



# DevOps and Continuous Delivery Reference Architectures

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VP and DevOps Advocate  
Sonatype

# Common Elements of the Software Supply Chain

 sonarqube

 Nexus

**maven**

 **Jenkins**

 **JIRA**

 **git**

 **puppet**  
labs

 **RUNDECK**

  
**CHEF**

 **docker**

  
SUBVERSION

 **Apache**  
**Tomcat**

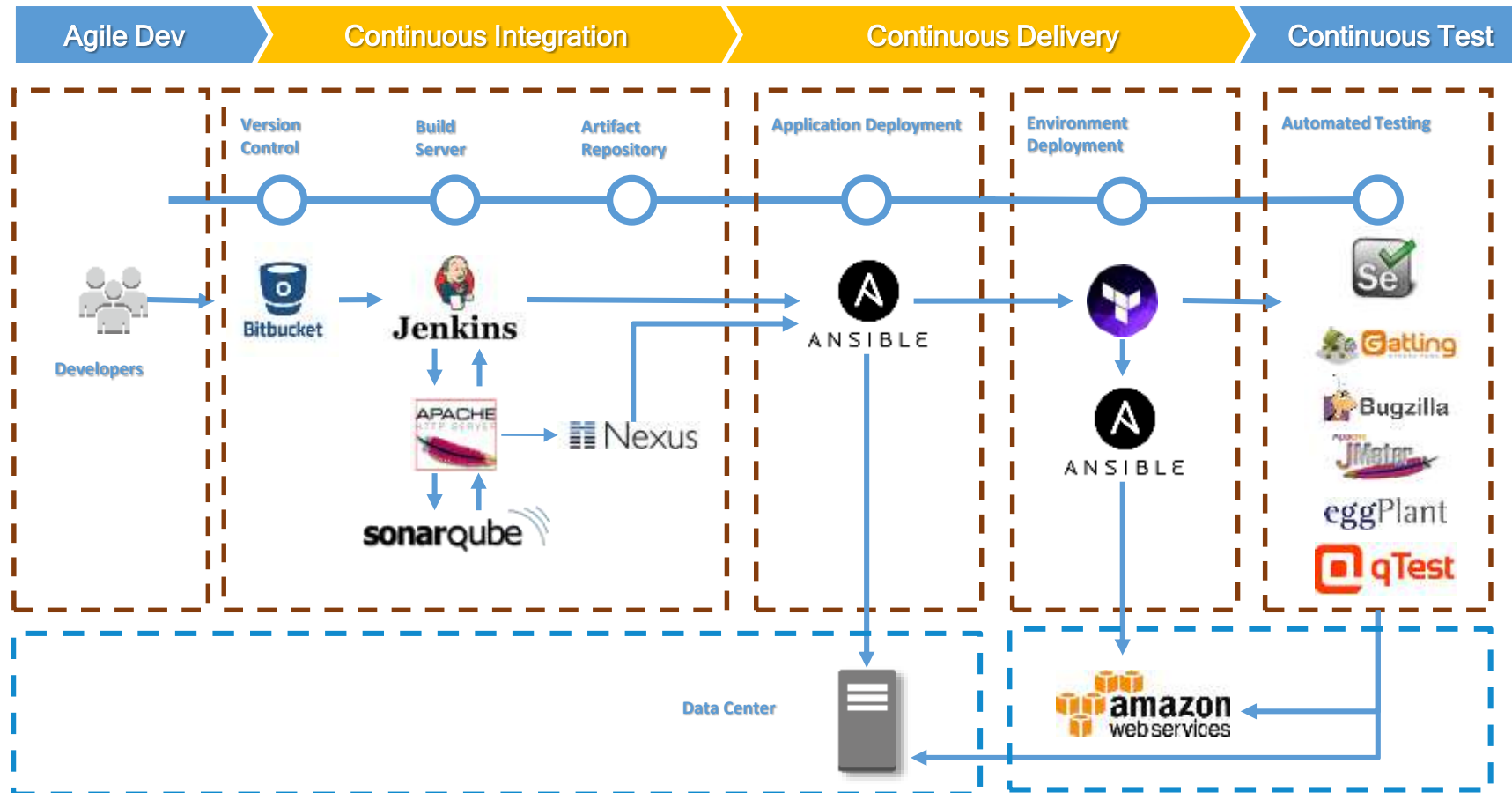
 **VAGRANT**

 **GitLab**

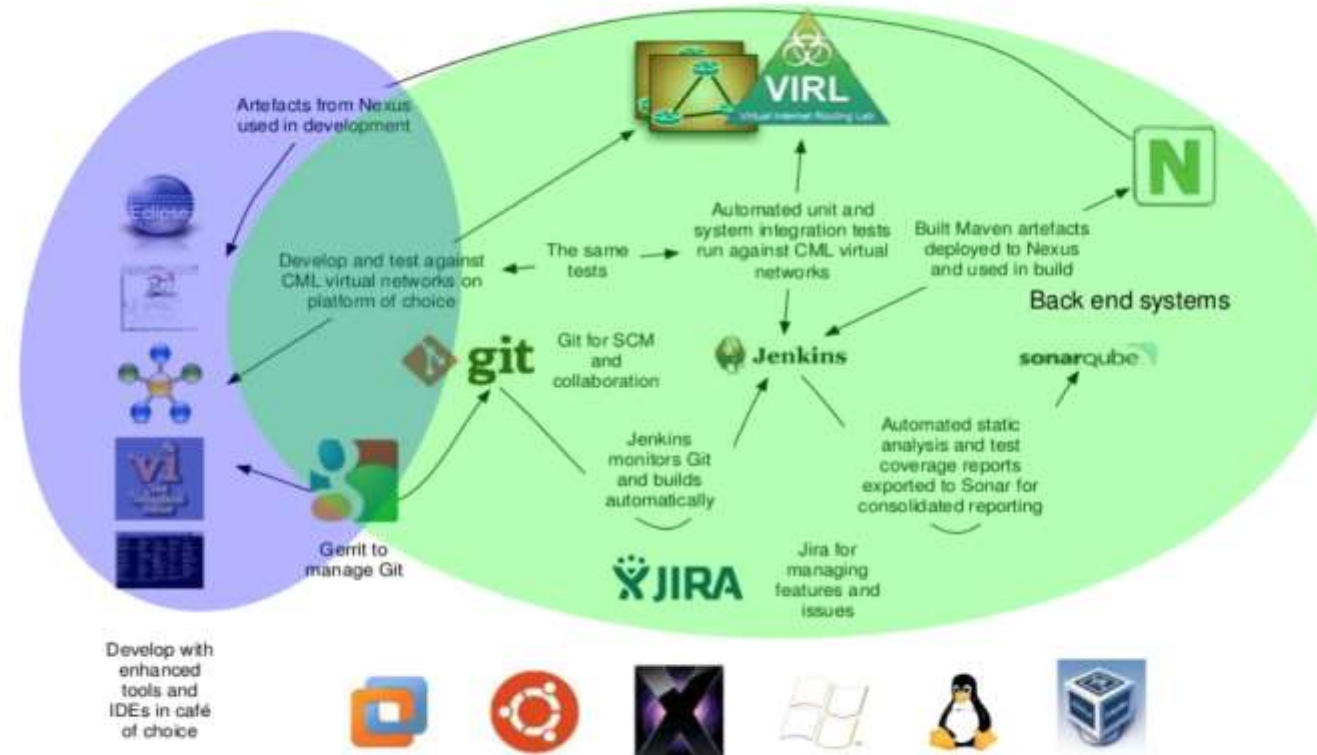
**ANSIBLE**

 Sonatype

# According to TUI



# According to Cisco



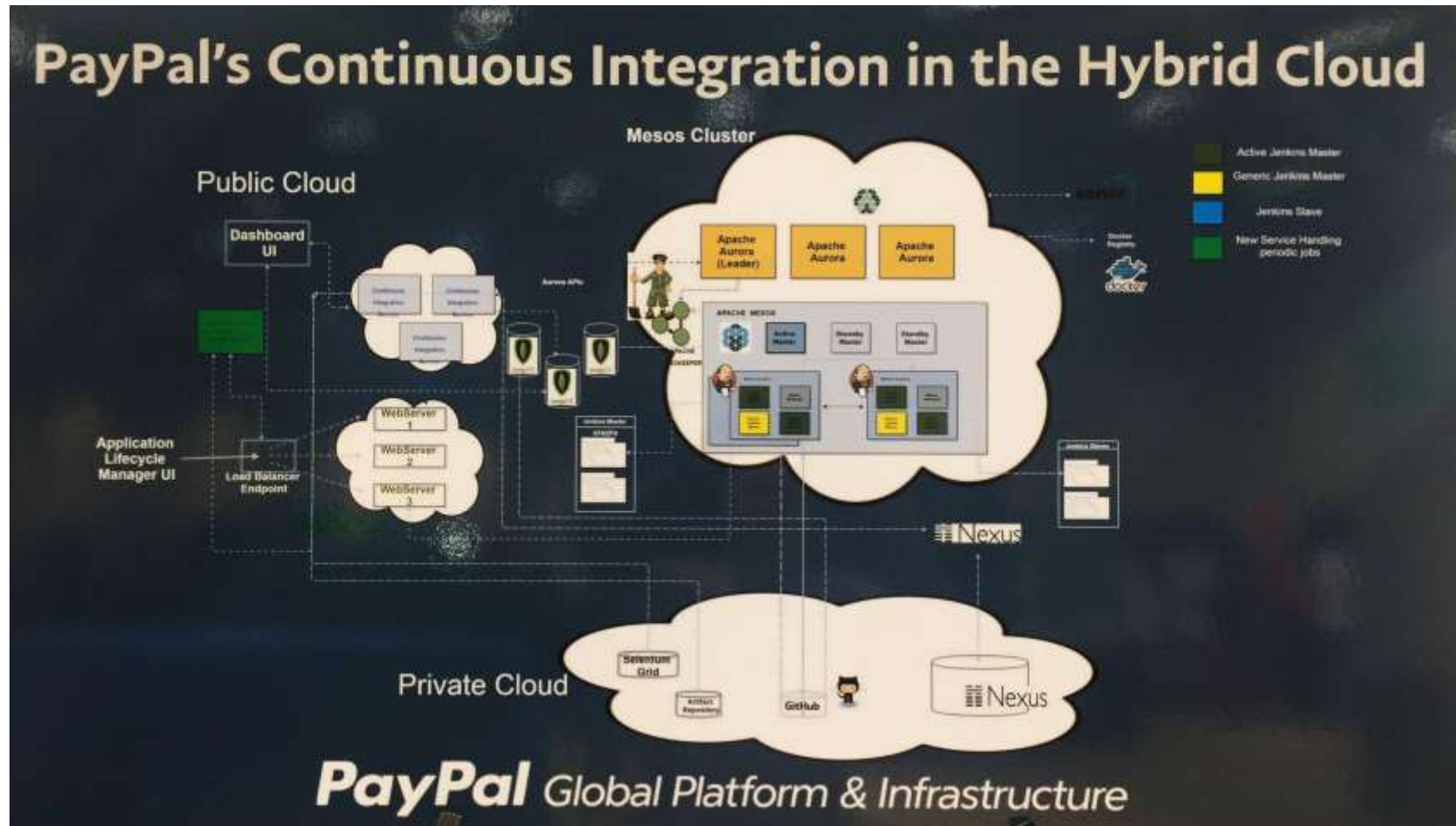
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Cisco Public

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Cisco live!

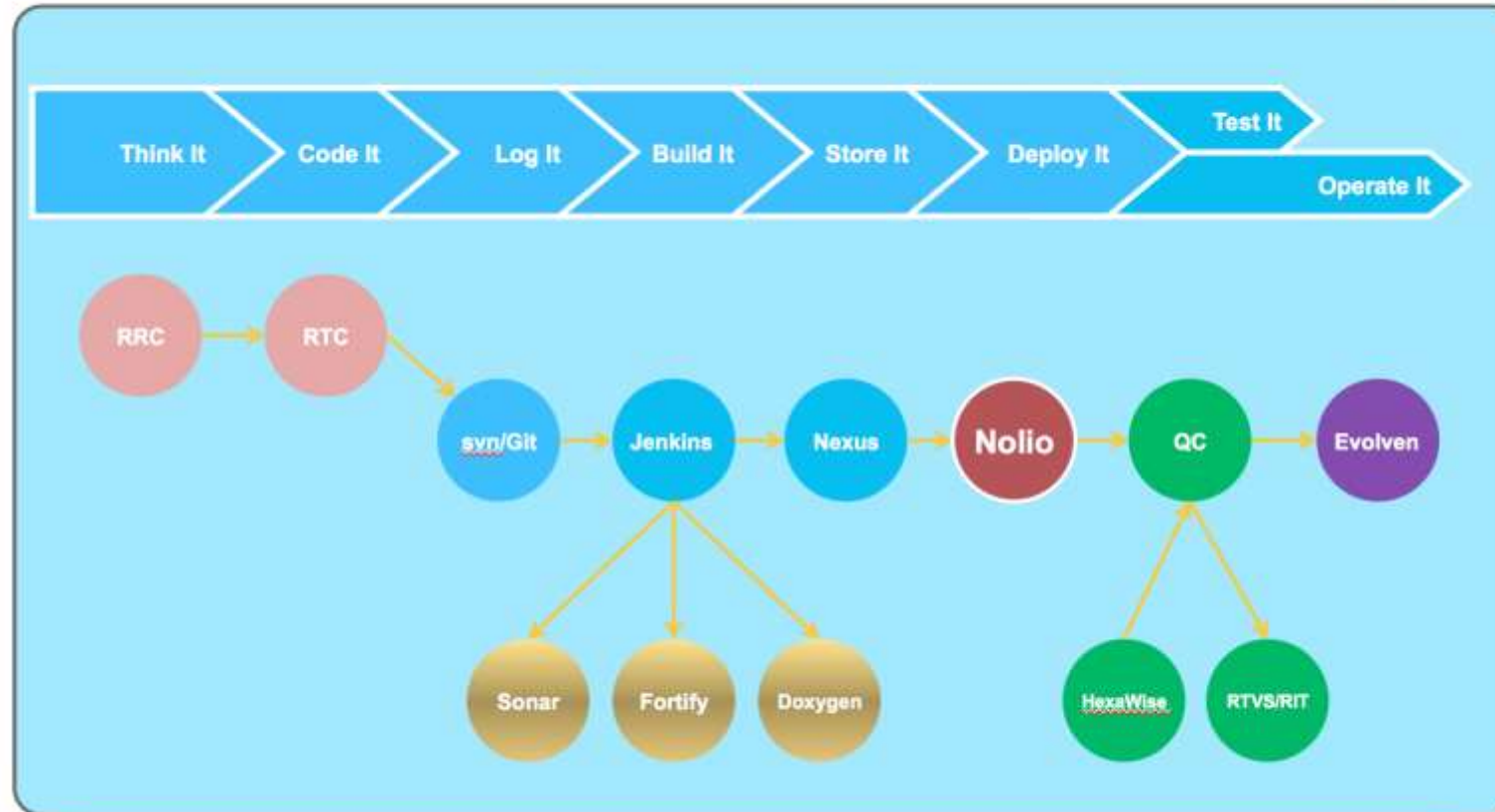
# According to PayPal



# According to BARCLAYS

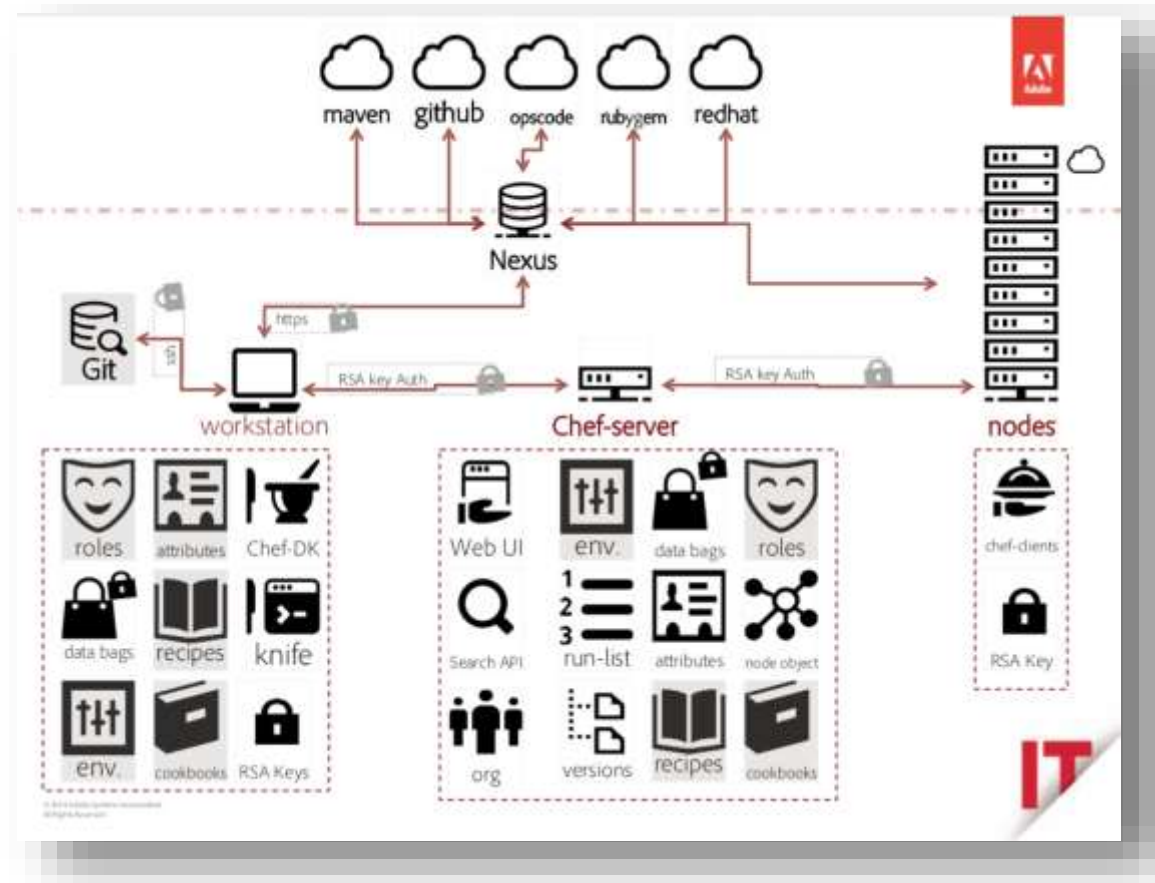


## Quantum – Automated Deployment





# According to Adobe



## DevSecOps: How to Seamlessly Integrate Security Into DevOps

Published: 30 September 2016 ID: G00315283

Analyst(s): Neil MacDonald, Ian Head

Information security architects must integrate security at multiple points into DevOps workflows in a collaborative way that is largely transparent to developers, and preserves the teamwork, agility and speed of DevOps and agile development environments, delivering "DevSecOps."

### Key Challenges

- DevOps compliance is a top concern of IT leaders, but information security is seen as an inhibitor to DevOps agility.
- Security infrastructure has lagged in its ability to become "software defined" and programmable, making it difficult to integrate security controls into DevOps-style workflows in an automated, transparent way.
- Modern applications are largely "assembled," not developed, and developers often download and use known vulnerable open-source components and frameworks.

### Recommendations

Information security architects should:

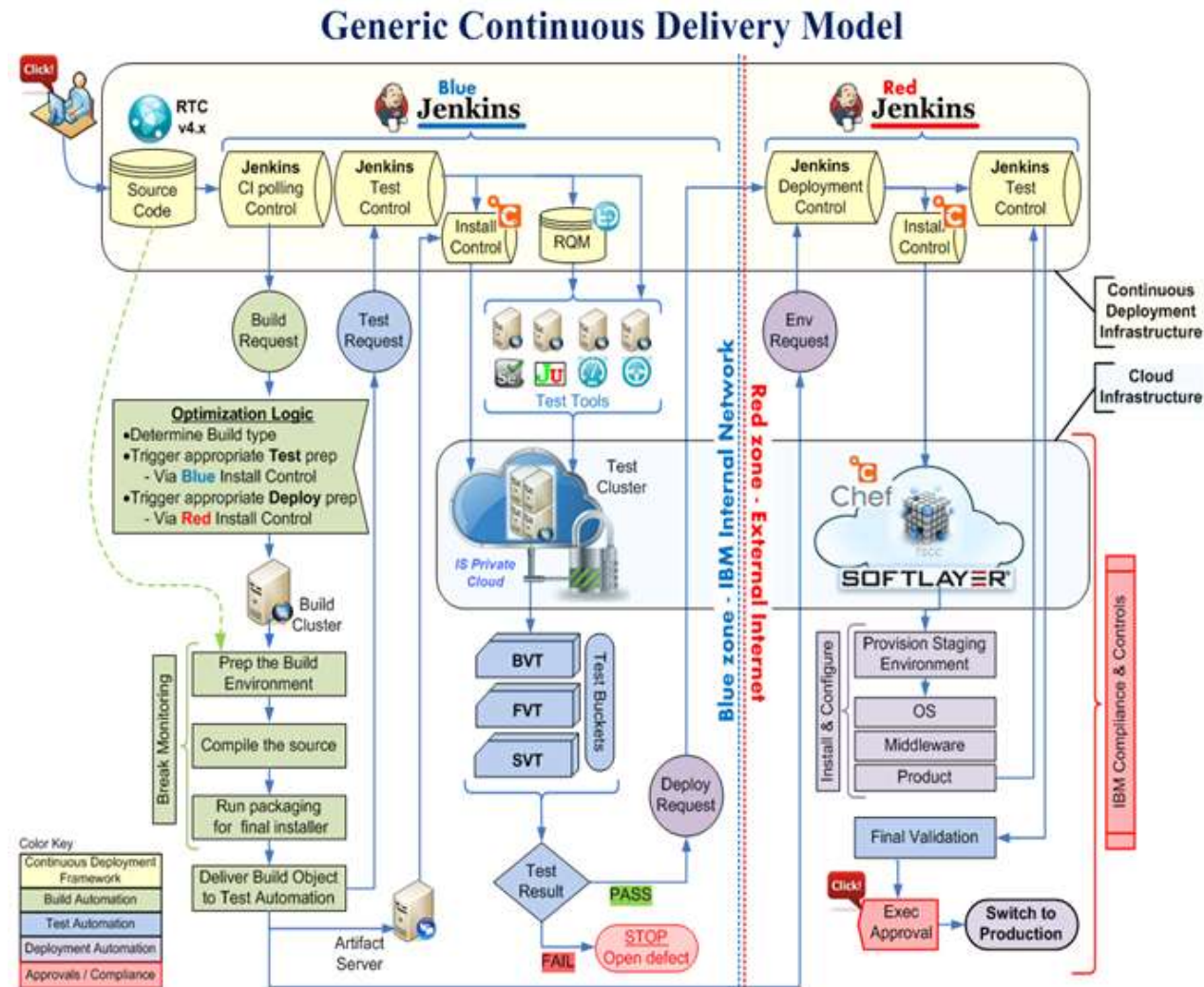
- Start with secure development and training, but don't make developers become security experts or switch tools.
- Embrace the concept of people-centric security and empower developers to take personal responsibility for security compensated for with monitoring. Embrace a "trust and verify" mindset.
- Require all information security platforms to expose full functionality via APIs for automatability.
- Use proven version control practices and tools for all application software and, equally as important, for all scripts, templates and blueprints used in DevOps environments.
- Adopt an immutable infrastructure mindset where production systems are locked down and changed via development.

# Learn more about DevOps and Security.

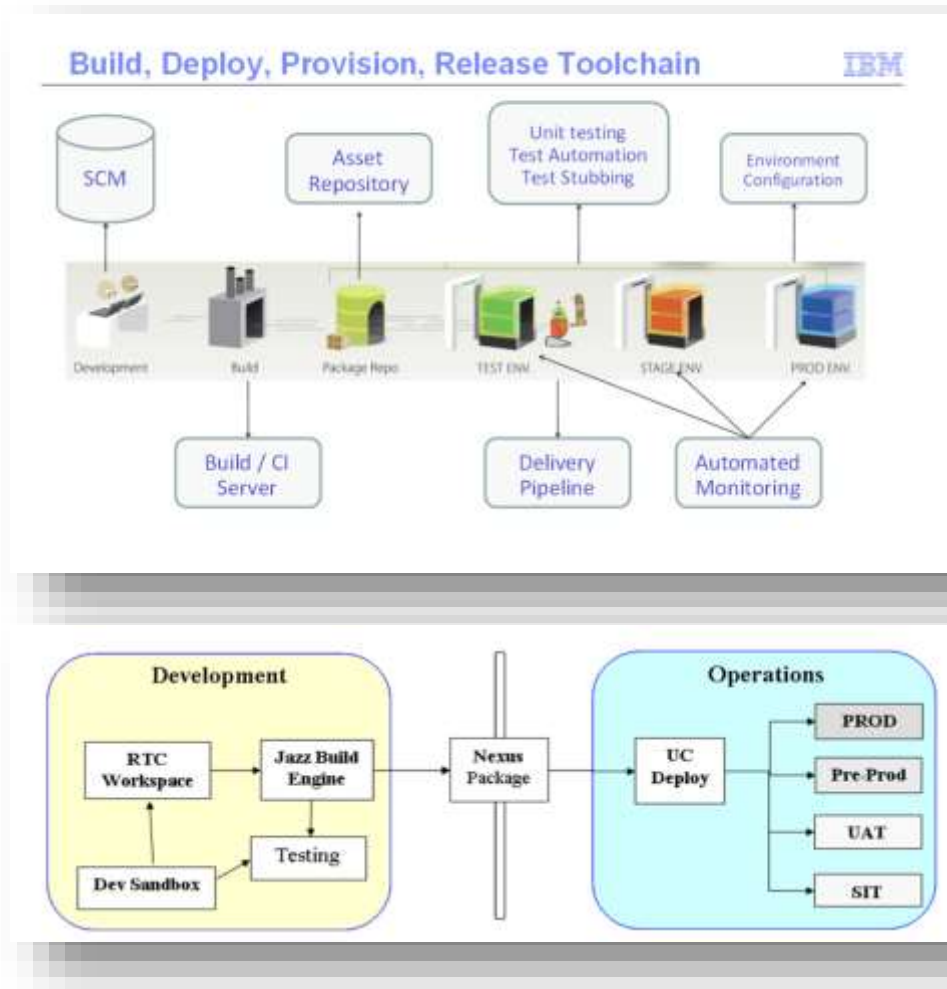
[www.sonatype.com/DevSecOps](http://www.sonatype.com/DevSecOps)



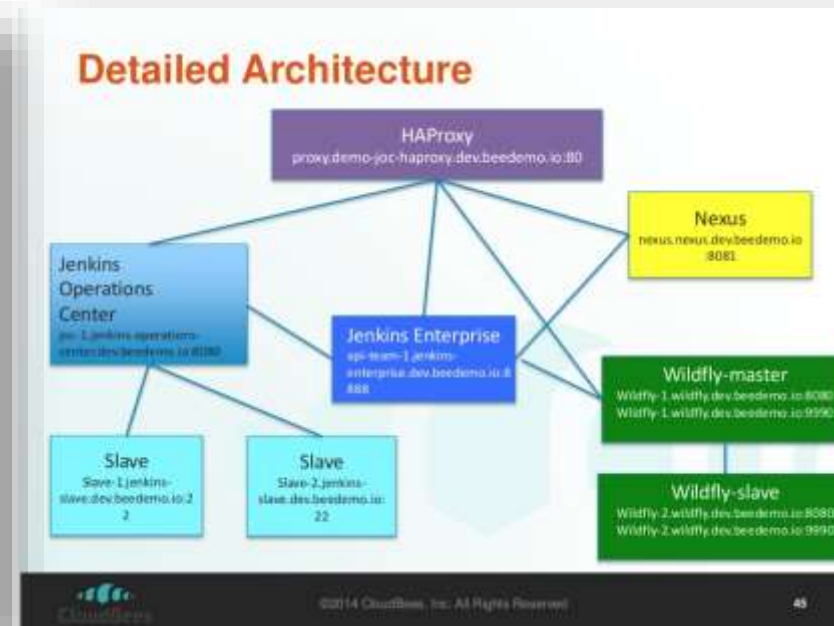
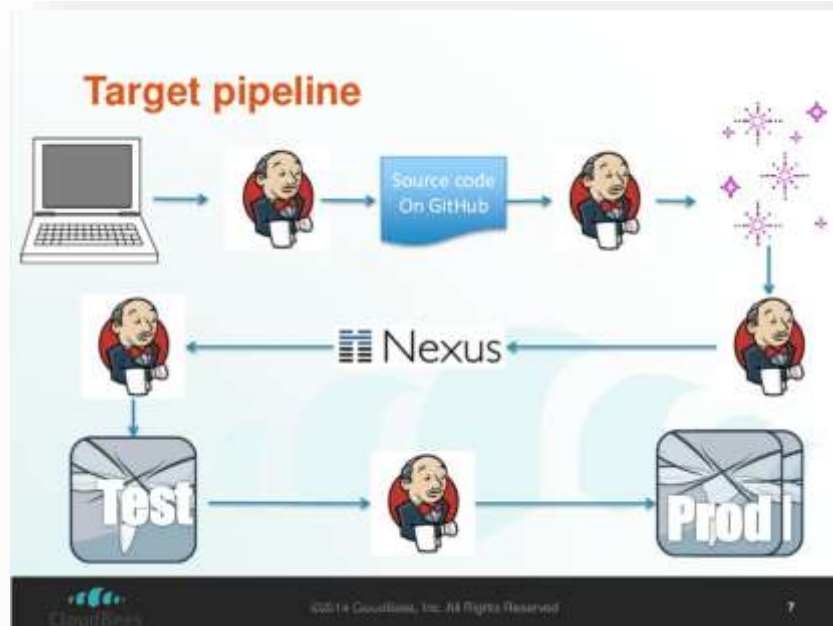
# According to IBM



