IF1006 – DevOps Software delivery way: DevOps Pipeline

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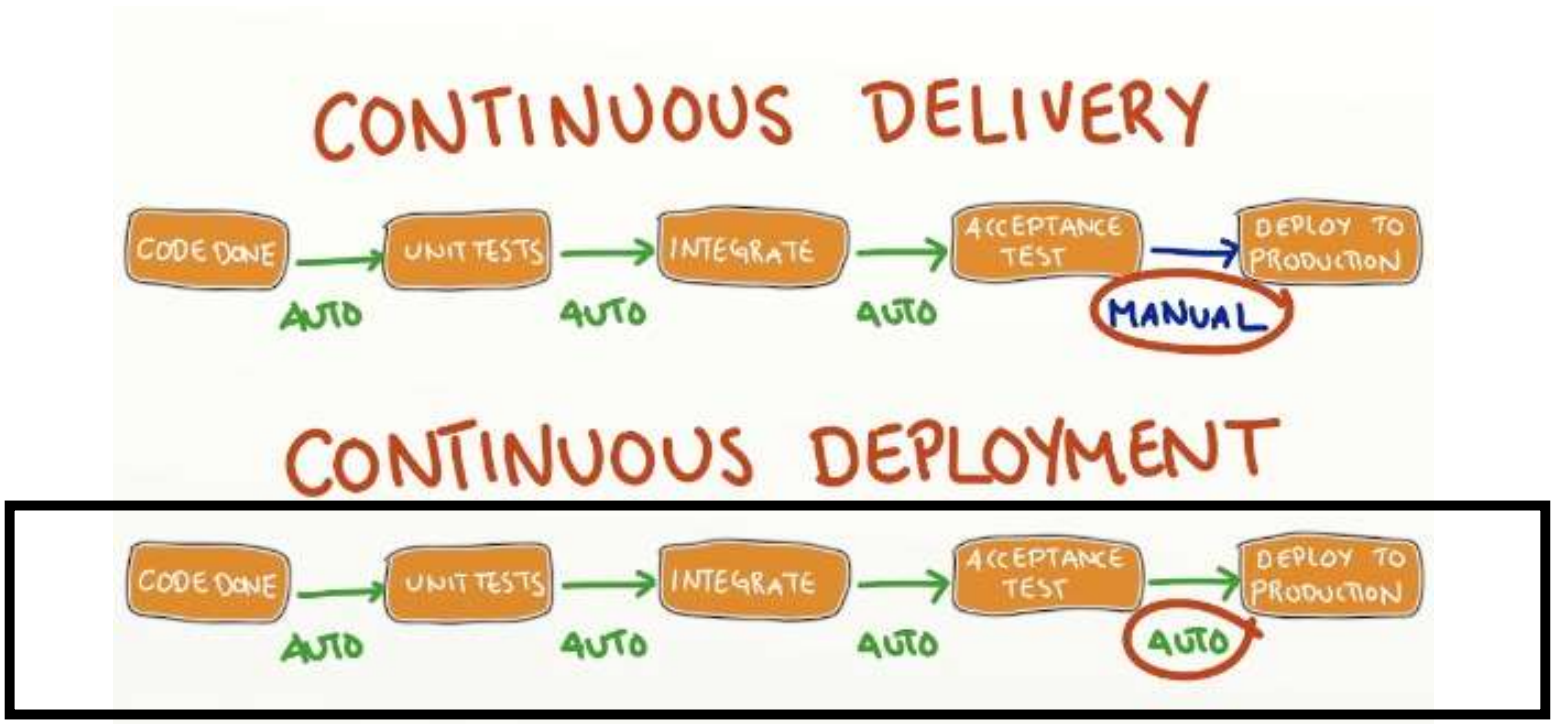
What is DevOps?

A set of practices to help organizations to deliver software fast without loss quality – [Culture]

Thinking in process such as practices

- Continuous Delivery/Deployment (Continuous integration, deployment every time)
- Treat operations personnel as first class citizen.
- Promote and support change of roles and sharing of knowledge.
- Apply software engineering disciplines on infrastructure code development (eg. shell scripts)

CDe vs CD



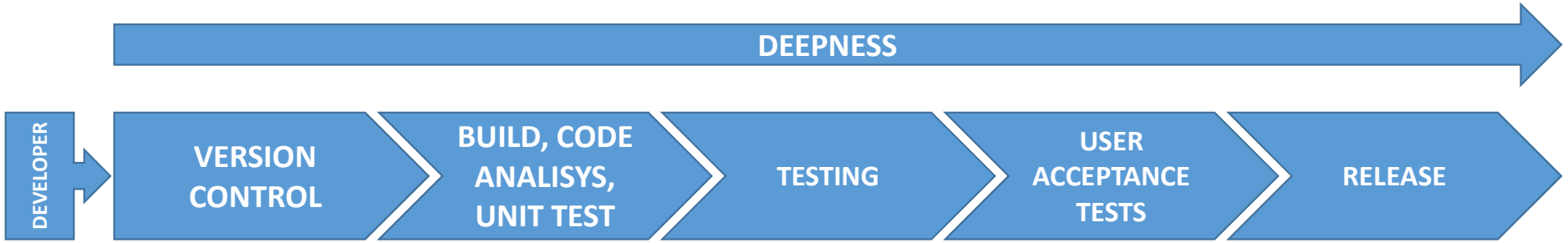
Imagine what you need to do for get a fully Continuous Deployment environment?

