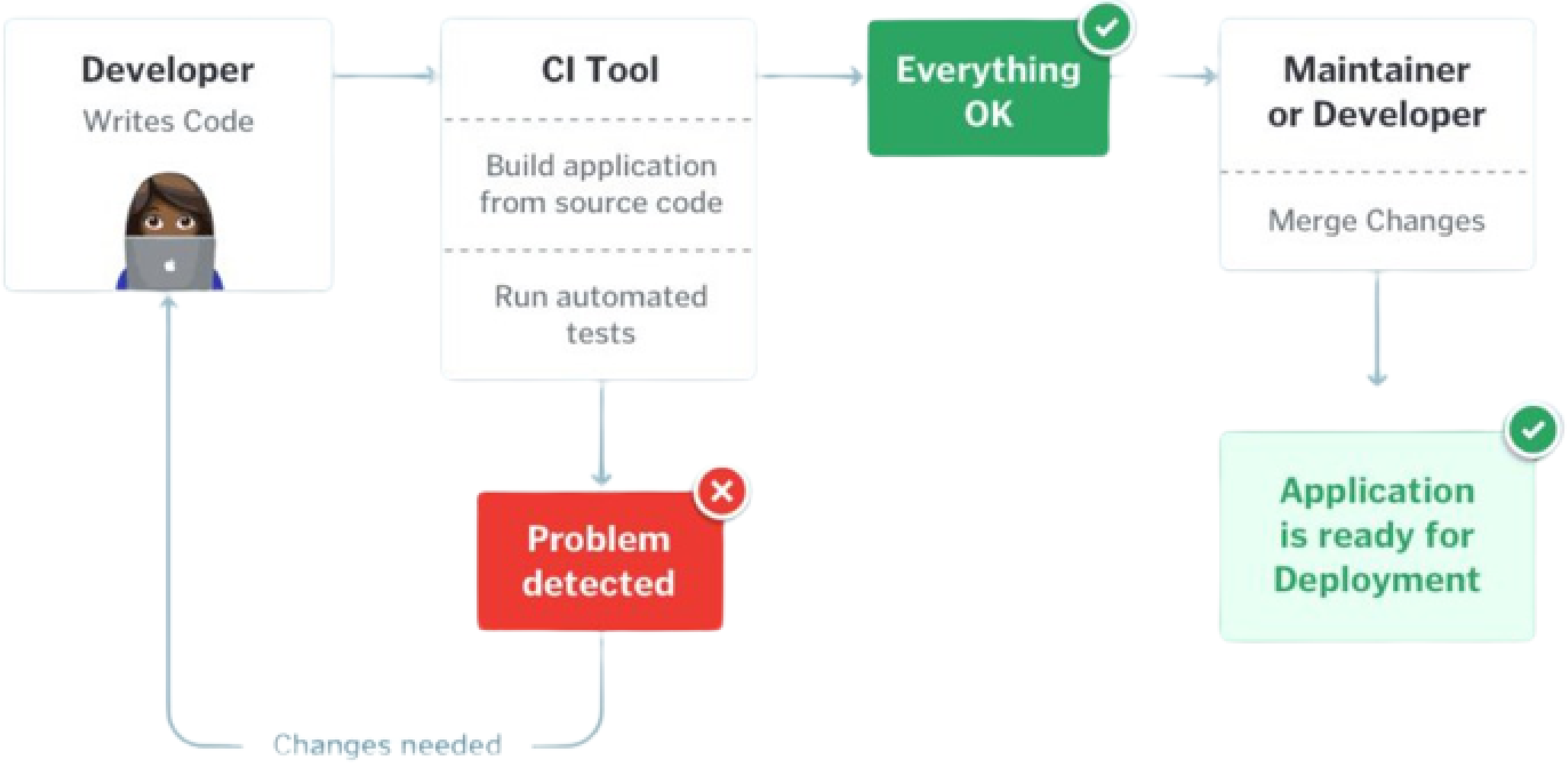


- DevOps is a collection of two words, “Development” and “Operations”

- Representing a cultural approach that emphasizes collaboration between development and operations teams to streamline the entire software delivery lifecycle.


Continuous
Integration
Continuous
Deployment
Code
Plan
Build
Dev
Release
Ops
Deploy
Operate
Test
Monitor
Continuous
Testing
Continuous
Monitoring