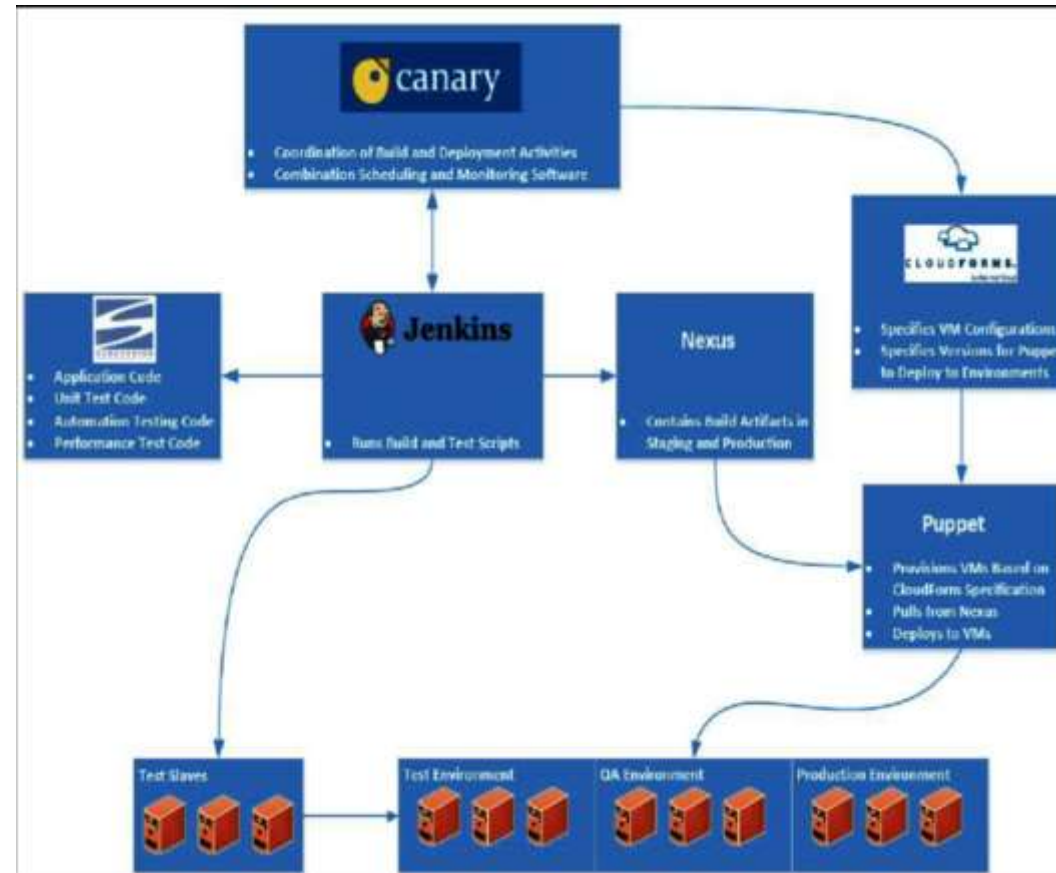
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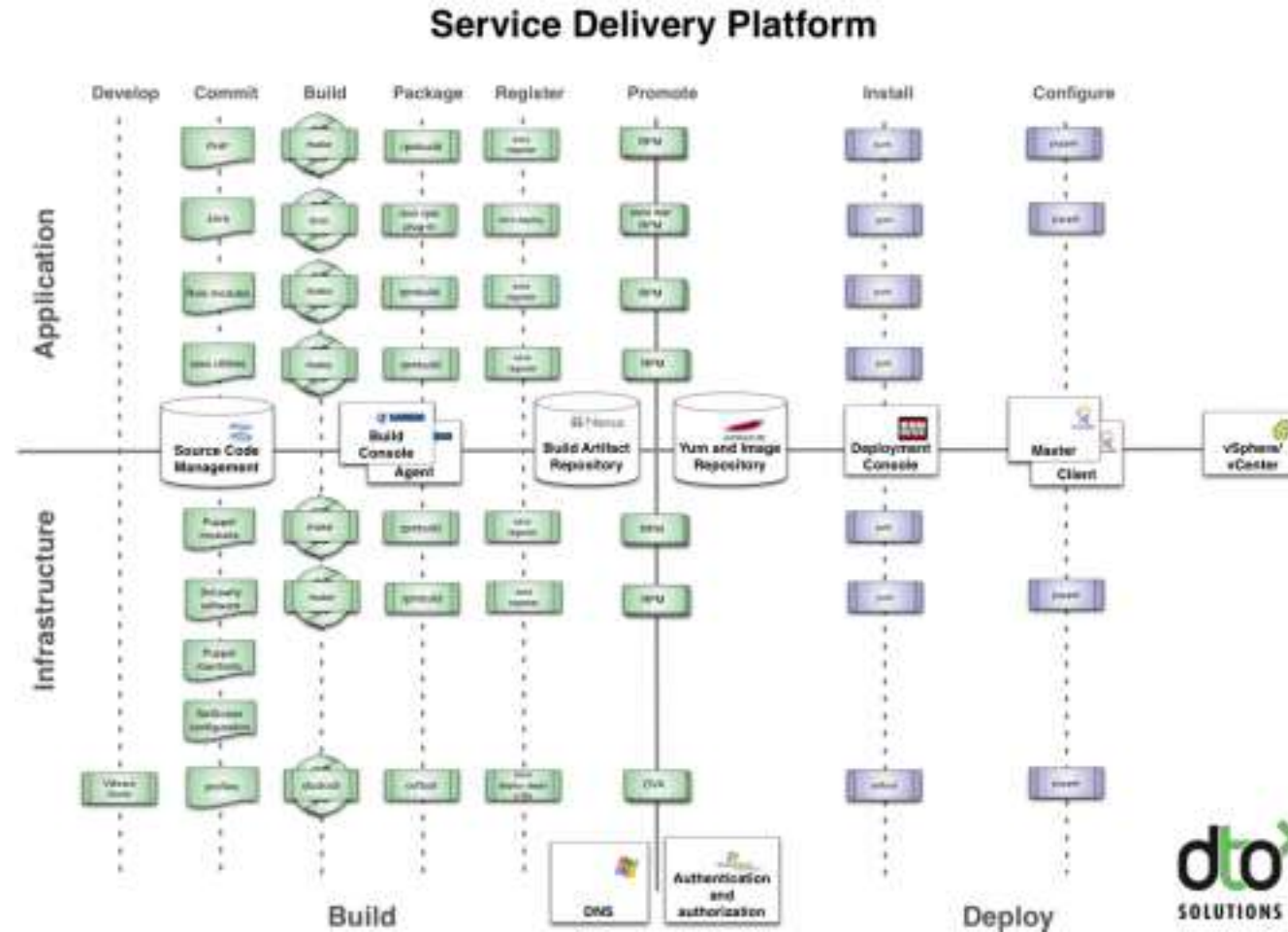
# According to Cloudbees



# According to US Patent & Trade Office (USPTO)



# According to Rundeck

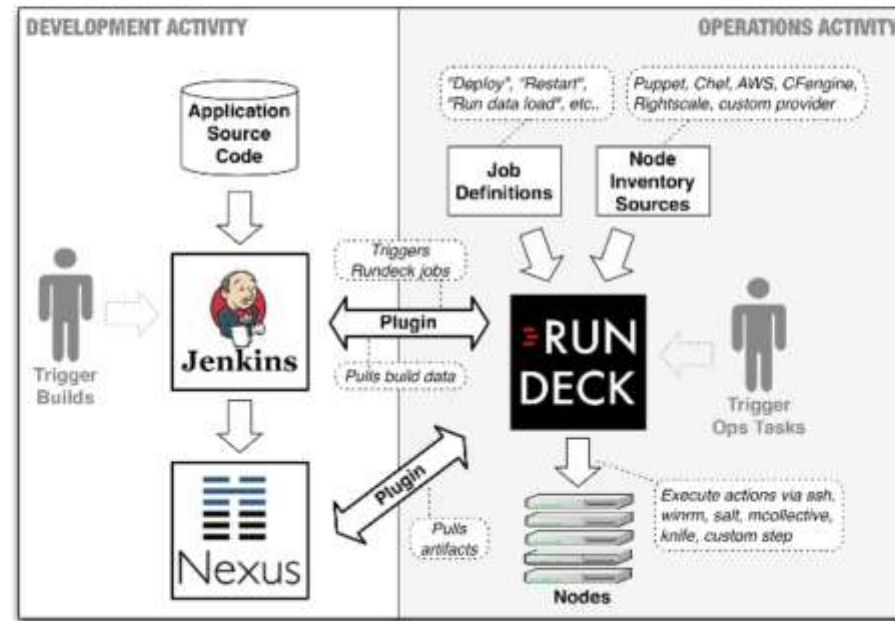




# According to Rundeck

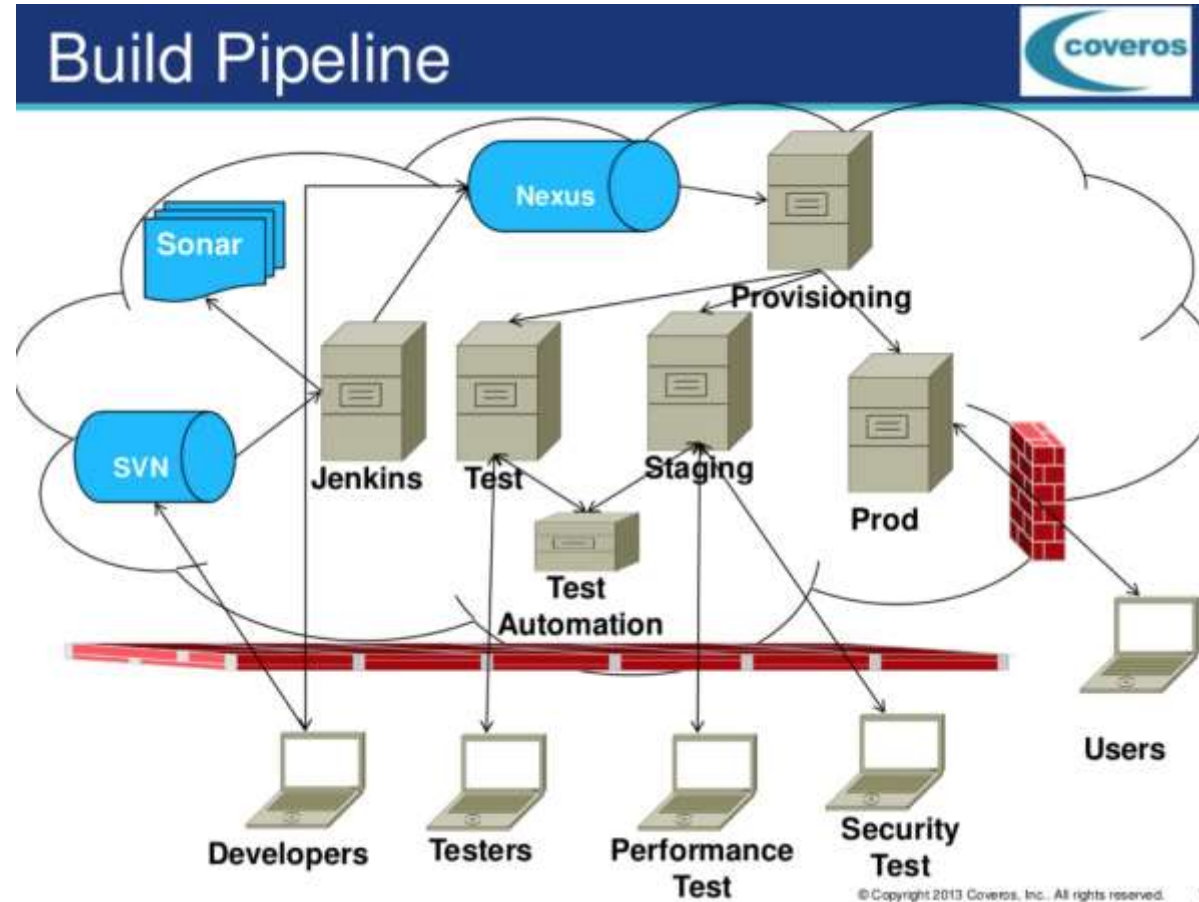


## Popular Trio: Jenkins + Nexus + Rundeck

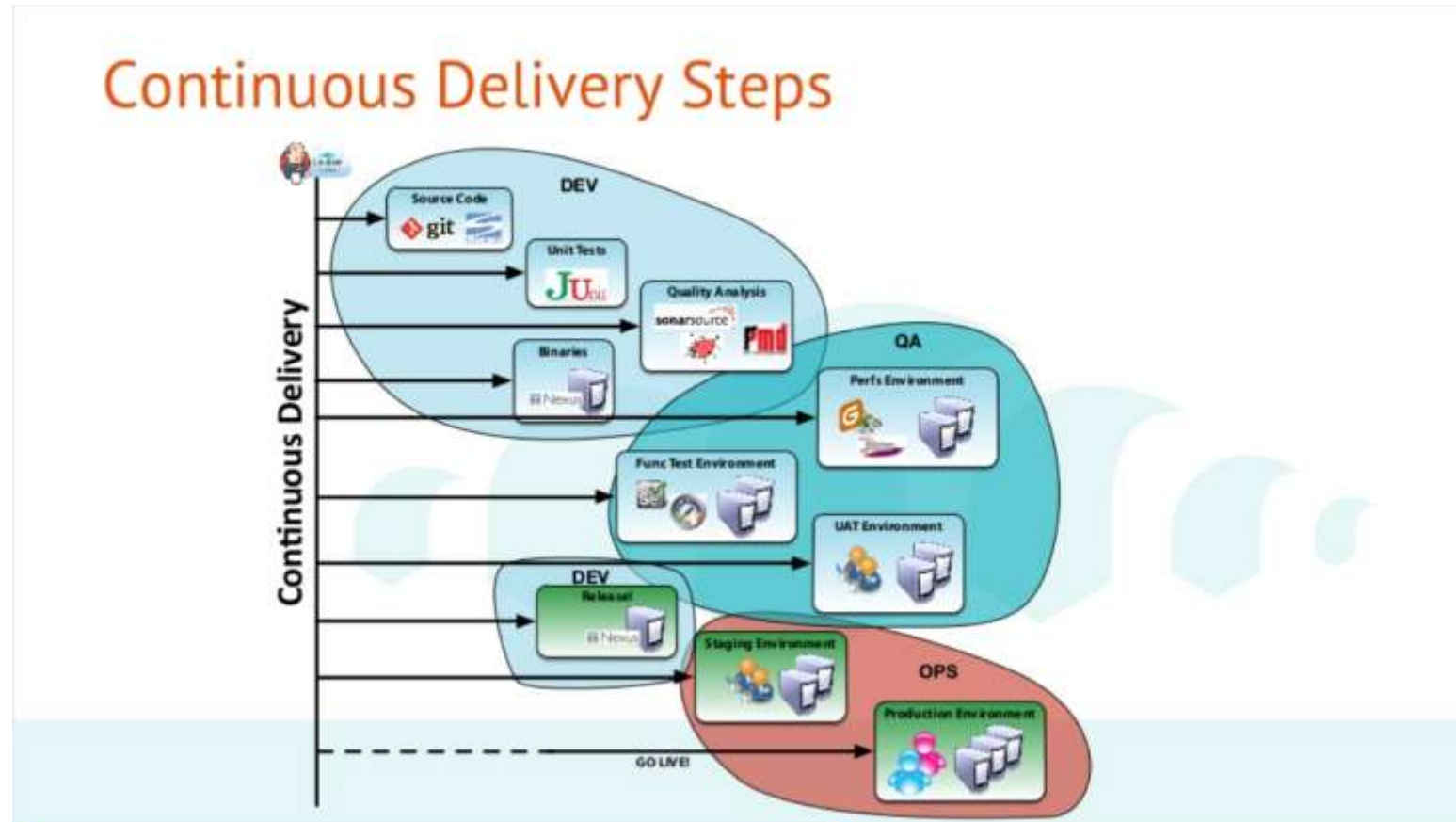




# According to Coveros

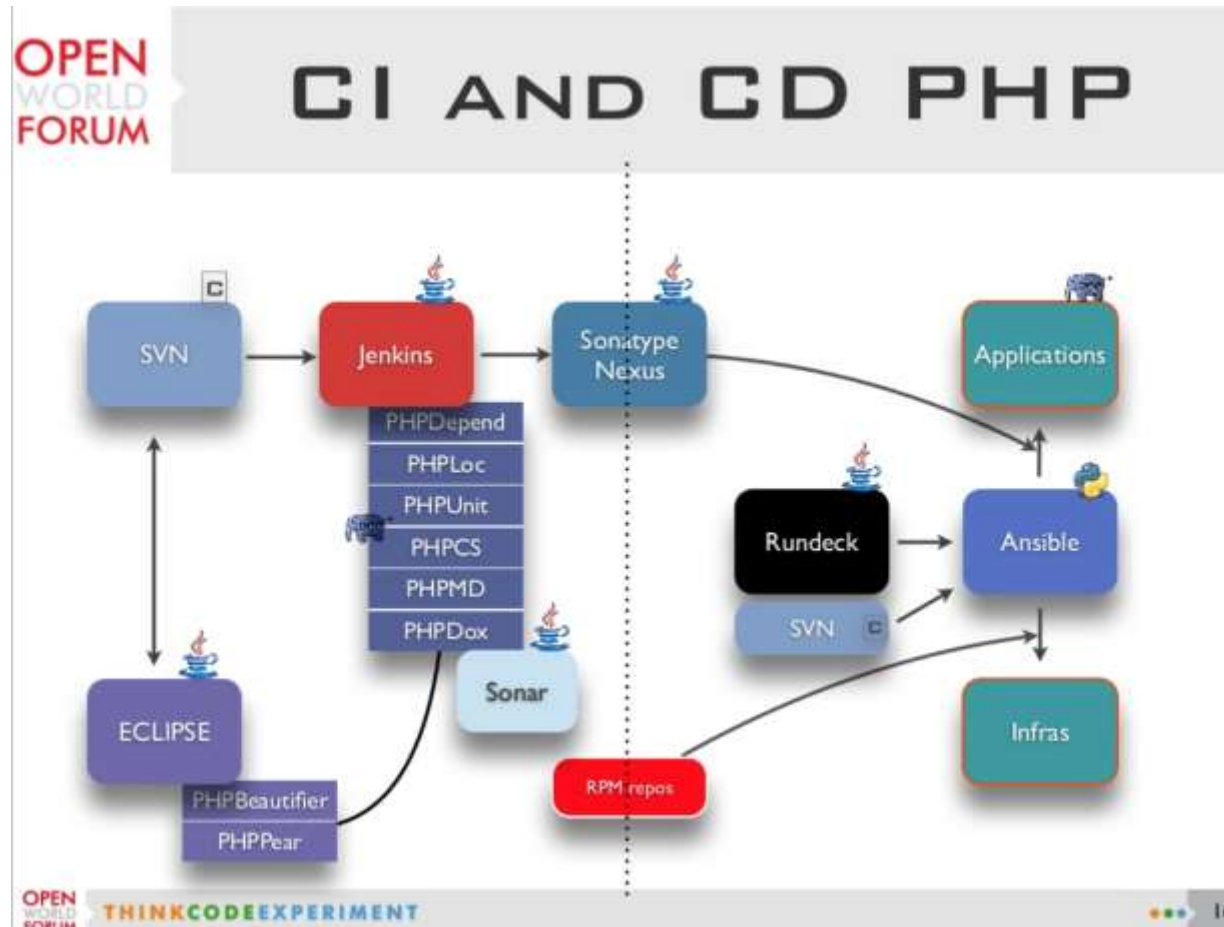


# According to Xebia

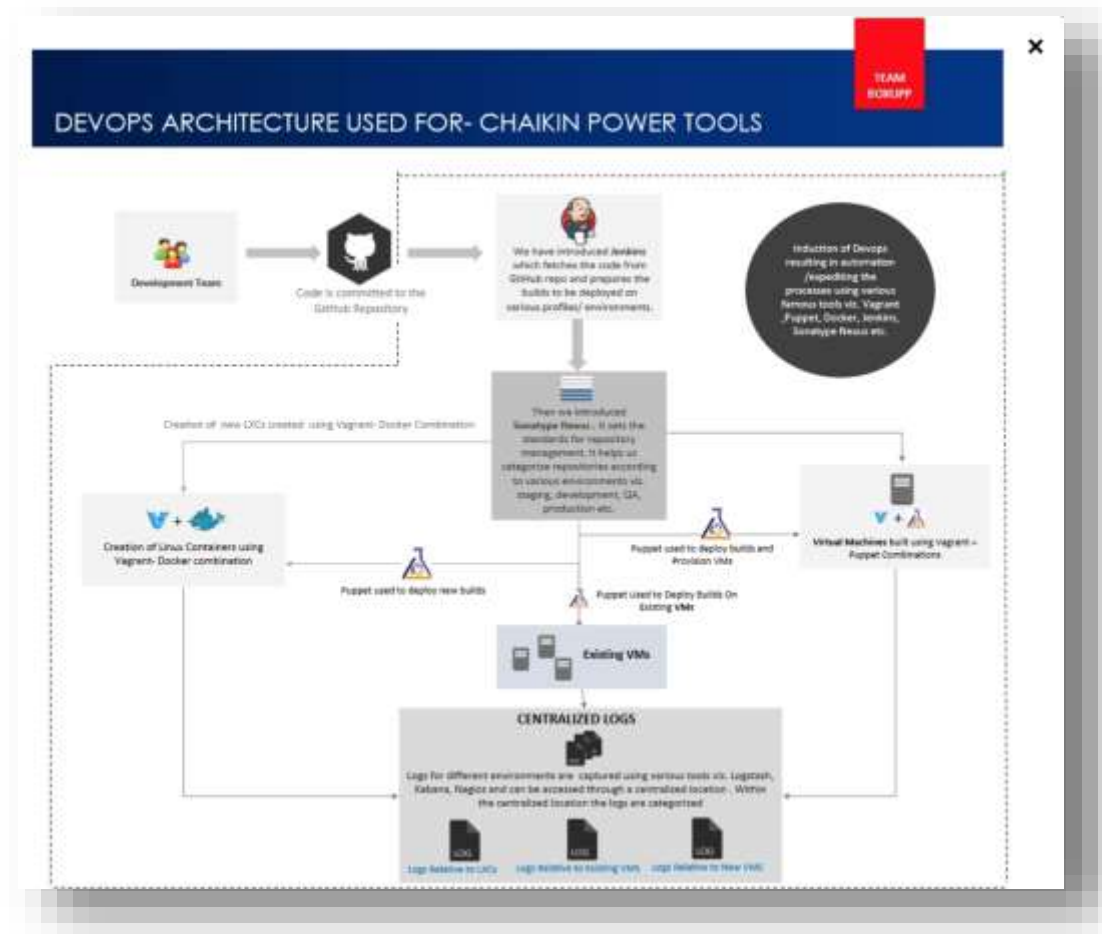


# Nexus at Alter Way

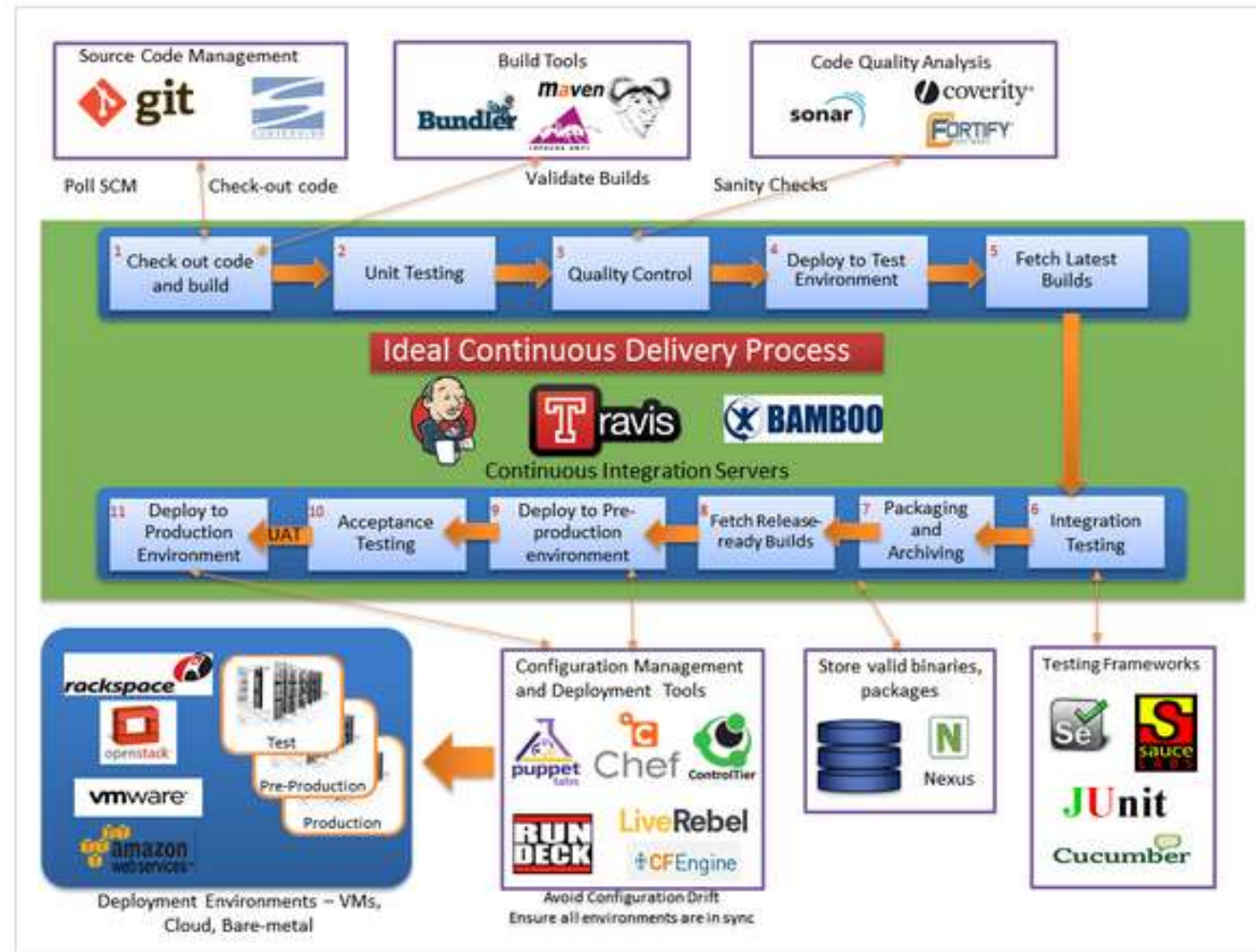
Alter Way



# According to Boxupp



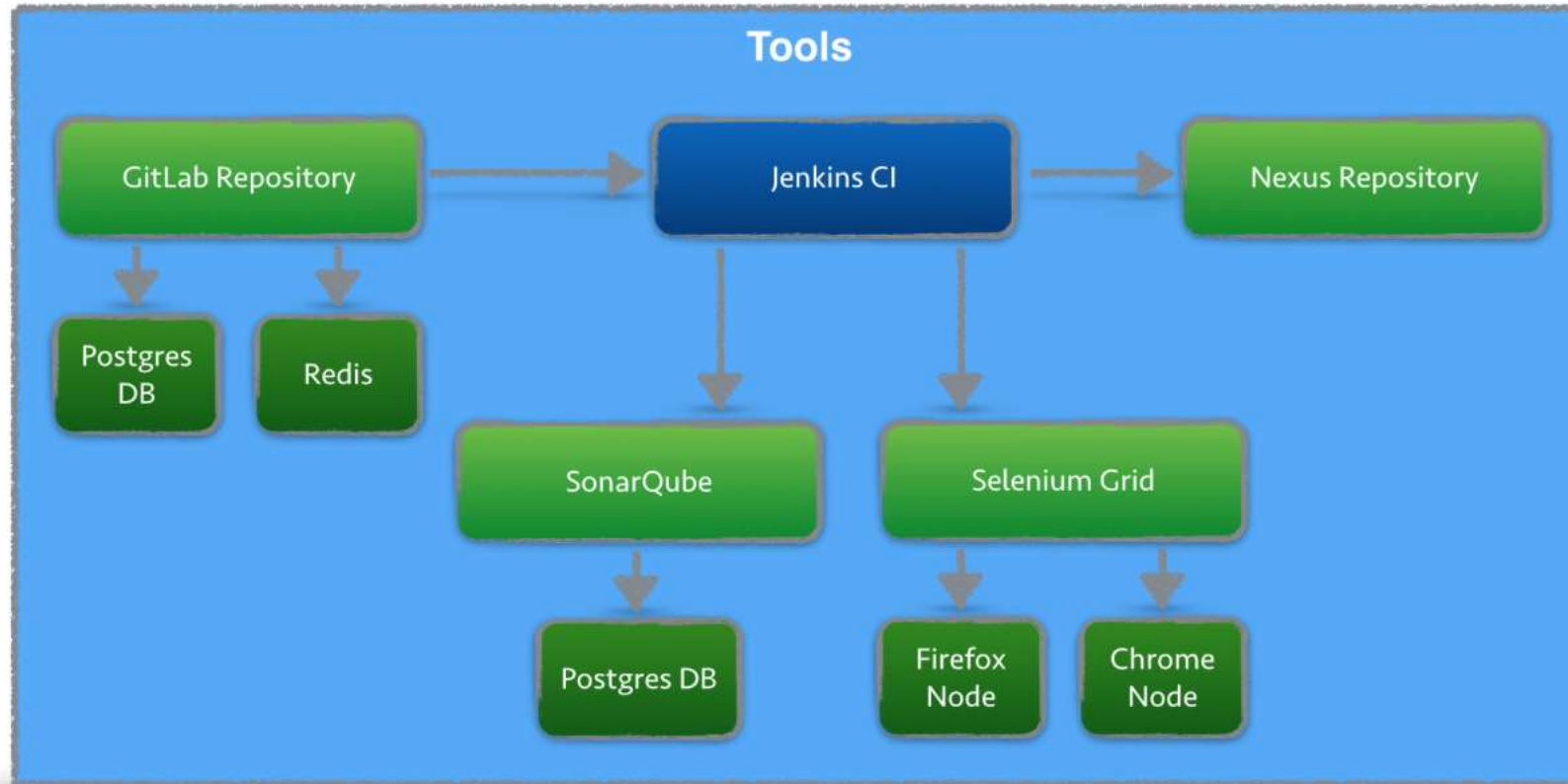
# According to bogotobogo





# According to codecentric

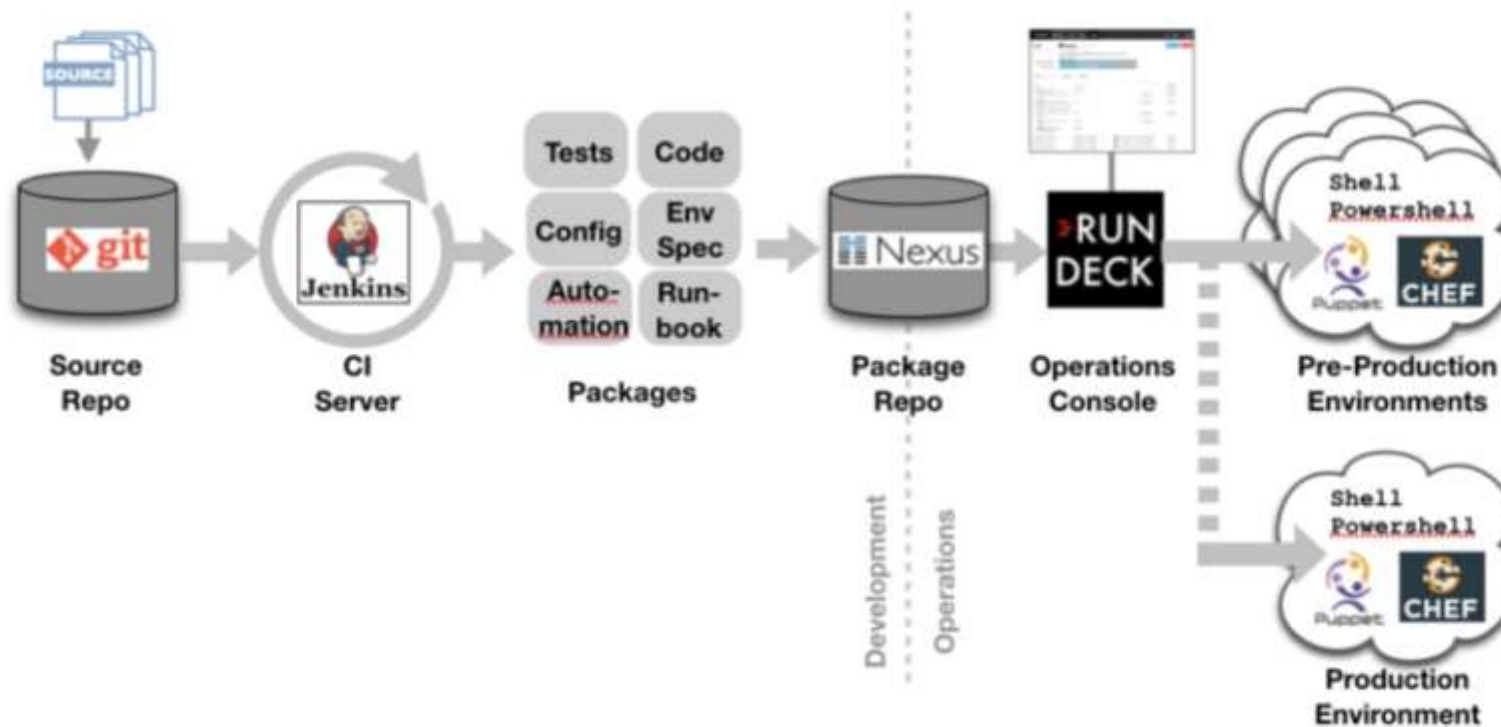
Continuous Integration Platform Using Docker Containers: Jenkins, SonarQube, Nexus, GitLab