Edited From: Yassal Sundman

Pipeline, an approach that intercepts DevOps practices

A pipeline is an abstraction of the delivery process (from construction until user).
The tool set are its encarnation.

Pipeline, how deep are you?

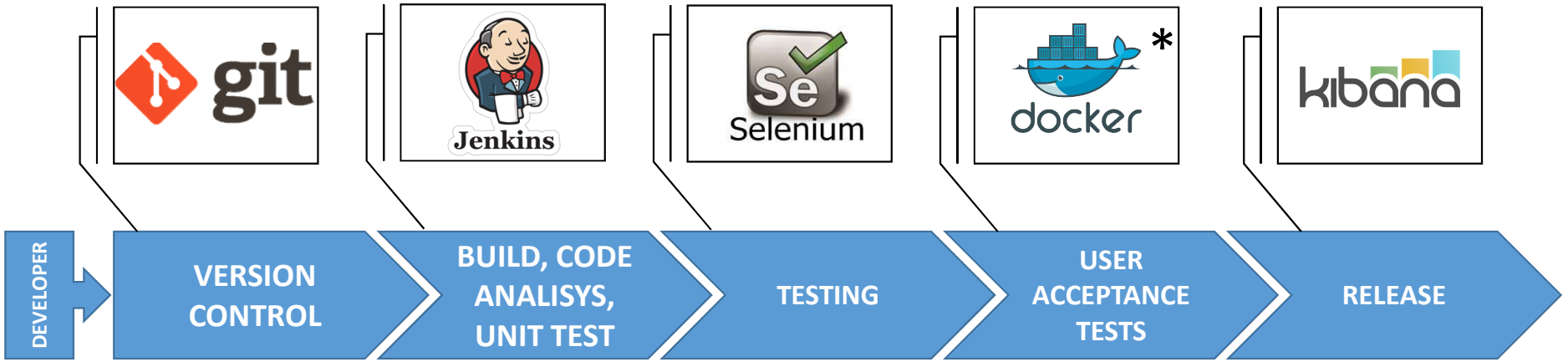


Have you control of whole pipeline?

Currently, this a tipical pipeline that I've seen

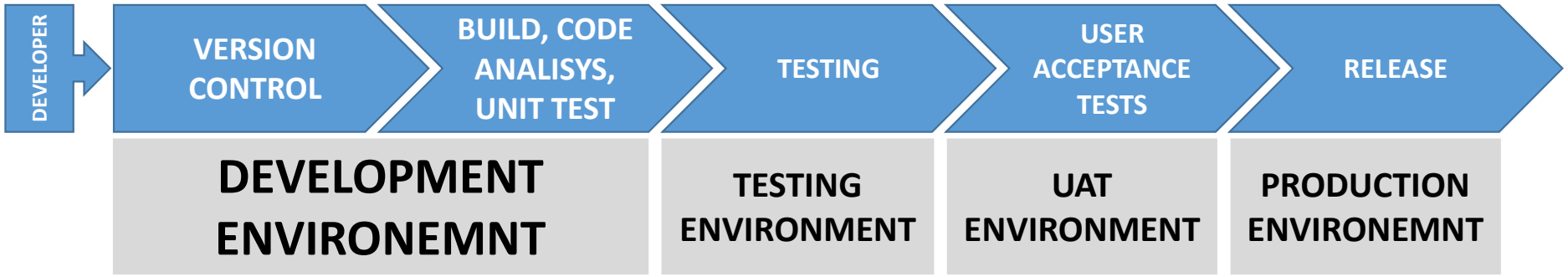
However, we will talk about a "full" version

Pipeline, some tools



* Use containers at beginning of development. Here, I inserted ant UAT for convenience

