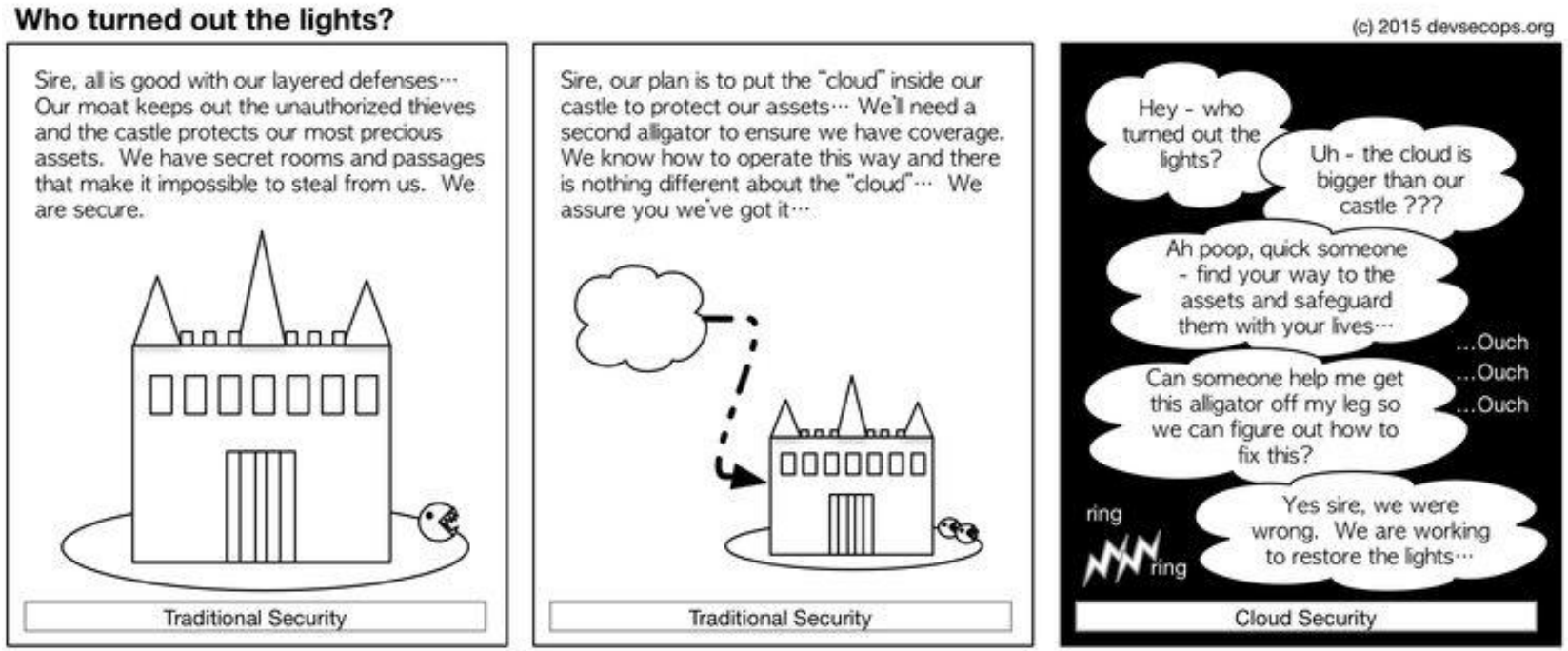
DOCKTER-TOM

TOM PORTER, PHD

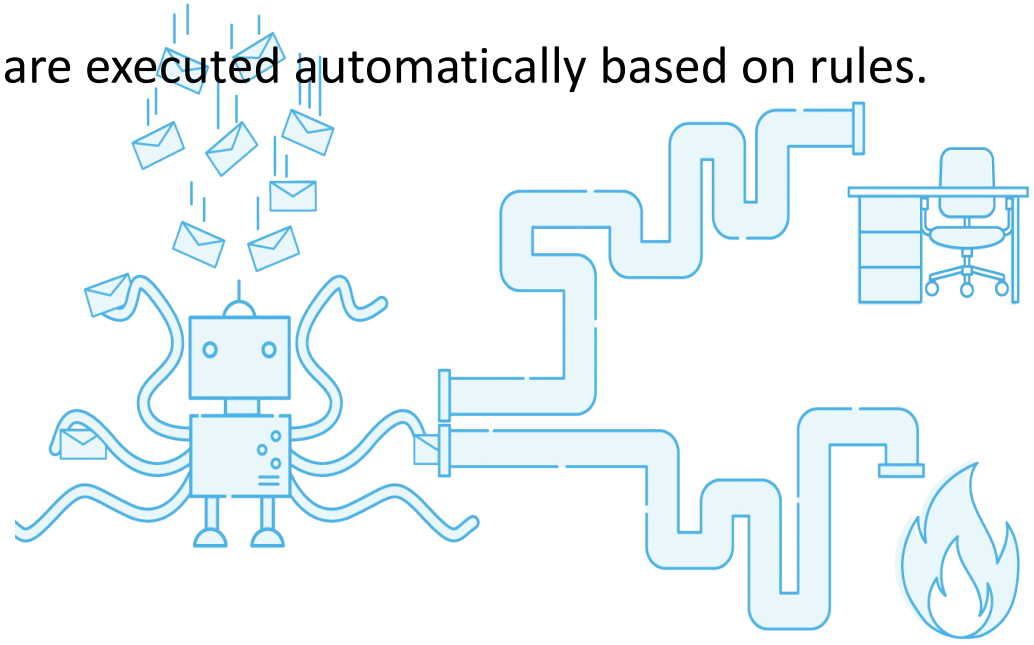
3 FEBRUARY 2018

Second Alligator

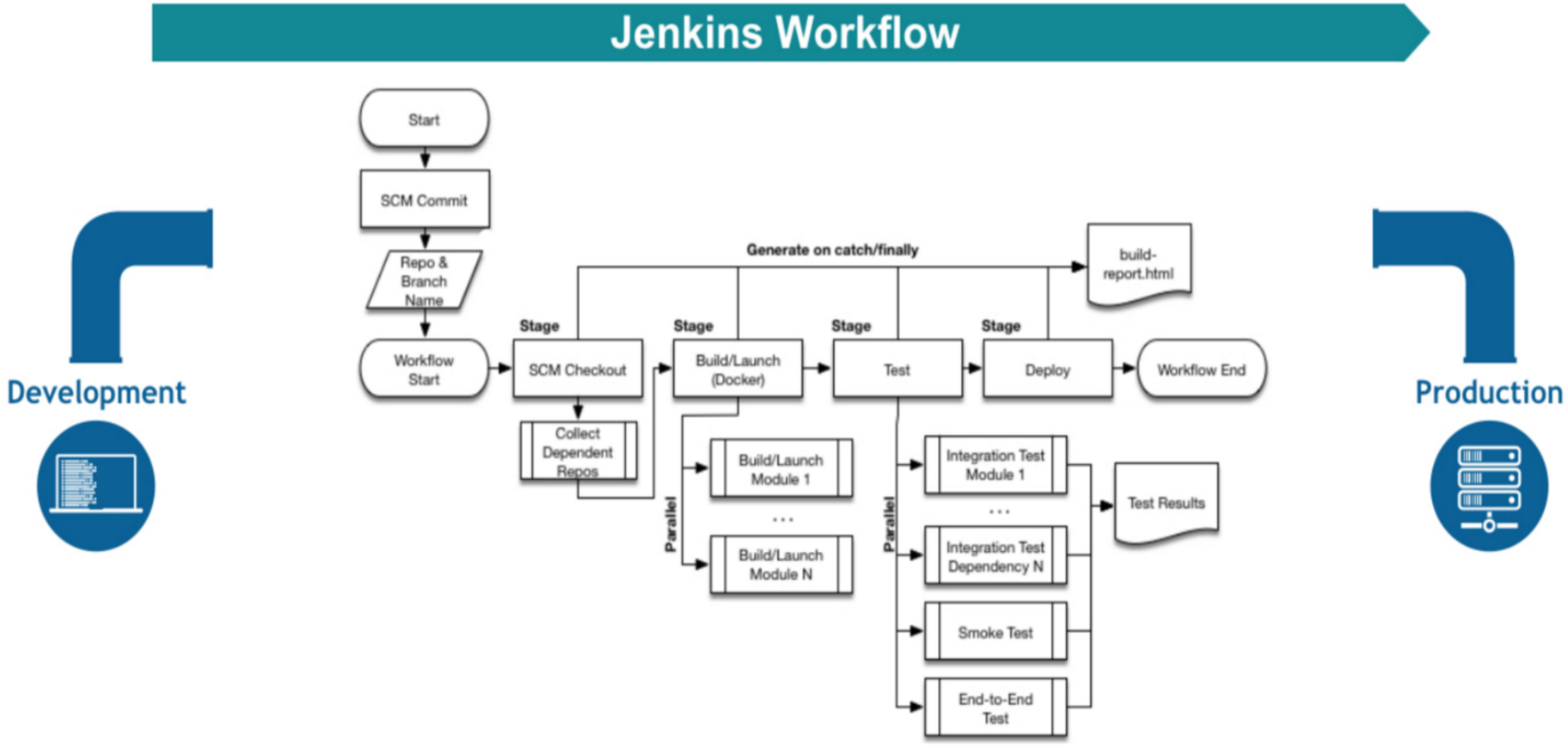


The Future of Work is Workflow Automation

- A workflow is the series of steps taken to achieve a goal or result.
- A digital workflow is that same process, but occurs on a computer or device.
- Workflow automation is when those processes are executed automatically based on rules.



Sample Jenkins Workflow



The Problem: Coders versus Security Pros

Many security professionals don't code. Likewise, the majority of software developers know very little about security. How can we bridge this gap?