Continuous Integration



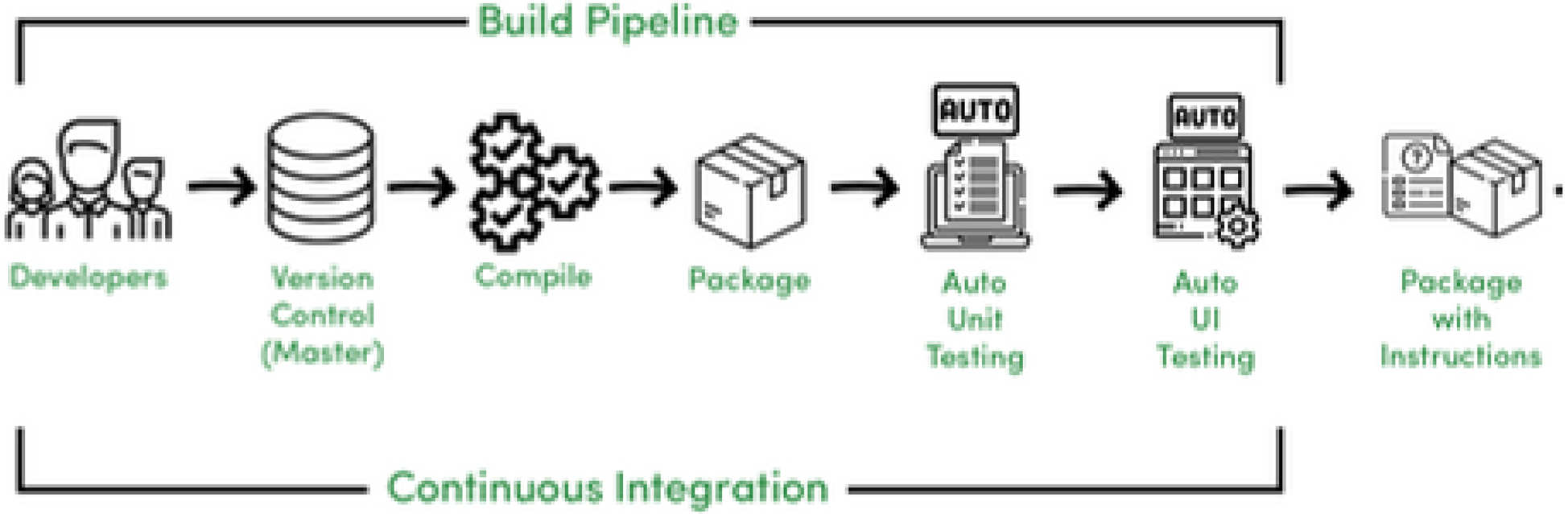
- Continuous Integration is the practice of automating the integration of code changes from multiple developers into a single codebase.

- It is a software development practice where the developers commit their work frequently into the central code repository (Github or Stash).

- Then there are automated tools that build the newly committed code and do a code review, etc as required upon integration.

Goals of CI

- find and address bugs quicker,
- make the process of integrating code across a team of developers easier,
- improve software quality
- reduce the time it takes to release new feature updates.
- Some popular CI tools are Jenkins, TeamCity, and Bamboo.

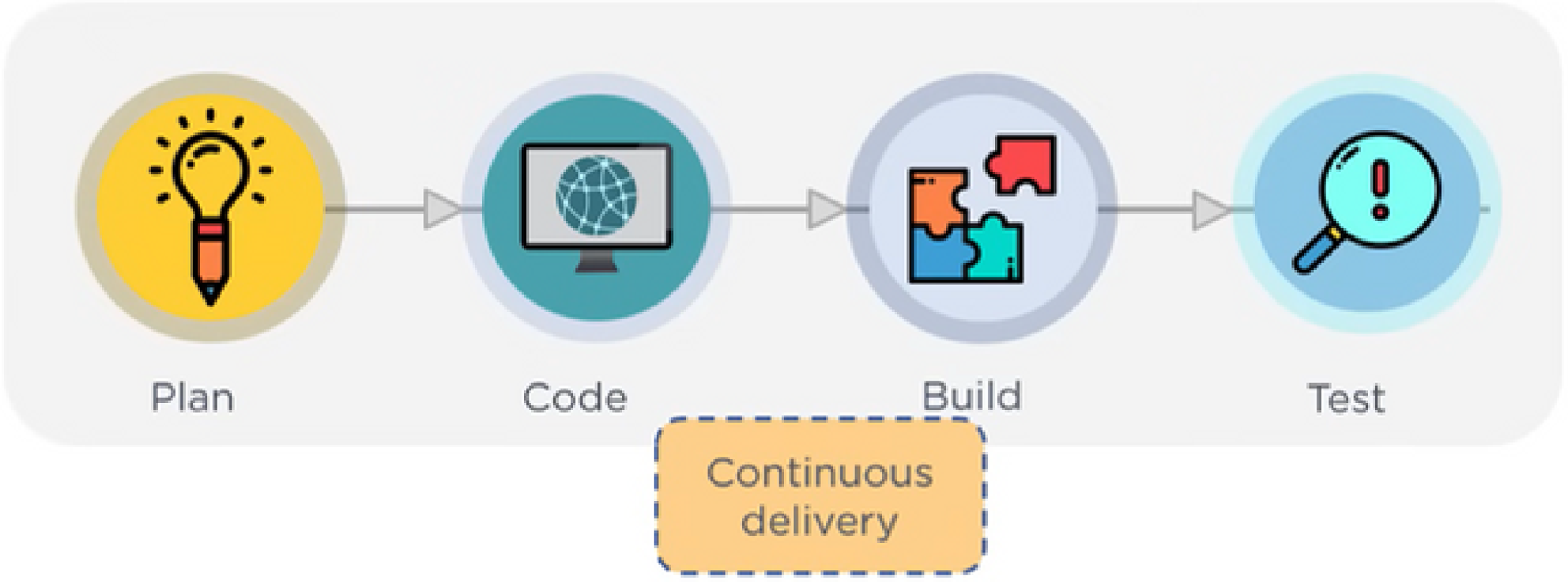

Build Pipeline
AUTO
AUTO
Developers
Version Control (Master)
Compile
Package
Auto Unit Testing
Auto UI Testing
Package with Instructions
Continuous Integration

Jenkins Example

CI -Essential Practices

- Maintain a code repository
- Automate the build
- Make the build self-testing
- Everyone commits to the baseline every day
- Every commit (to baseline) should be built
- Keep the build fast
- Test in a clone of the production environment
- Make it easy to get the latest deliverables
- Everyone can see the results of the latest build
- Automate deployment