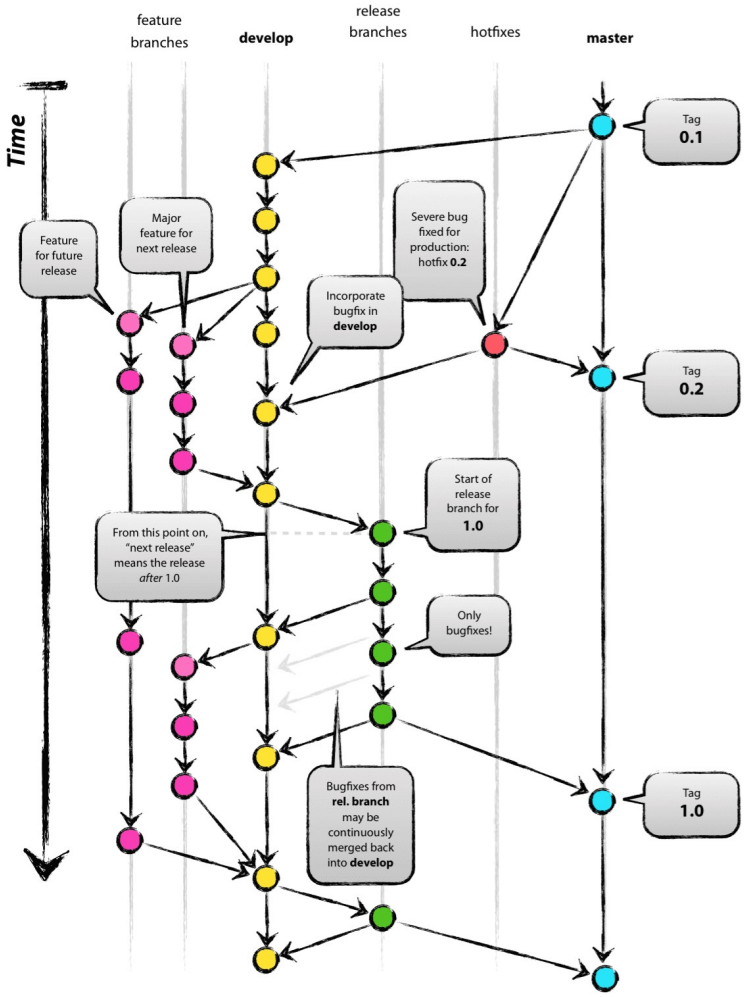
Pipeline, environments



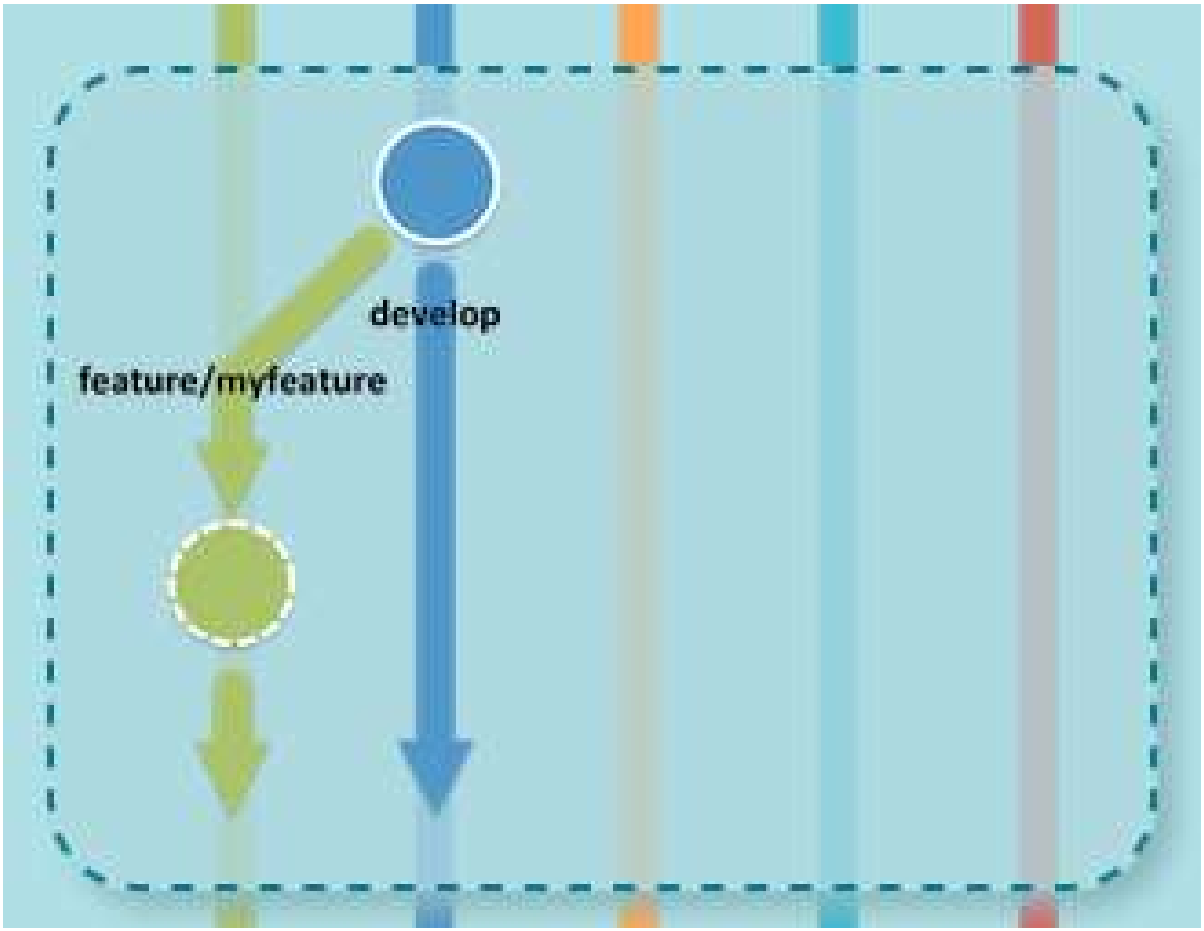
Some important points to have CD

- I need hardware (Cloud) to provide places to run tests;
- I need know laws about data security policies
- How “deep” can I go trough environments. Ex. The customer don´t let us access his production environment.
- Will my customer apreciate the idea of deploy in production for every 11 secs? [amazona aws]