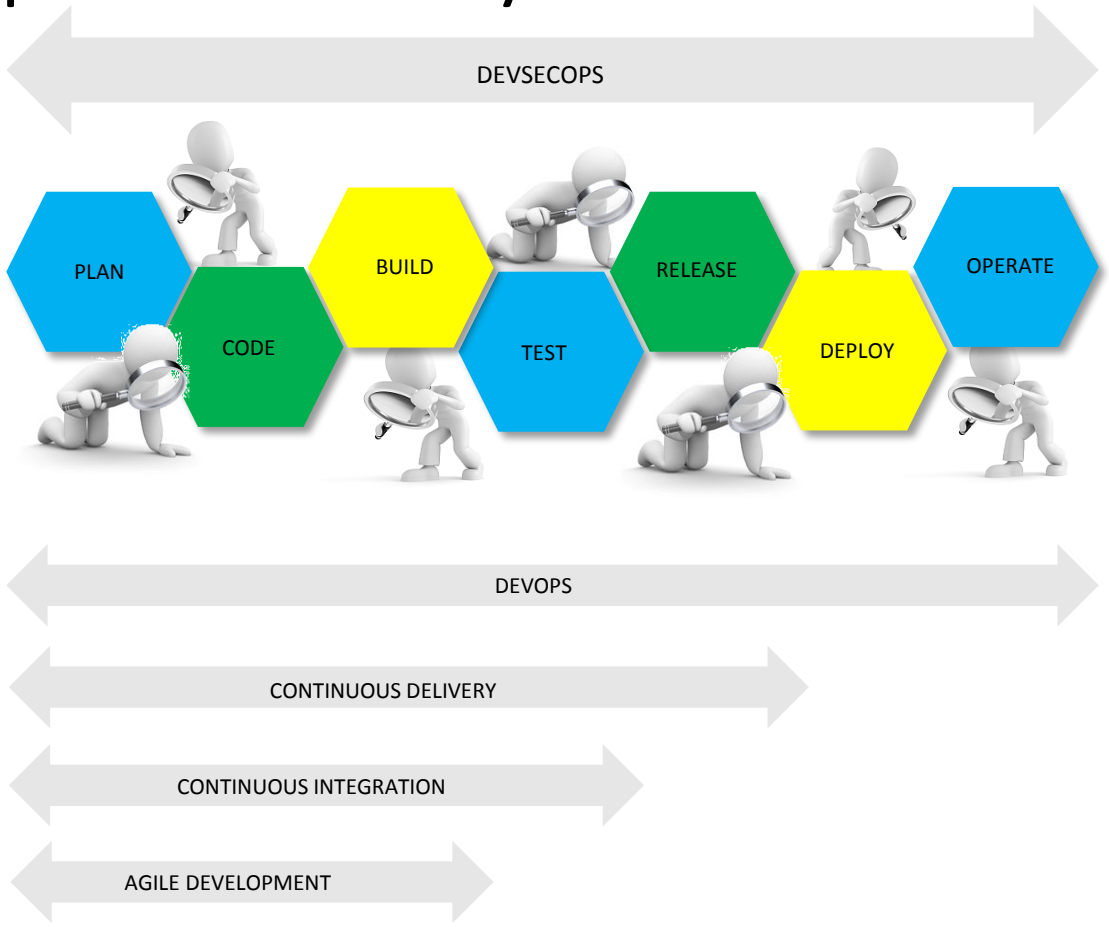
Currently, security is a one-shot affair – relying on some penetration testing to catch bugs. If we are honest, we would acknowledge that this hinders the ability to release software fast and often (a core tenet of DevOps).

“The 2 DevSecOps Truths”

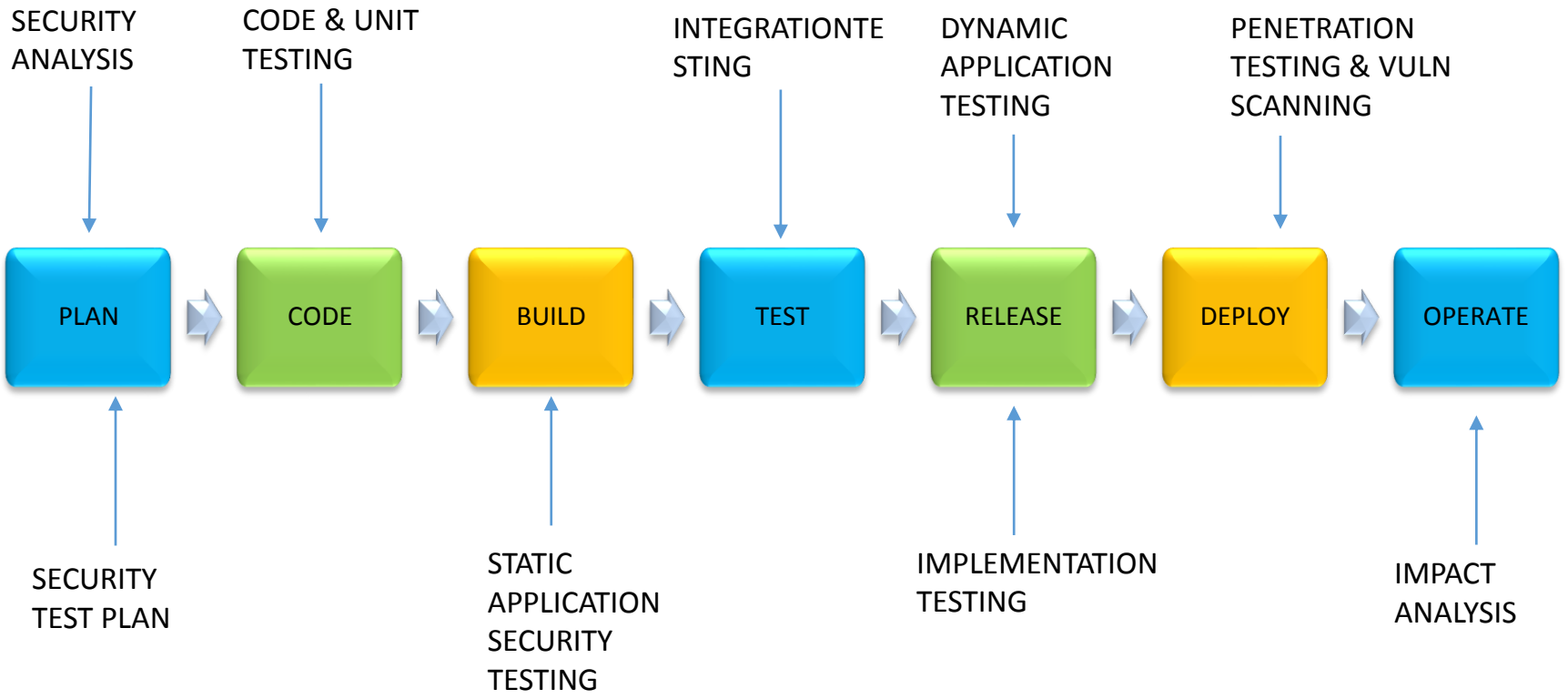
- DevSecOps: Information security architects must integrate security into DevOps workflows at multiple points and in a collaborative way that is largely transparent to developers, while preserving the teamwork, agility, speed, & mindset of DevOps and agile development environments.