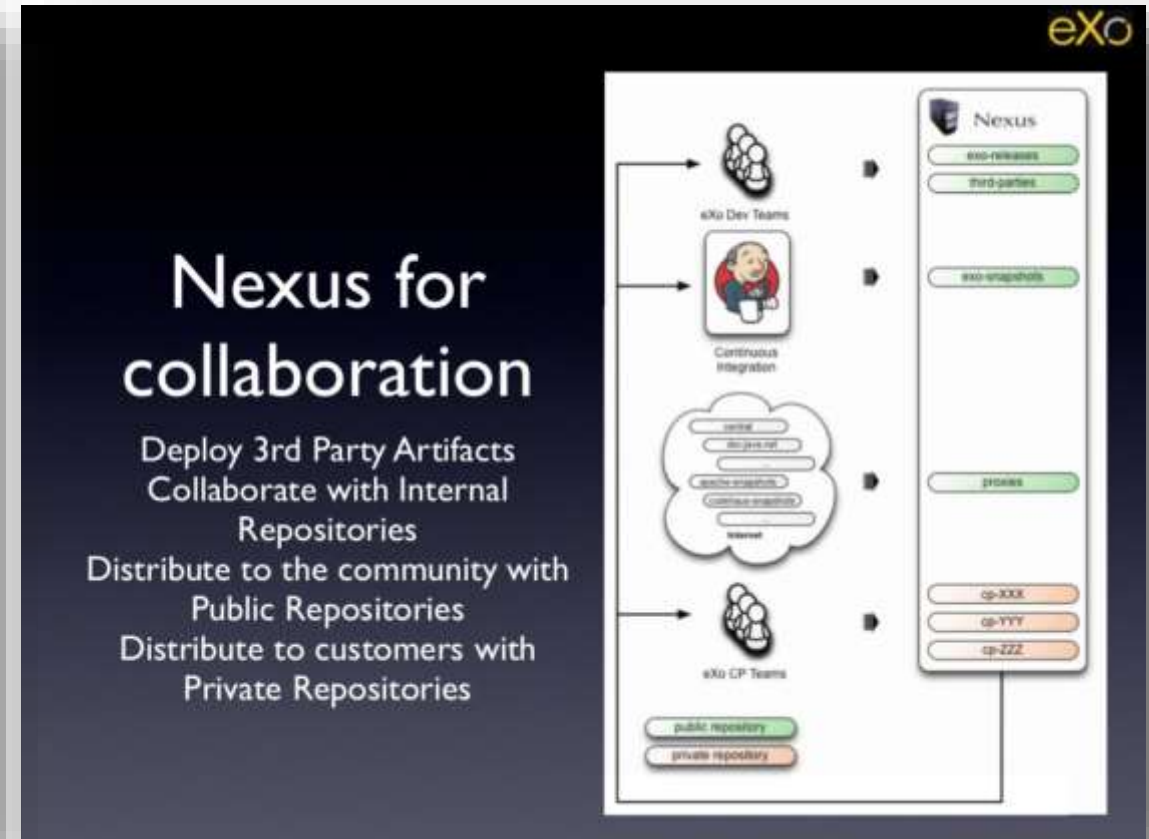
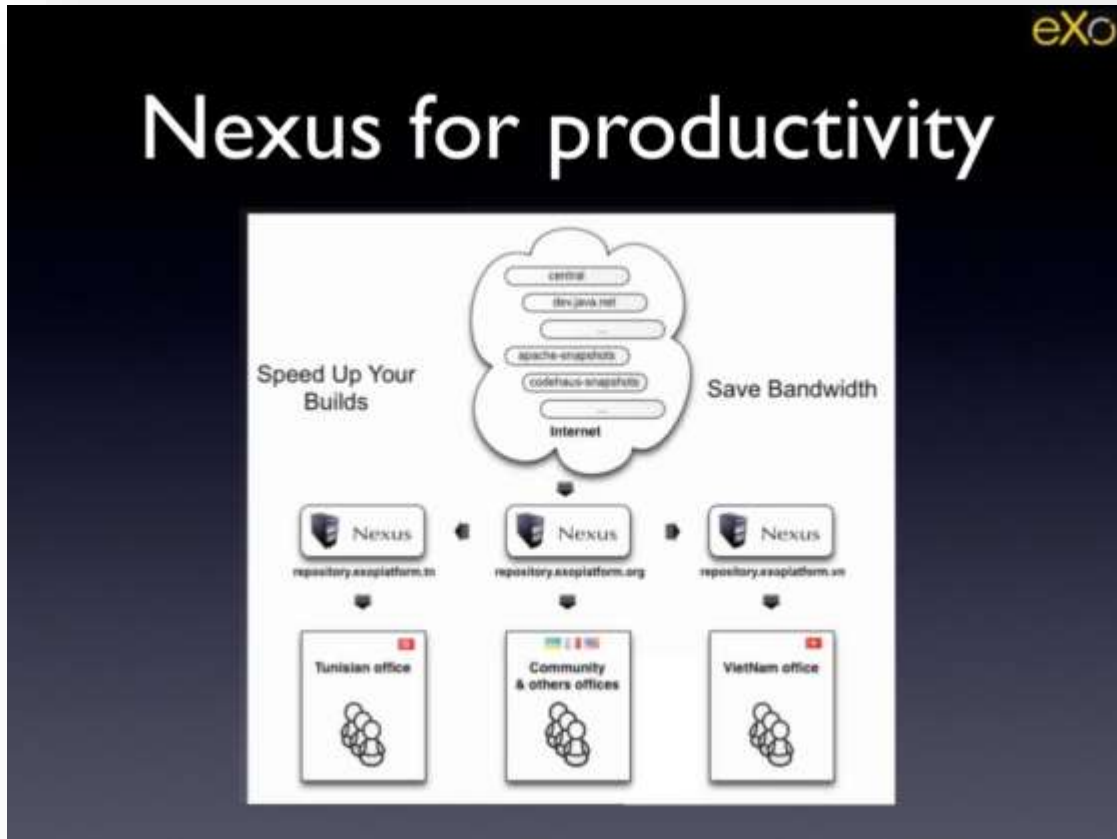
# According to SimplifyOps

#SimplifyOps



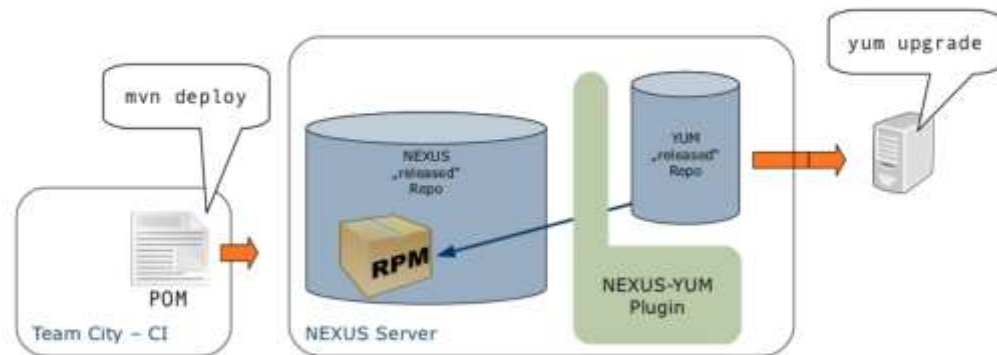
#SimplifyOps

# According to eXo Software



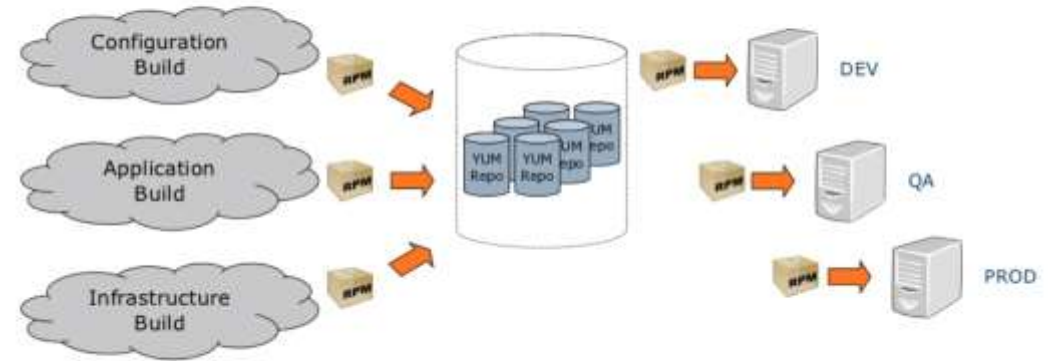
# According to ImmobilienScout24

## Application Build – Site-wide Releases



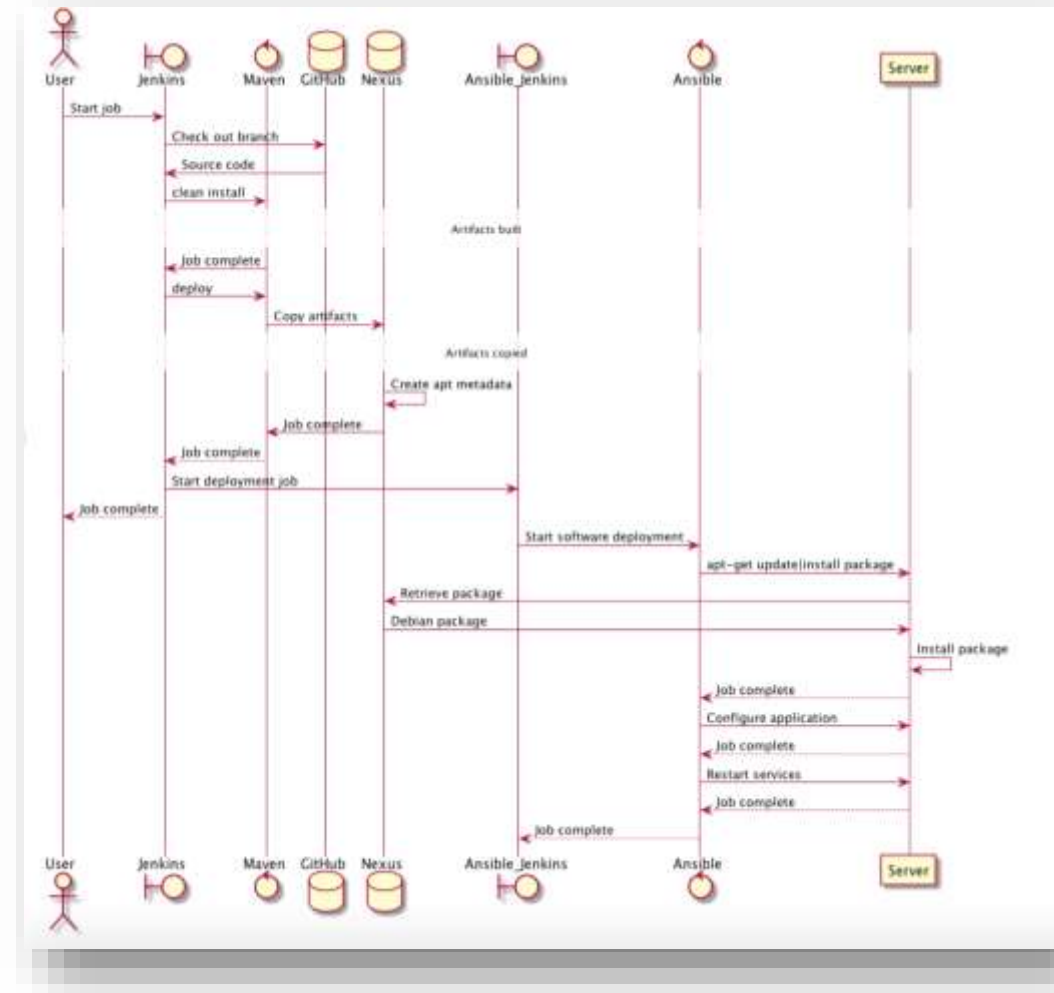
20 Overview **File Mgmt** Systems Mgmt Lessons Learned

## File Management through many YUM repositories

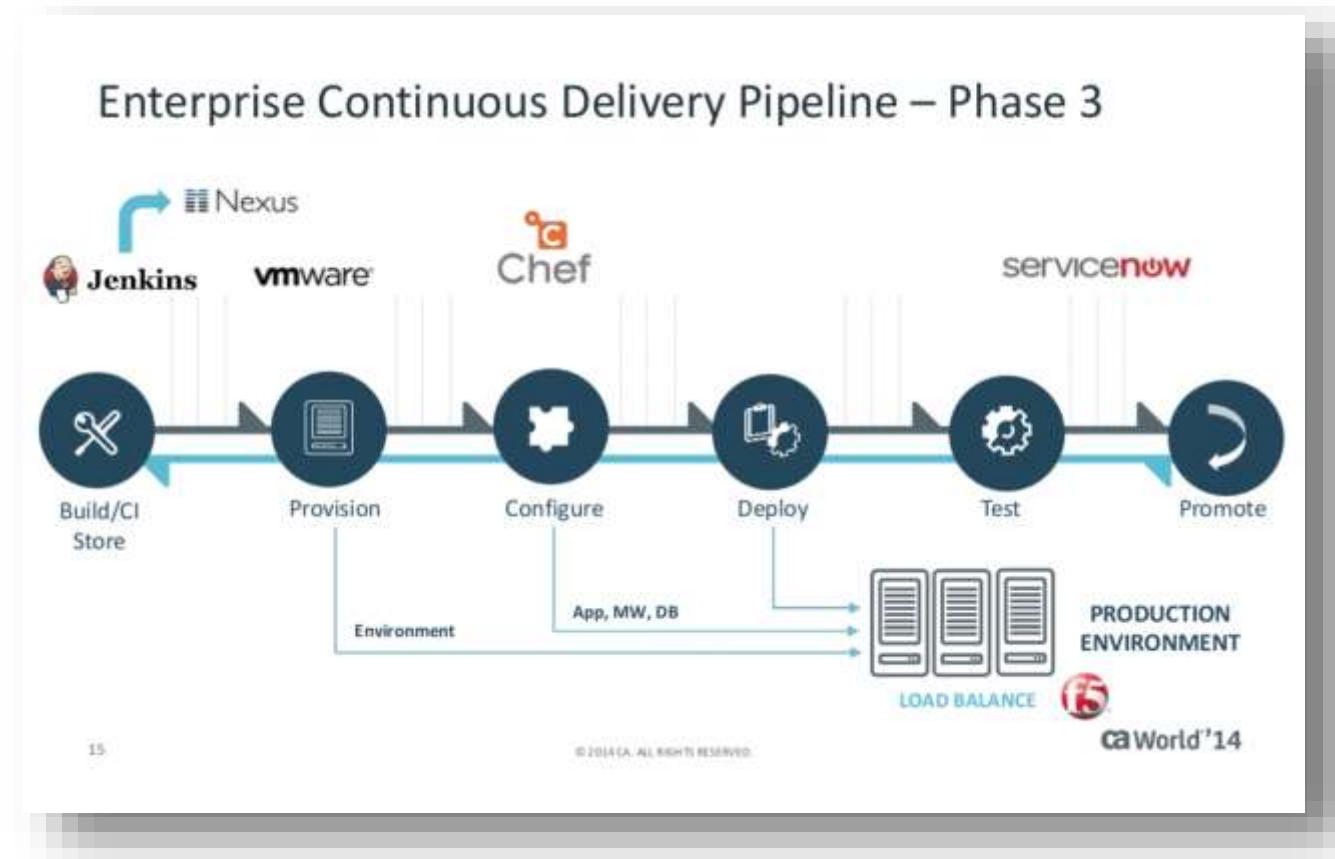


21 Overview **File Mgmt** Systems Mgmt Lessons Learned

# According to IHTSDO



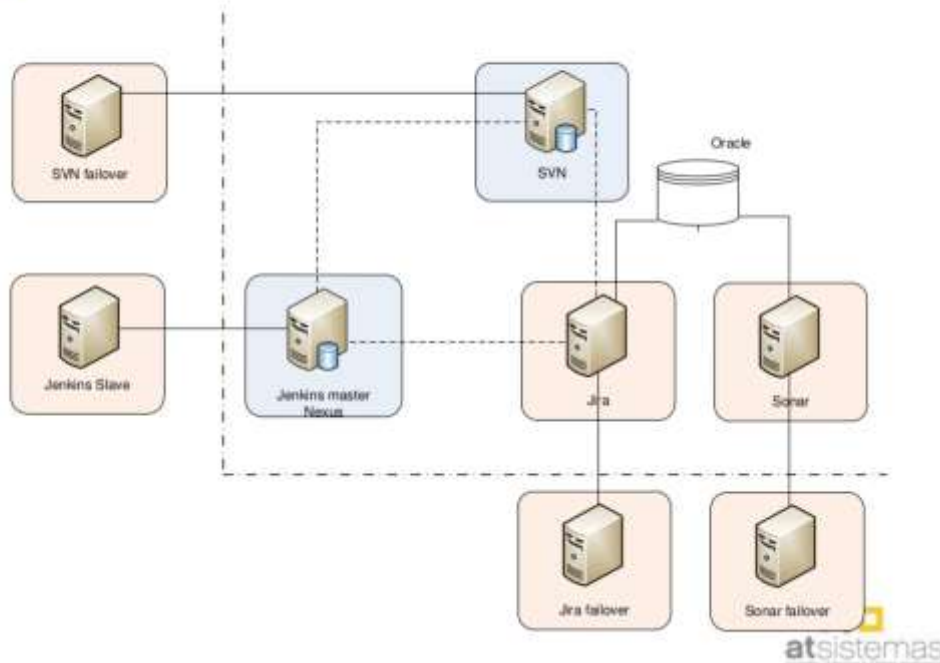
# According to CA Technologies



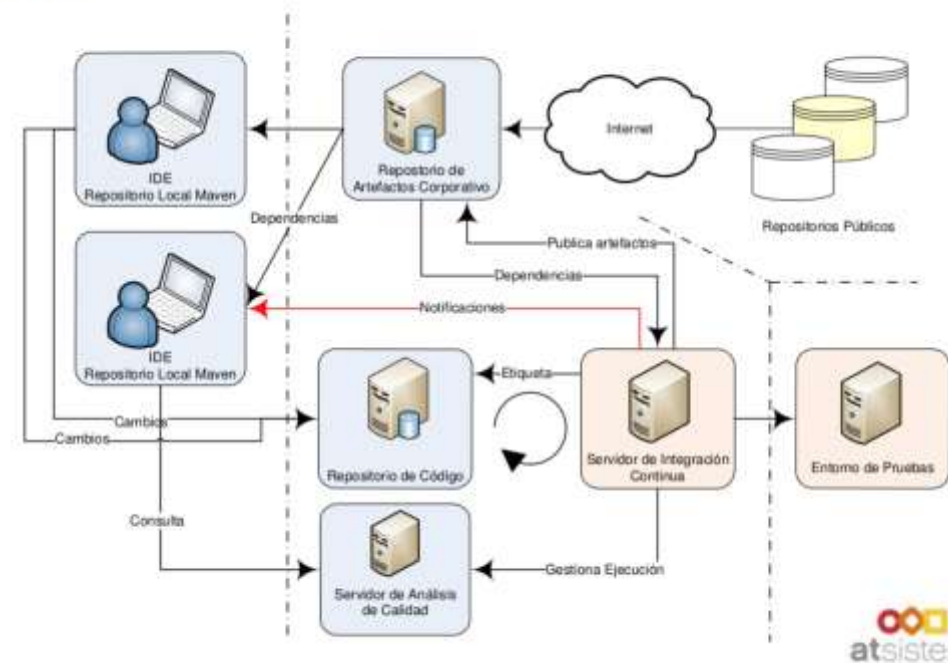
# According to atSistemas



## 3. Caso práctico – Diagrama de sistemas



## 3. Caso práctico - Desarrollo

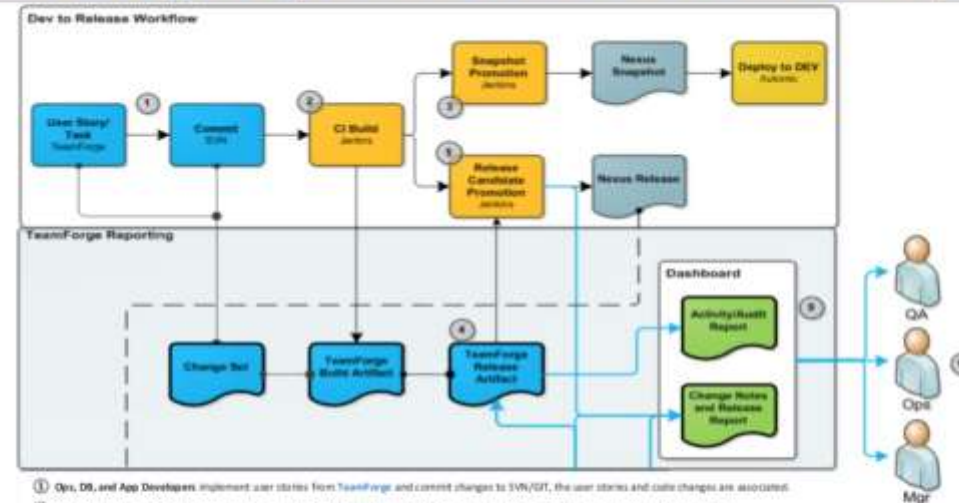




# According to CollabNet

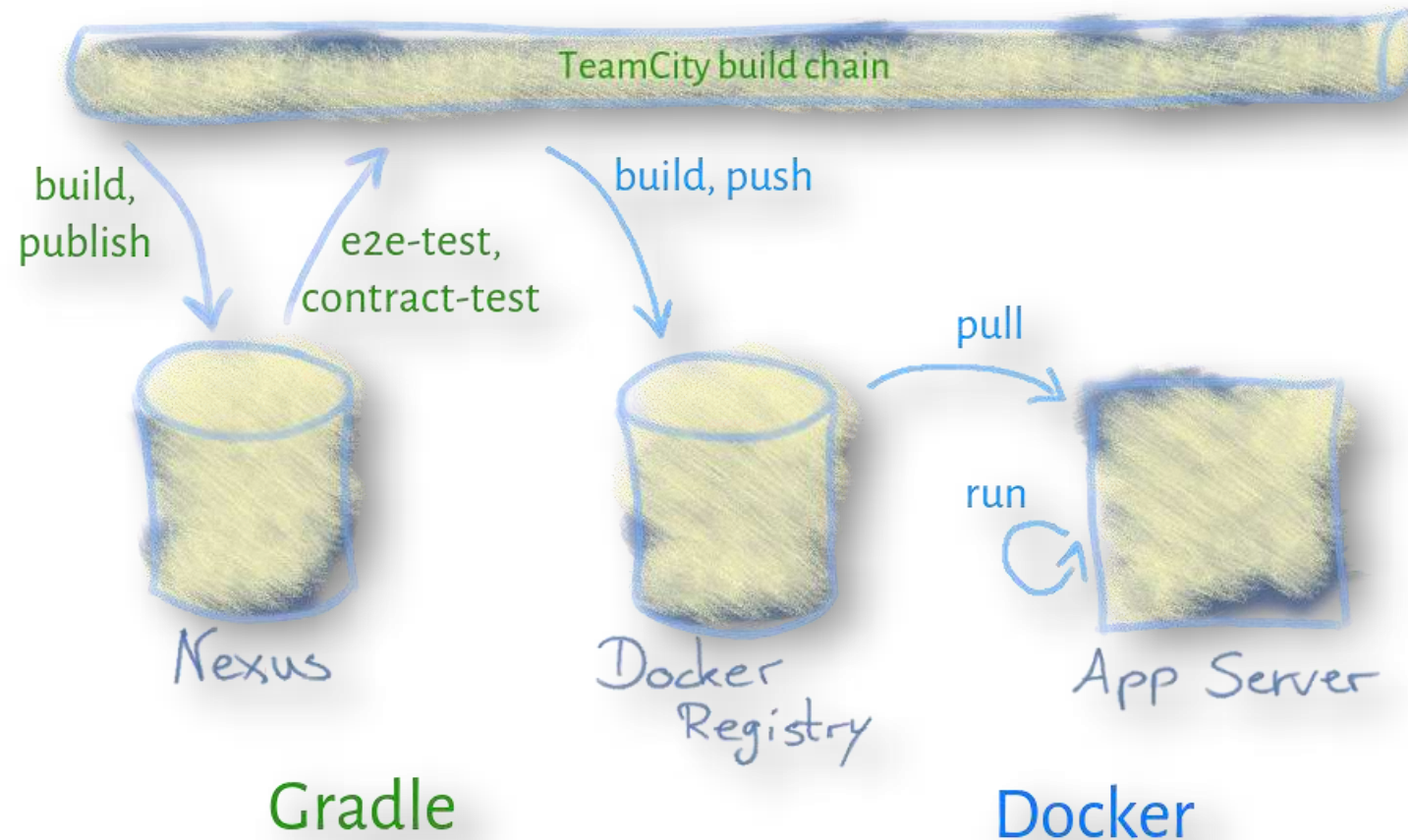


## Connect Agile Upstream to Downstream: Example



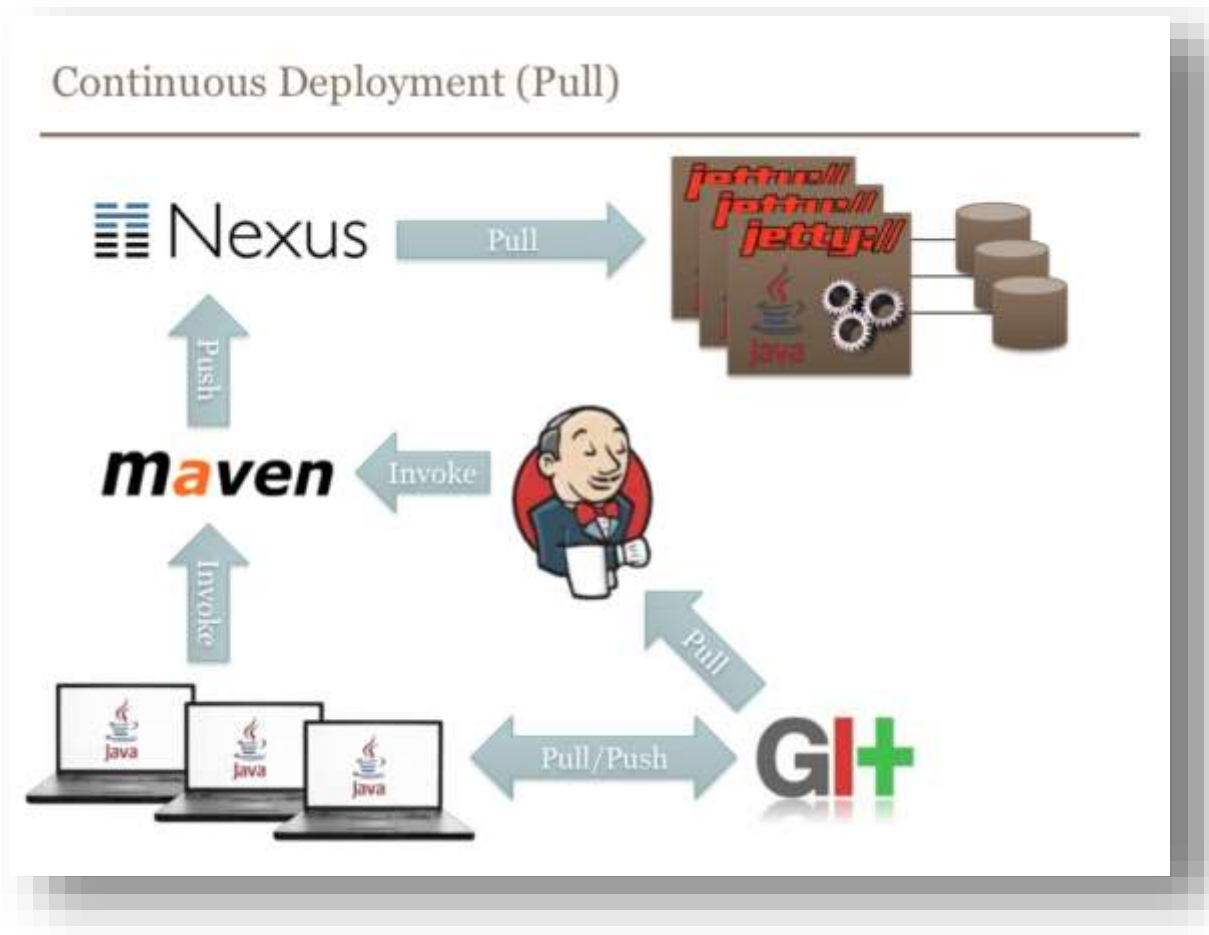
1. Ops, DB, and App Developers implement user stories from TeamForge and commit changes to SVN/GIT, the user stories and code changes are associated.
2. A CI build job runs, executing unit tests, code analysis, etc., a TeamForge Build Artifact is created, change notes are generated and associated.
3. Every 15 minutes or on-demand a snapshot build is published to the Needs Snapshot. The snapshot build is deployed to the Development servers by Automic.
4. The Project Manager reviews the Change Notes and Release Folder in TeamForge and using the data decides to promote a build as a Release Candidate, she creates a Release Manager Artifact (RMA) and sets it to "Ready to Release."
5. A Jenkins Release Candidate Promotion job runs executing the application build, publishing the artifacts to Needs, and populating Automic with the release meta-data.
6. An Automic package references the Needs release holding the release candidate to be deployed.
7. Operations, QA and/or Change Management promote and deploy the release candidate using Automic Workflow.
8. At each promotion and deployment step the TeamForge Release Artifact is updated from Automic, and team members receive email notifications.
9. The Release Dashboard in TeamForge provides up-to-date pipeline Activity Reports and Release Notes.
10. Dev, QA, Ops and Management can view the Release Dashboard in TeamForge to track activity and make informed decisions.