Branching

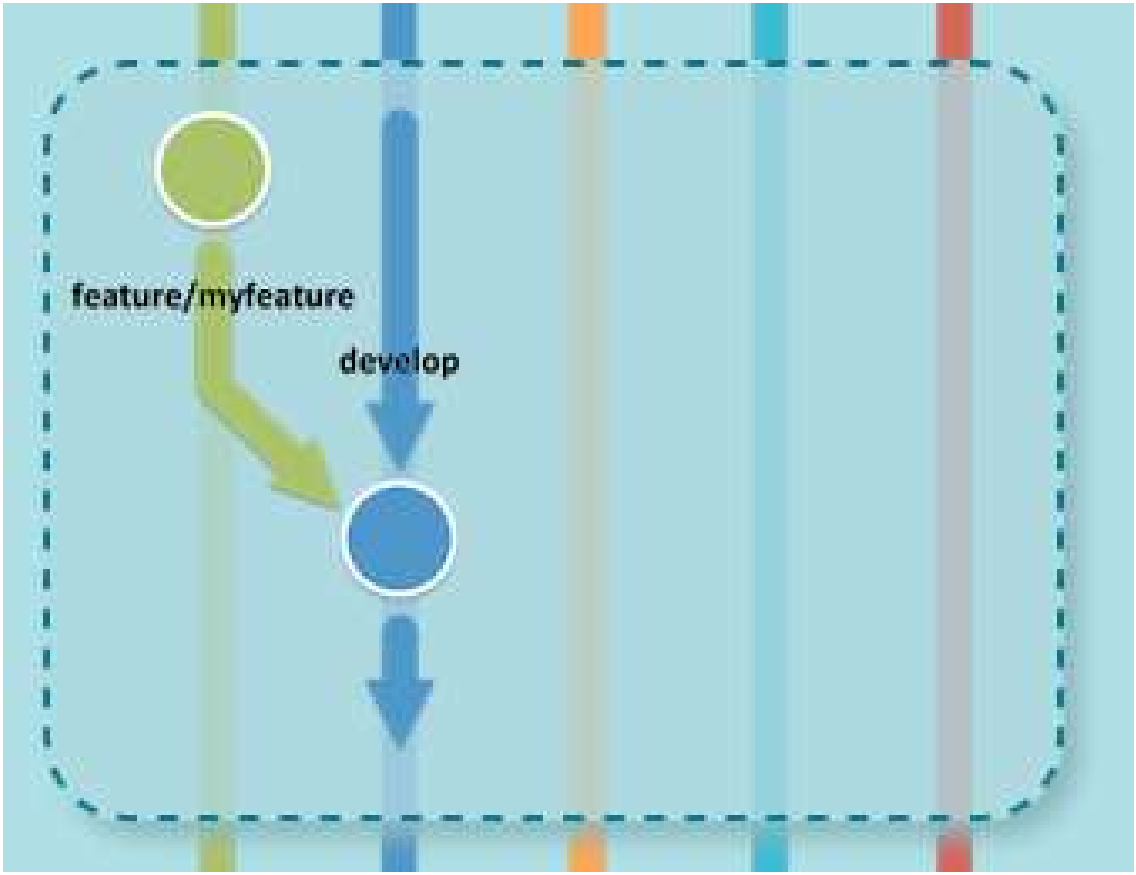

feature branches
develop
release branches
hotfixes
master
Time
Feature for future release
Major feature for next release
Severe bug fixed for production: hotfix 0.2
Incorporate bugfix in develop
Tag 0.1
Tag 0.2
Start of release branch for 1.0
From this point on, "next release" means the release after 1.0
Only bugfixes!
Bugfixes from rel. branch may be continuously merged back into develop
Tag 1.0

