OWASP

Open Web Application Security Project

Reducing the friction of vulnerability scanning in continuous integration

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About Me

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Some Key Terms

- SAST – Static Application Security Testing
- DAST – Dynamic Application Security Testing
- Security Testing – Validating software for vulnerabilities
- DevOps – Cultural change to bring development and operations together
- DevSecOps – DevOps + Security
- CI - Continuous Integration
- CD - Continuous Delivery
- Delivery Pipeline – Automated Process to Deliver Software.

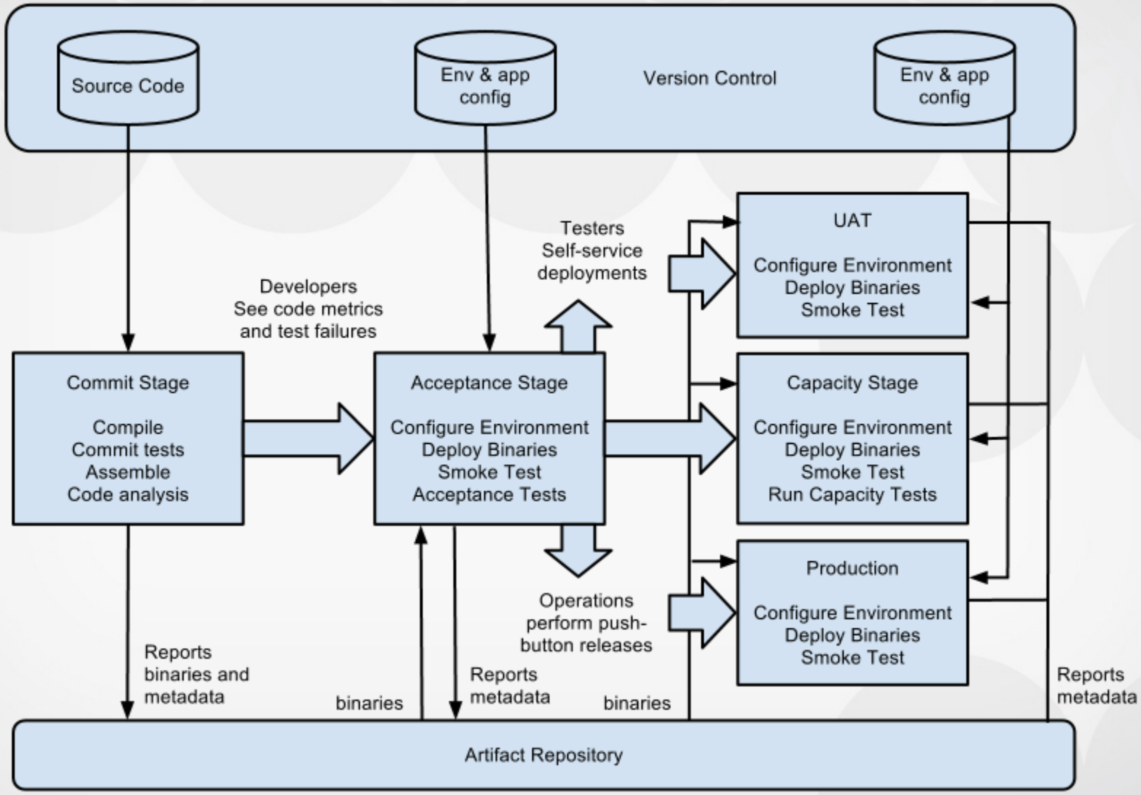
CONNECT. LEARN. GROW.

When developing software

HOW TO GO FAST AND SECURELY?

OWASP
Open Web Application
Security Project

Continuous Delivery (Pipeline)

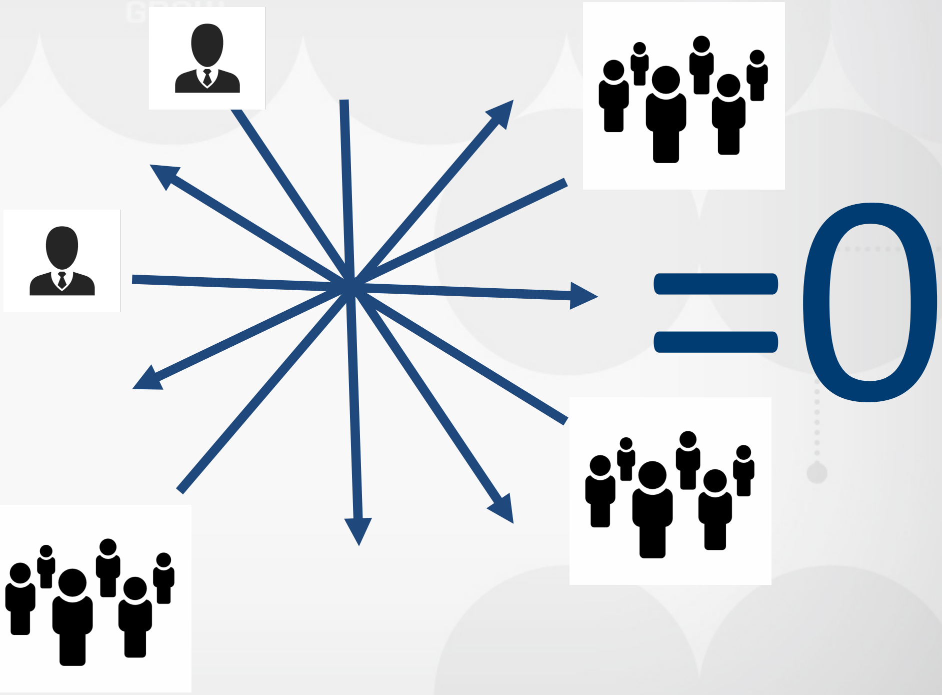


* **Continuous Delivery**. Reliable Software Releases through Build, Test, and Deployment Automation. by Jez Humble and David **Farley**.