# According to Hypoport AG

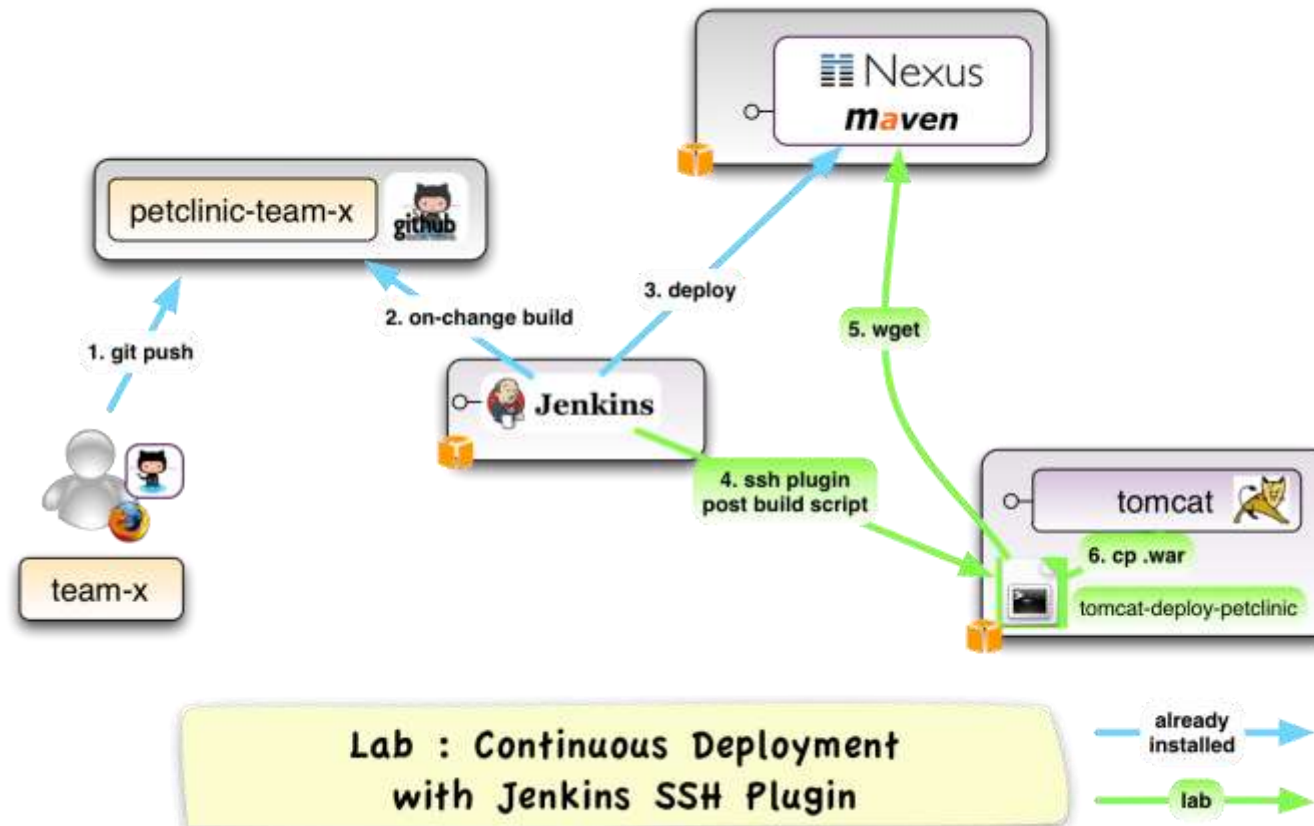


# According to BEKK

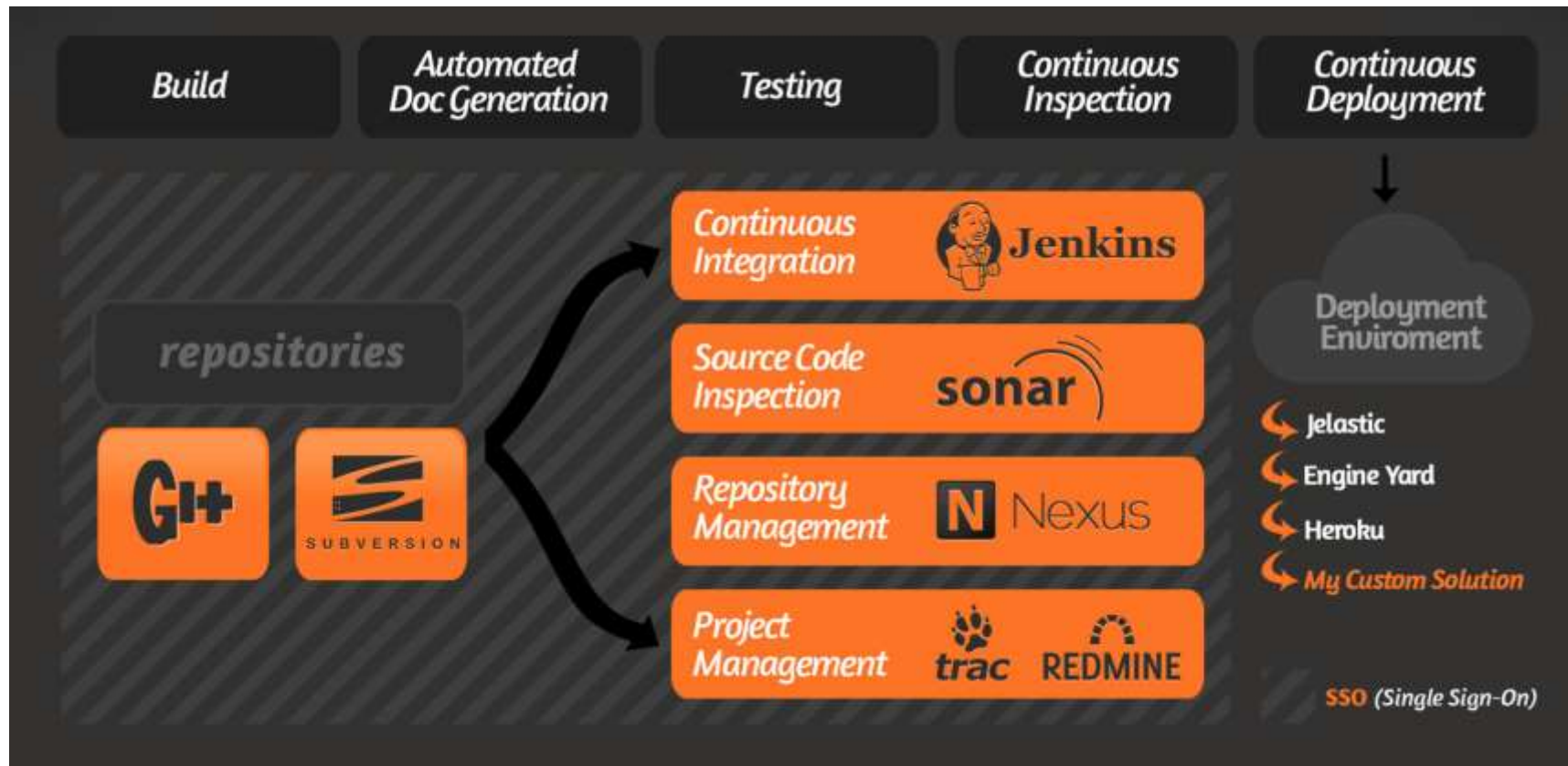
BEKK



# According to Xebia



# According to ClinkerHQ



# According to Zanox



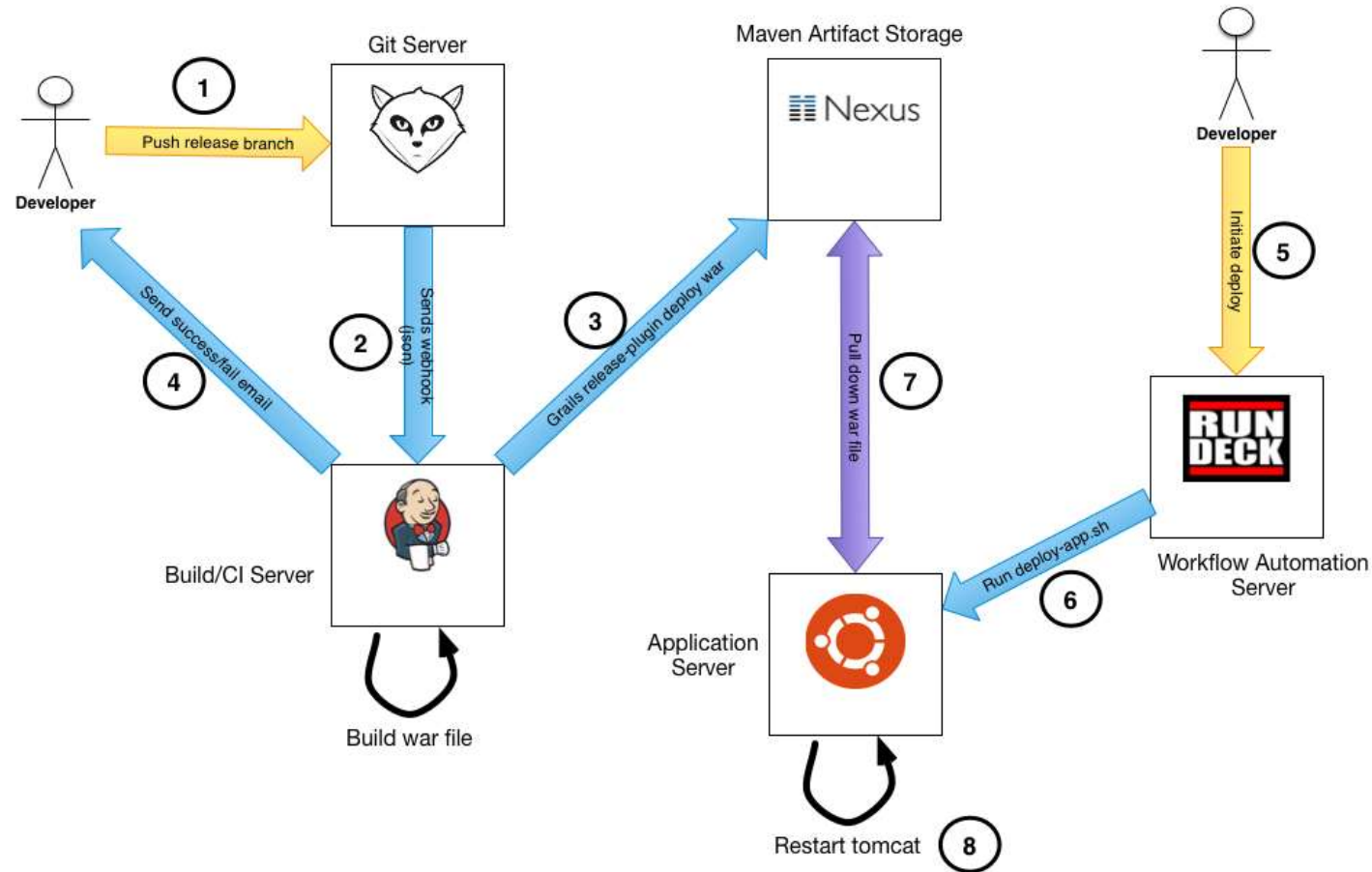
WJAX'13 Business Technology Days

## Chef & JBoss

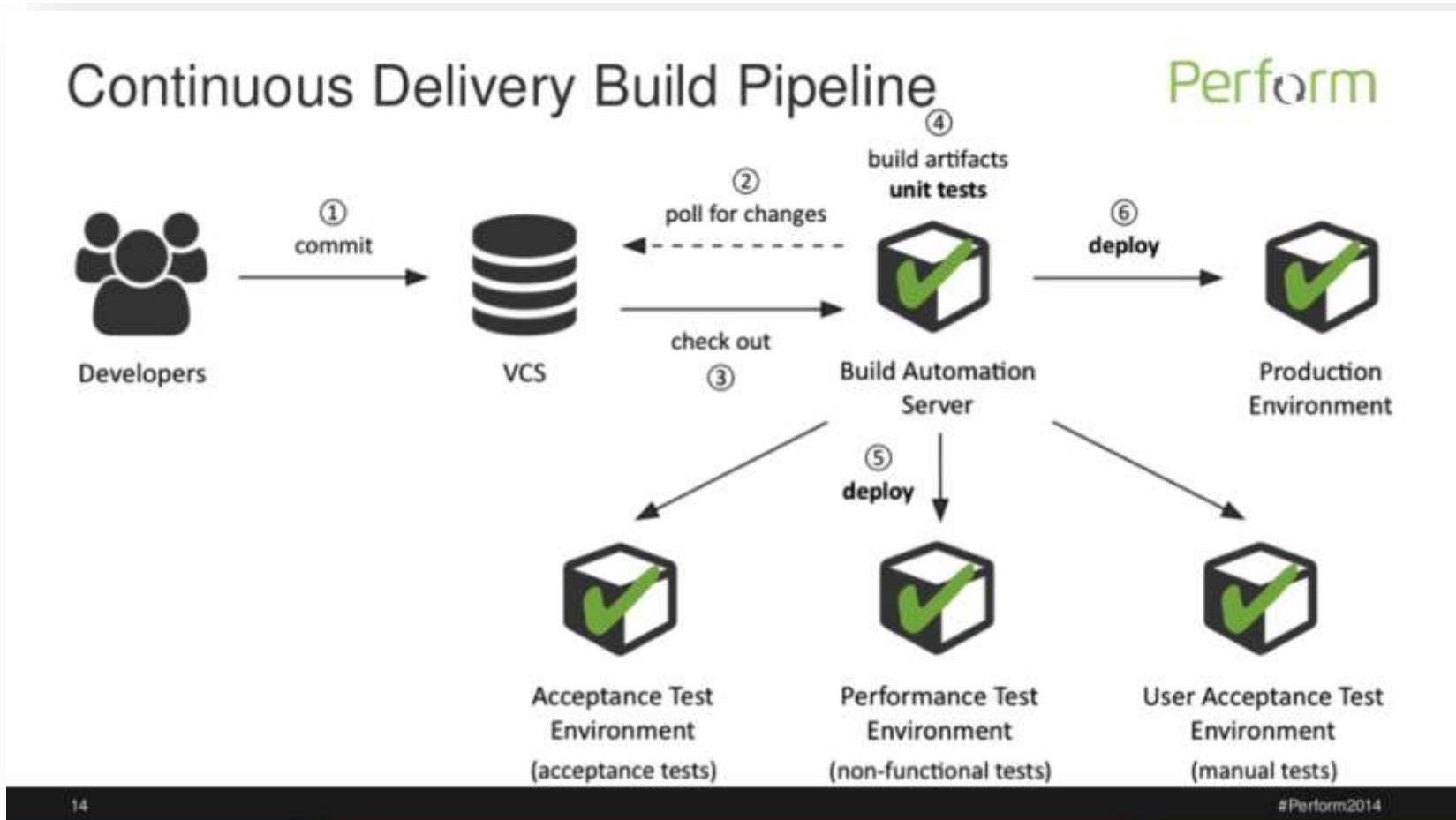
- Fabric
  - Python library and command-line tool
  - Streamlining the use of SSH
  - Application deployment
  - Used to deploy apps from Nexus
  - <https://github.com/fabric/fabric> 