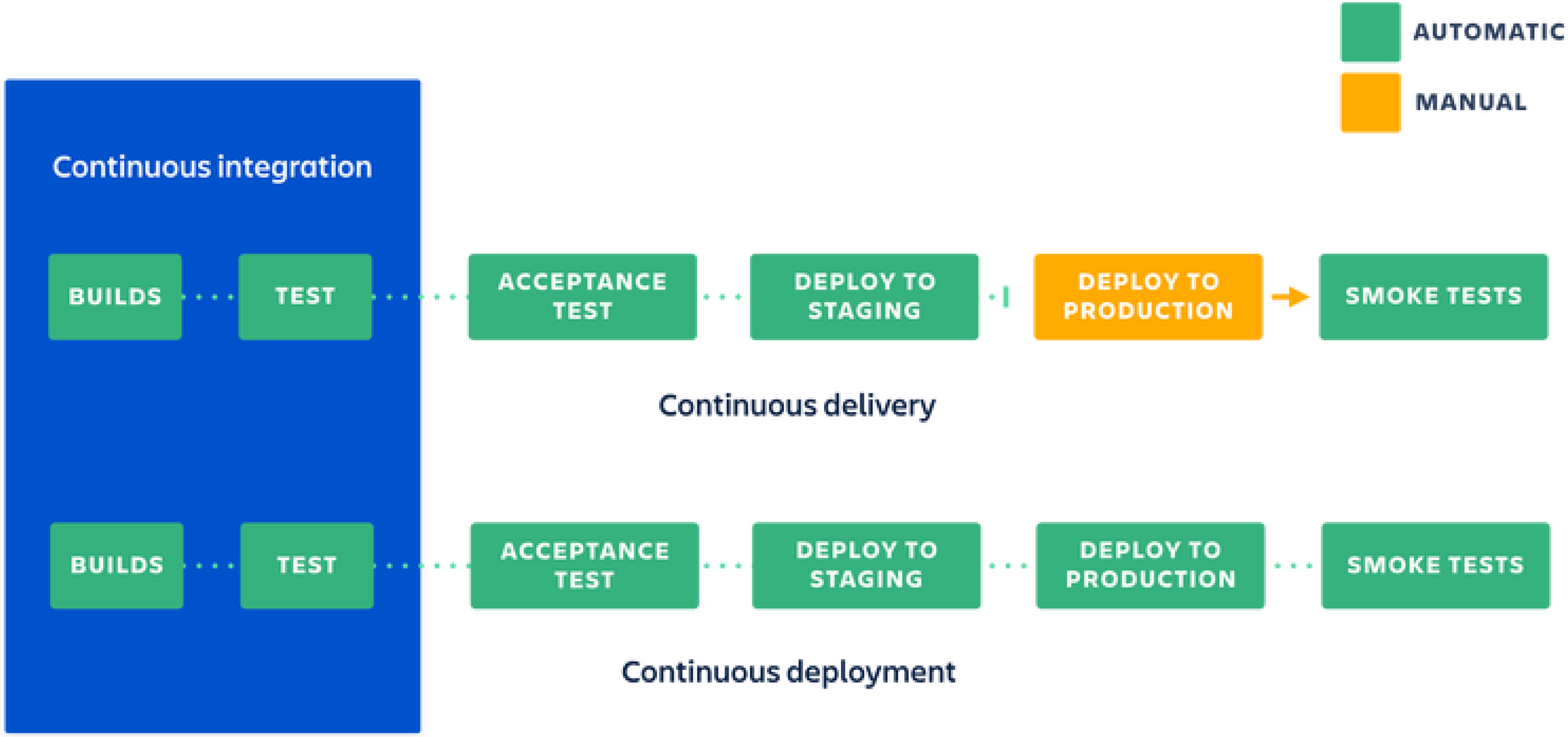
Continuous Delivery



- Continuous delivery is an extension of continuous integration since it automatically deploys all code changes to a testing and/or production environment after the build stage.

