Build secure software with OWASP tools and guides

OWASP
The Open Web Application Security Project

/whoami

Martin Knobloch

+10 years developer experience
+15 years information security experience

Dutch OWASP Chapter Leader since 2007
OWASP Foundation Board of Directors since 2017

Global AppSec Strategist @ Micro Focus / Fortify

Contact:

martin.knobloch@owasp.org

https://twitter.com/knoblochmartin
https://www.linkedin.com/in/martin-knobloch
https://xing.to/knoblochmartin

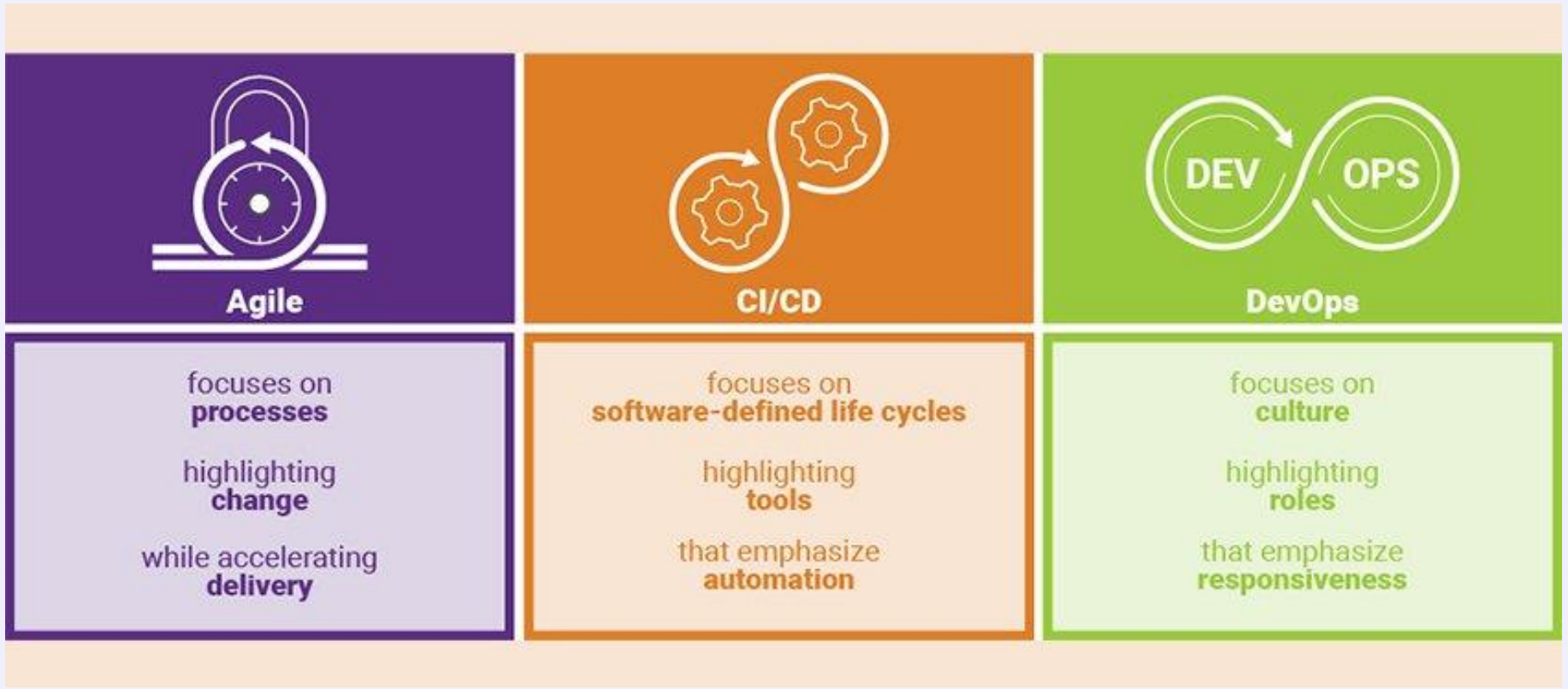
OWASP
The Open Web Application Security Project