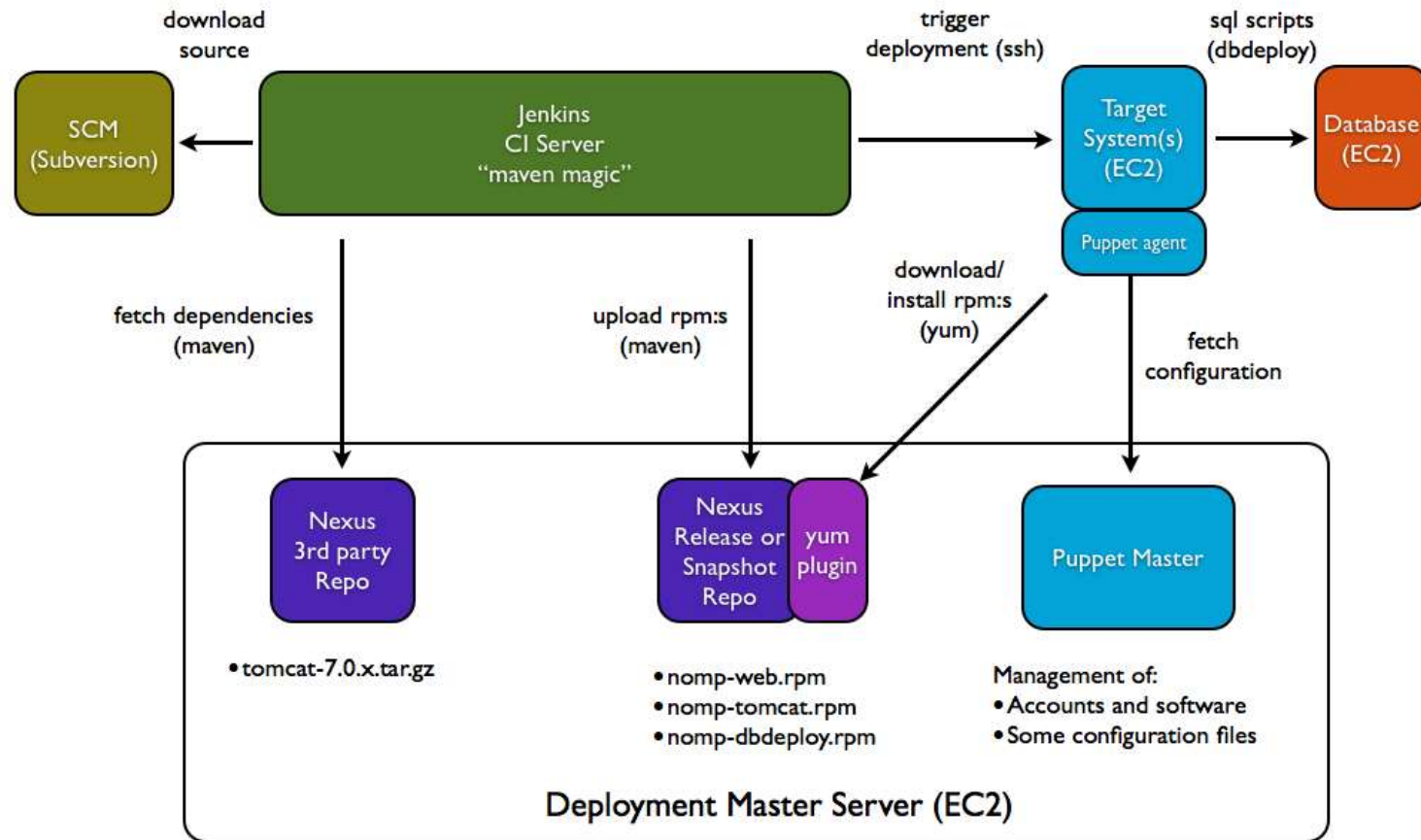
# According to Riverside I/O



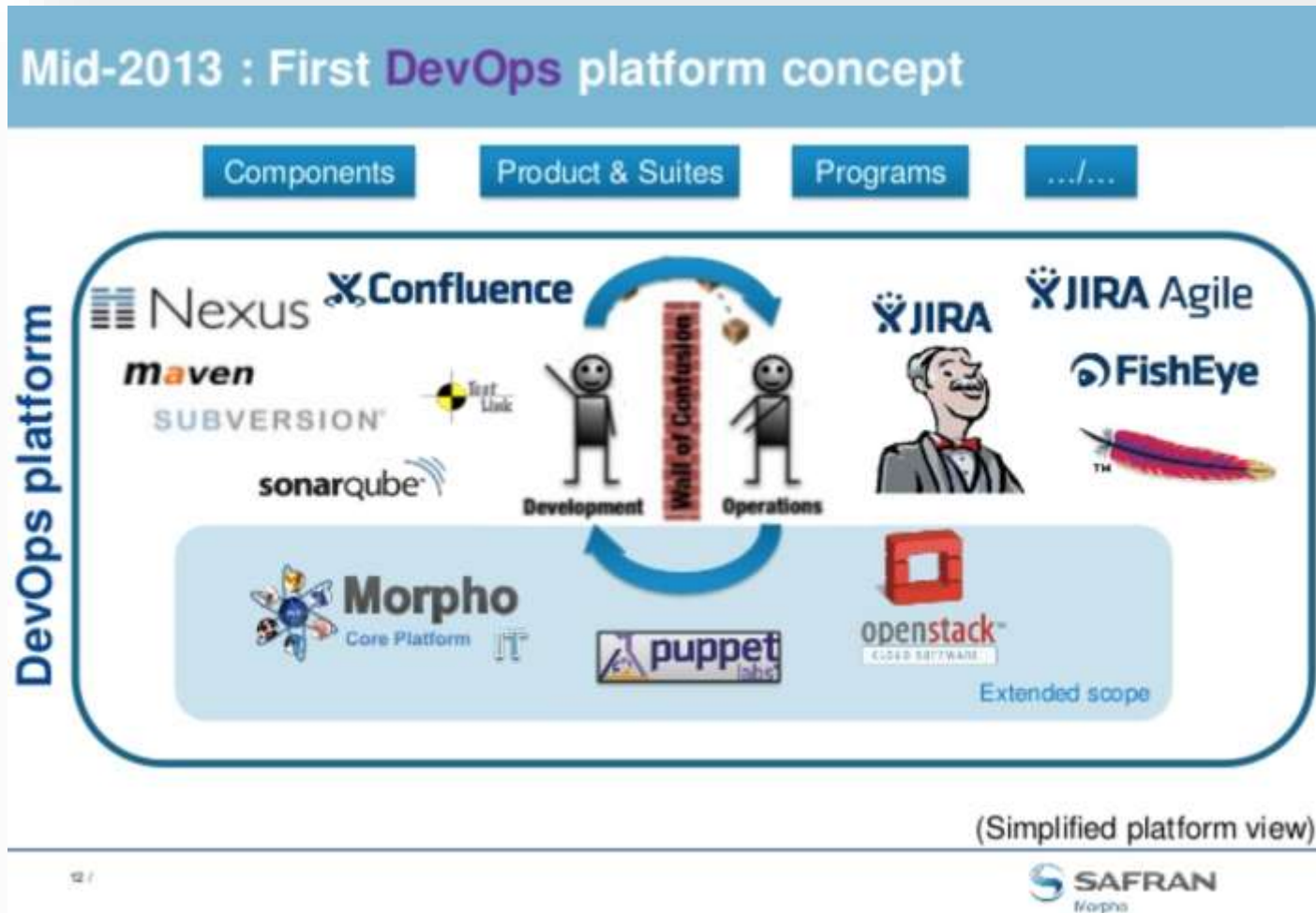
# According to Dynatrace



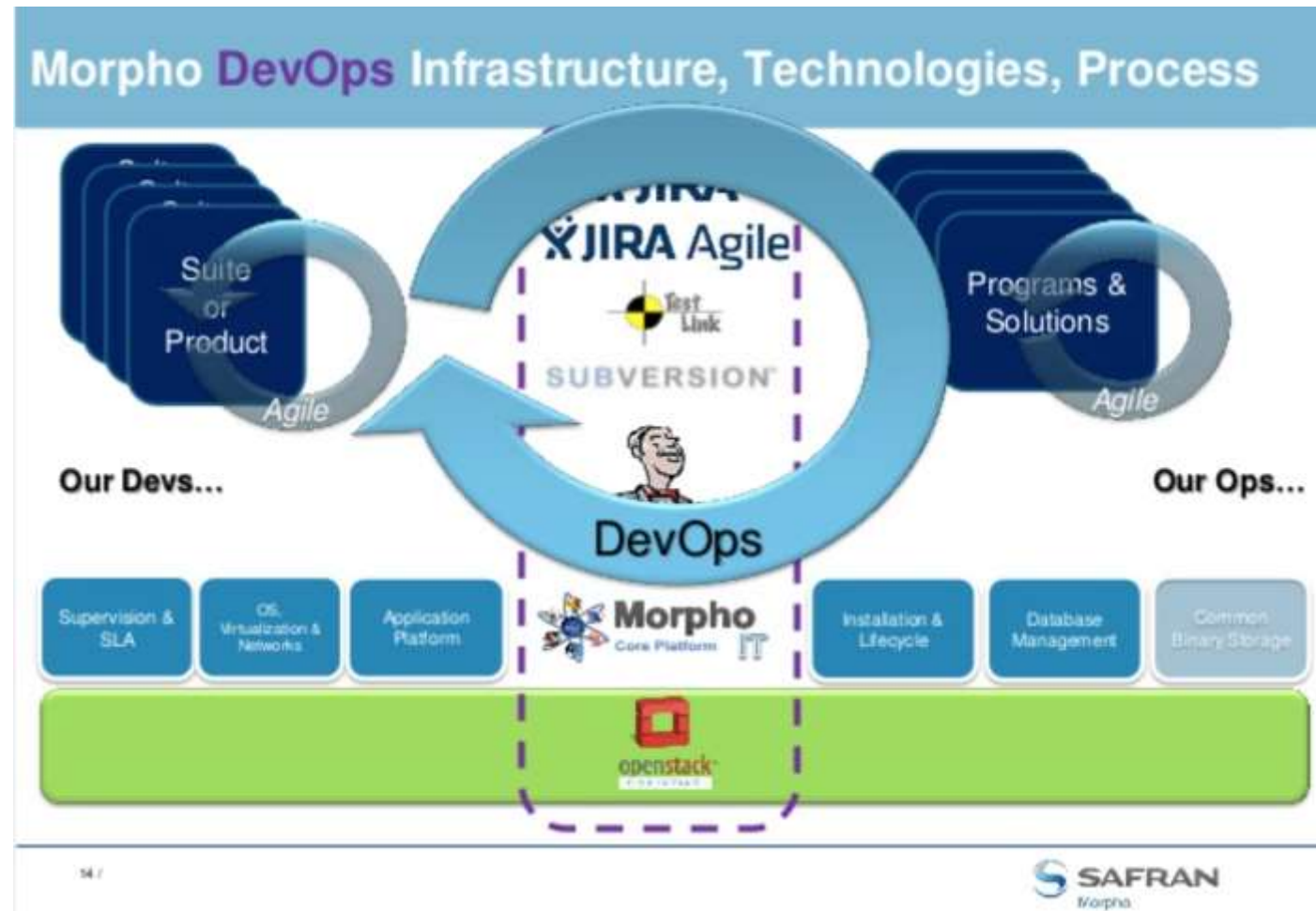
# According to Stefan Norberg



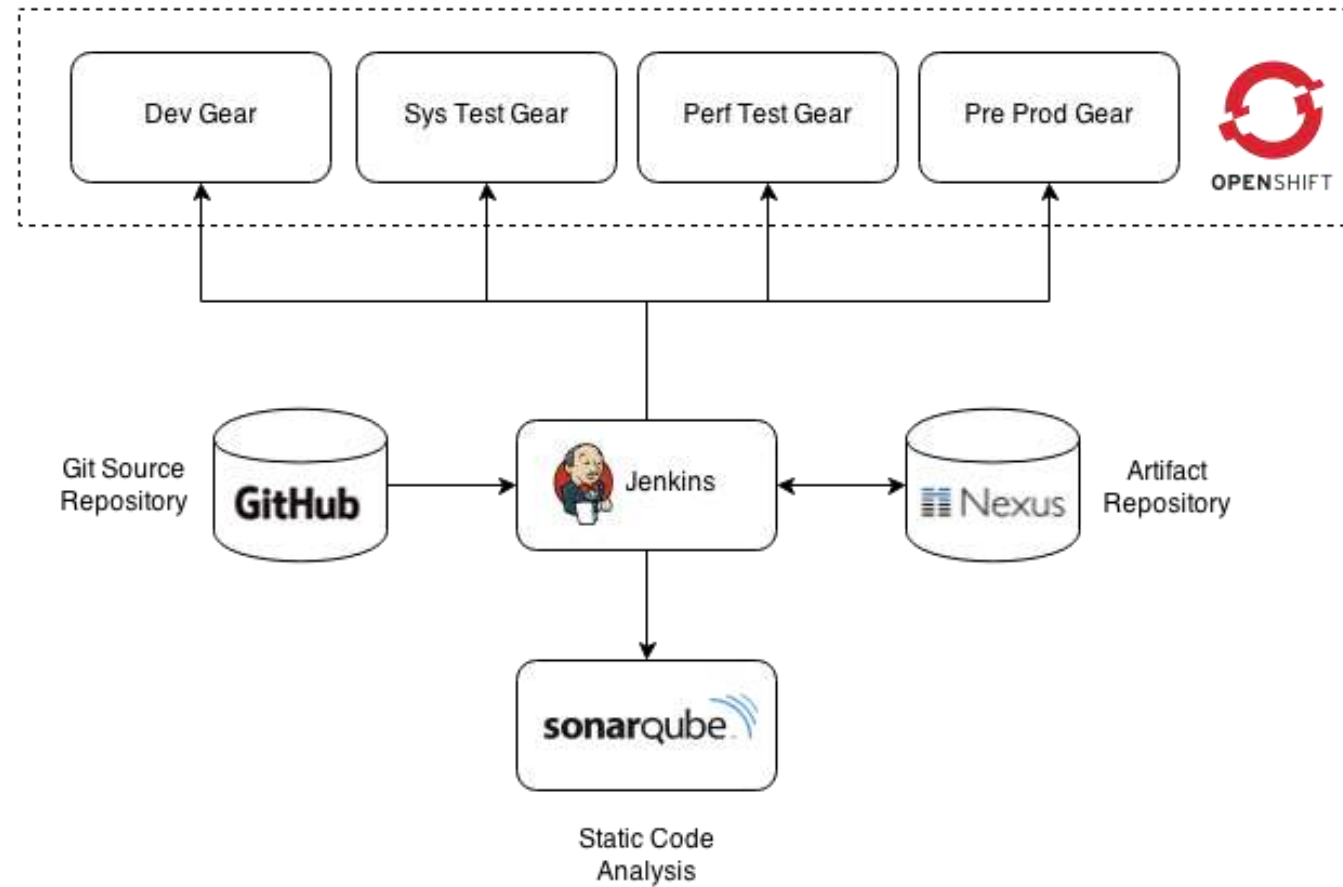
# Nexus at Morpho



# According to Morpho

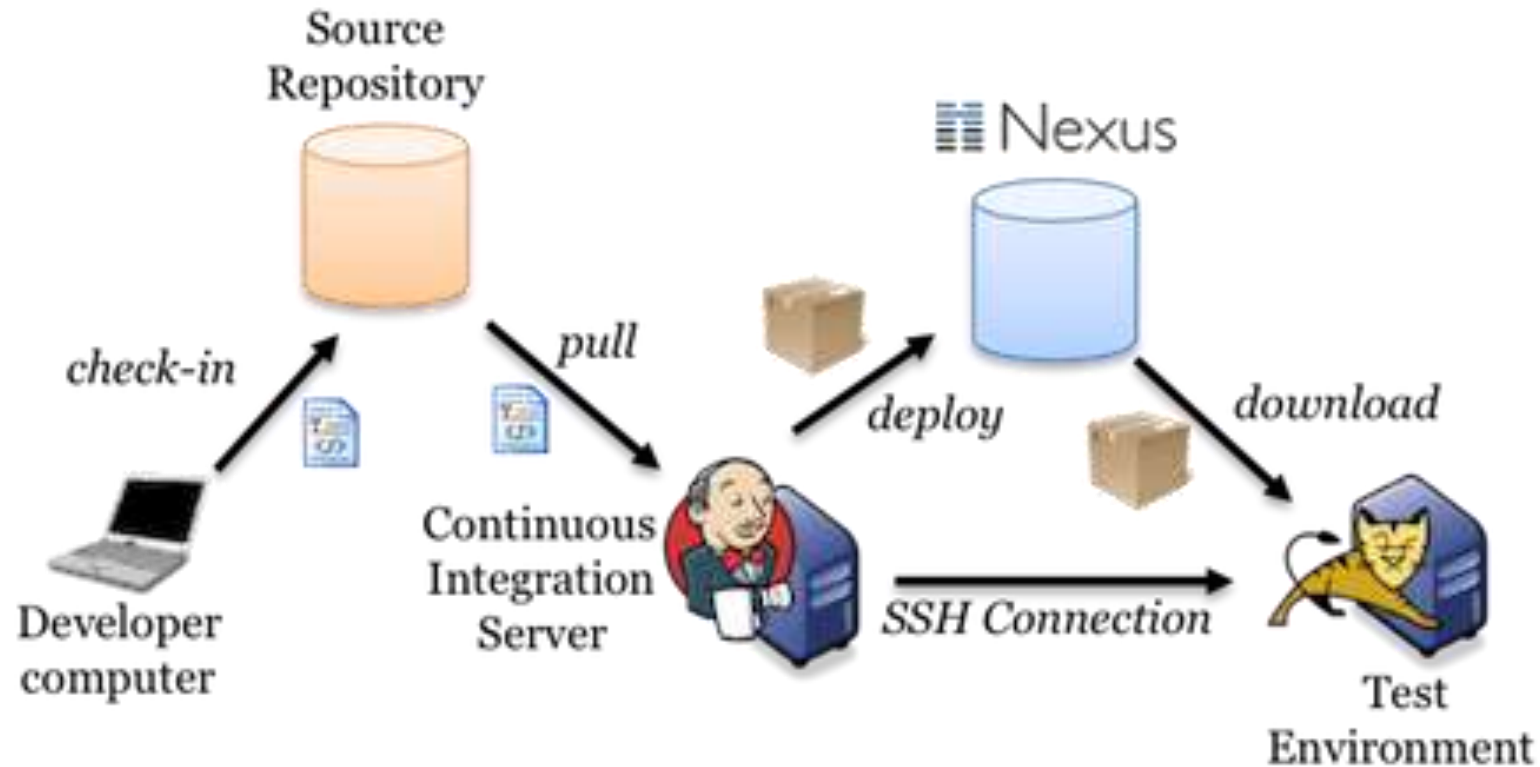


# According to OPENS SHIFT

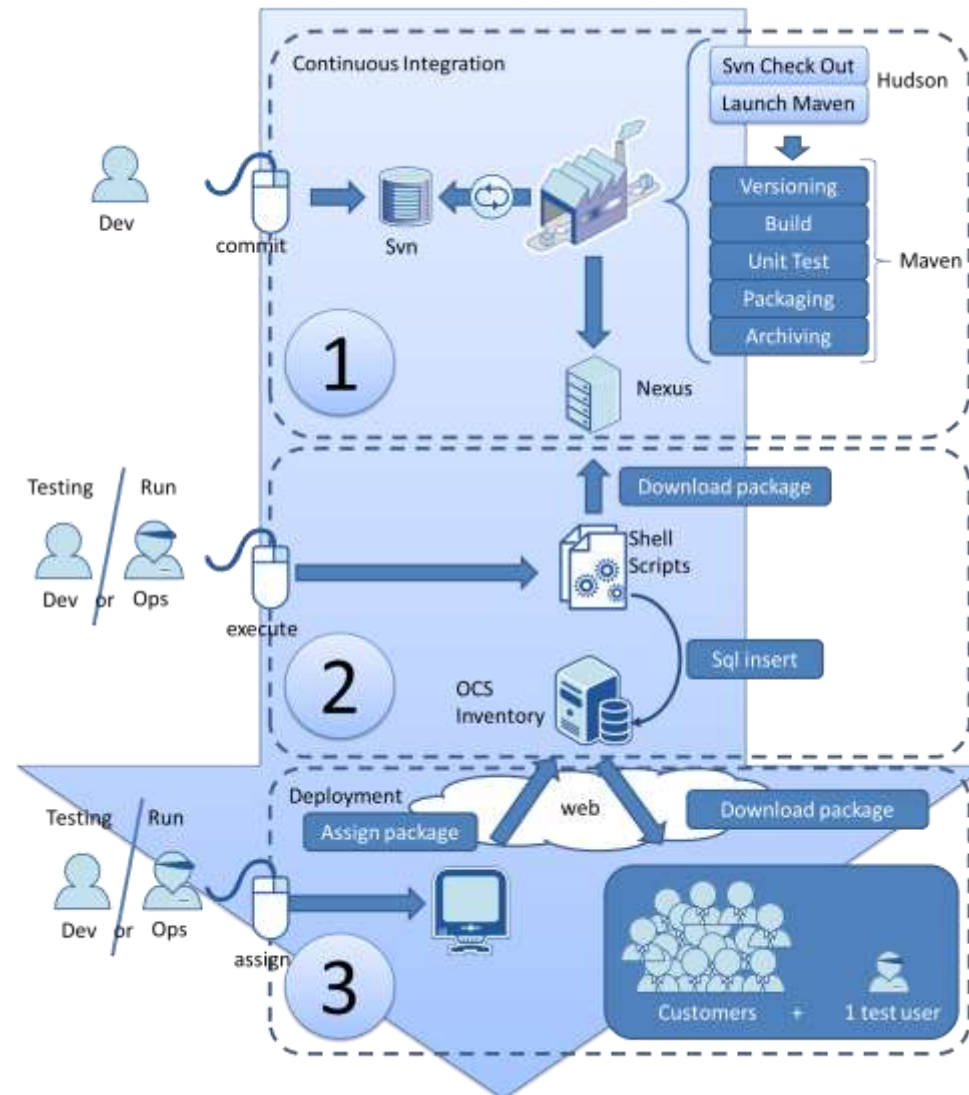




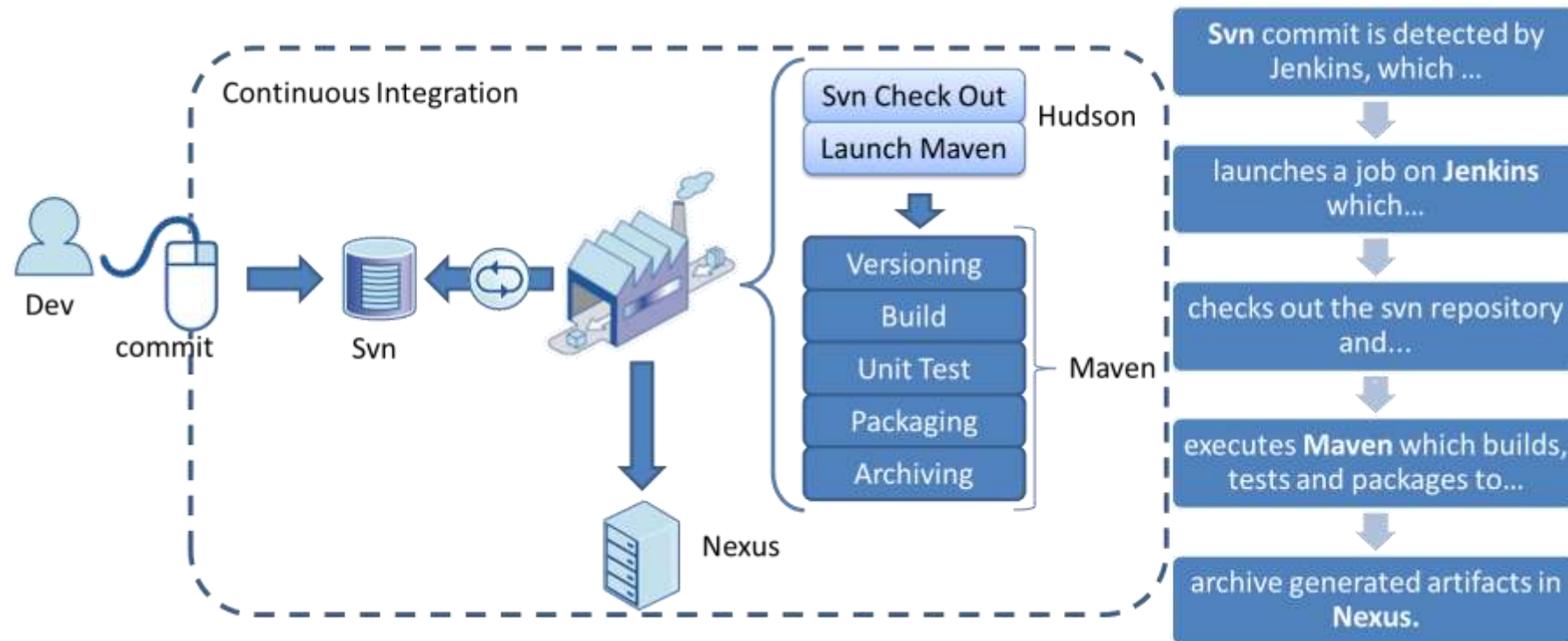
# According to akquinet



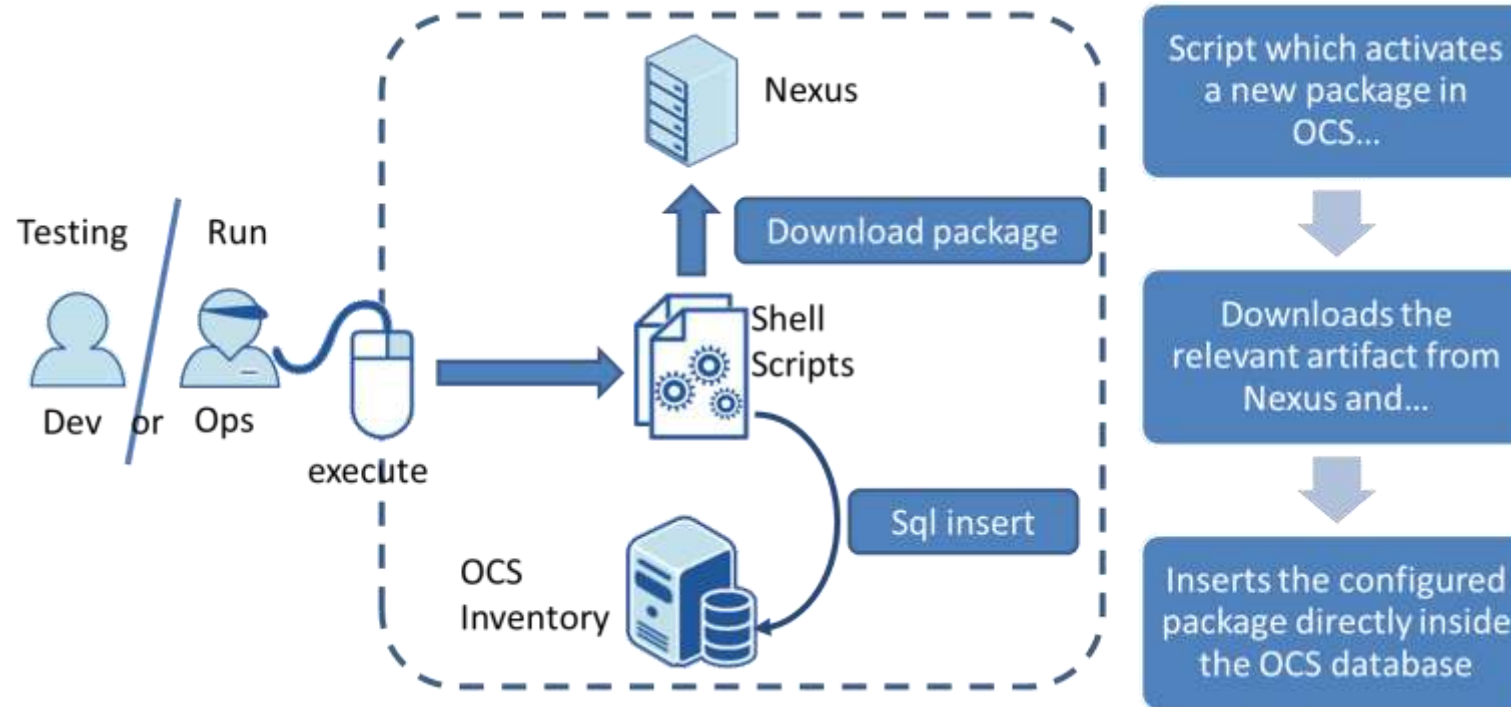
# According to OCTO



# According to OCTO



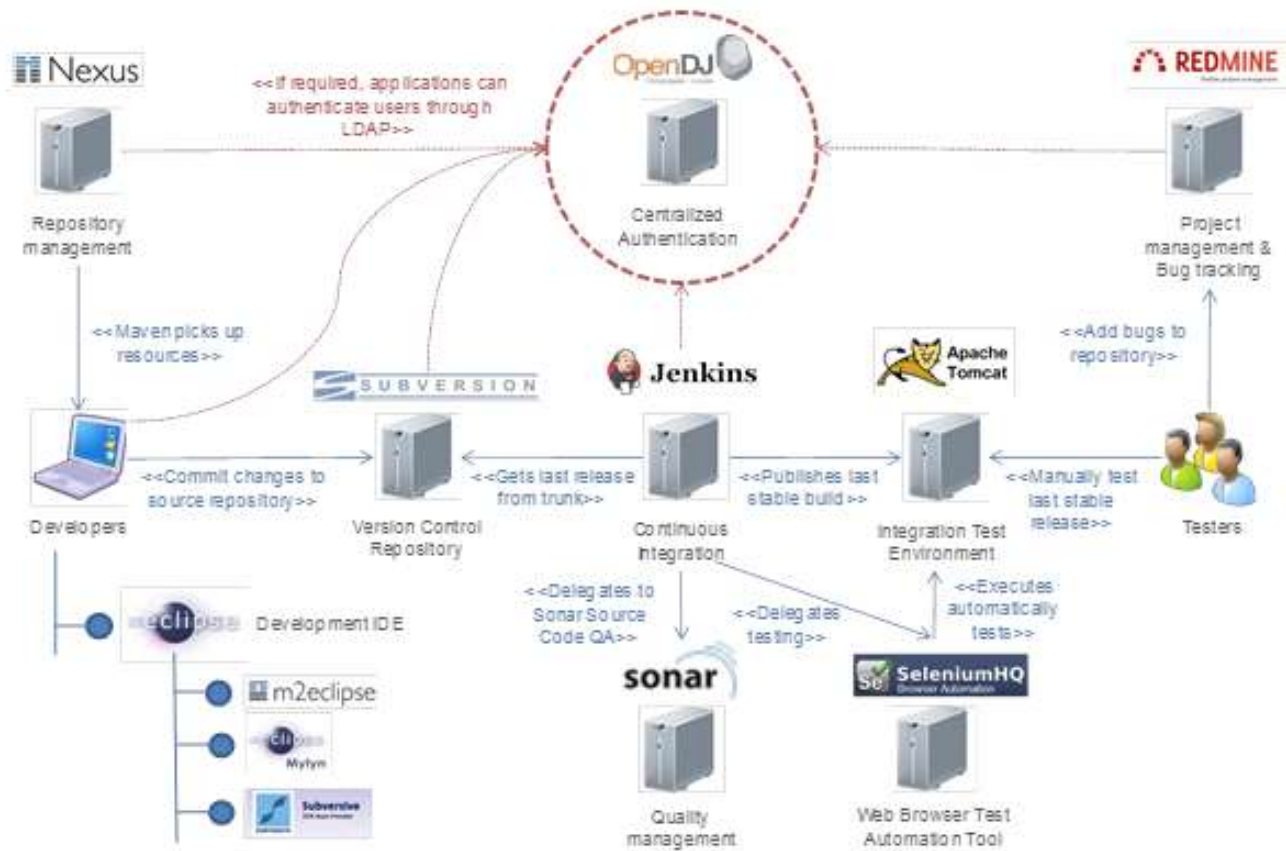
# According to OCTO



# According to Jordi Cuenca-Aubets

## Free continuous integration platform @Glance

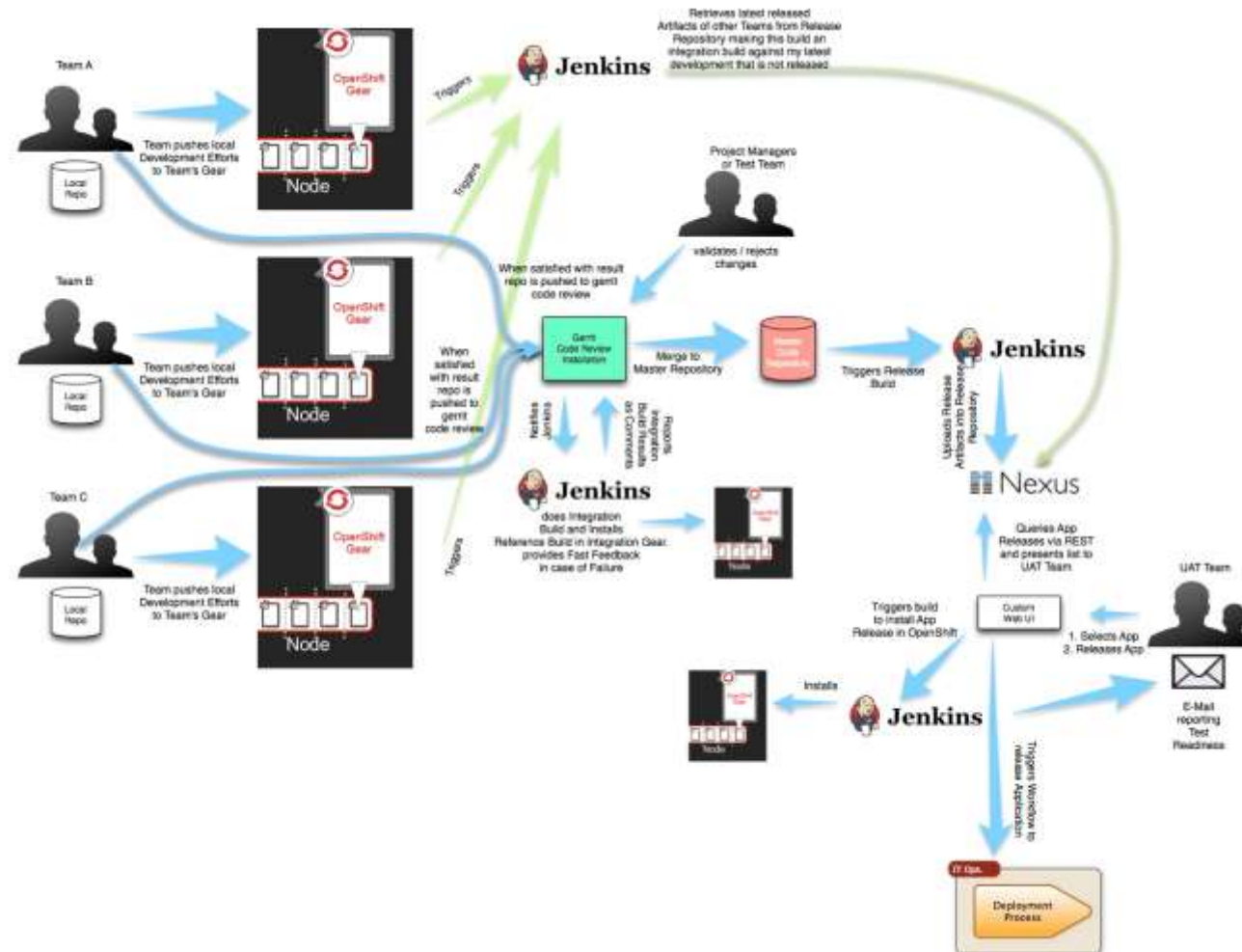
### Runtime architecture





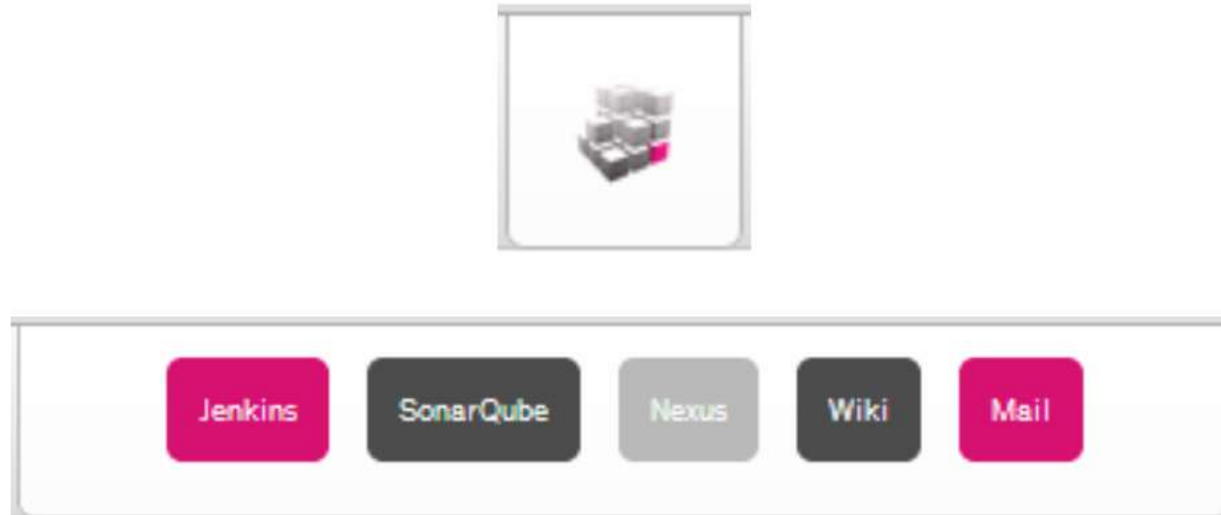
# According to Open Sourcerers

OPEN SOURCERERS

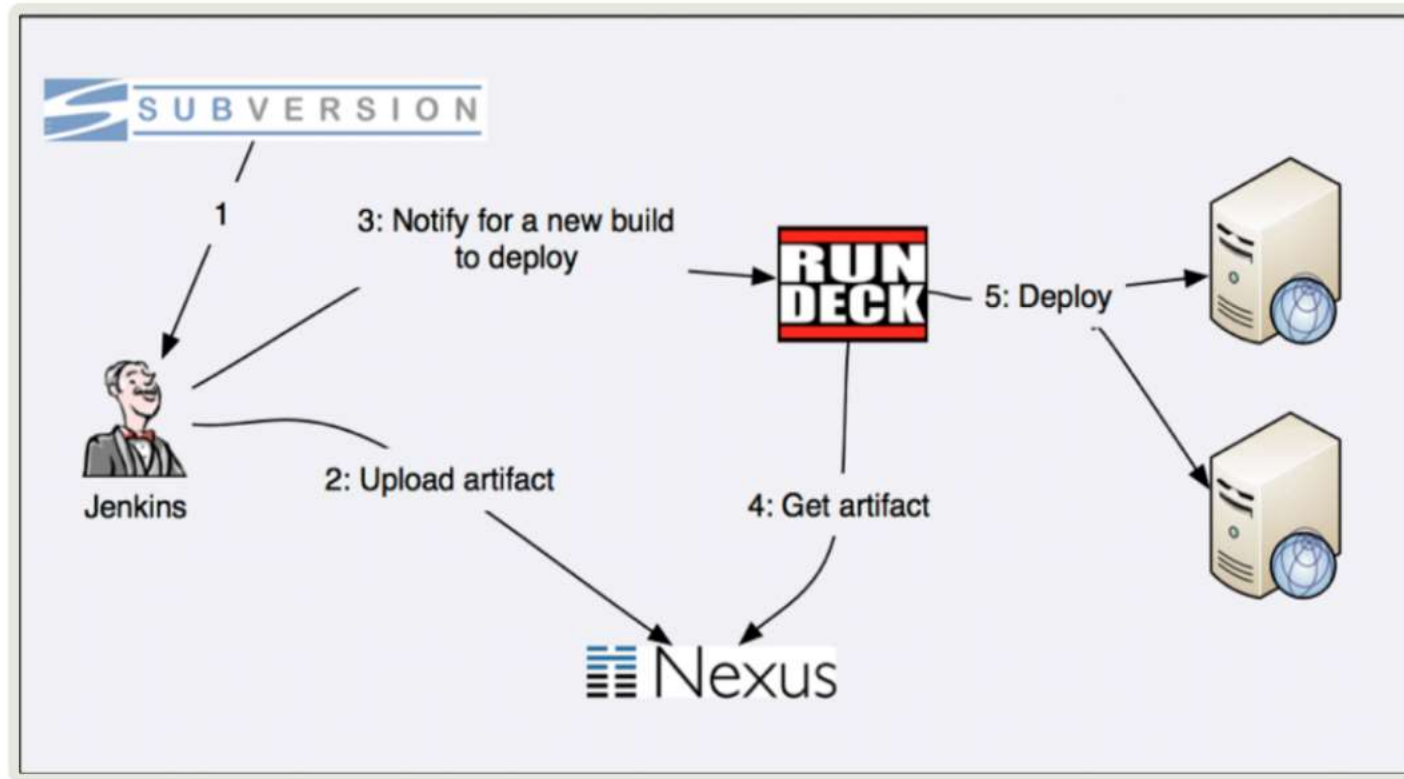




# According to Michael Rumpf



# According to Cardlife



# According to Paolo Antinori, RedHat

Let's start describing the component of our **sample Continuous Integration setup**:

## 1) JBoss Fuse 6.1

It's the **runtime** we are going to deploy onto. It lives in a dedicated box. It interacts with *Nexus* as the source of the artifacts we produce and publish.

## 2) Nexus

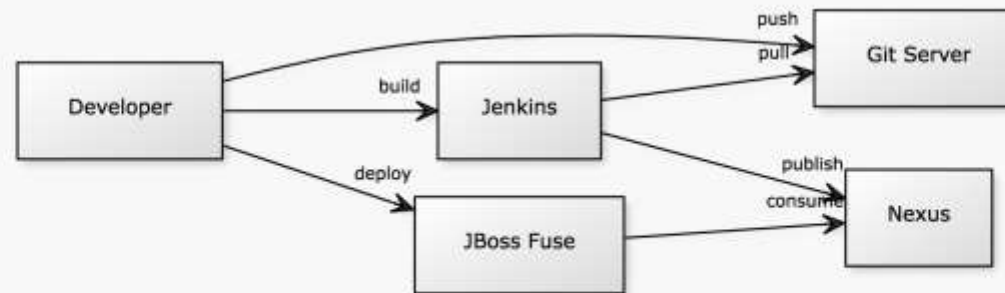
It's the software we use to **store the binaries** we produce from our code base. It is accessed by *JBoss Fuse*, that downloads artifacts from it but it is also accessed from *Jenkins*, that publishes binaries on it, as the last step of a successful build job.

## 3) Jenkins

It's our **build jobs invoker**. It publishes its outputs to *Nexus* and it builds its output if the code it checked out with *Git* builds successfully.