Branching



From http://nvie.com/

Branching



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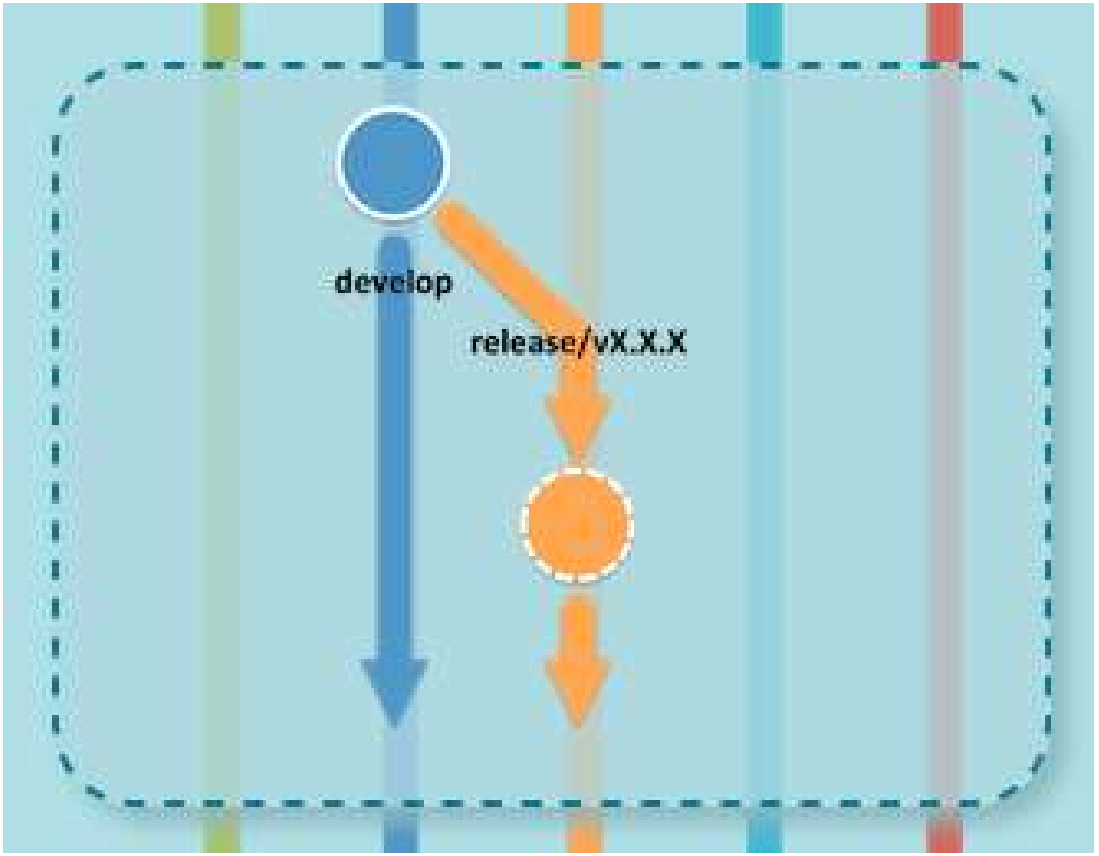

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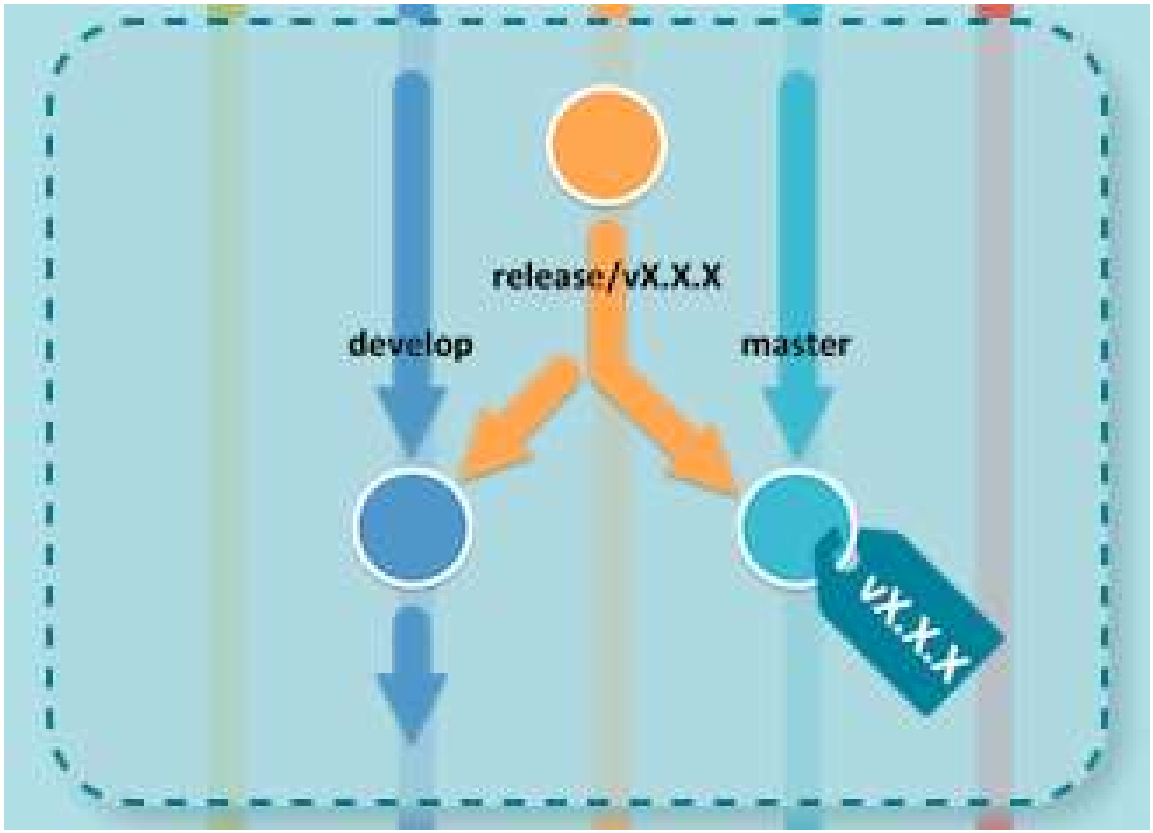
Branching