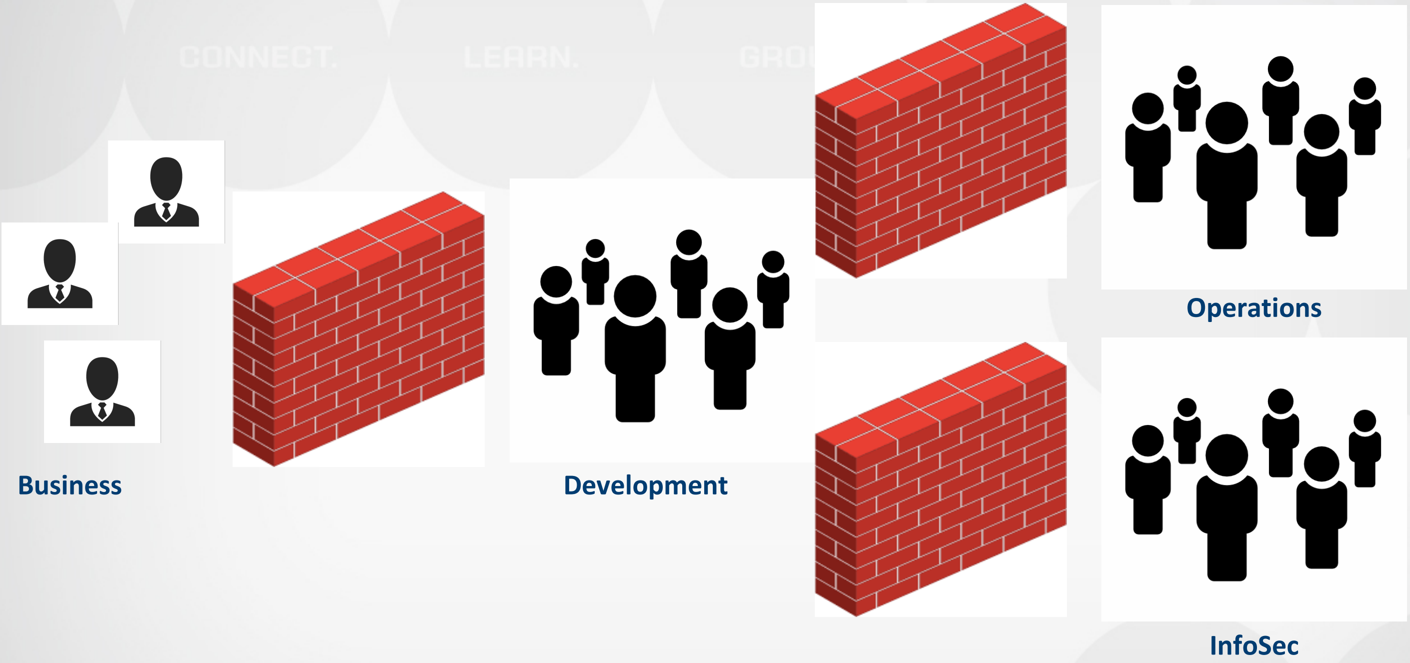
OWASP
Open Web Application Security Project

Lack of alignment

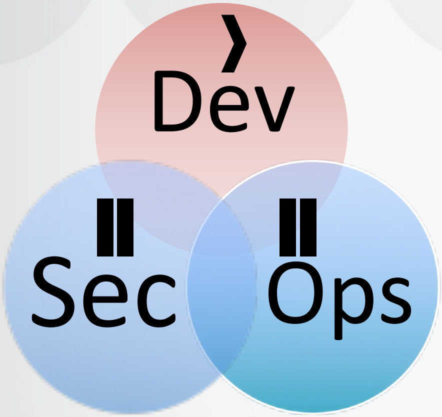
- Different Direction and Goals
- Lack of Alignment Cancel each other out
- Feeling of constant work with no real progress