- Software testing does not guarantee that software will be bug-free; rather software testing results are a means of providing an estimate of software quality to stakeholders at multiple levels.

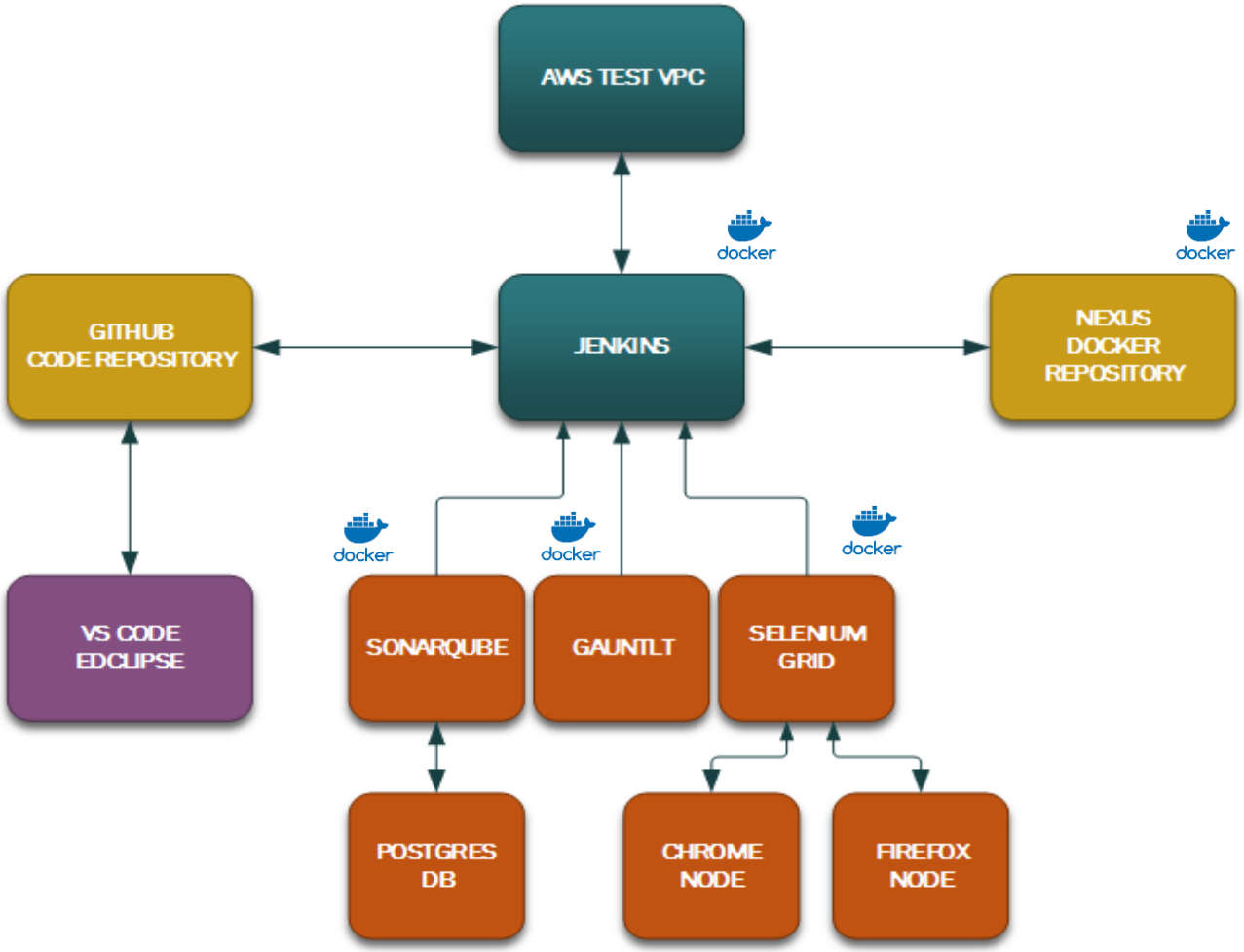
DevSecOps: Security Across the Pipeline



DevSecOps: Security Across the Pipeline



DevSecOps Tools: How to do DevSecOps at Home (an example)