OWASP Mission

OWASP
The Open Web Application Security Project

- to make application security "visible," so that people and organizations can make informed decisions about application security risks

Agile – CI/CD - DevOps

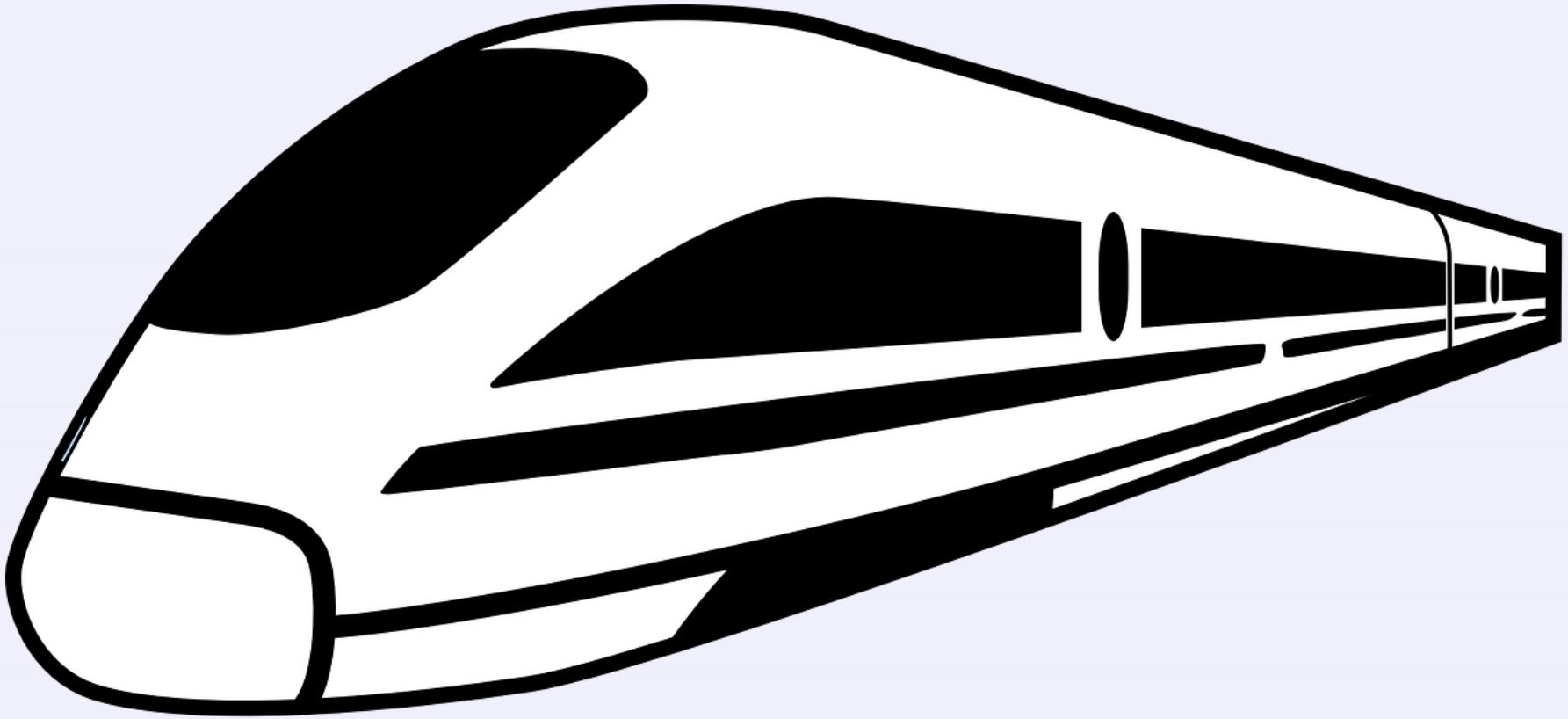


OWASP Guide for CISOs

OWASP
The Open Web Application Security Project

https://www.owasp.org/index.php/Application_Security_Guide_For_CISOs

Faster towards production



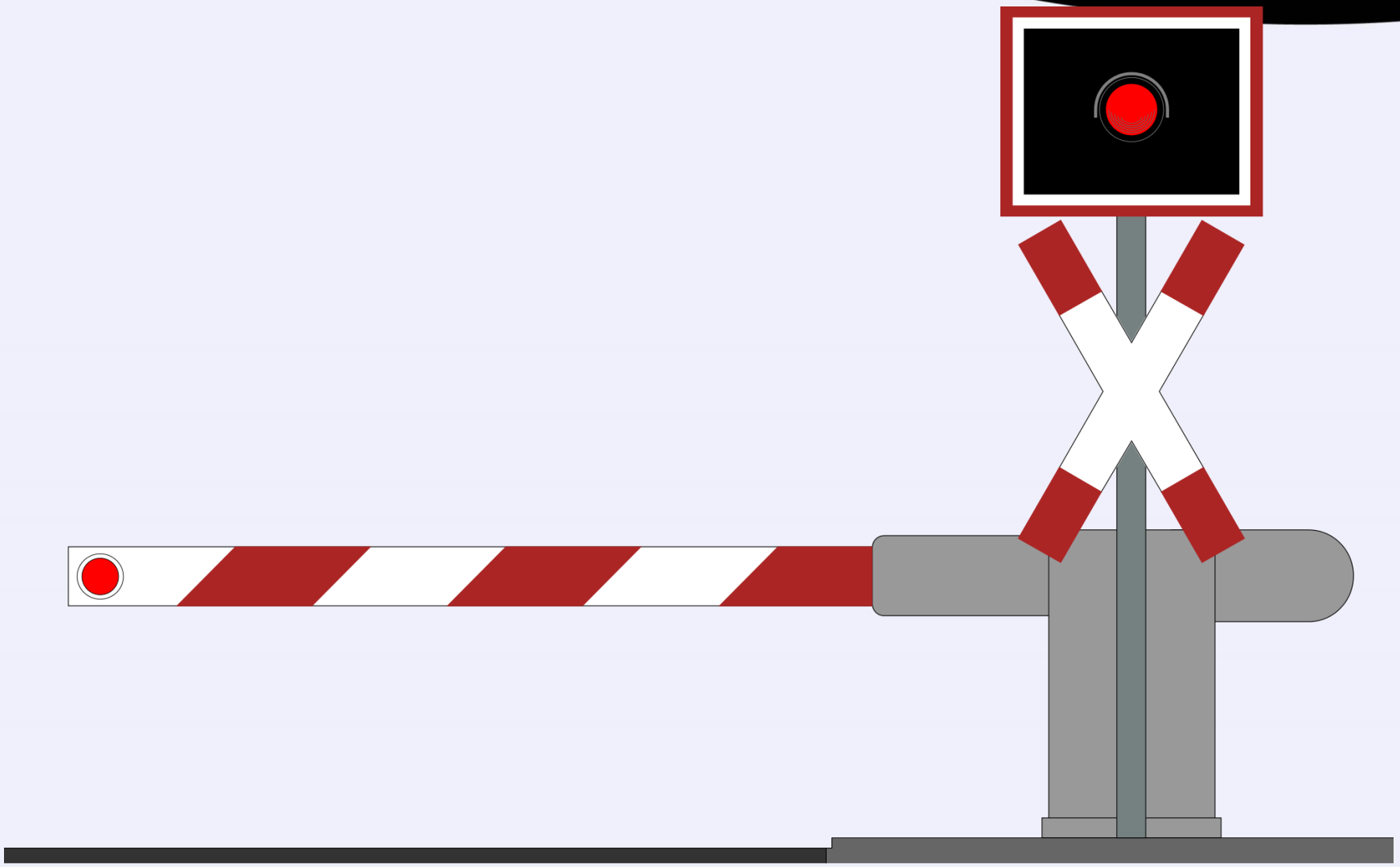
OWASP

The Open Web Application Security Project

OWASP Top 10 – 2013 (Previous)	OWASP Top 10 – 2017 (New)
A1 – Injection	A1 – Injection
A2 – Broken Authentication and Session Management	A2 – Broken Authentication and Session Management
A3 – Cross-Site Scripting (XSS)	A3 – Cross-Site Scripting (XSS)
A4 – Insecure Direct Object References - Merged with A7	A4 – Broken Access Control (Original category in 2003/2004)
A5 – Security Misconfiguration	A5 – Security Misconfiguration
A6 – Sensitive Data Exposure	A6 – Sensitive Data Exposure
A7 – Missing Function Level Access Control - Merged with A4	A7 – Insufficient Attack Protection (NEW)
A8 – Cross-Site Request Forgery (CSRF)	A8 – Cross-Site Request Forgery (CSRF)
A9 – Using Components with Known Vulnerabilities	A9 – Using Components with Known Vulnerabilities
A10 – Unvalidated Redirects and Forwards - Dropped	A10 – Underprotected APIs (NEW)