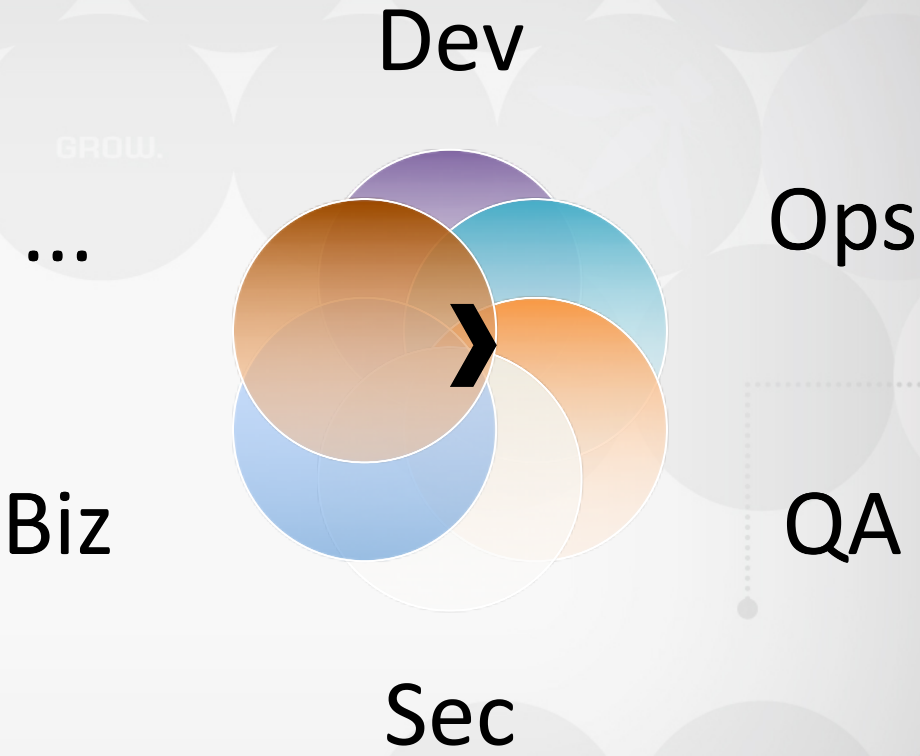


Walls of confusion

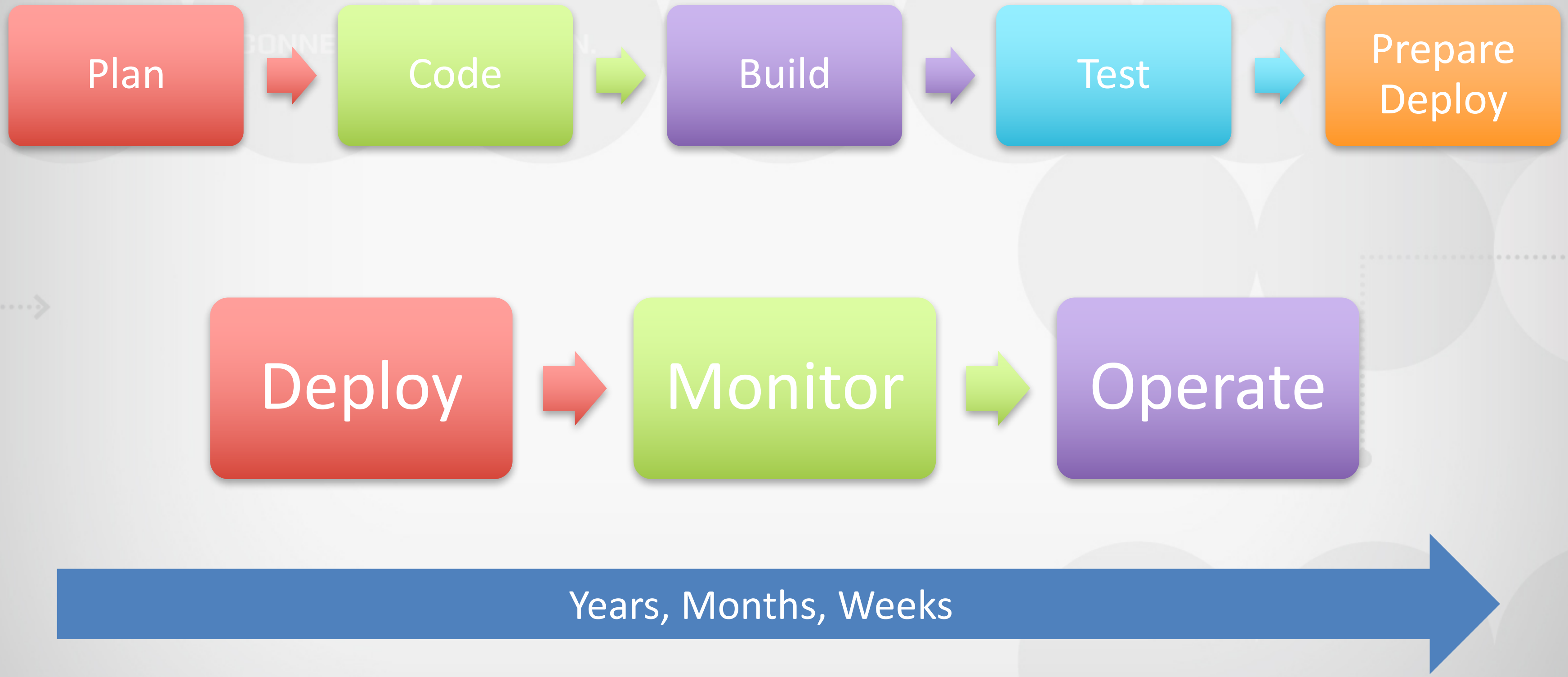


Why DevOps?