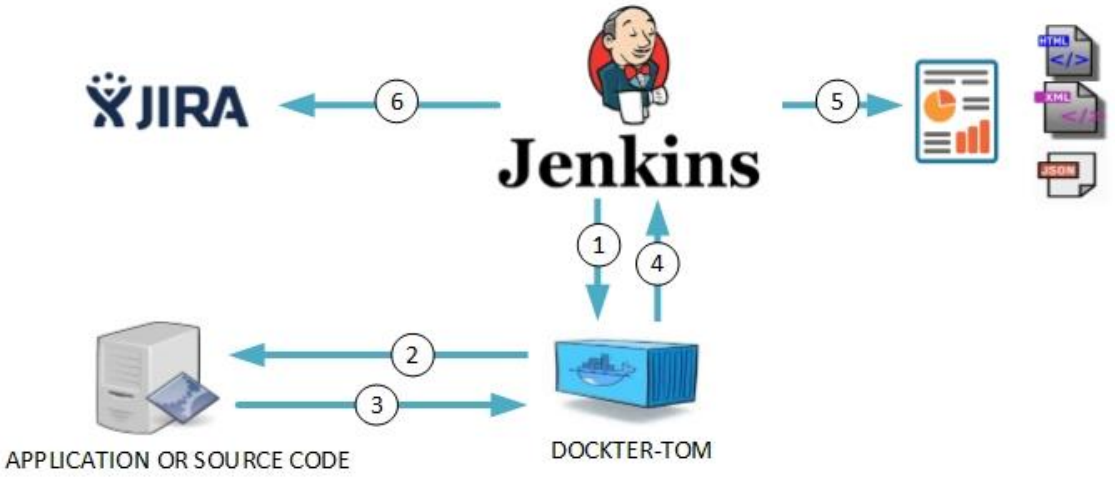
Vulnerability Scanning Definitions

- **SAST Static Application Security Testing** is a set of technologies designed to analyze application source code, byte code and binaries for coding and design conditions that are indicative of security vulnerabilities. The goal of **SAST** is to identify vulnerabilities in your source code before you deploy to production. **SAST** solutions are often programming language-specific, & analyze an application from the "inside out" in a nonrunning state. Common language-independent SAST tools include: Sonarqube, Sentry, HP Fortify SCA, Coverity, Checkmarx, & Veracode.

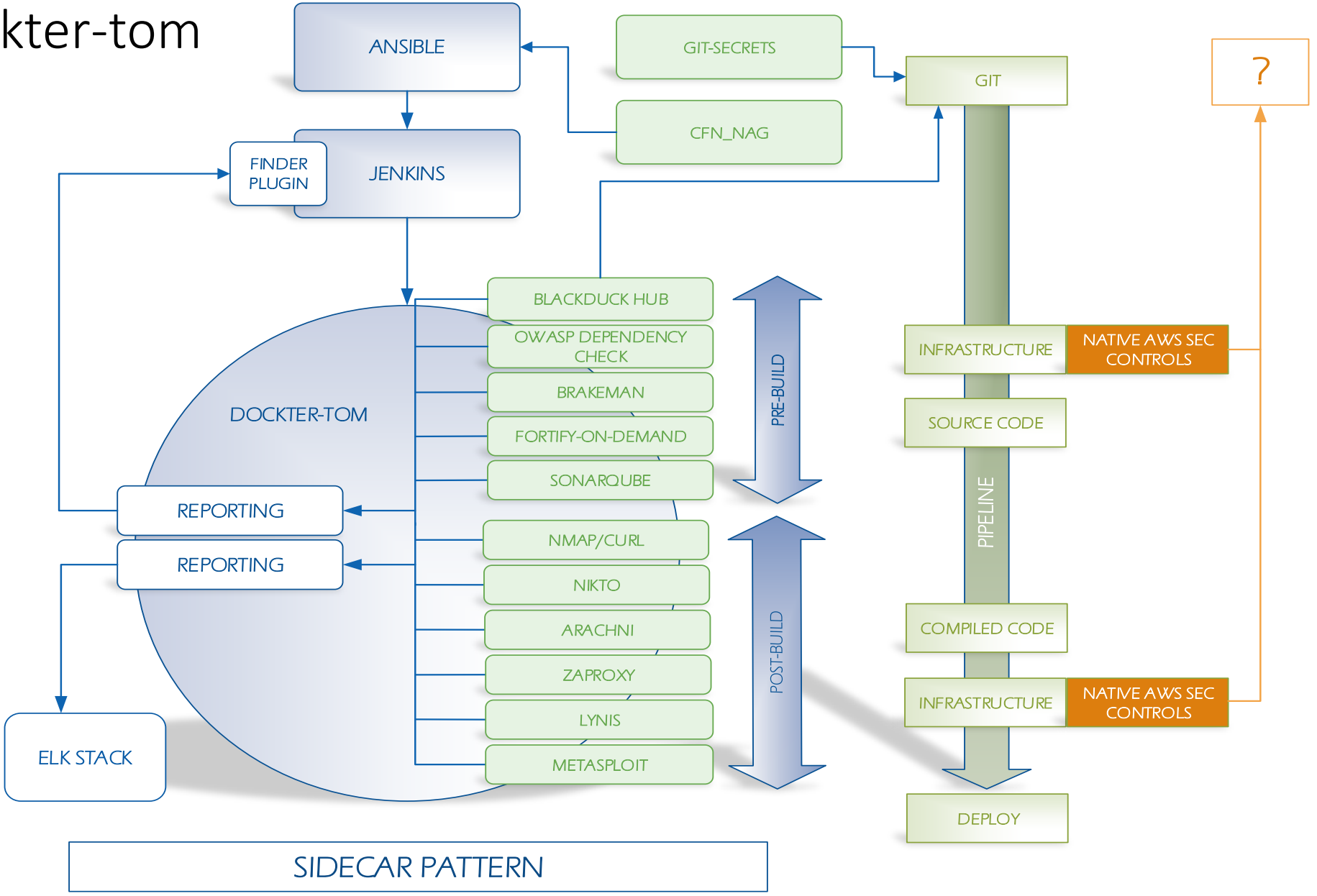
- **DAST Dynamic Application Security Testing** technologies are designed to detect conditions indicative of a security vulnerability in an application in its running state. Most **DAST** solutions test only the exposed HTTP, HTML, REST, & SOAP interfaces of Web-enabled applications; however, some solutions are designed specifically for non-Web protocol and data malformation such as remote procedure calls. Popular DAST tools include: nmap, Metasploit framework, Burp Suite, Nikto, Arachni, ZAProxy, SQLMap, Lynis, & vendors -- Rapid7 & Accunetix.