## 4) Git Server

It's the **remote code repository** holder. It's accessed by *Jenkins* to download the most recent version of the code we want to build and it's populated by all the *developers* when they share their code and when they want to build on the Continuous Integration server. **In our case, git server is just a filesystem accessed via ssh.**



<http://yum1.me/edit/7e75fab5>

# According to Atlassian

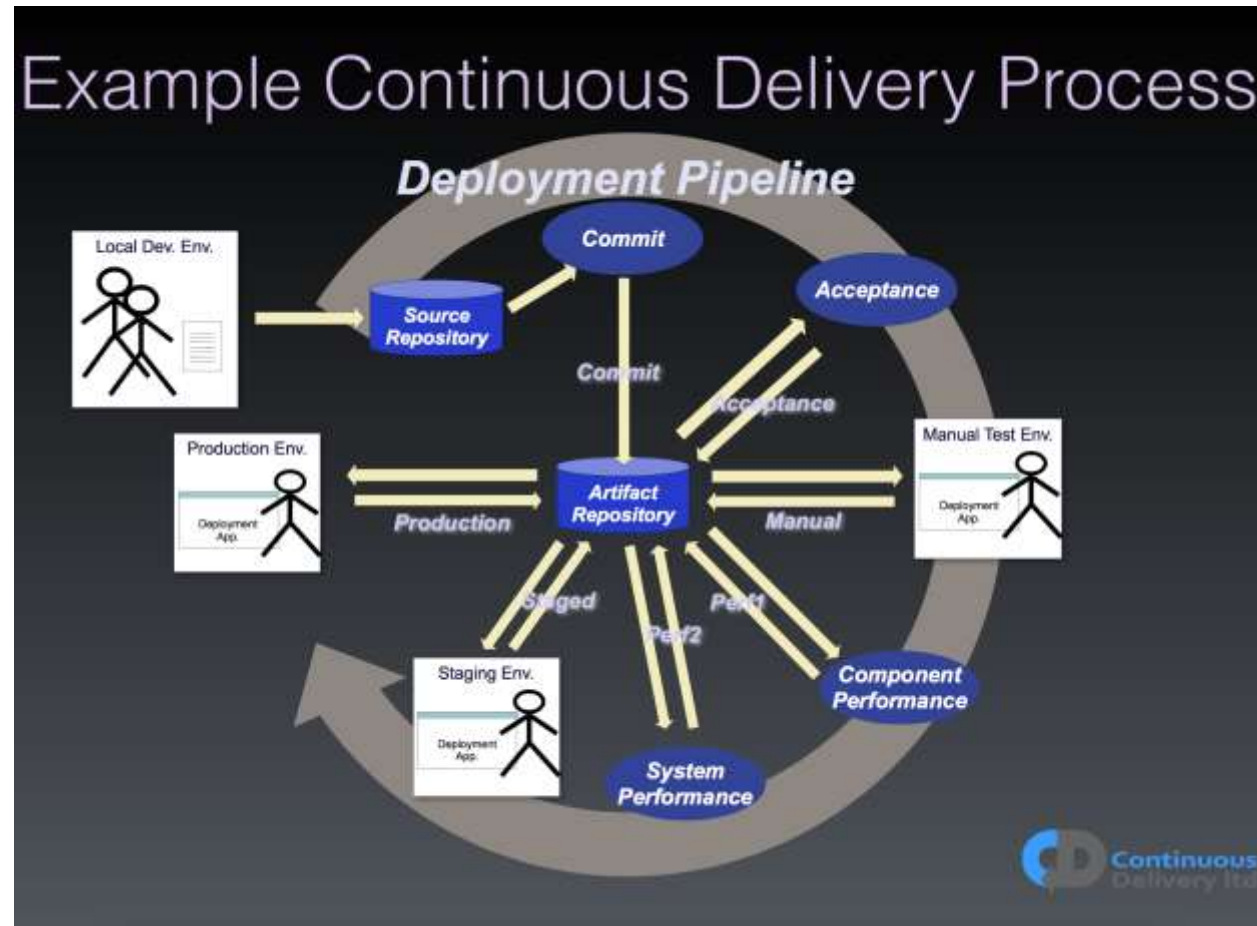


## Build Engineering today @ Atlassian

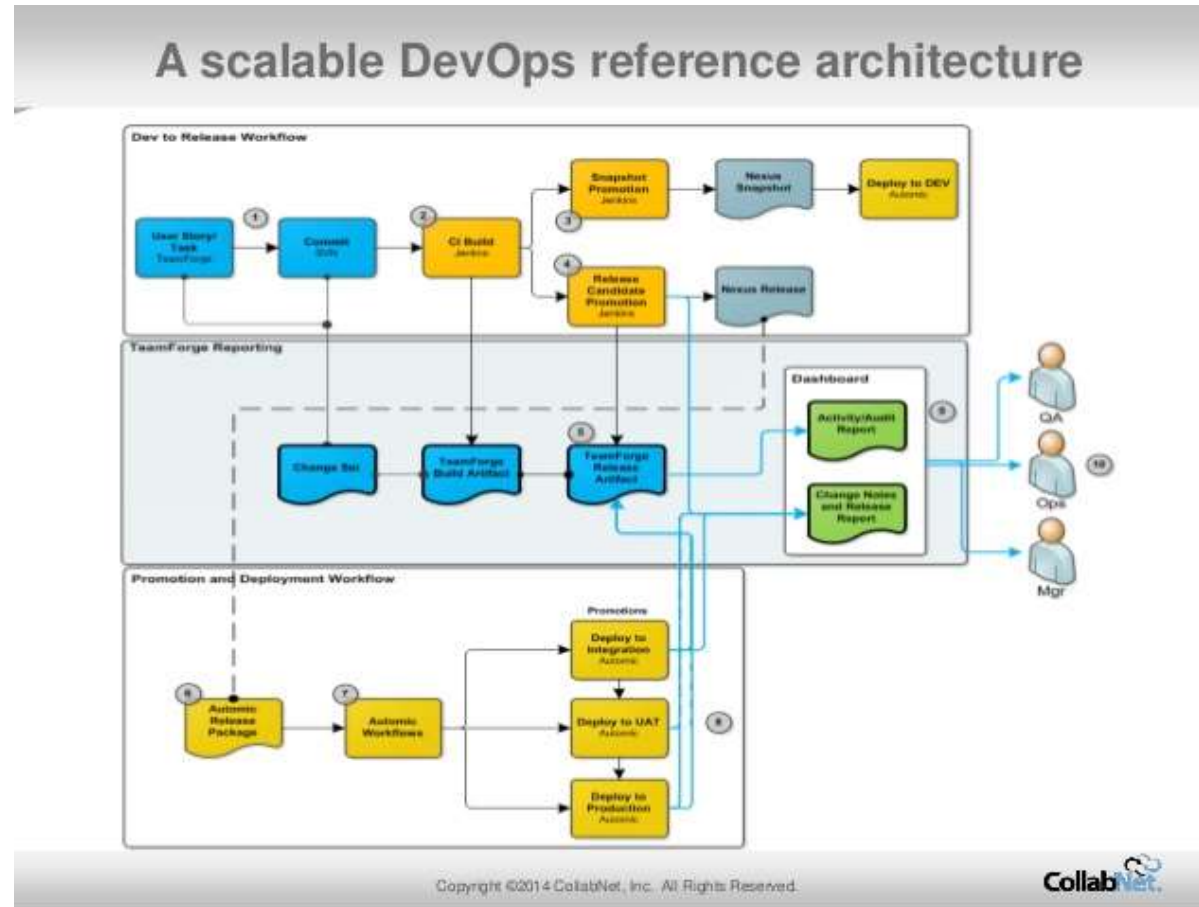


- 600 build agents (own hardware + EC2 instances)
  - include SCM clients, JDKs, JVM build tools, databases, headless browser testing, python builds, NodeJS, installers & more
- Maintain 20 AMIs of various build configurations
- 6 Bamboo Servers
- maven.atlassian.com / 6 Nexus instances
- Monitoring - opsview / graphite / statsd

# According to Continuous Delivery Ltd

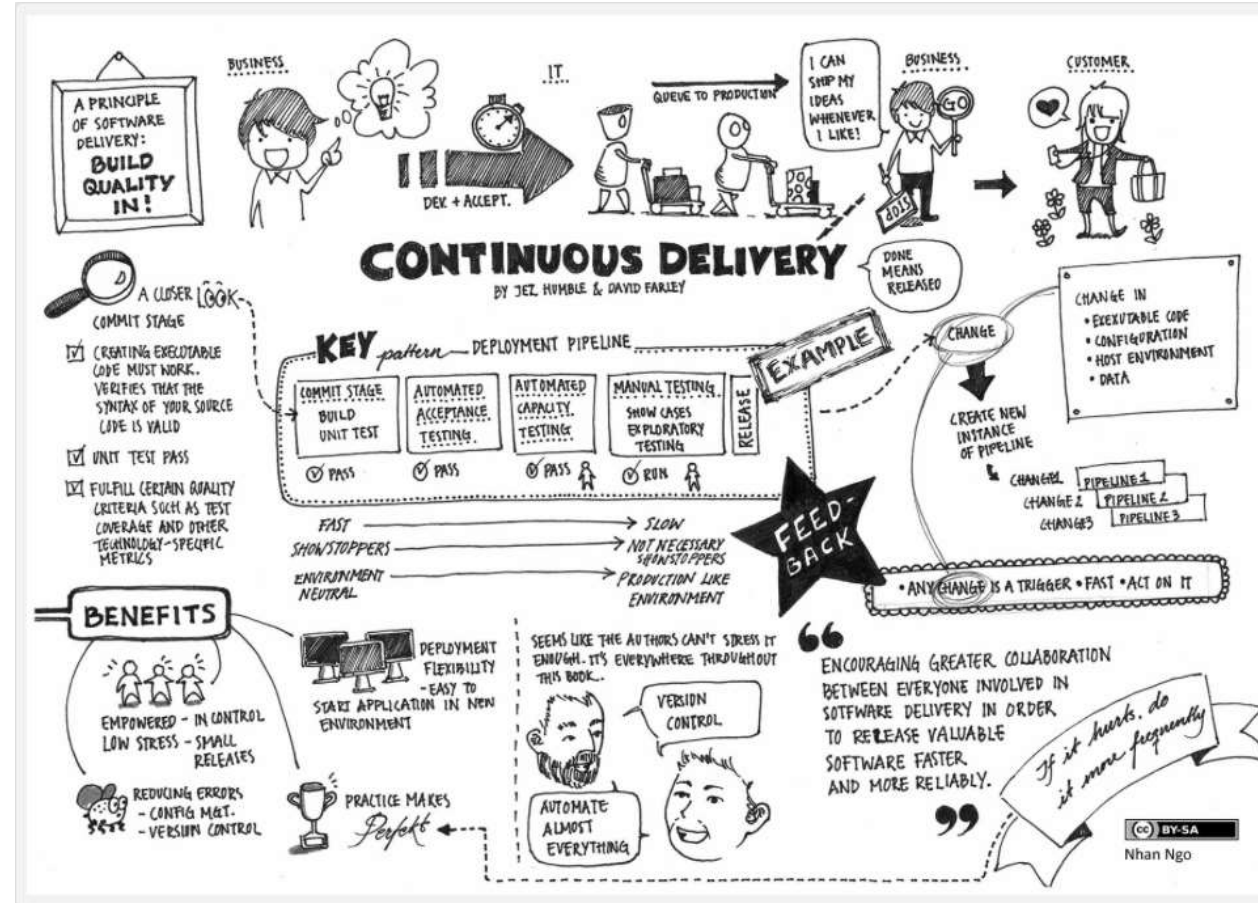


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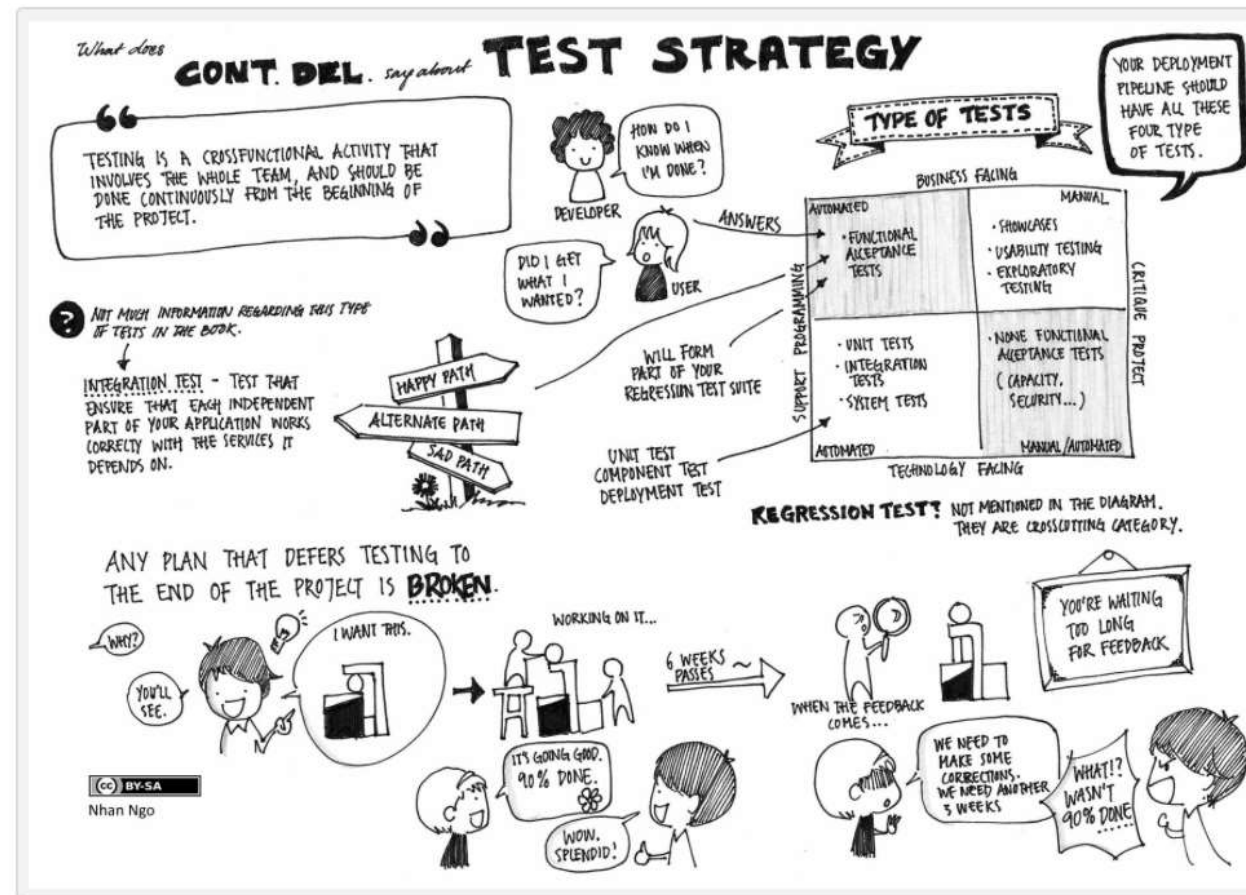