Waterfall



Plan

Code

Build

Test

Prepare Deploy

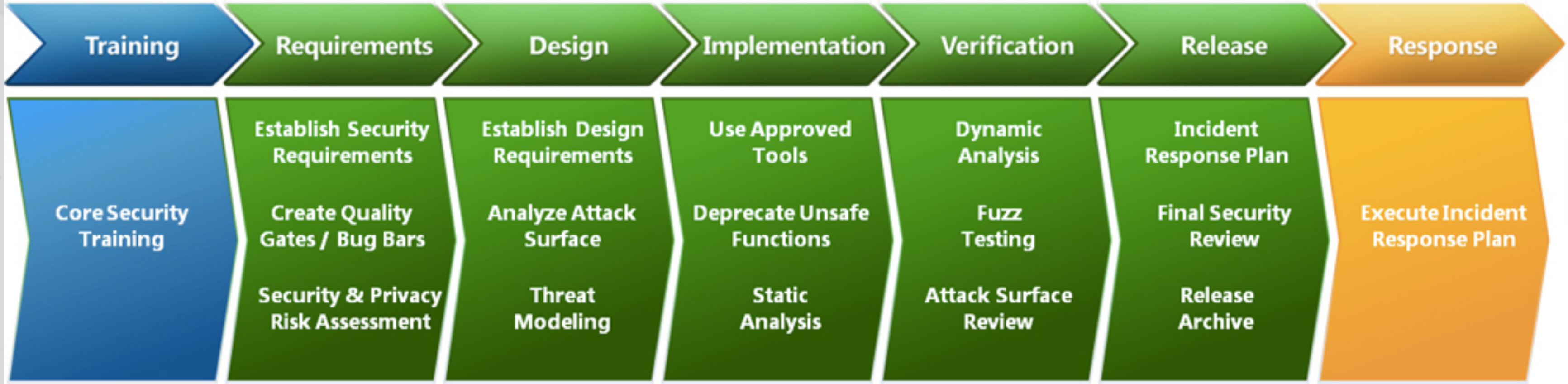
Deploy

Monitor

Operate

Years, Months, Weeks

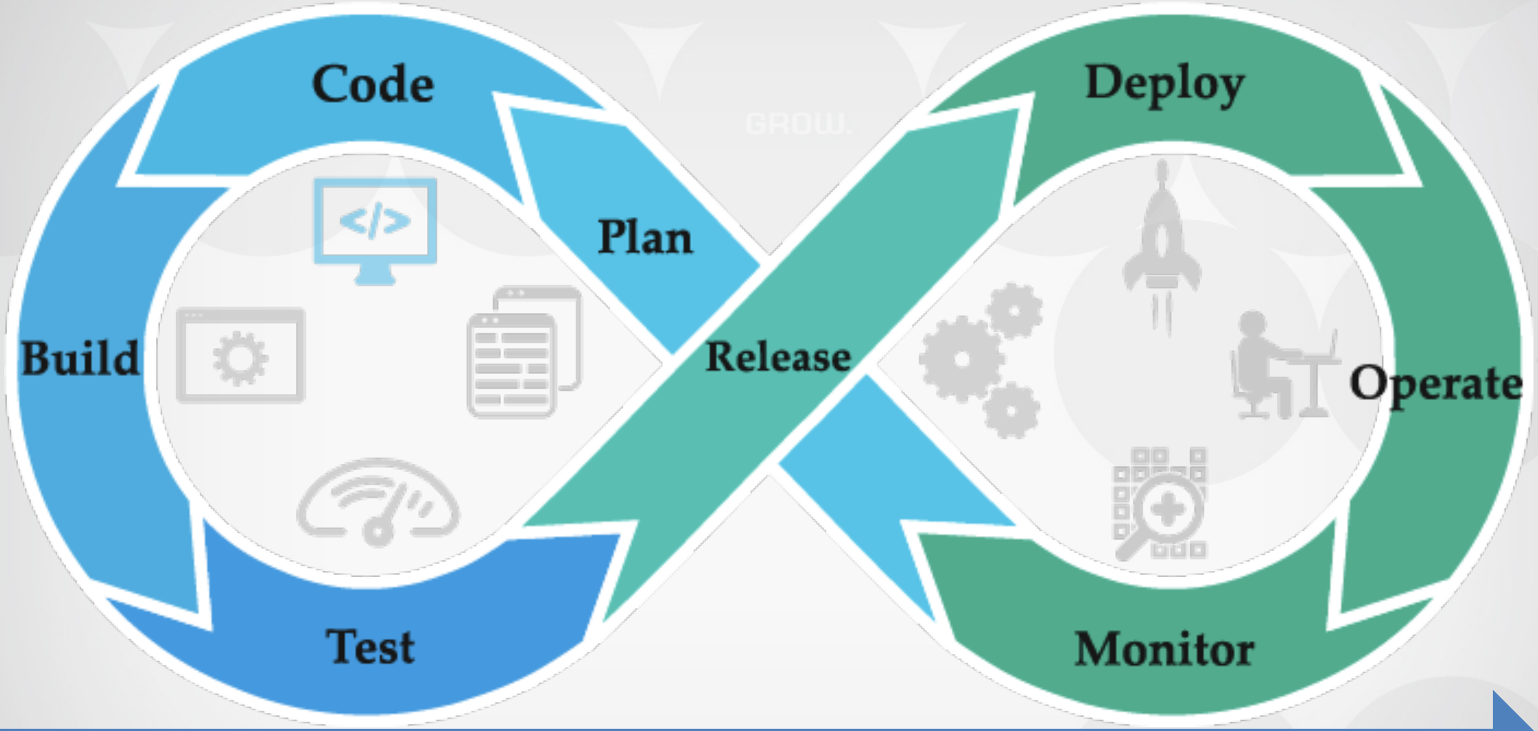
SDL



Training	Requirements	Design	Implementation	Verification	Release	Response
Core Security Training	Establish Security Requirements Create Quality Gates / Bug Bars Security & Privacy Risk Assessment	Establish Design Requirements Analyze Attack Surface Threat Modeling	Use Approved Tools Deprecate Unsafe Functions Static Analysis	Dynamic Analysis Fuzz Testing Attack Surface Review	Incident Response Plan Final Security Review Release Archive	Execute Incident Response Plan

https://social.technet.microsoft.com/wiki/contents/articles/7100.the-security-development-lifecycle.aspx

DevOps Process



Code

Plan

Build

Release

Test

Deploy

Operate

Monitor

Continuously (days, hours, minutes)

http://www.northcrossgroup.com/capabilities/devops/index.php

Our Problem

- SAST and DAST process where slow and time consuming
- Deployments were gated due to having to complete Static and Dynamic analysis
- We were asked to go faster but still be complaint with (our) InfoSec requirements
- Save time by automating scan manual process
- DAST & SAST duration was non-deterministic

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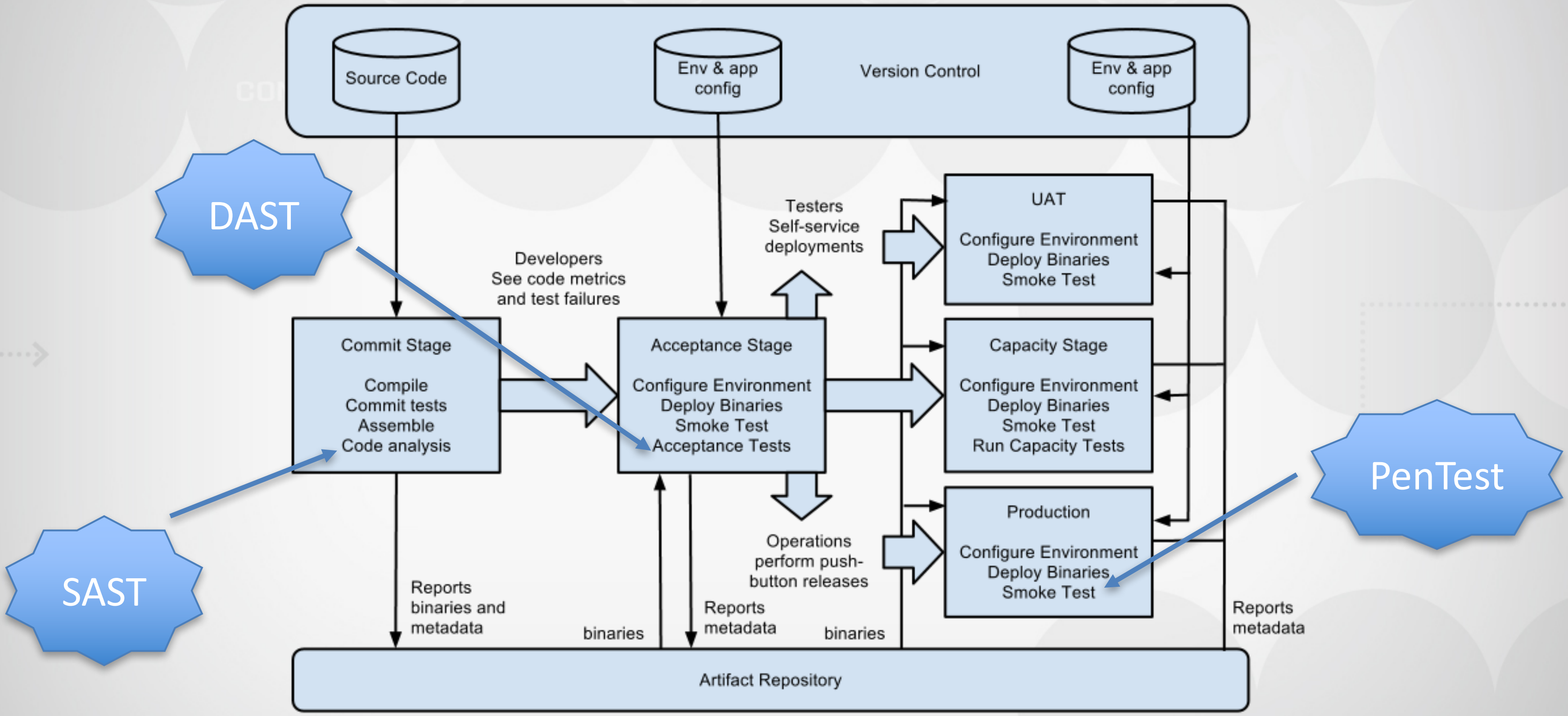
In the DevOps flow