https://owasp.org/www-project-top-ten/

..but

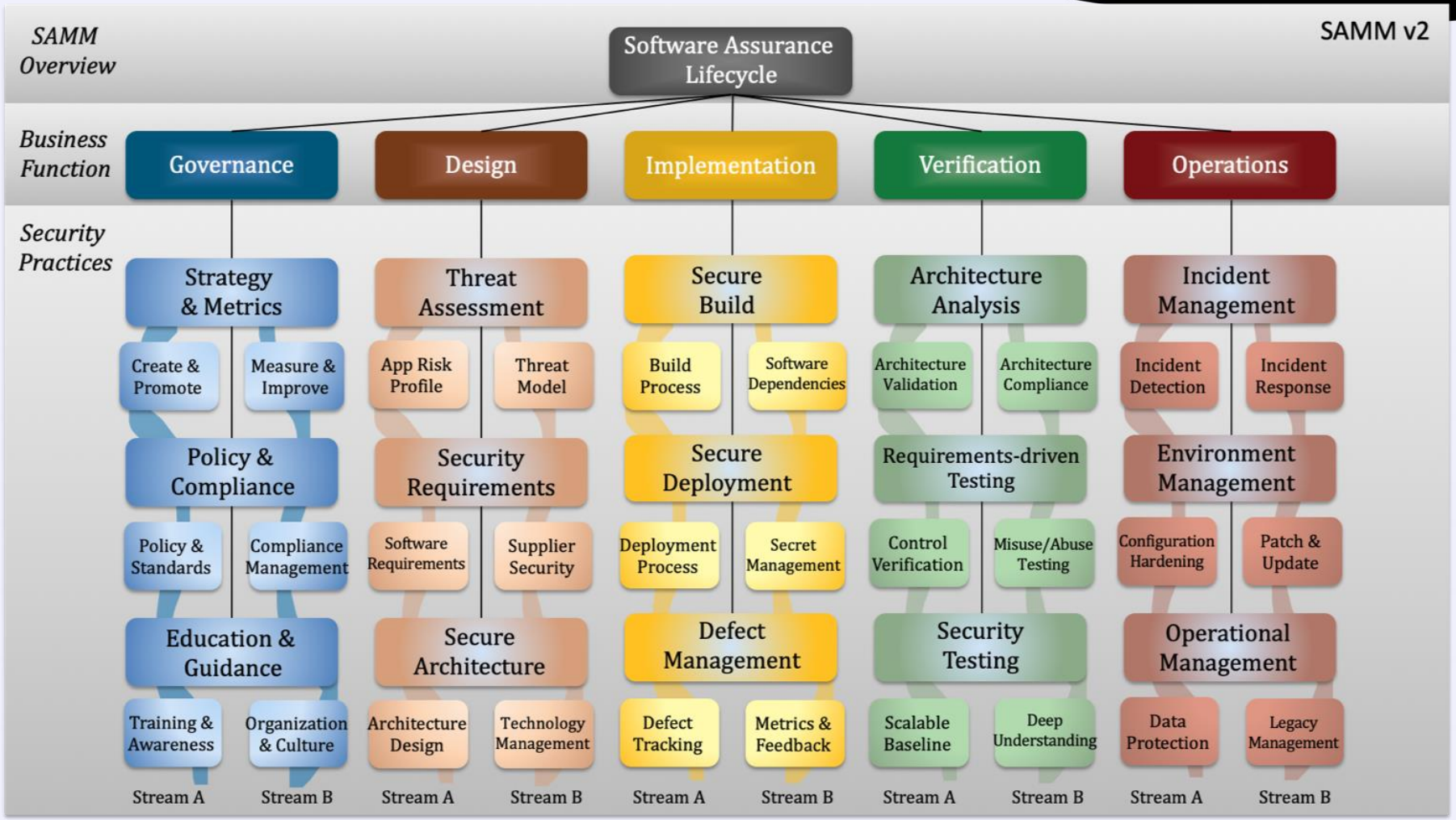


..Fail?

OWASP
The Open Web Application Security Project

OWASP SAMM

OWASP
The Open Web Application Security Project



https://owasp.org/www-project-samm/

OWASP
The Open Web Application Security Project

OWASP Pro Active CONTROLS

C1: Define Security Requirements

C2: Leverage Security Frameworks and Libraries

C3: Secure Database Access

C4: Encode and Escape Data

C5: Validate All Input

C6: Implement Digital Identity

C7: Enforce Access Controls

C8: Protect Data Everywhere

C9: Implement Security Logging and Monitoring

C10: Handle All Errors and Exceptions

https://owasp.org/www-project-proactive-controls/

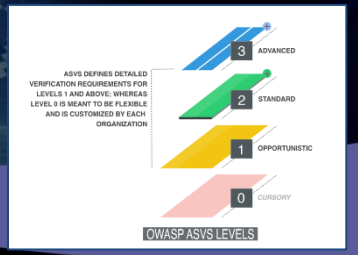
Cheat Sheet Series

OWASP
The Open Web Application Security Project

https://cheatsheetseries.owasp.org/
https://owasp.org/www-project-cheat-sheets/

OWASP

The Open Web Application Security Project



- V1: Architecture, Design and Threat Modeling Requirements
- V2: Authentication Verification Requirements
- V3: Session Management Verification Requirements
- V4: Access Control Verification Requirements
- V5: Validation, Sanitization and Encoding Verification Requirements
- V6: Stored Cryptography Verification Requirements
- V7: Error Handling and Logging Verification Requirements
- V8: Data Protection Verification Requirements
- V9: Communication Verification Requirements
- V10: Malicious Code Verification Requirements
- V11: Business Logic Verification Requirements
- V12: File and Resources Verification Requirements
- V13: API and Web Service Verification Requirements
- V14: Configuration Verification Requirements