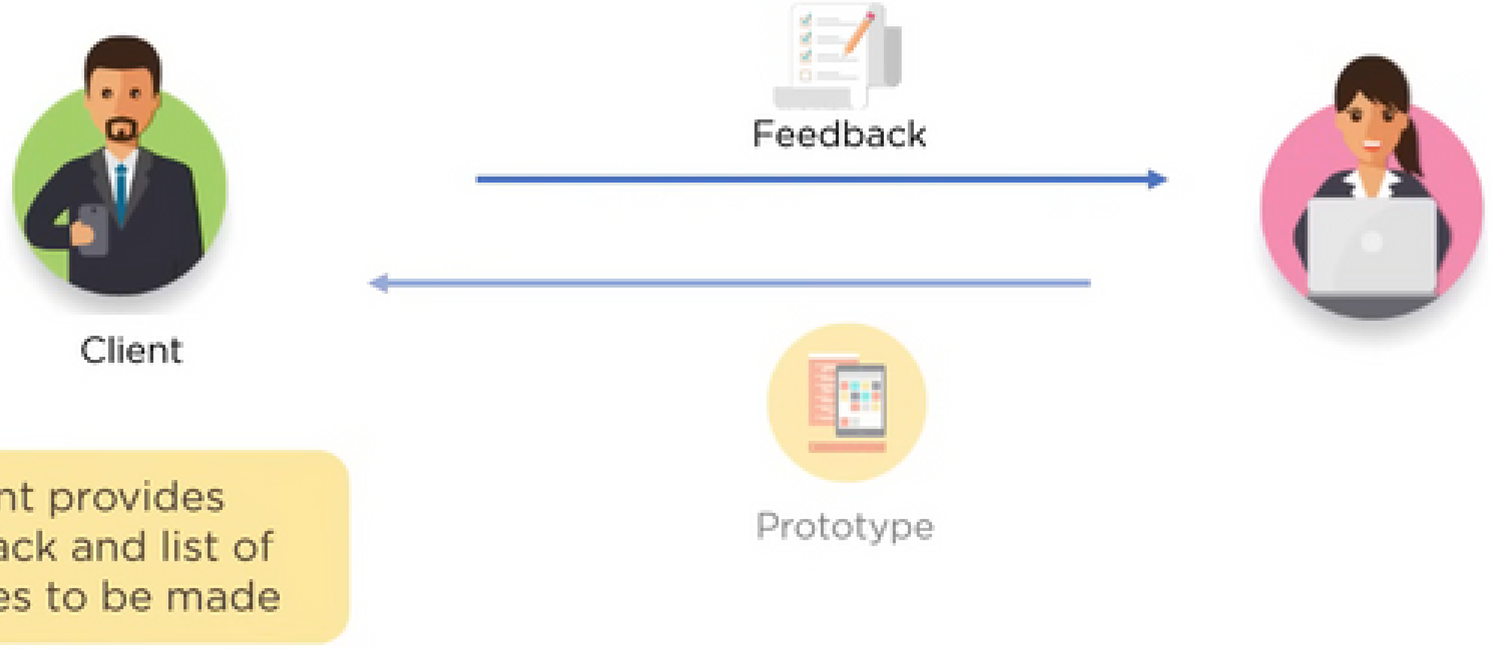
- This means that on top of automated testing, you have an automated release process and you can deploy your application any time by clicking a button.

CI / CD

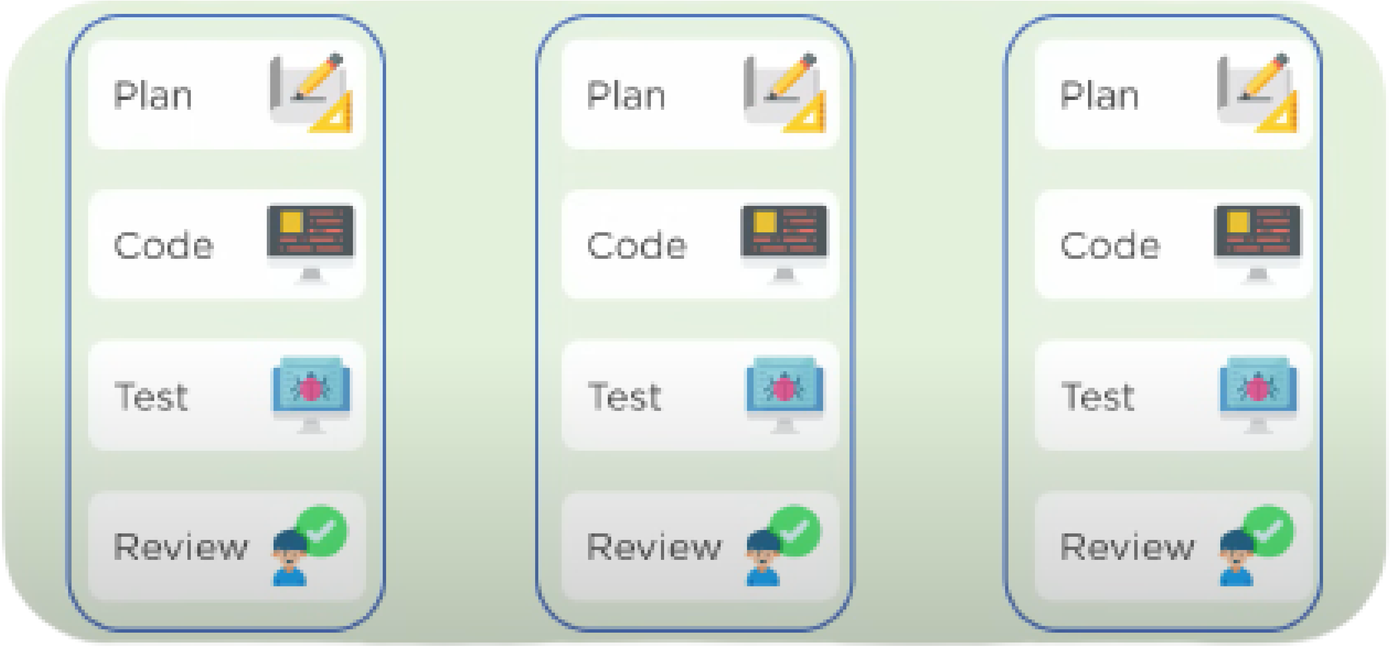

AUTOMATIC
MANUAL
Continuous integration
BUILDS
TEST
ACCEPTANCE TEST
DEPLOY TO STAGING
DEPLOY TO PRODUCTION
SMOKE TESTS
Continuous delivery
BUILDS
TEST
ACCEPTANCE TEST
DEPLOY TO STAGING
DEPLOY TO PRODUCTION
SMOKE TESTS
Continuous deployment