HOW CAN WE INTEGRATE SECURITY GATES?

OWASP
Open Web Application
Security Project

Continuous Delivery (Pipeline)



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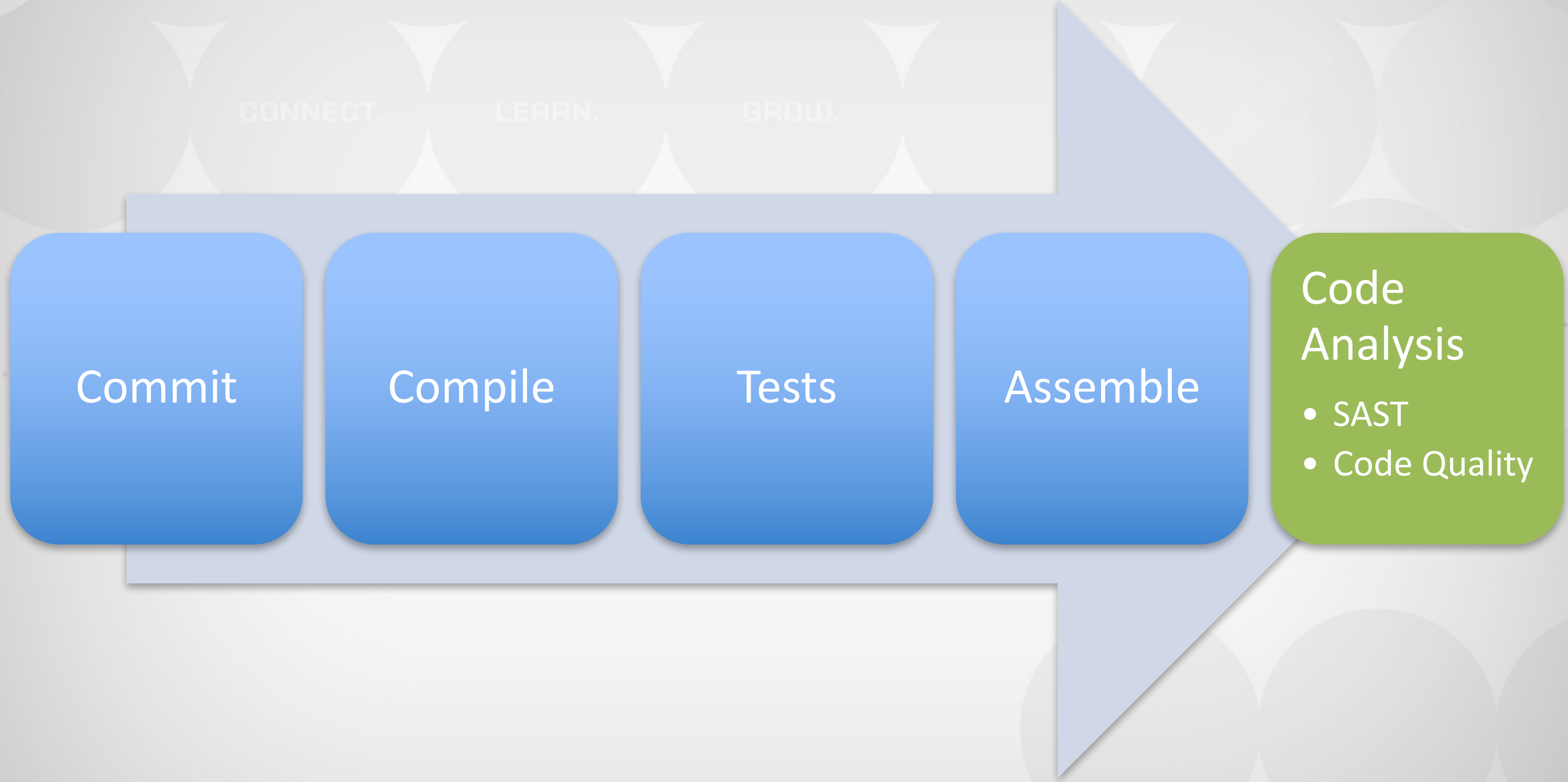
Static Application Security Testing