https://owasp.org/www-project-application-security-verification-standard/

ASVS

OWASP
The Open Web Application Security Project

Requirements

#	Description	1	2	3	Since
4.1	Verify that the principle of least privilege exists - users should only be able to access functions, data files, URLs, controllers, services, and other resources, for which they possess specific authorization. This implies protection against spoofing and elevation of privilege.	✓	✓	✓	1.0
4.4	Verify that access to sensitive records is protected, such that only authorized objects or data is accessible to each user (for example, protect against users tampering with a parameter to see or alter another user's account).	✓	✓	✓	1.0
4.5	Verify that directory browsing is disabled unless deliberately desired. Additionally, applications should not allow discovery or disclosure of file or directory metadata, such as Thumbs.db, .DS_Store, .git or .svn folders.	✓	✓	✓	1.0
4.8	Verify that access controls fail securely.	✓	✓	✓	1.0
4.9	Verify that the same access control rules implied by the presentation layer are enforced on the server side.	✓	✓	✓	1.0
4.10	Verify that all user and data attributes and policy information used by access controls cannot be manipulated by end users unless specifically authorized.		✓	✓	1.0
4.11	Verify that there is a centralized mechanism (including libraries that call external authorization services) for protecting access to each type of protected resource.			✓	1.0
4.12	Verify that all access control decisions can be logged and all failed decisions are logged.		✓	✓	2.0