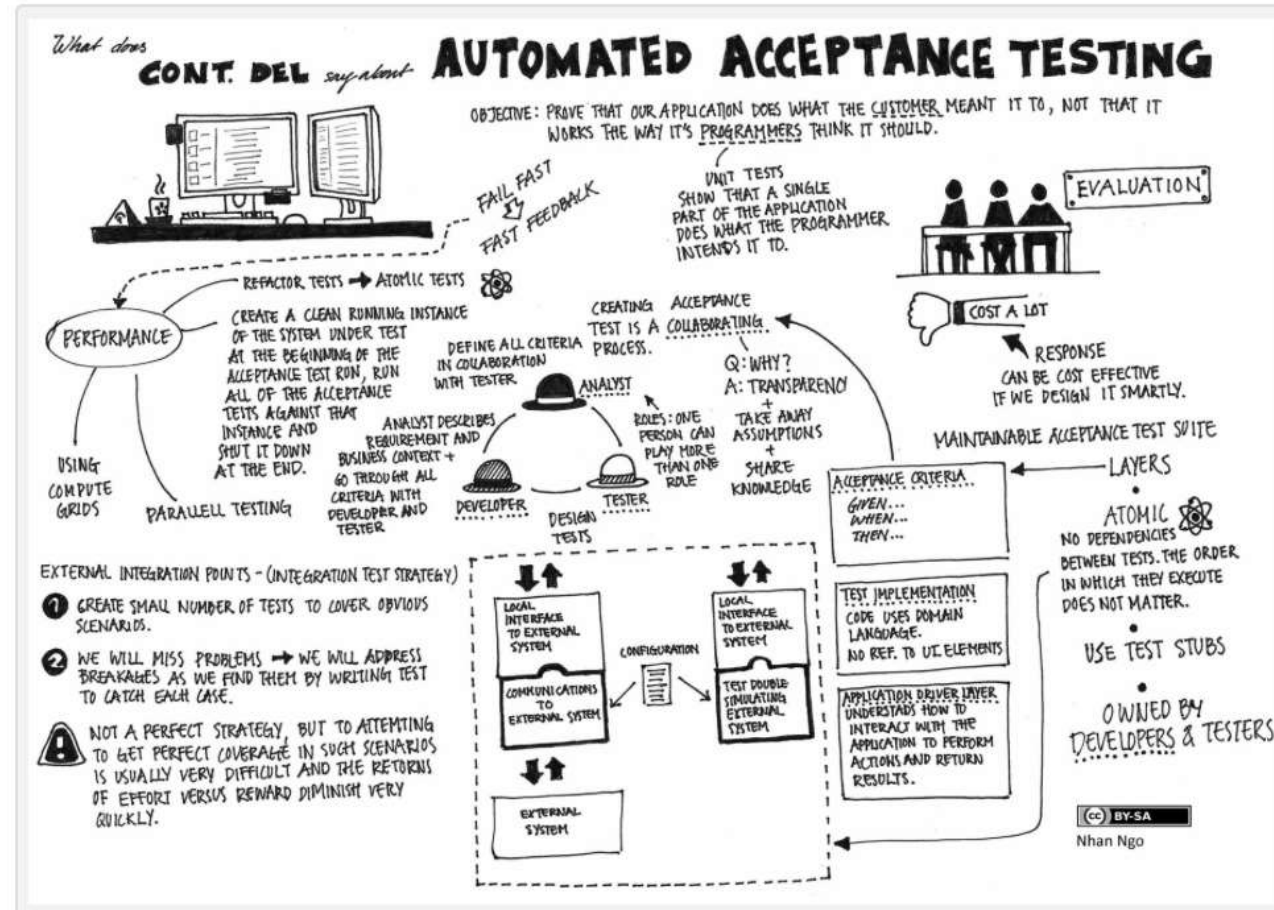
# According to Nhan Ngo



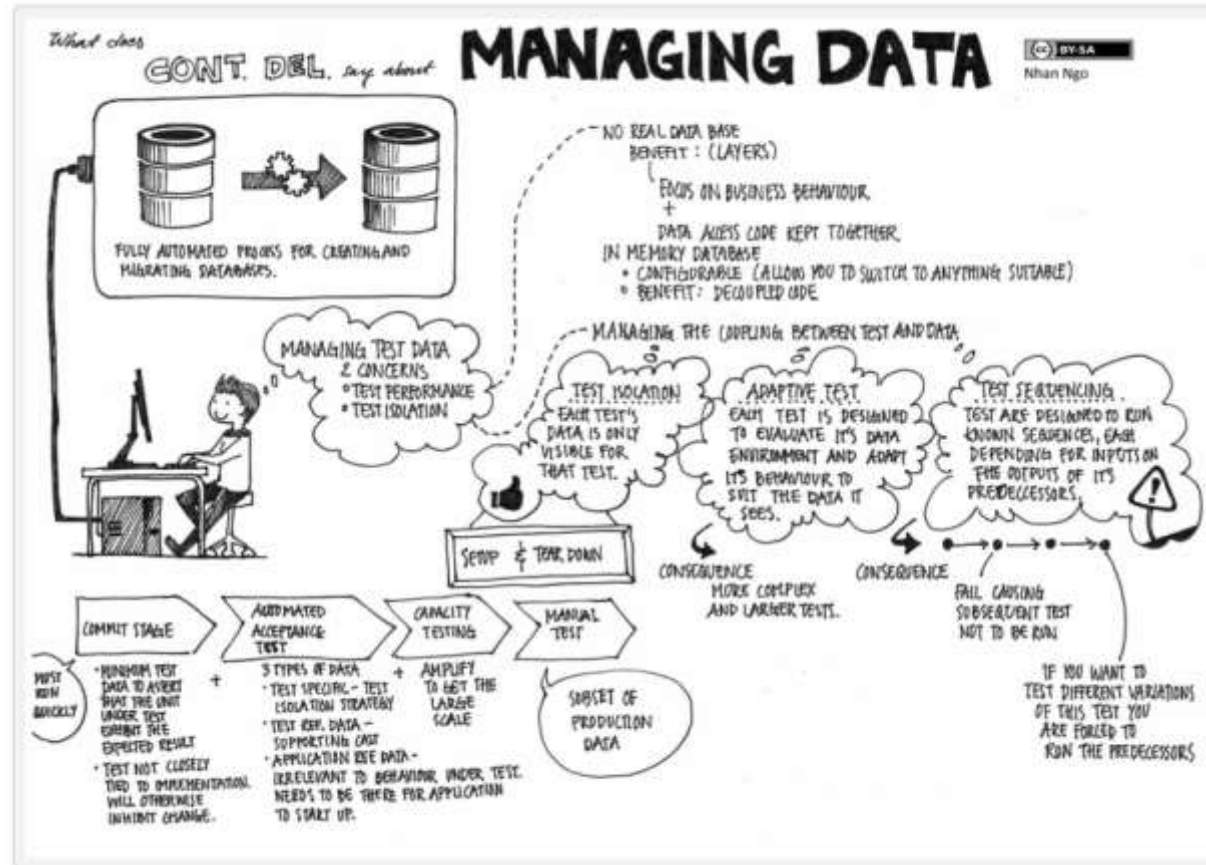
# According to Nhan Ngo



# According to Nhan Ngo



# According to Nhan Ngo





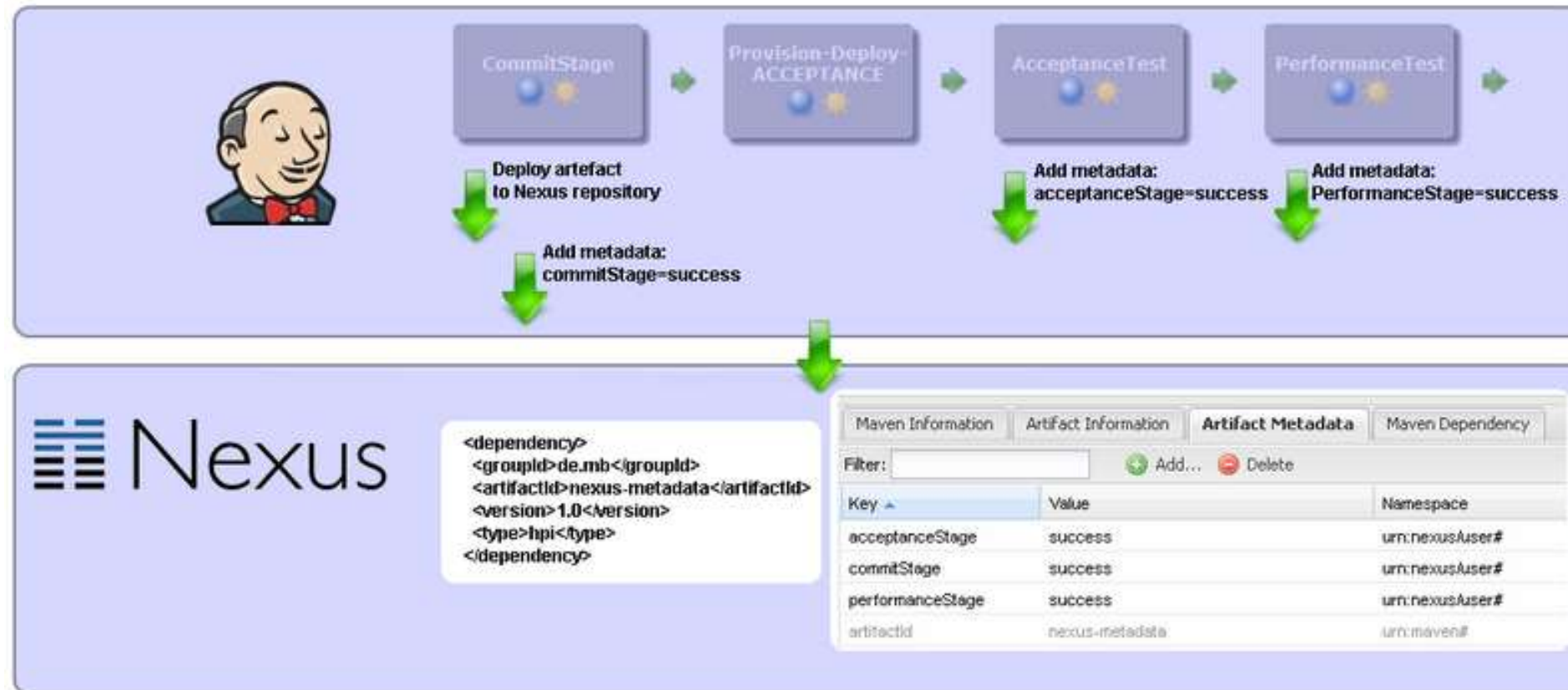
# According to WS02



## A Reference Architecture DevOps both dev and ops perspective

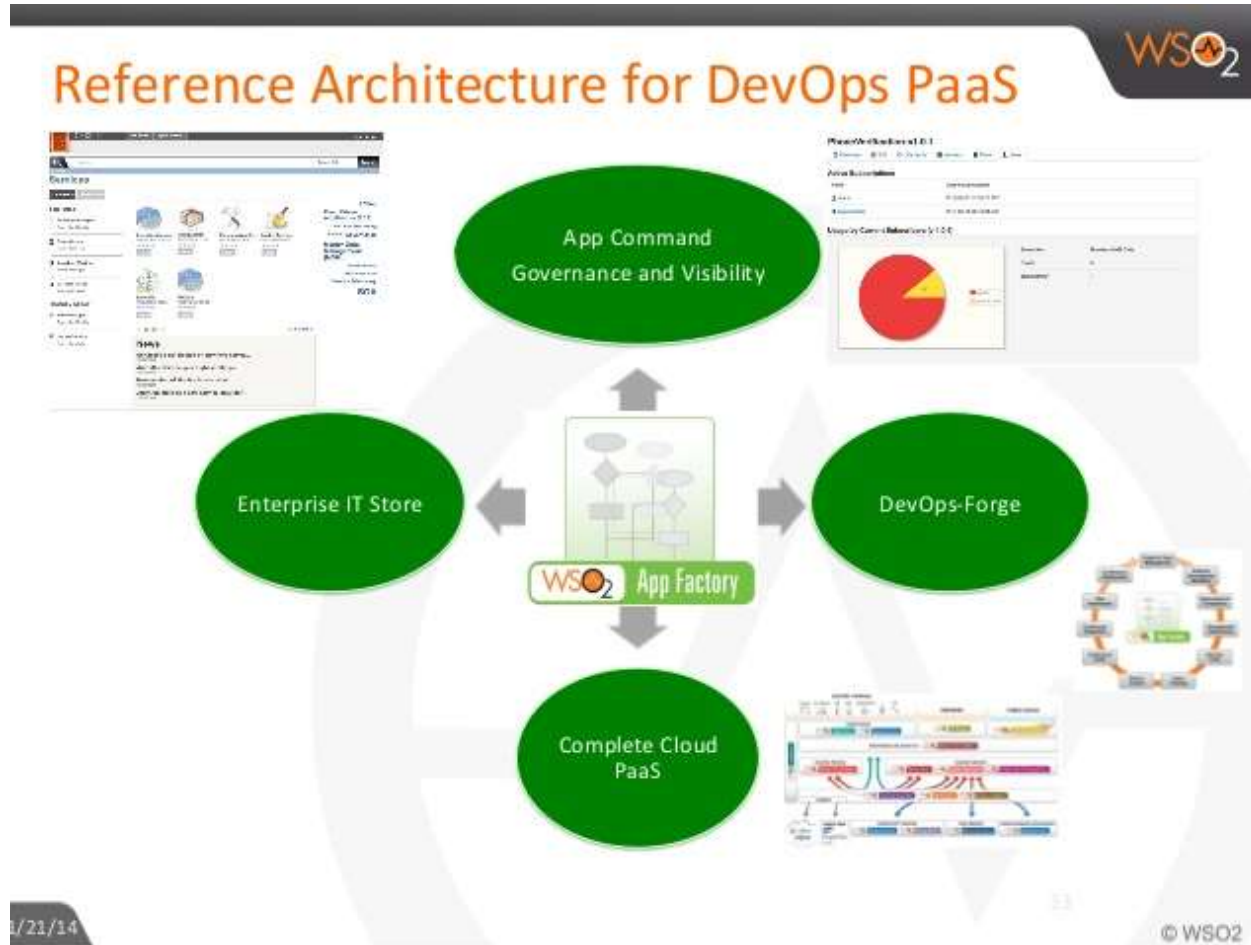


# According to CodeCentric

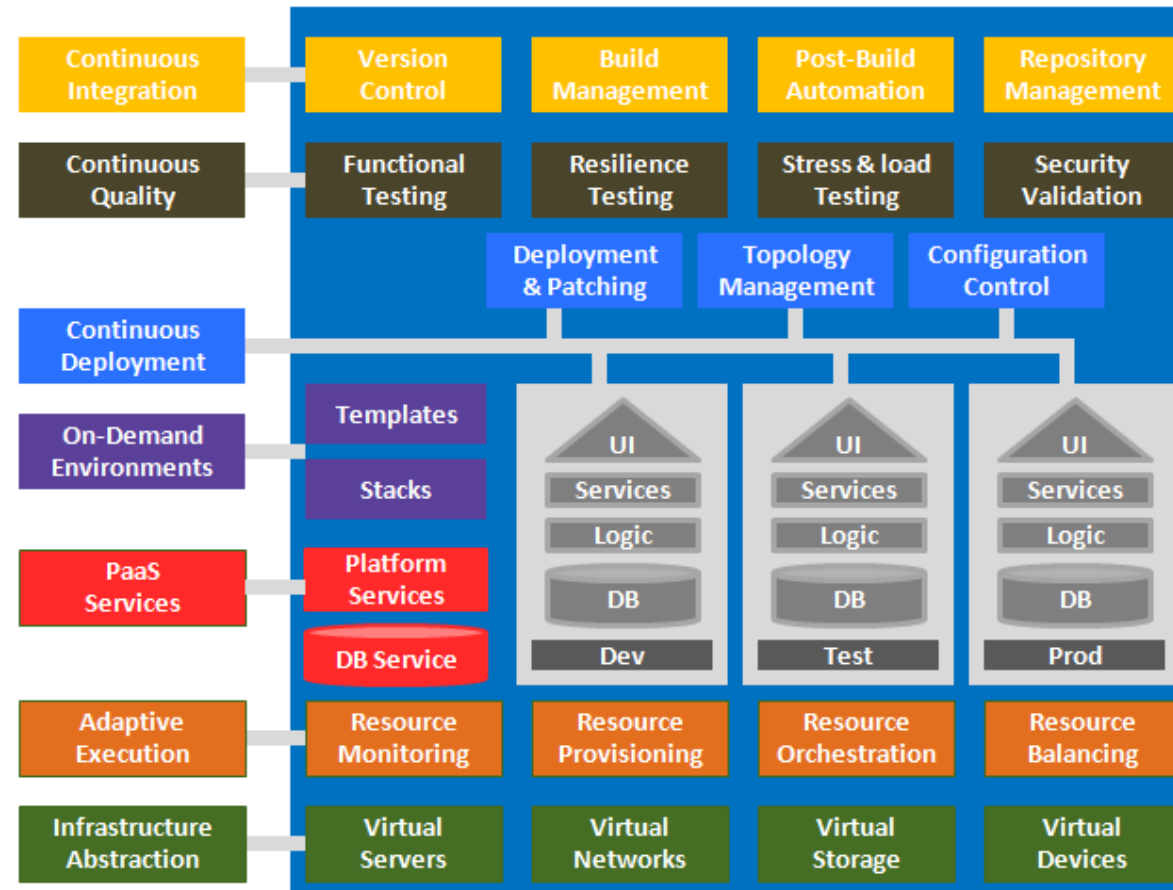




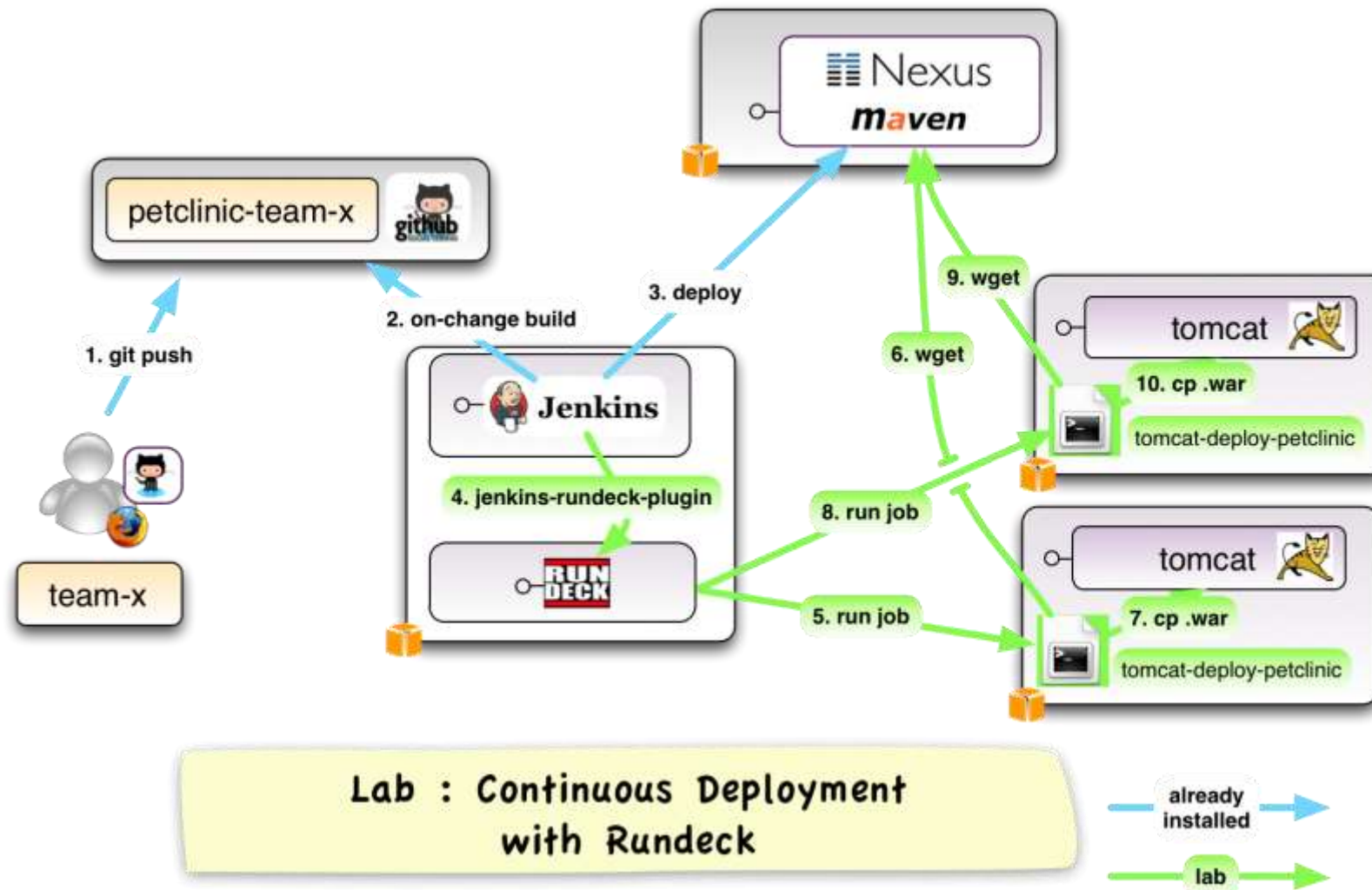
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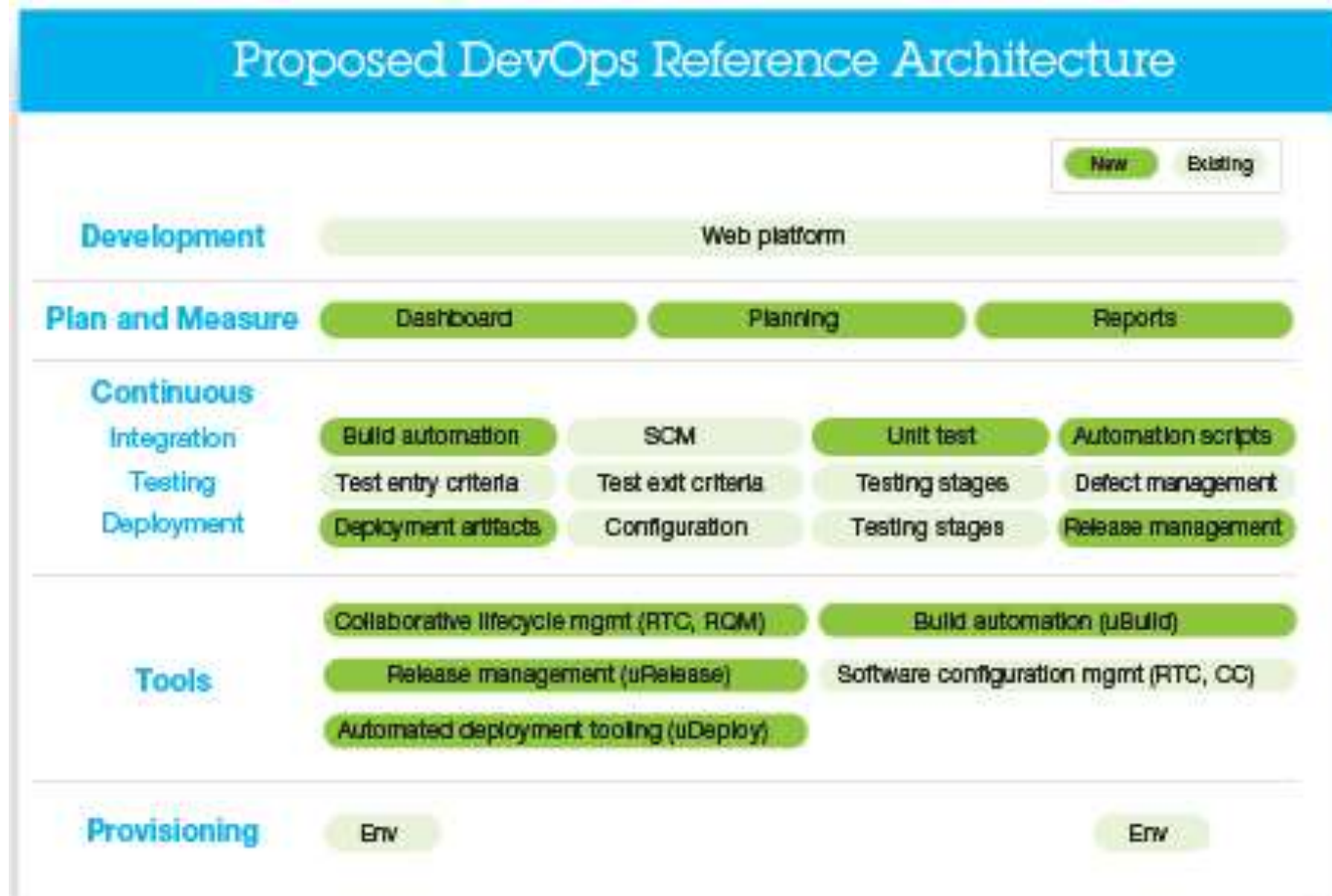
# According to Momentum SI