- Find security bugs
- ‘Faster’ inside out
- Reads your code
- Works at rest

Commit Stage



Commit

Compile

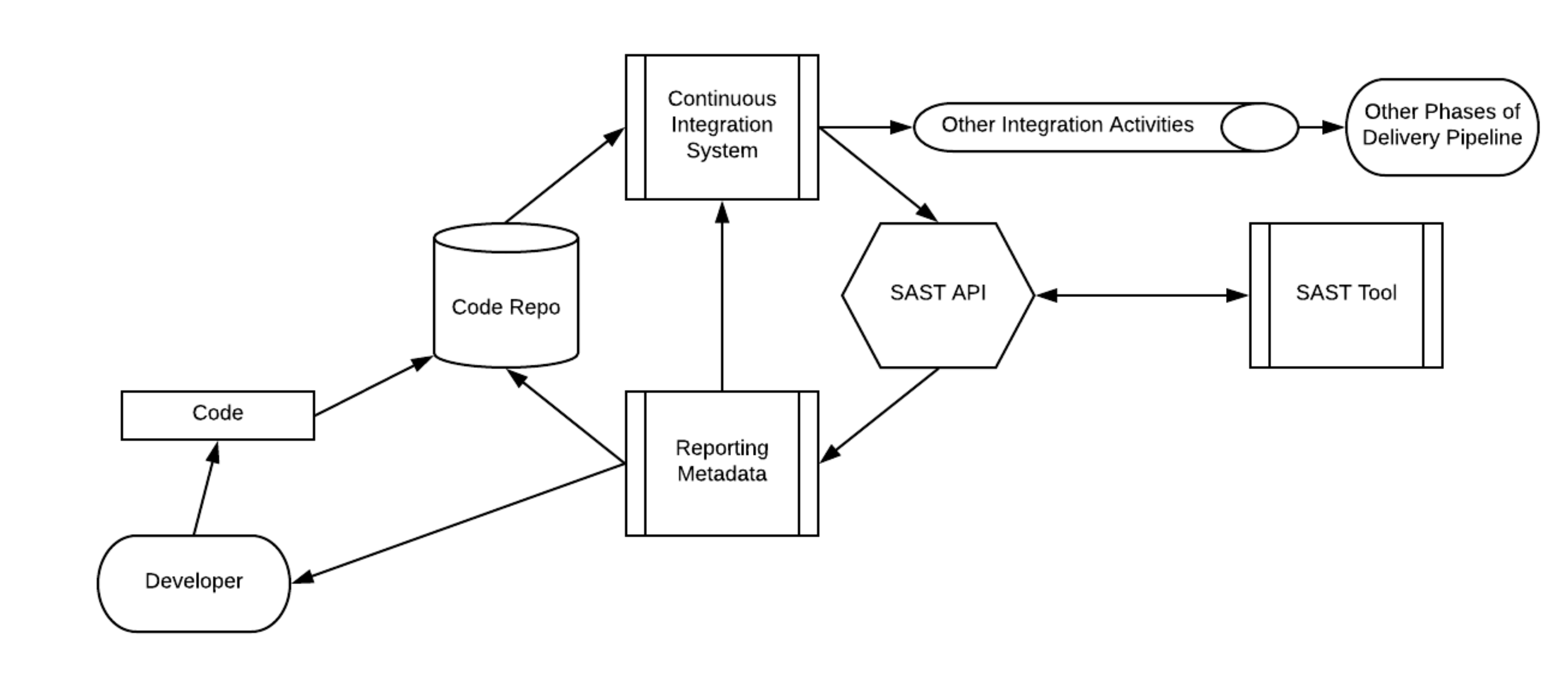
Tests

Assemble

Code Analysis

- SAST
- Code Quality

Integrated SAST Process


Continuous Integration System
Other Integration Activities
Other Phases of Delivery Pipeline
Code Repo
SAST API
SAST Tool
Code
Reporting Metadata
Developer