https://owasp.org/www-project-application-security-verification-standard/

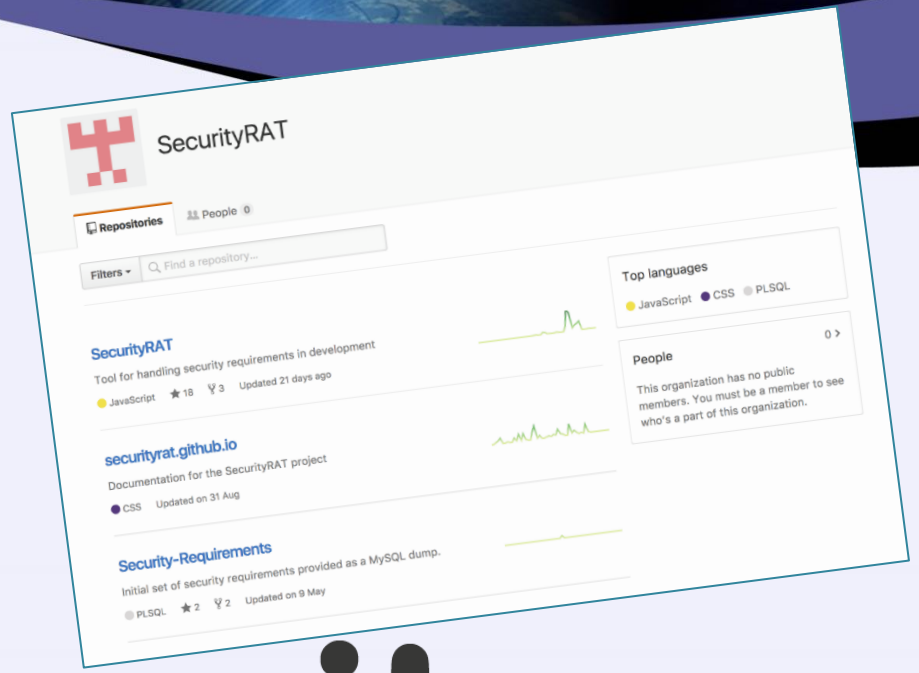
Cornucopia

OWASP
The Open Web Application Security Project

https://owasp.org/www-project-cornucopia/

Security RAT

OWASP
The Open Web Application Security Project

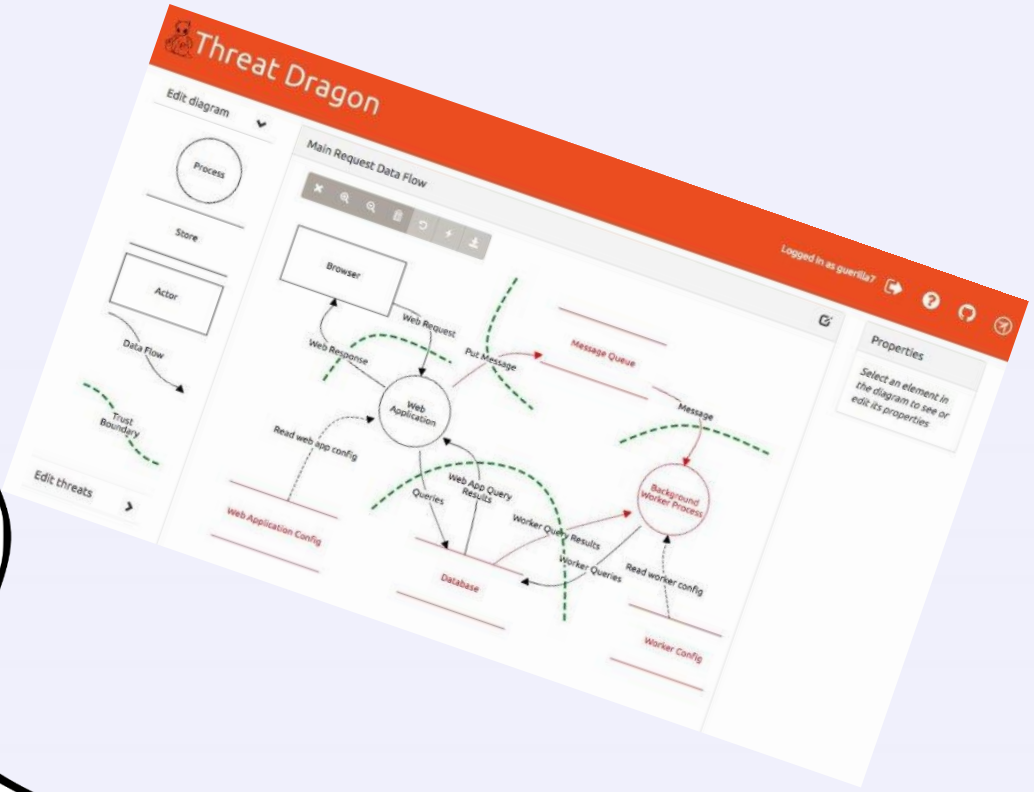


Security RAT

https://owasp.org/www-project-securityrat/

Threat Dragon

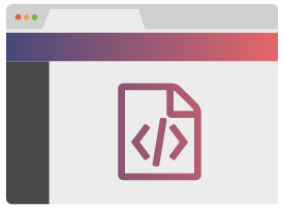
OWASP
The Open Web Application Security Project



https://owasp.org/www-project-threat-dragon/

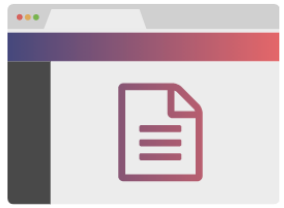
Security Knowledge Framework

OWASP
The Open Web Application Security Project



Detect possible threats in your application

In pre-development detect possible threats based on the processing functions on your application.



Run OWASP ASVS Checklists

Harden your application functions in post-development by running OWASP ASVS checklists, complete with feedback and solutions.

Learn about threats and vulnerabilities in the SKF knowledge base

An extensive library of common hacks and exploits, learn the hacker mindset and keep your project secure.

Learn to code secure from best practice code examples

An extensive library of code examples for a wide range of functions, beautifully commented.

https://www.securityknowledgeframework.org/
https://owasp.org/www-project-security-knowledge-framework/

Dependency Check

OWASP
The Open Web Application Security Project

https://owasp.org/www-project-dependency-check/
https://owasp.org/www-project-dependency-track/ - https://docs.dependencytrack.org/

Dependency Track

https://owasp.org/www-project-dependency-check/

https://owasp.org/www-project-dependency-track/ - https://docs.dependencytrack.org/

OWASP Testing Guide

OWASP
The Open Web Application Security Project

https://owasp.org/www-project-web-security-testing-guide/
https://owasp.org/www-project-mobile-security-testing-guide/