From http://nvie.com/

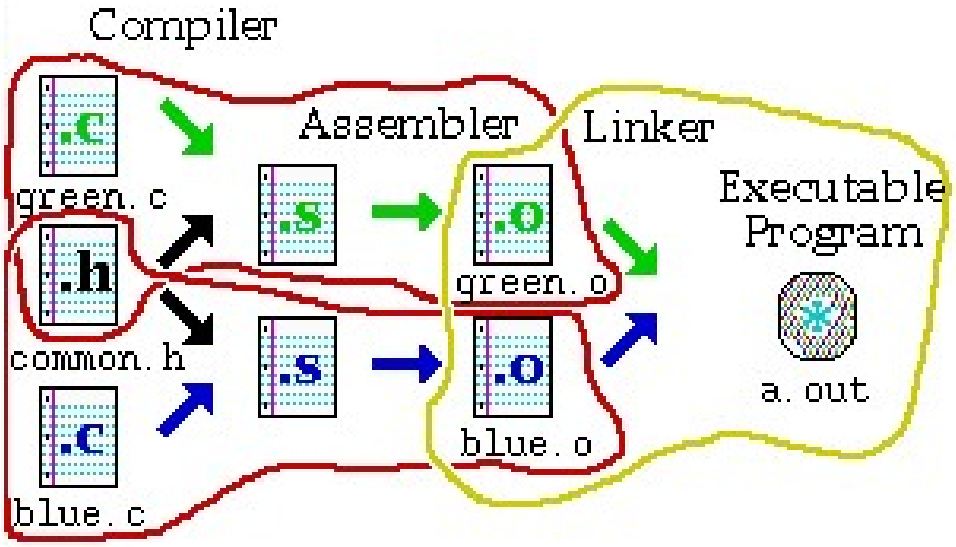
Build: building a deployable

1. Generating sources.
2. Compiling sources.
3. Compiling test sources.
4. Executing tests (unit tests, integration tests, etc).
5. Packaging (into jar, war, ejb-jar, ear, rpm).
6. Running health checks (static analyzers like Checkstyle, Findbugs, PMD, test coverage, Sonarqube).
7. encapsulating environments
8. Generating reports.

Build:Get source

```
git clone https://github.com/jfsc/spring-petclinic.git
```

Build: Compiling



From https://goo.gl/MNLHZl

```
andes:~rcomp1/softdev> gcc -c green.c
andes:~rcomp1/softdev> ls -ls green.o
3 -rw-r--r--  1 13042 users 2312 Mar 13 13:40 green.o
andes:~rcomp1/softdev> file green.o
green.o: ELF 64-bit LSB relocatable, AMD x86-64, version 1 (SYSV), not stripped
andes:~rcomp1/softdev> gcc -c blue.c
andes:~rcomp1/softdev> gcc green.o blue.o
andes:~rcomp1/softdev> ls -ls a.out
8 -rwxr-xr-x  1 13042 users 7864 Mar 13 13:40 a.out
andes:~rcomp1/softdev> a.out
Result of Monte Carlo integration is 3.582862
andes:~rcomp1/softdev> gcc -o green green.o blue.o
andes:~rcomp1/softdev> file green
green: ELF 64-bit LSB executable, AMD x86-64, version 1 (SYSV), for GNU/Linux 2.4.
andes:~rcomp1/softdev> green
Result of Monte Carlo integration is 3.582862
andes:~rcomp1/softdev>
```