Tools to Integrate your Own

- Git (Git Hub*)
- Jenkins*
- SonarQube*
- Any OWASP SonarQube Project Plugin

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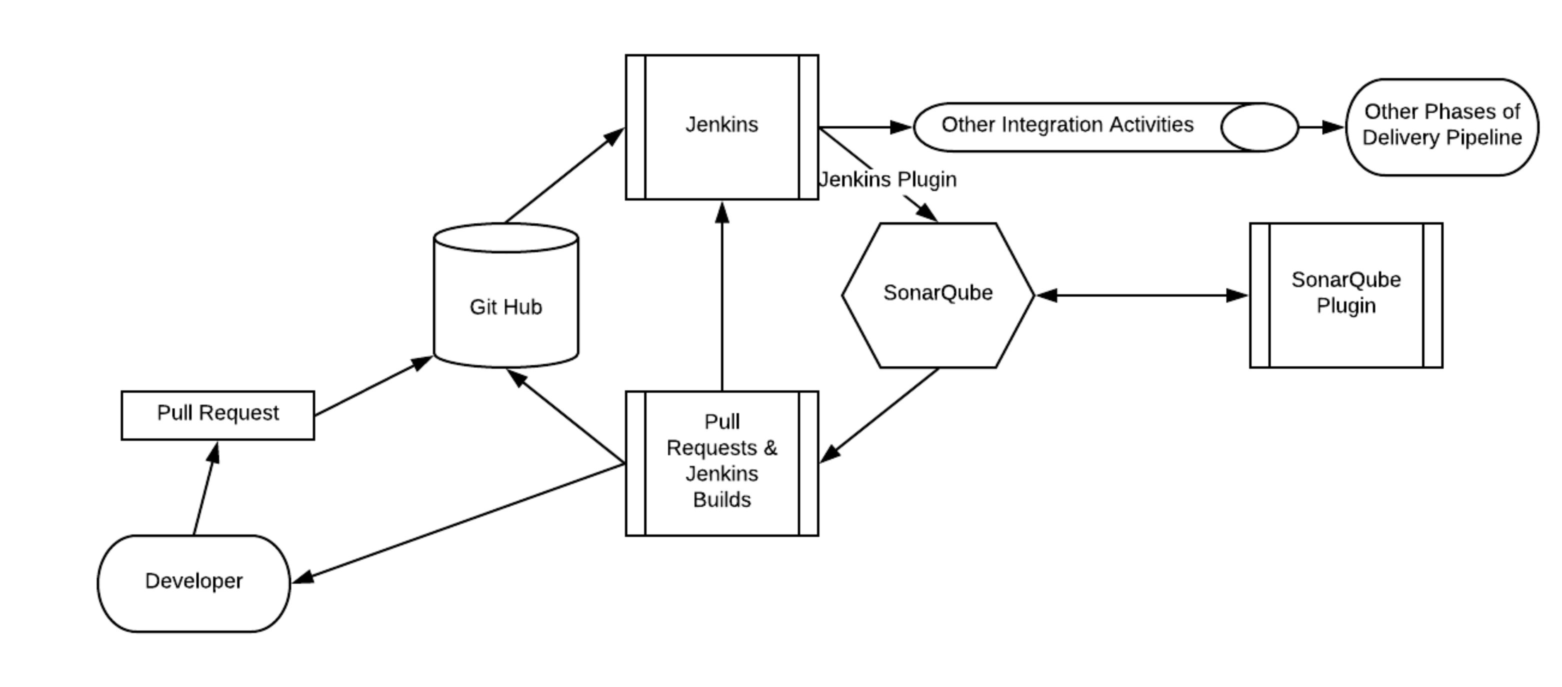
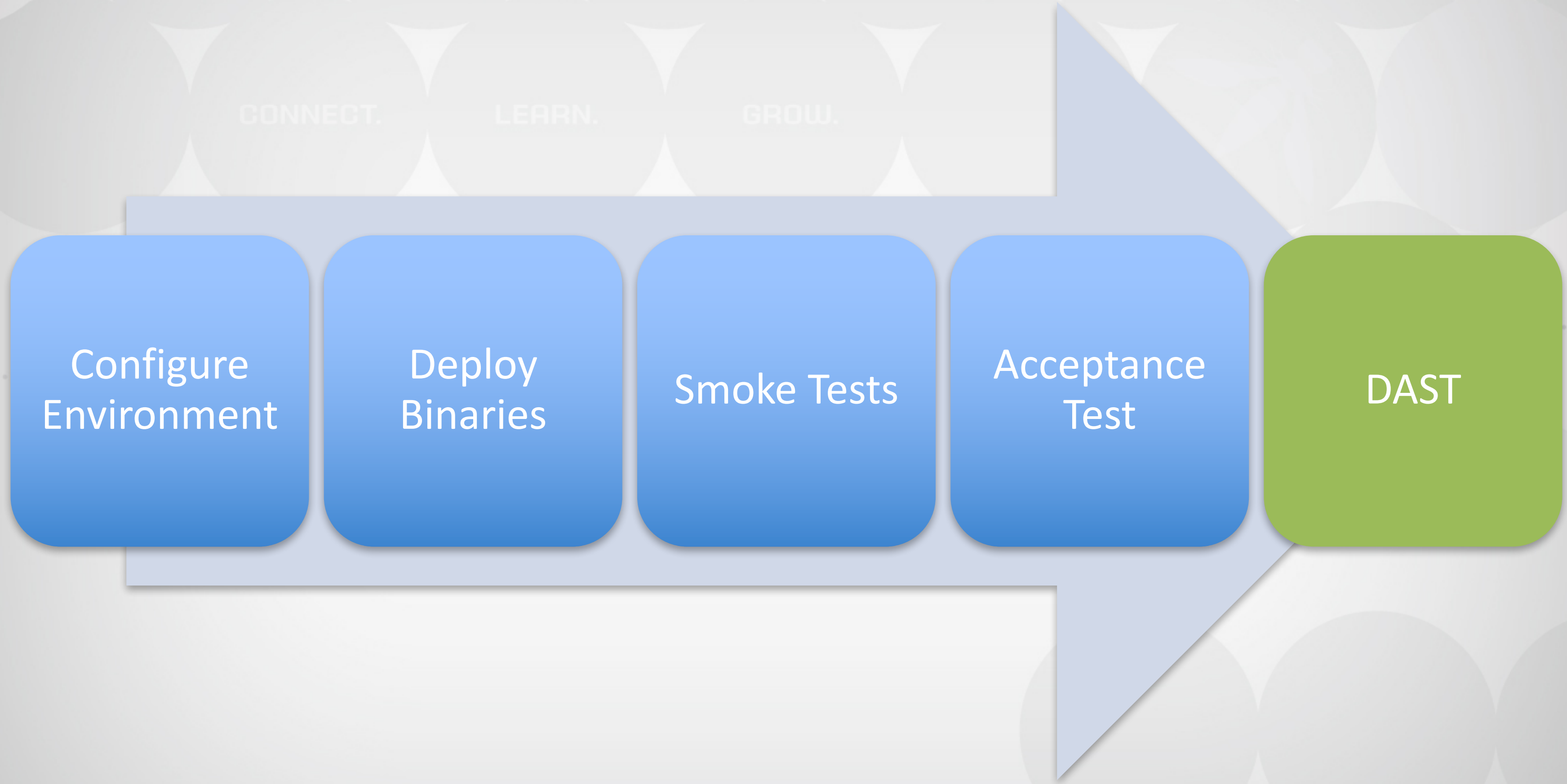
Open Source Alternative


Jenkins
Other Integration Activities
Other Phases of Delivery Pipeline
Jenkins Plugin
Git Hub
SonarQube
SonarQube Plugin
Pull Request
Pull Requests & Jenkins Builds
Developer

Dynamic Application Security Testing

- Find ‘other’ security bugs
- ‘Slower’ outside in
- Plays with your application
- Works at play