- **HAST/IAST Hybrid Application Security Testing** as you would imagine, combine features of both **SAST** & **DAST** technologies. Popular HAST/IAST Vendors include: Contrast Security, Synopsis, Veracode, & Checkmarx.

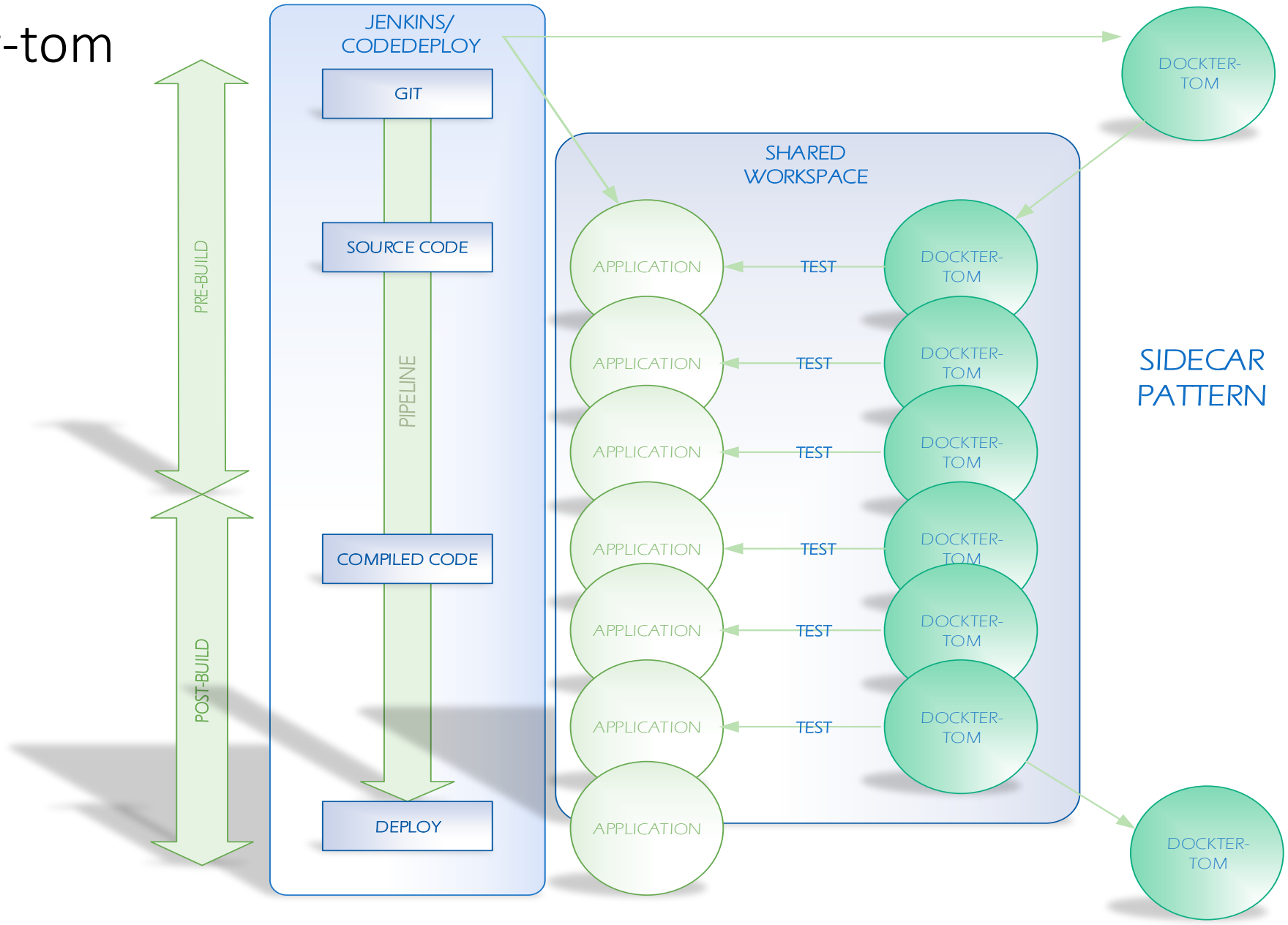
Dockter-tom: Workflow

DOCKTER-TOM AS PART OF CI WORKFLOW	
1	A Jenkins CI Build step initializes dockter-tom
2	dockter-tom performs predefined vulnerability scans against application or server – scans defined by Gauntlt/Cucumber DSL
3	Target application or target server responds to vulnerability scan(s)
4	dockter-tom sends vulnerability scan data back to Jenkins via several plugins
5	Jenkins publishes and archives the report(s)
6	Jenkins creates JIRA or other events for the alerts.