Agile Model

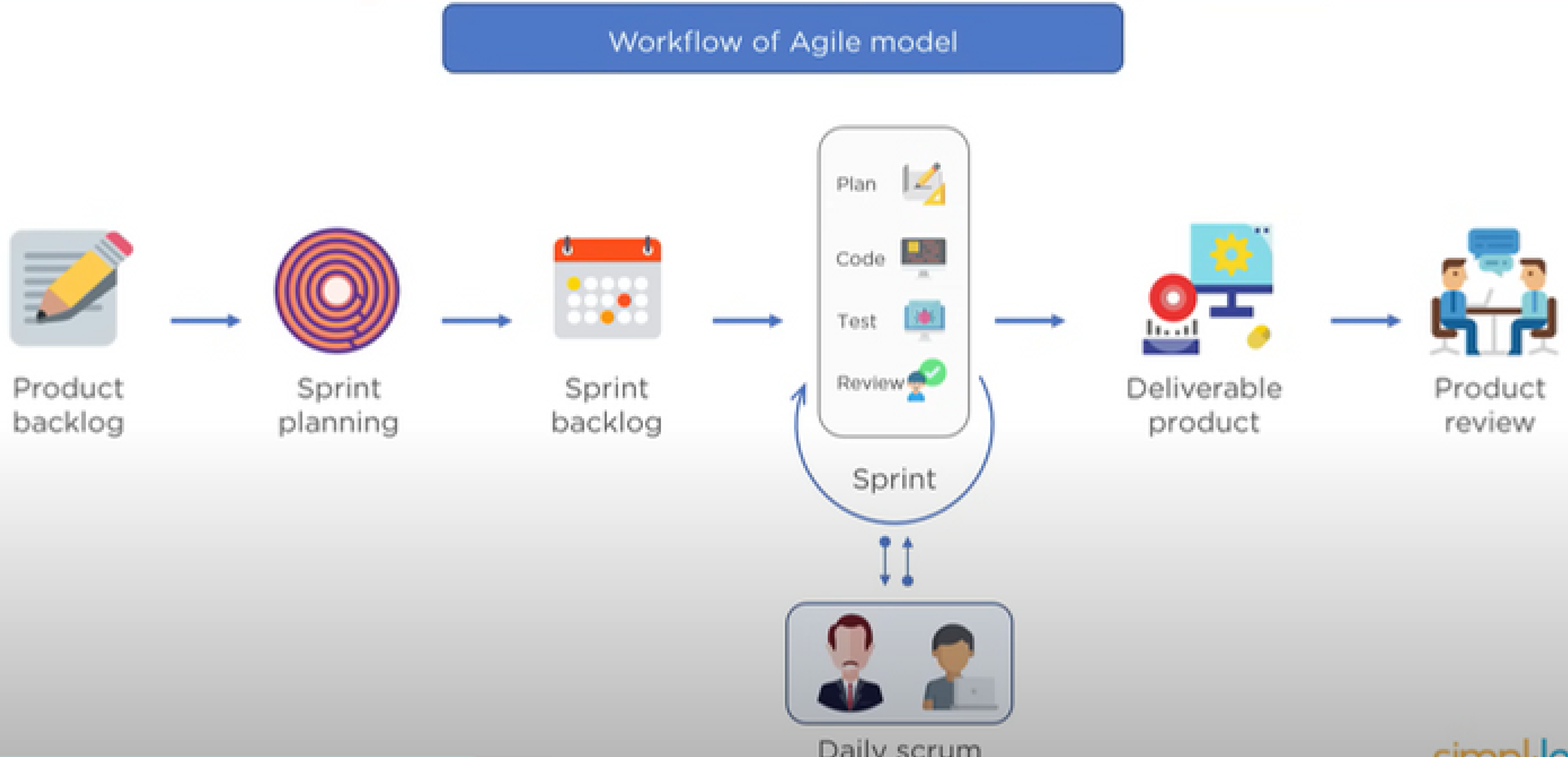
Following the Agile model, programmers create prototypes to understand client requirements



The entire process of building a software is broken down into small actionable blocks called sprints