Acceptance Stage



Configure Environment

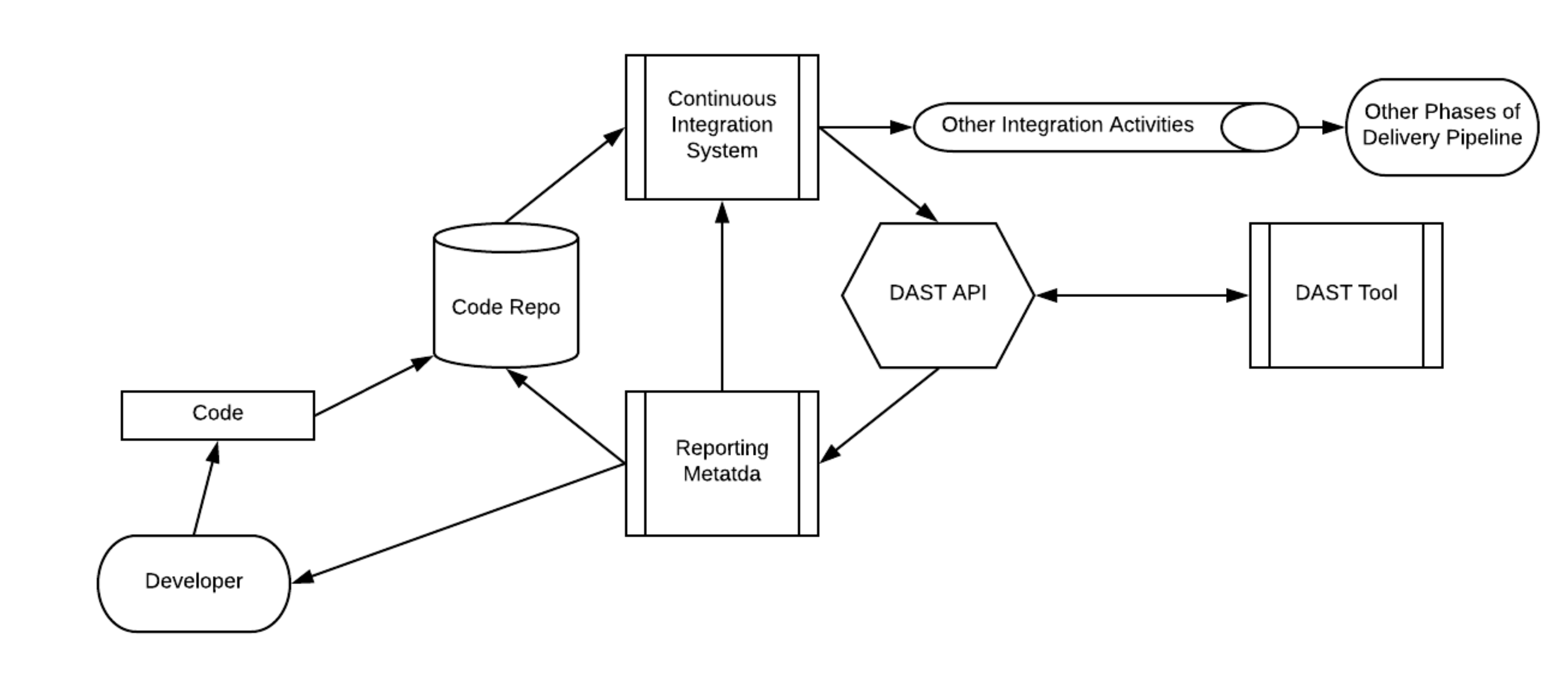
Deploy Binaries

Smoke Tests

Acceptance Test

DAST

Integrated DAST Process


Continuous Integration System
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Reporting Metatda
Developer

CONNECT. LEARN. GROW.

Integrating more security validations into our delivery pipeline

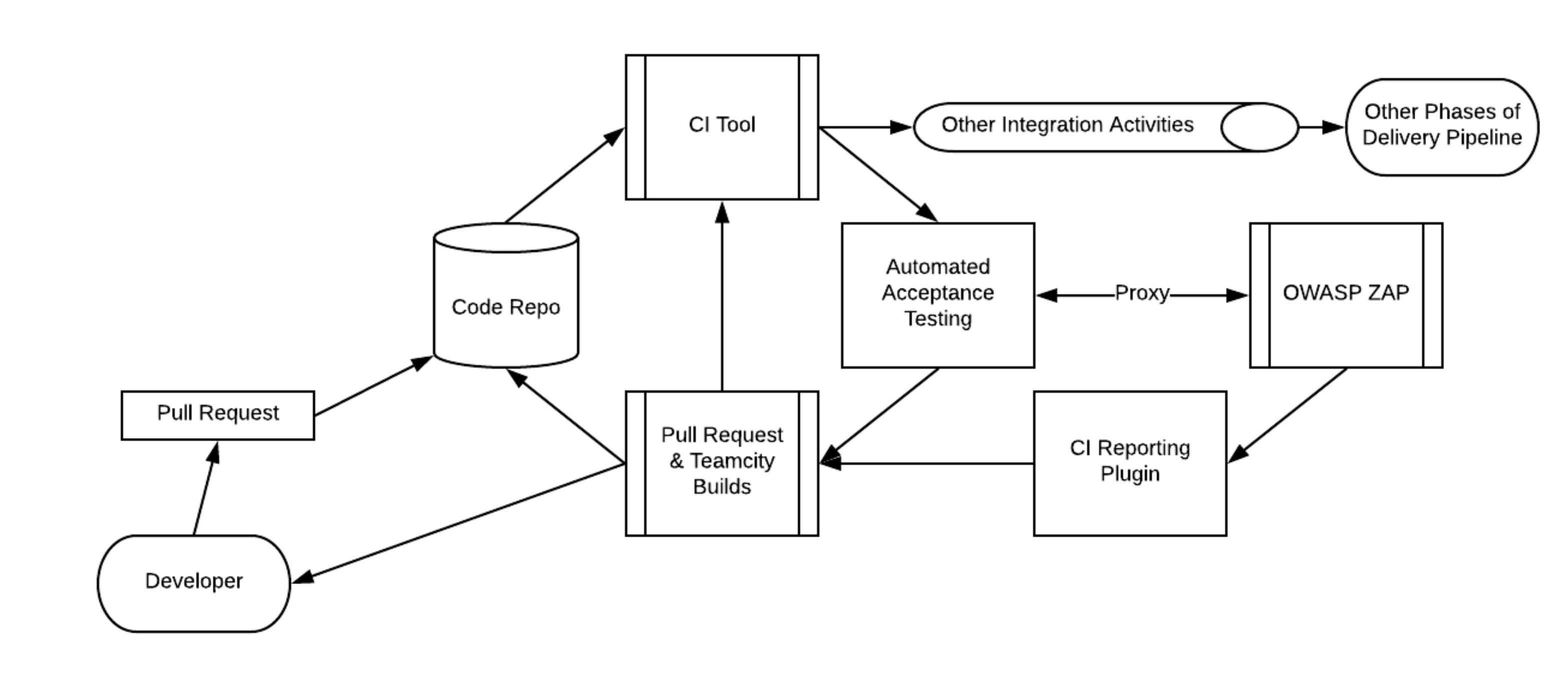
GOING FURTHER, SECURITY TESTING

OWASP
Open Web Application
Security Project

Why?

- Enhanced assurance
- Faster feedback
- Innovation
- DAST has some ‘deficiencies’

ZAP Integration into our pipeline


CI Tool
Other Integration Activities
Other Phases of Delivery Pipeline
Code Repo
Automated Acceptance Testing
Proxy
OWASP ZAP
Pull Request
Pull Request & Teamcity Builds
CI Reporting Plugin
Developer

Advantages in the new approach

- Acceptance test allow a ‘knowledgeable’ scan with ZAP
- Reporting from ZAP integrated into builds give traceability
- Easy integration, just needed to change proxy settings into the testing boxes

Some Highlights

- While DAST and SAST showed no issues, ZAP reported vulnerabilities
- ZAP approach turned to be faster than DAST or SAST scans
- ZAP scan duration is deterministic (same as acceptance tests)
- According to State of DevOps high performer teams spend 50% less time remediating security issues