dockter-tom


ANSIBLE
GIT-SECRETS
GIT
?
FINDER PLUGIN
JENKINS
CFN_NAG
BLACKDUCK HUB
OWASP DEPENDENCY CHECK
BRAKEMAN
FORTIFY-ON-DEMAND
SONARQUBE
PRE-BUILD
DOCKTER-TOM
REPORTING
REPORTING
NMAP/CURL
NIKTO
ARACHNI
ZAPROXY
LYNIS
METASPLOIT
POST-BUILD
ELK STACK
INFRASTRUCTURE
NATIVE AWS SEC CONTROLS
SOURCE CODE
PIPELINE
COMPILED CODE
INFRASTRUCTURE
NATIVE AWS SEC CONTROLS
DEPLOY
SIDECAR PATTERN

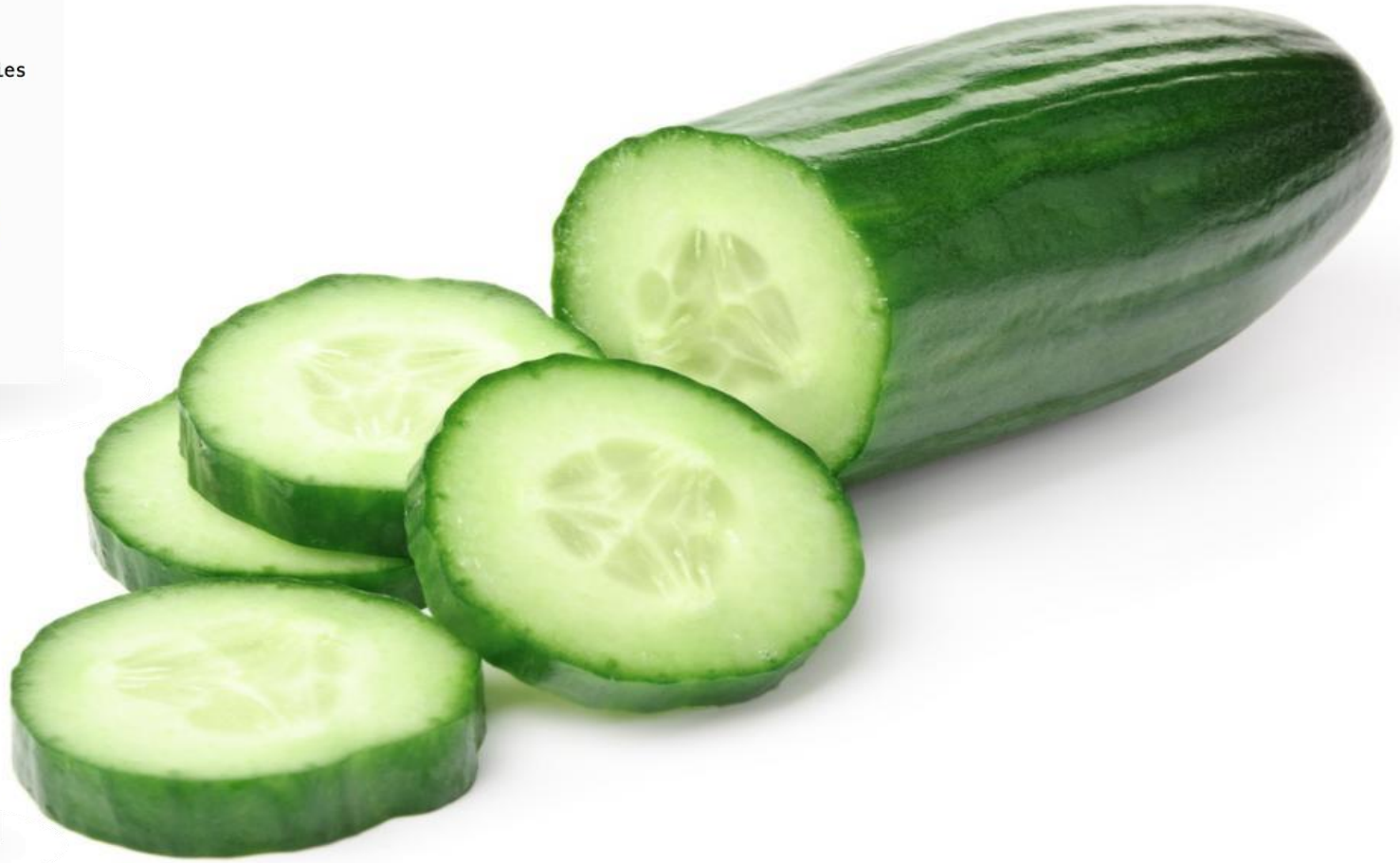
dockter-tom


JENKINS/
CODEDEPLOY
GIT
SOURCE CODE
PIPELINE
COMPILED CODE
DEPLOY
PRE-BUILD
POST-BUILD
DOCKTER-
TOM
SHARED
WORKSPACE
APPLICATION
TEST
SIDECAR
PATTERN

CUCUMBER: Behavior Driven Development

```
@cwe-89
Scenario: The application should not contain SQL injection vulnerabilities
  And the SQL-Injection policy is enabled
  And the attack strength is set to High
  And the alert threshold is set to Low
  When the scanner is run
  And the following false positives are removed
    |url                    |parameter          |cweId      |wascId   |
  And the XML report is written to the file build/zap/sql_injection.xml
  Then no Medium or higher risk vulnerabilities should be present
```

```
@cwe-295-auth
Scenario: Present the login form itself over an HTTPS connection
  Given a new browser instance
  And the client/browser is configured to use an intercepting proxy
  And the proxy logs are cleared
  And the login page is displayed
  And the HTTP request-response containing the login form
  Then the protocol should be HTTPS
```