Build: Compile and run UnitTests

```
javac -cp .:"/Applications/IntelliJ IDEA 13 CE.app/Contents/lib/*" SetTest.java
```

```
java -cp .:"/Applications/IntelliJ IDEA 13 CE.app/Contents/lib/*" org.junit.runner.JUnitCore SetTest
JUnit version 4.11
.
Time: 0.007
OK (1 test)
```

Build: Packaging

- (*.JAR;*.WAR.*.EAR, *.DLL)
- (*.RPM, *.EXE, *.O)

Build: Code Analysis

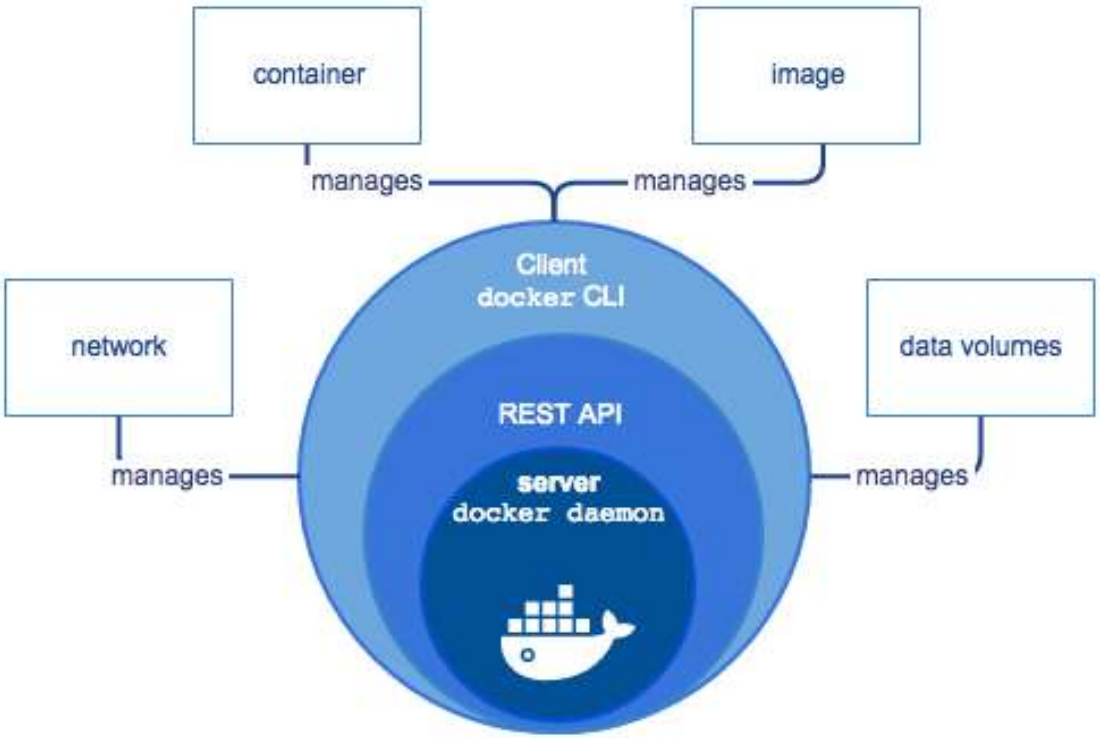
SonarQube (*)