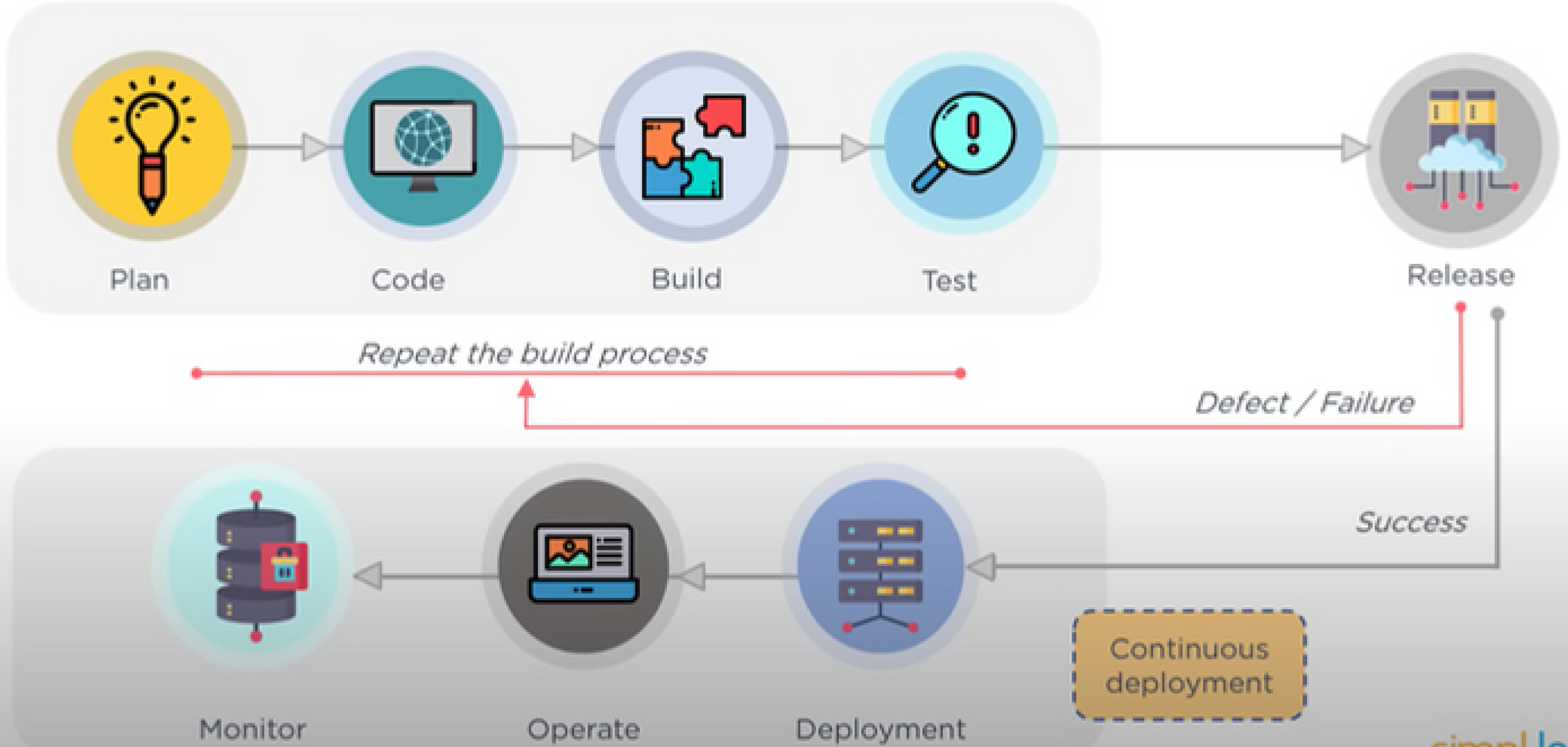
Agile Model

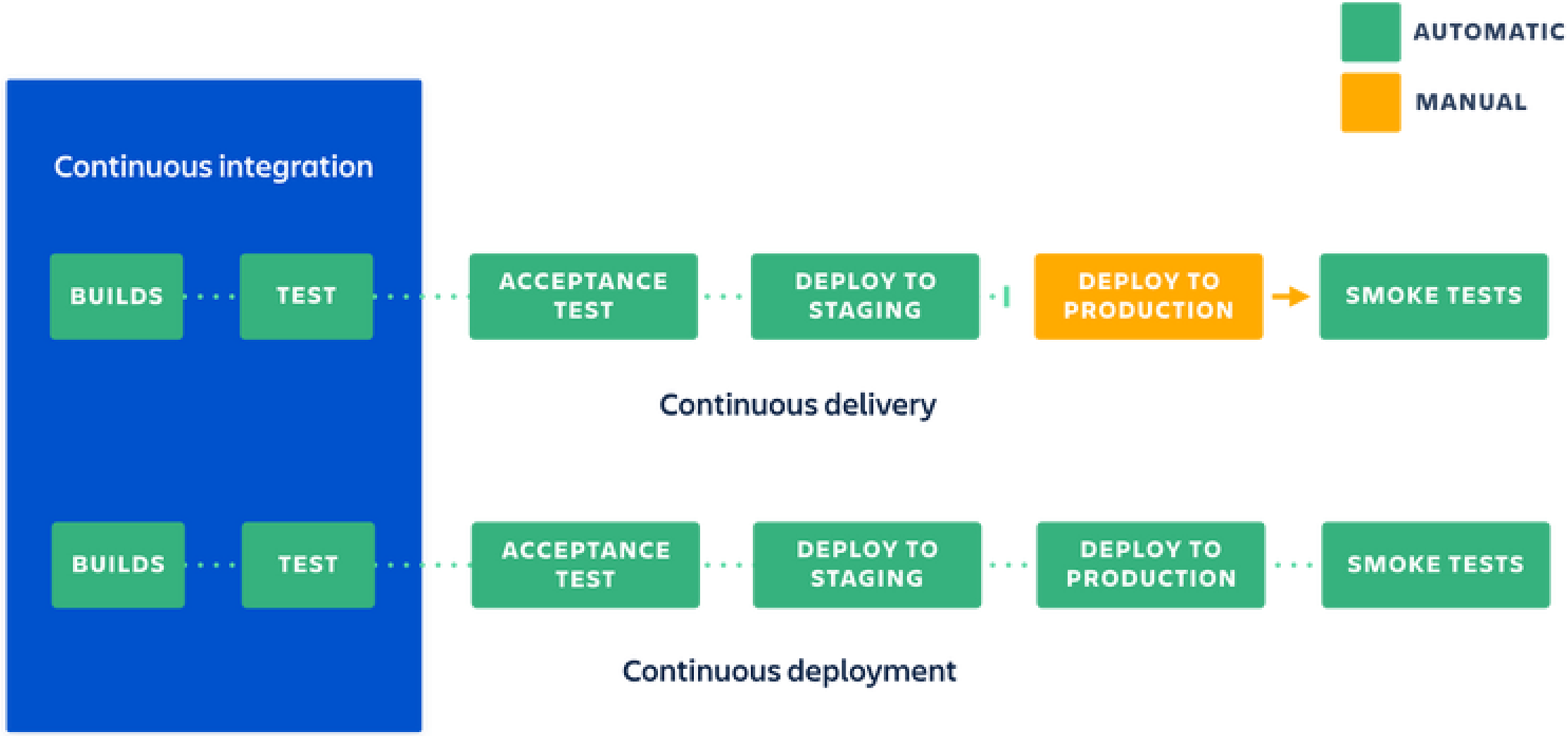

Workflow of Agile model
Product backlog
Sprint planning
Sprint backlog
Plan
Code
Test
Review
Sprint
Daily scrum
Deliverable product
Product review

Principles of software Delivery

1. Repeatable Reliable Process
2. Automate Everything
3. Version Control Everything
4. Bring the Pain Forward
5. Build-in Quality
7. Everyone is Responsible
8. Continuous Improvement

Continuous Deployment




AUTOMATIC
MANUAL
Continuous integration
BUILDS
TEST
ACCEPTANCE TEST
DEPLOY TO STAGING
DEPLOY TO PRODUCTION
SMOKE TESTS
Continuous delivery
BUILDS
TEST
ACCEPTANCE TEST
DEPLOY TO STAGING