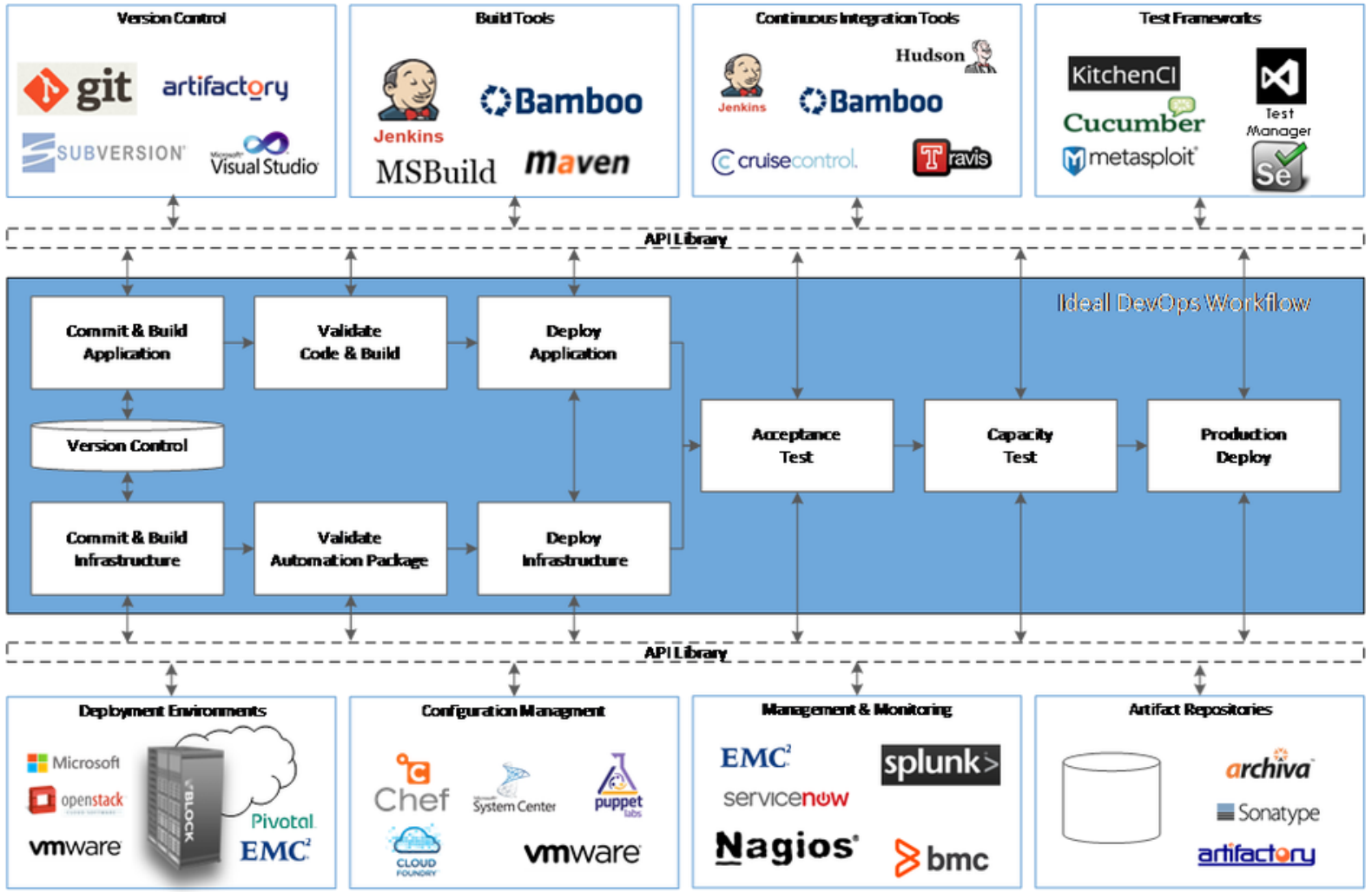
AWS Native Security Services

AWS Service	Summary
CloudWatch logs & logging agents	Monitor, store, and access many types of logs
CloudTrail logs	Records all API calls
IAM - Users, groups, roles, policies	Manage “least-privilege” access
VPC’s	Network segregation
Security Groups	Inbound firewall
Network ACL's (NACL's)	Inbound/Outbound ACL’s
VPN’s & VPG’s	Encrypted remote access
Selective encryption of data-at-rest	Encryption
API Gateways	Control access with IAM roles
SNS	Automated messaging to SMS
Amazon Inspector	Agent-based security assessments
IAM User Access Advisor	Monitor user, role access
Trusted Advisor	Monitor service limits
Amazon Macie	Classify and protect sensitive data in AWS
Amazon GuardDuty	Managed threat detection

BACKUPS

DevSecOps Tools – A Model I

DevSecOps Tools – A Model II



“Your sh*t is broken”

1. View actual code in stack traces, with source maps for JS, symbolication for iOS, and stack locals for Python bug tracking.

2. See the error’s parameters and session information in the crash report.

3. Filter noisy stack traces with app, framework, and raw error views.