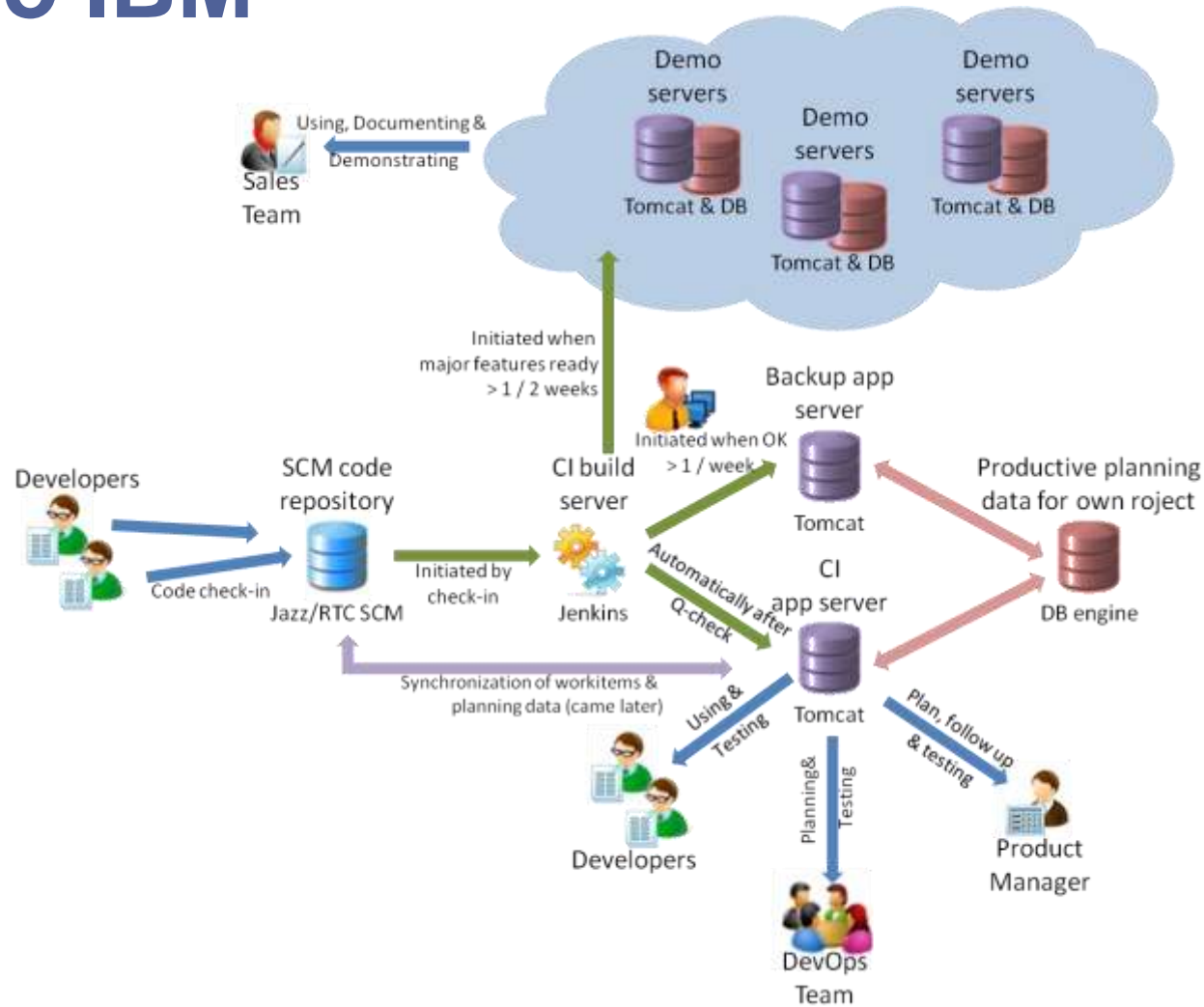
# According to Goobbe



# According to IBM



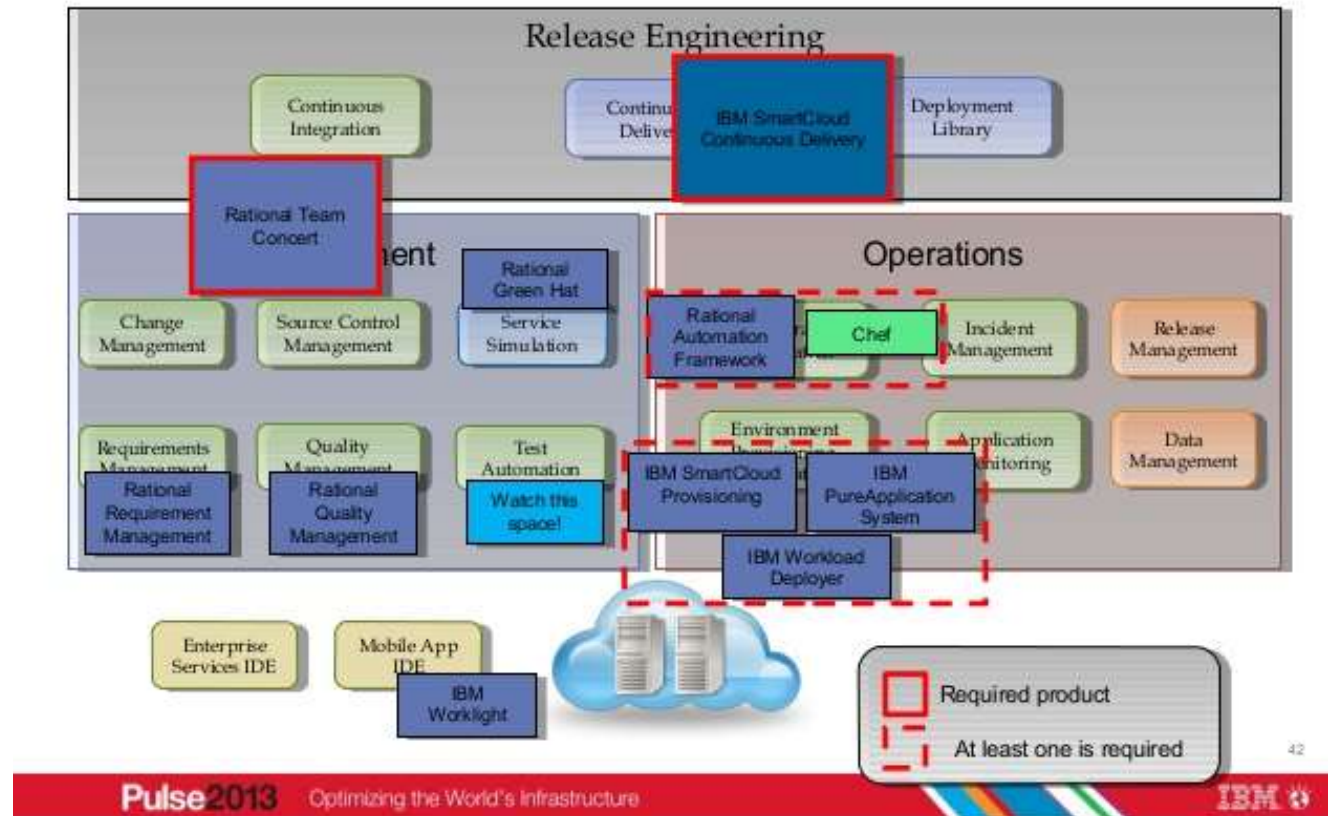
# According to IBM



# According to IBM

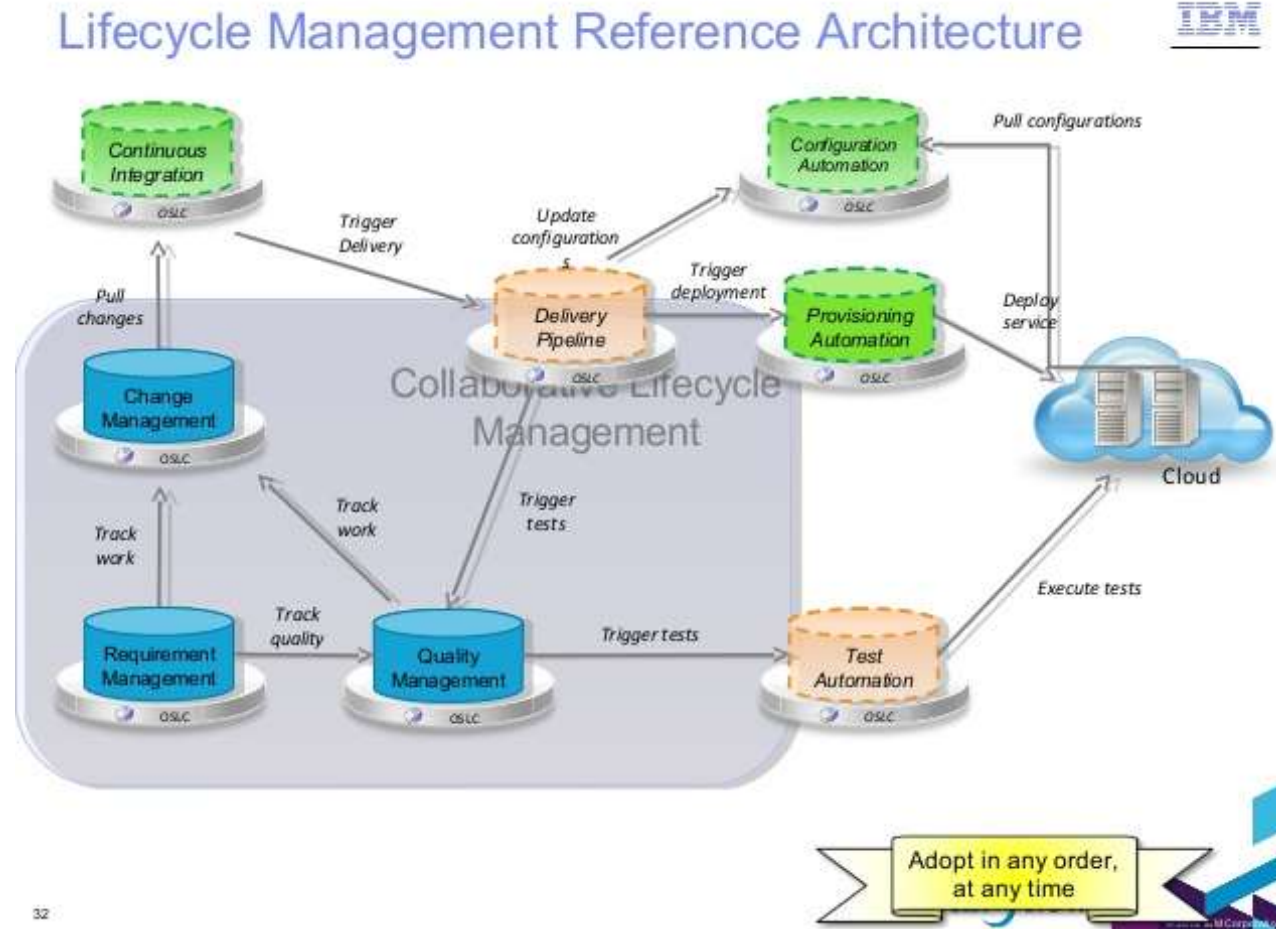


## Reference Architecture: Product Implementations

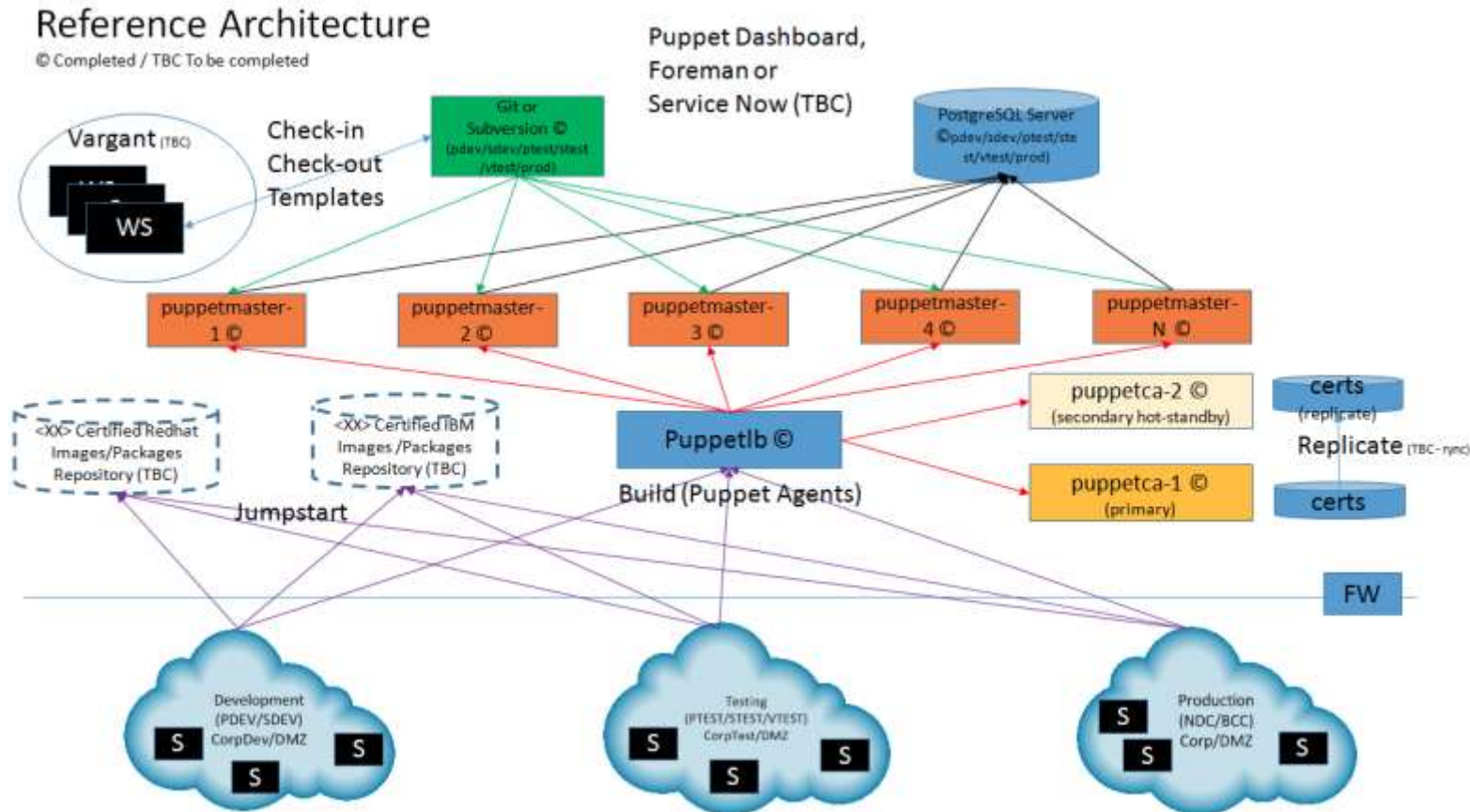




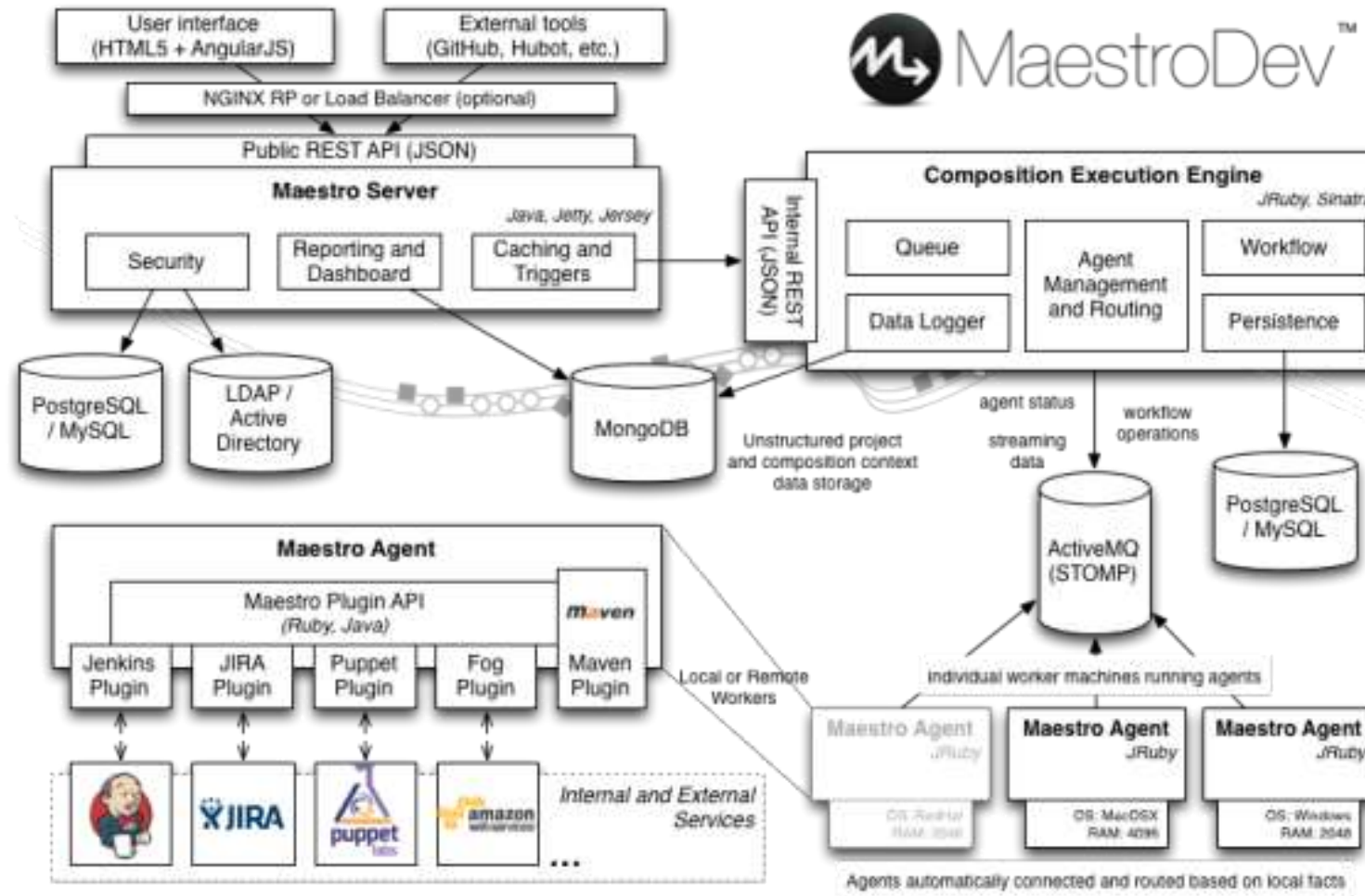
# According to IBM



# According to OZsofts

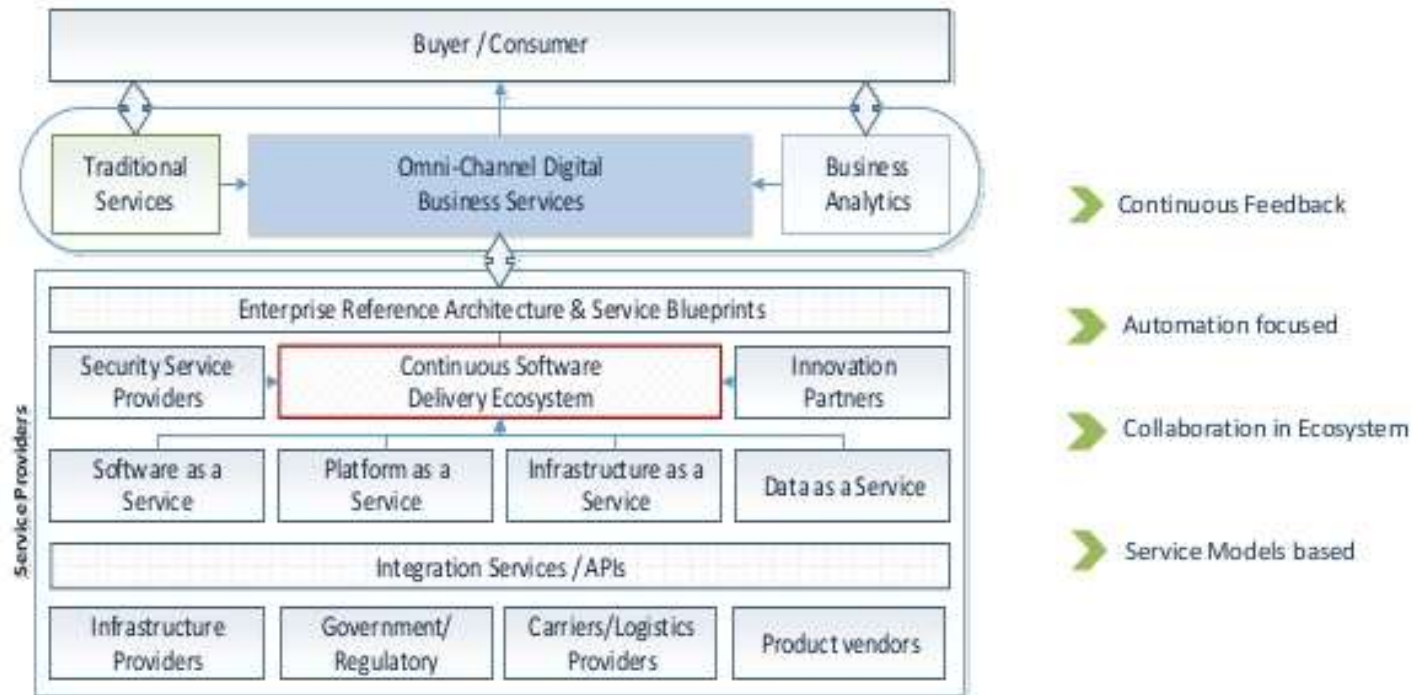


# According to MaestroDev



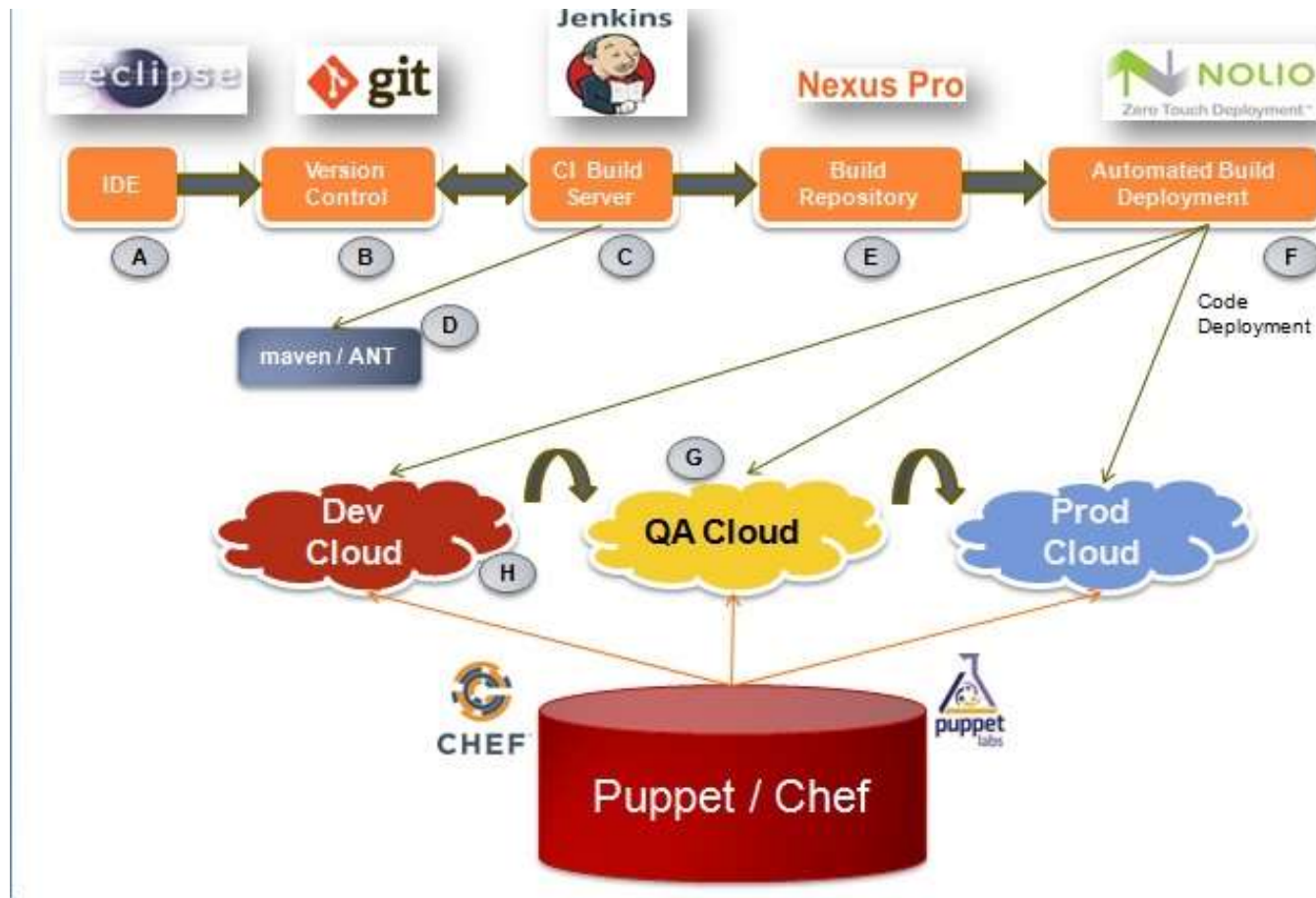
# According to The Open Group

## DevOps – A paradigm shift in IT to deliver Digitalization





# According to AgileTrick



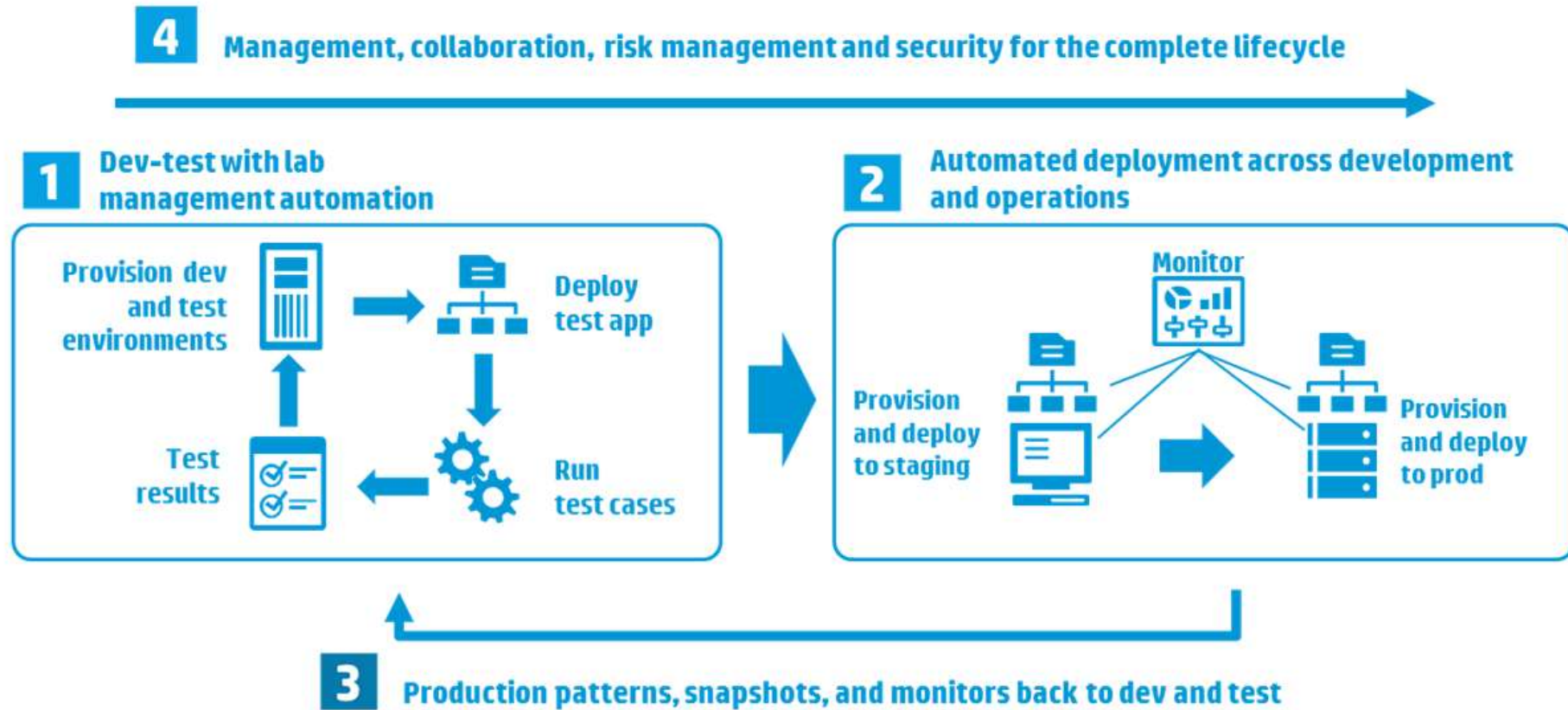
# According to DevOps by Design

## DEVOPS BY DESIGN



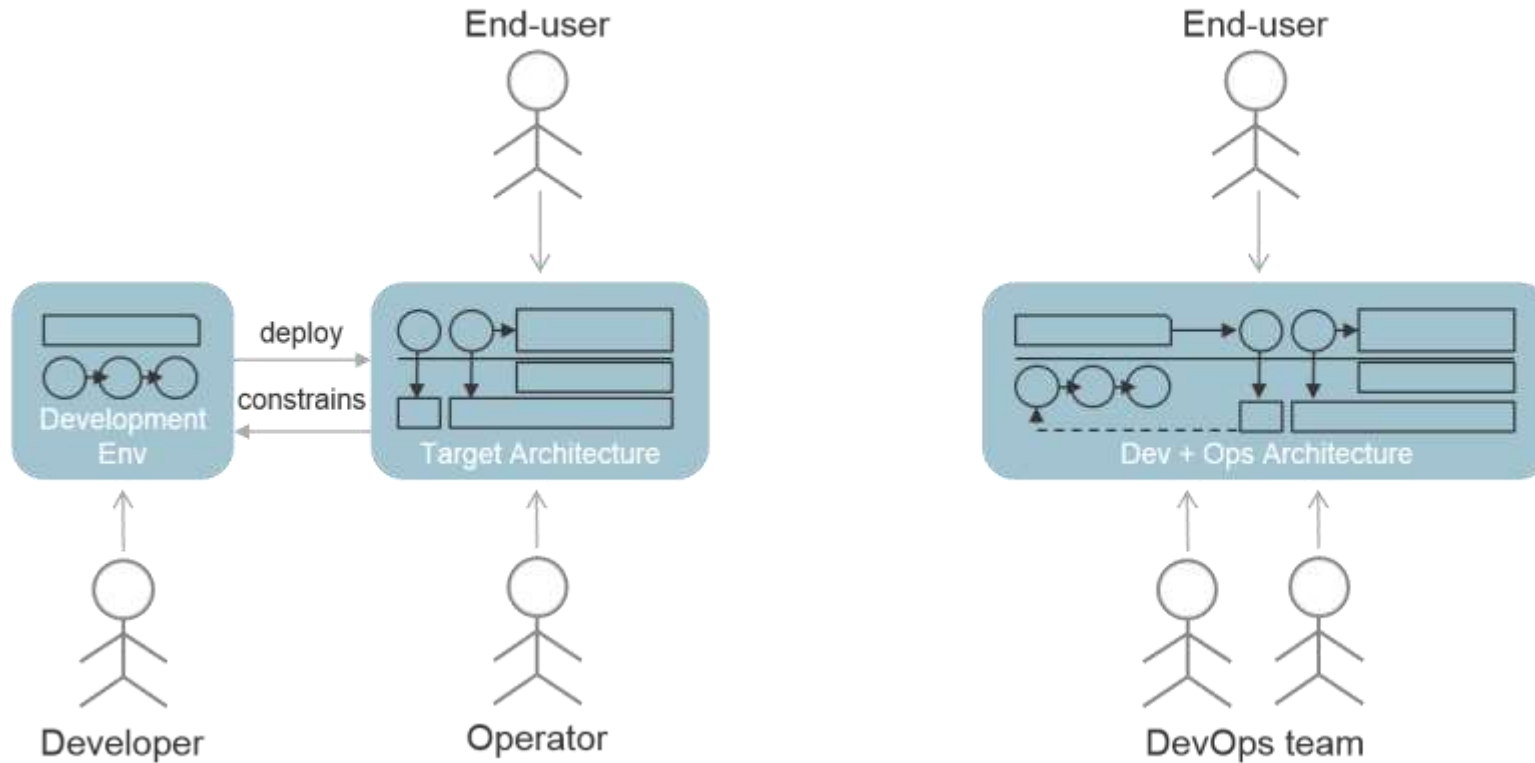


# According to HP

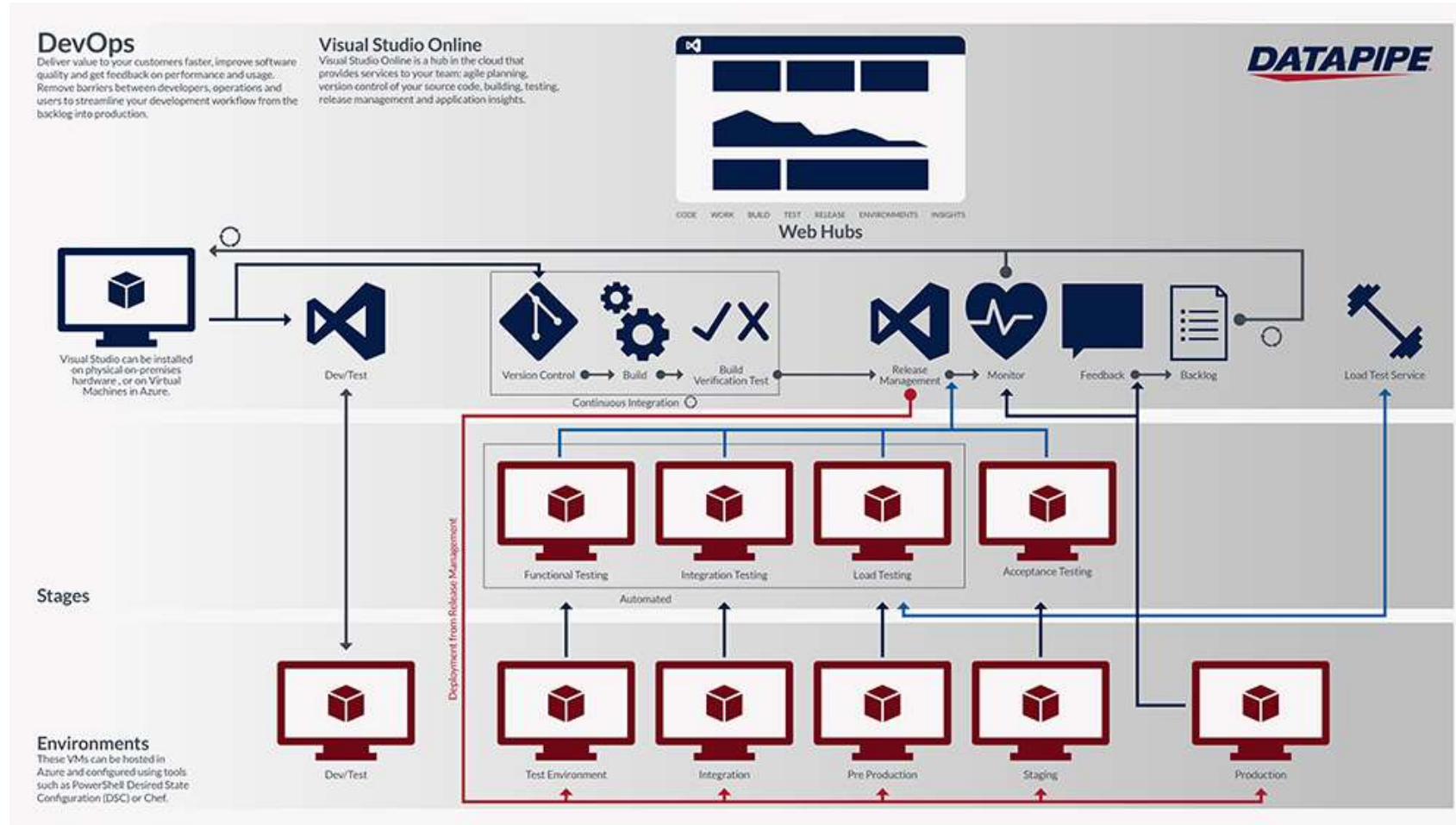


# According to Eljto

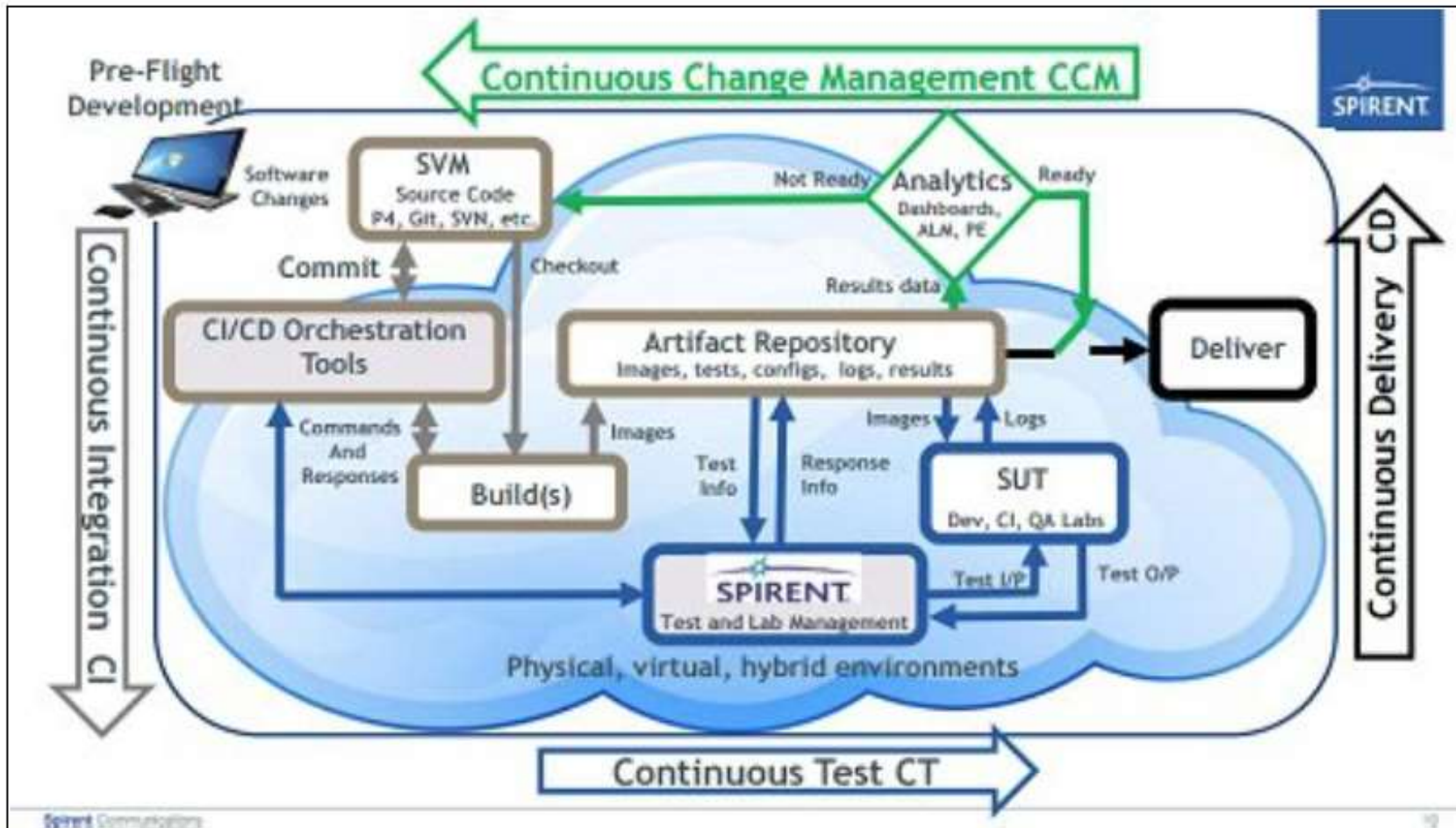
Architecture separated from Dev → Consolidated DevOps architecture



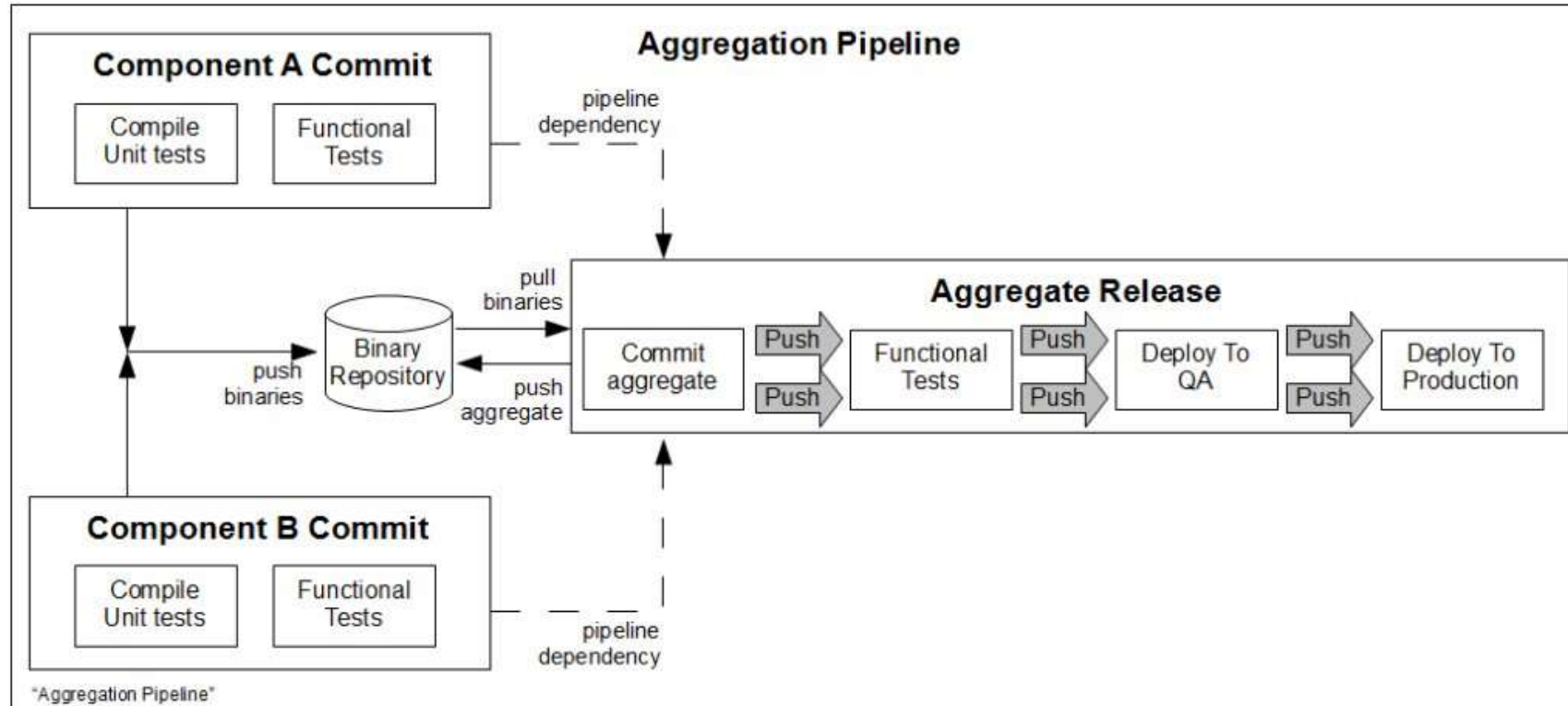
# According to DATAPIPE



# According to Spirent

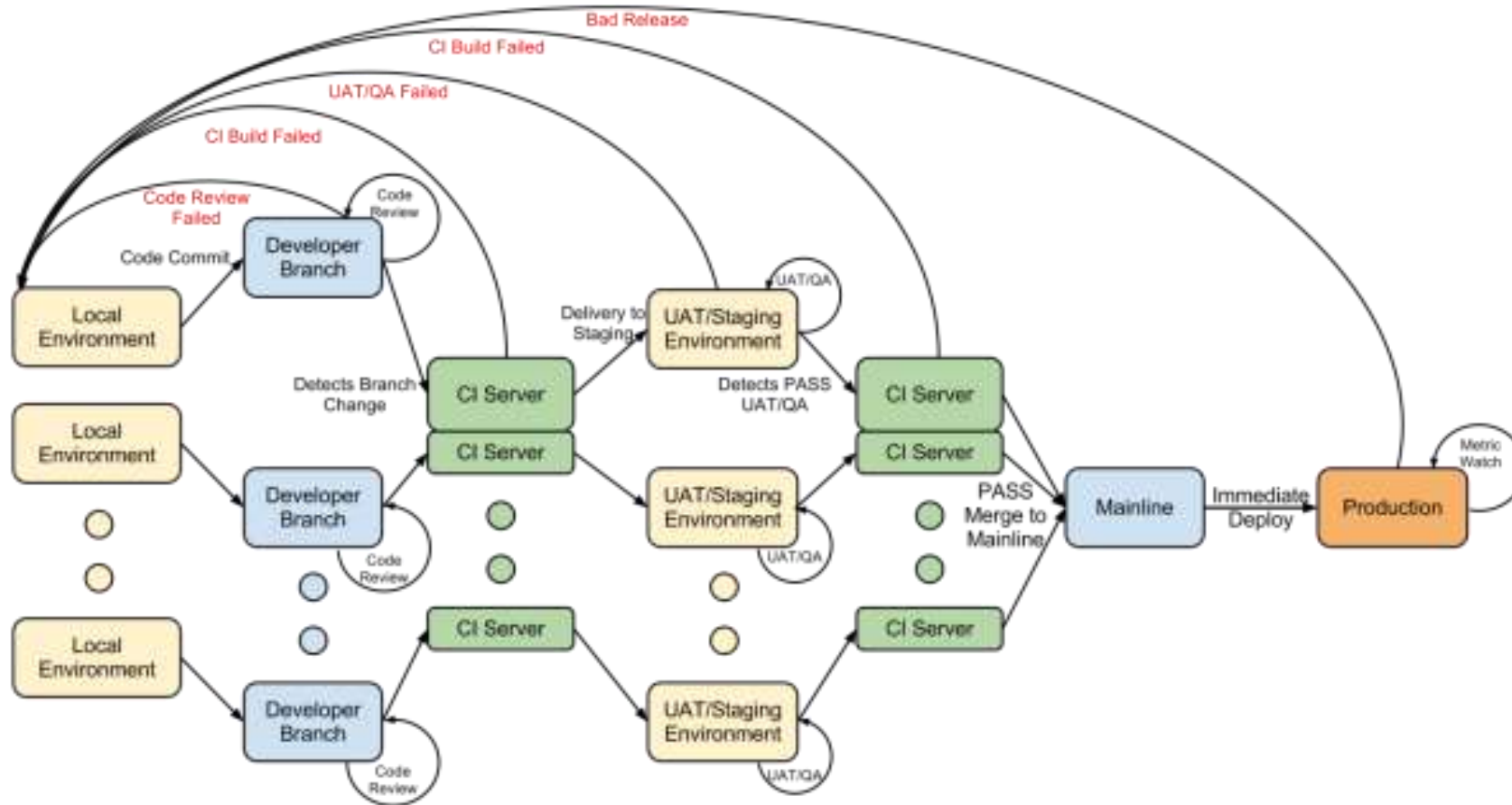


# According to Always Agile



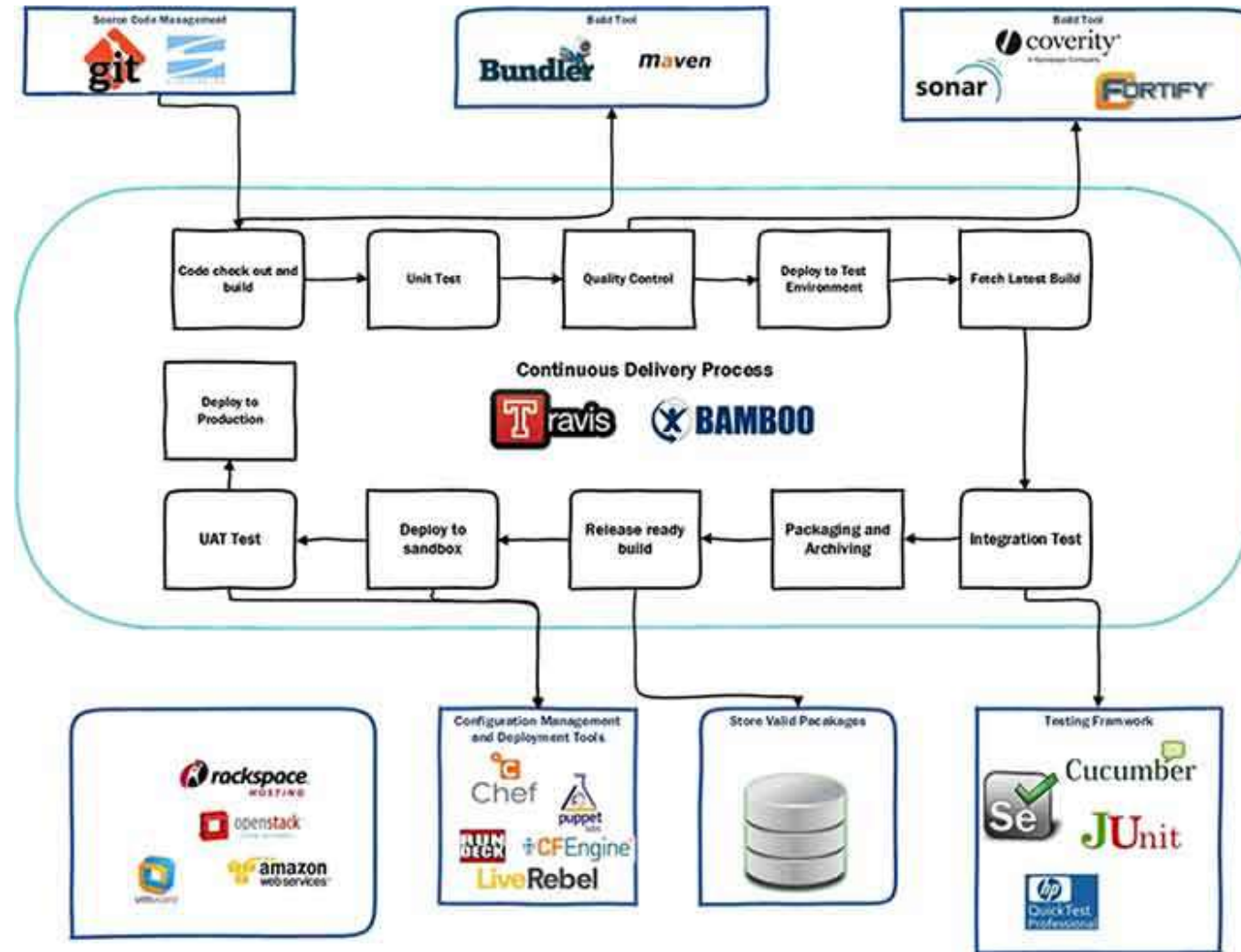


# According to Assembla

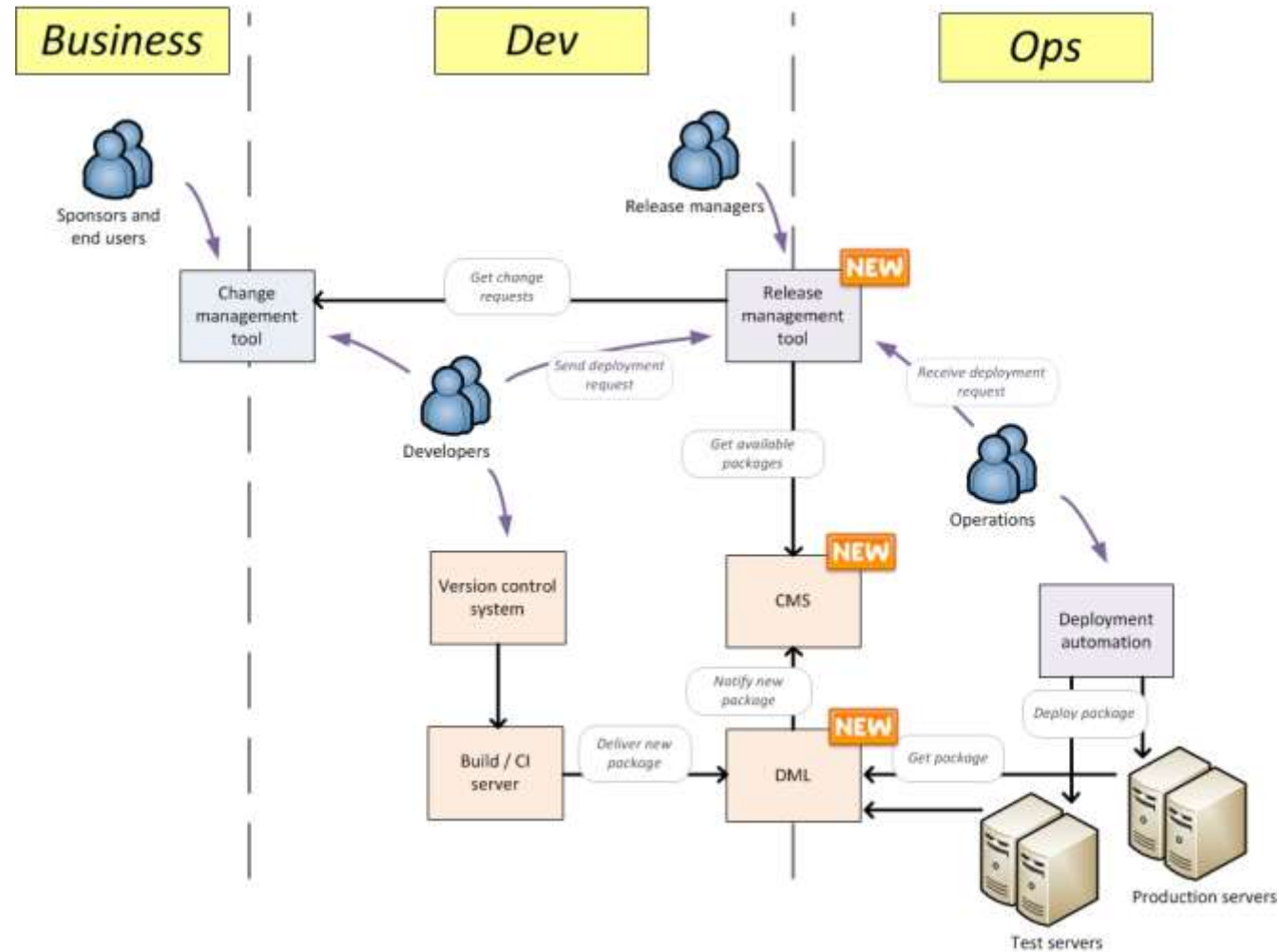




# According to Girikon



# According to Bartholomeus





Andi Mann



Chris Swan



Damien Coraboeuf



Karthik Gaekwad



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