DEPLOY TO PRODUCTION
SMOKE TESTS
Continuous deployment

What is Ansible?

Ansible is a configuration management tool where applications are deployed automatically on a variety of environments

Push based configuration tool

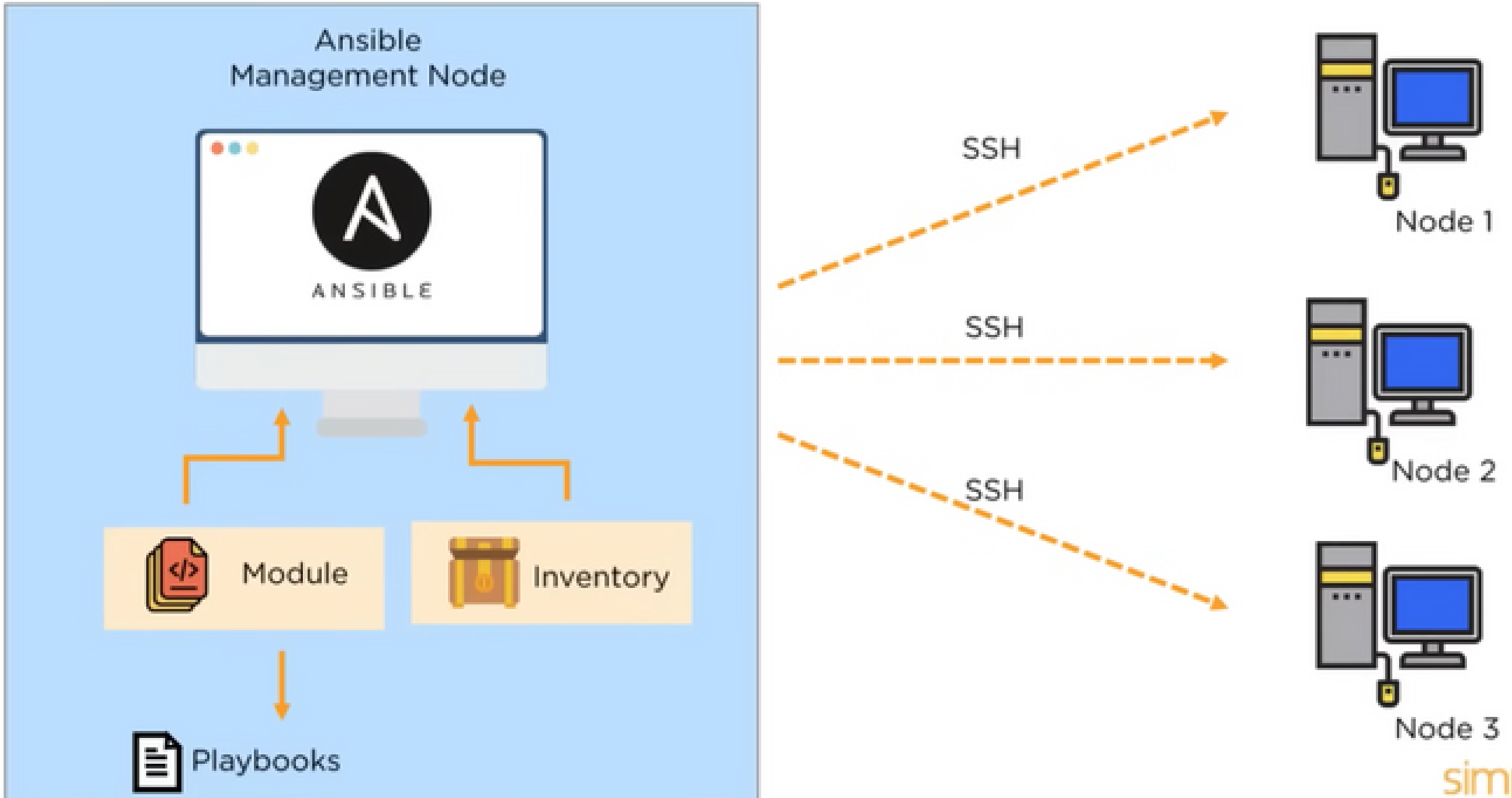
Agentless tool

Maintains consistency of a product's performance

Uses SSH for secure connections

- Ansible is an IT automation engine that can automate various IT needs.
- It has features like application deployment that means you can deploy your application easily as per your requirements.
- Cloud provisioning, configuration management is also the main feature where you can configure and describe your automation job.