Cobertura

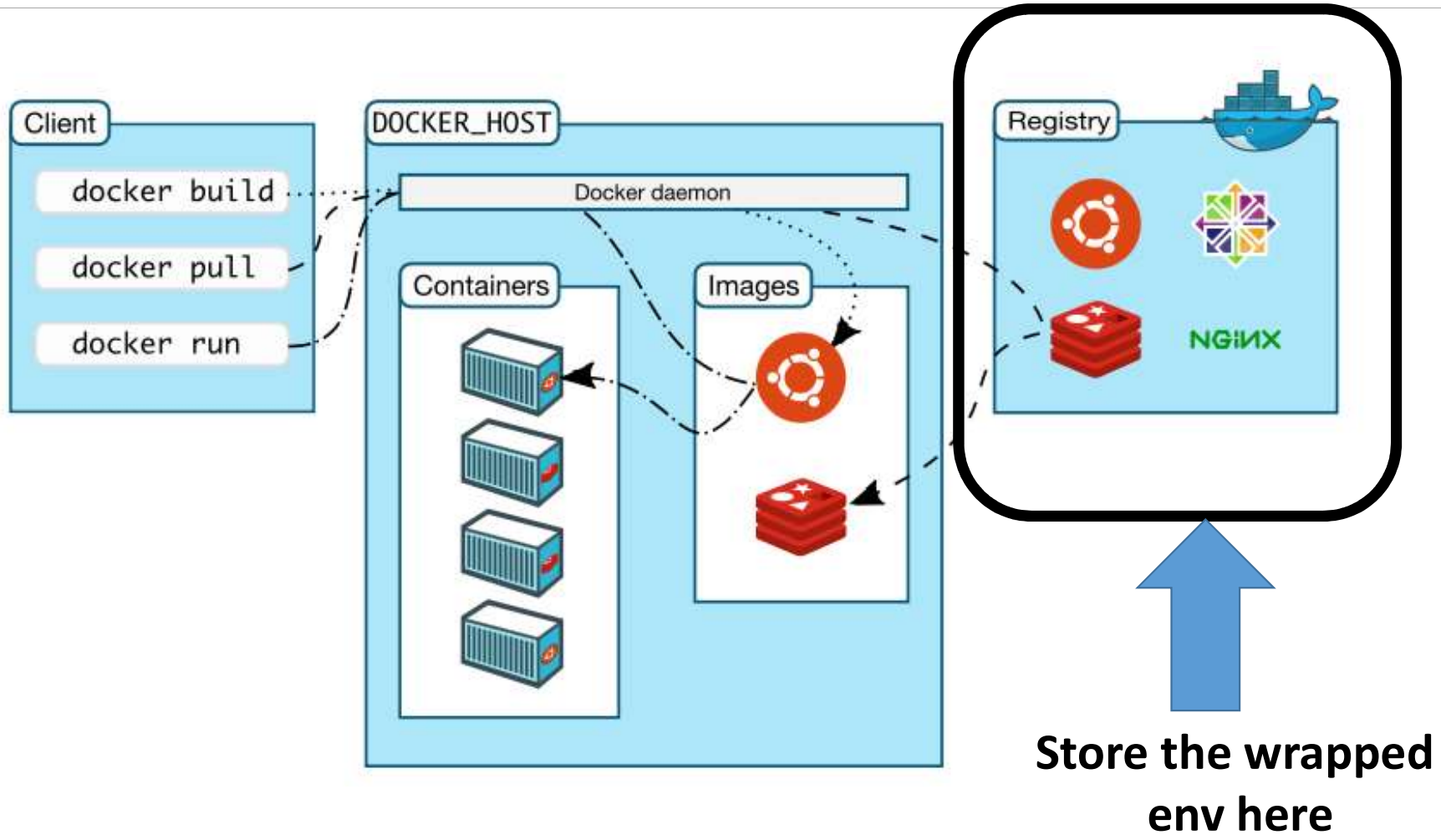
Build: Store Envs

- Docker
- VMs

Build: Store Envs : Docker



Build: Store Envs : Docker



Testing

- Manual (Exploratory)
- Automatic

UAT:User Acceptance Testing

- Smoke Tests
- Customer Validation

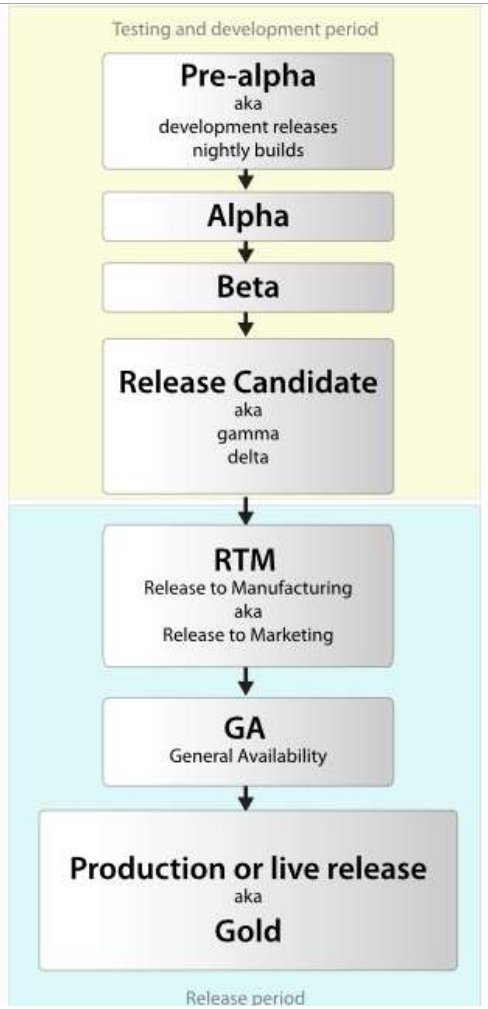
PRODUCTION

- Release
- Measurement

Release Management

“Release management is the process of managing, planning, scheduling and controlling a software build through different stages and environments; including testing and deploying software releases” [wiki]

A Release lifecycle



[wiki]

Release Naming

1 . 3 . 5

BREAKING . FEATURE . FIX

Breaking change

New **Feature**

Fixing bugs