Architecture of Ansible

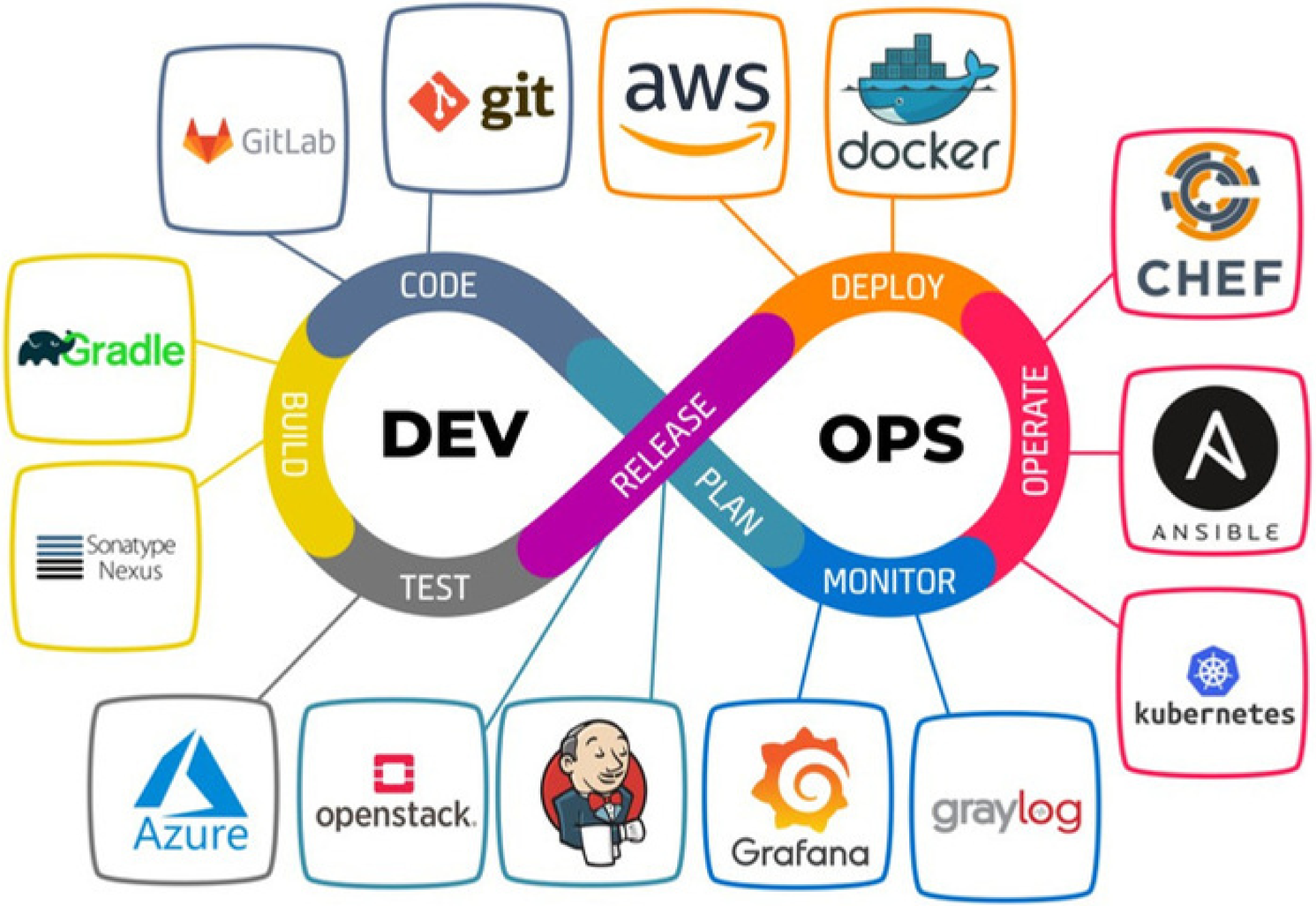


```
---
- name: sample book
  hosts: ansible_servers
  remote_user: root
  become: true

  tasks:
   - name: install httpd
     yum:
       name: httpd
       state: latest
   - name: run httpd
     service:
       name: httpd
       state: started
   - name: create content
     copy:
        content: "welcome"
        dest: /var/www/html/index.html
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
```

Test Automation: Robot Framework.

- Robot Framework is a common open-source automation framework for Acceptance Testing.
- Acceptance Test-Driven Development (ATTD), and Robotic Process Automation (RPA).
- It uses a keyword-driven testing technology approach and the capabilities can be extended by testing libraries that can be implemented in Python or Java.


GitLab
git
aws
docker
CHEF
Gradle
CODE
DEPLOY
BUILD
DEV
RELEASE
PLAN
OPS
OPERATE
ANSIBLE
Sonatype Nexus
TEST
MONITOR
kubernetes
Azure
openstack
Grafana
graylog