OWASP Testing Guide

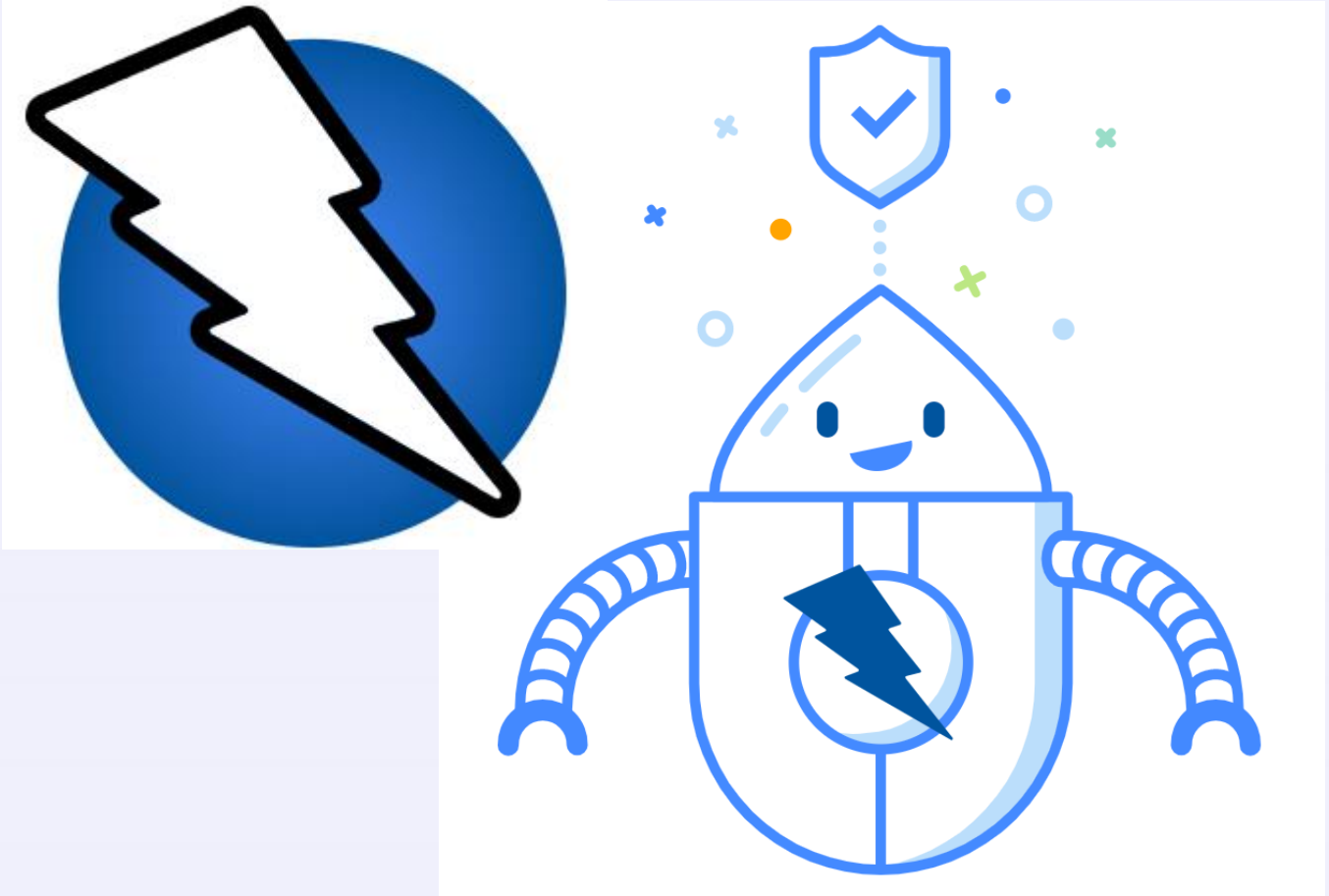
OWASP
The Open Web Application Security Project

Information Gathering	Configuration and Deploy Management Testing	Identity Management Testing
Authentication Testing	Authorization Testing	Session Management Testing
Input Validation Testing	Testing for Error Handling	Testing for Weak Cryptography
Business Logic Testing	Client-Side Testing	API Testing

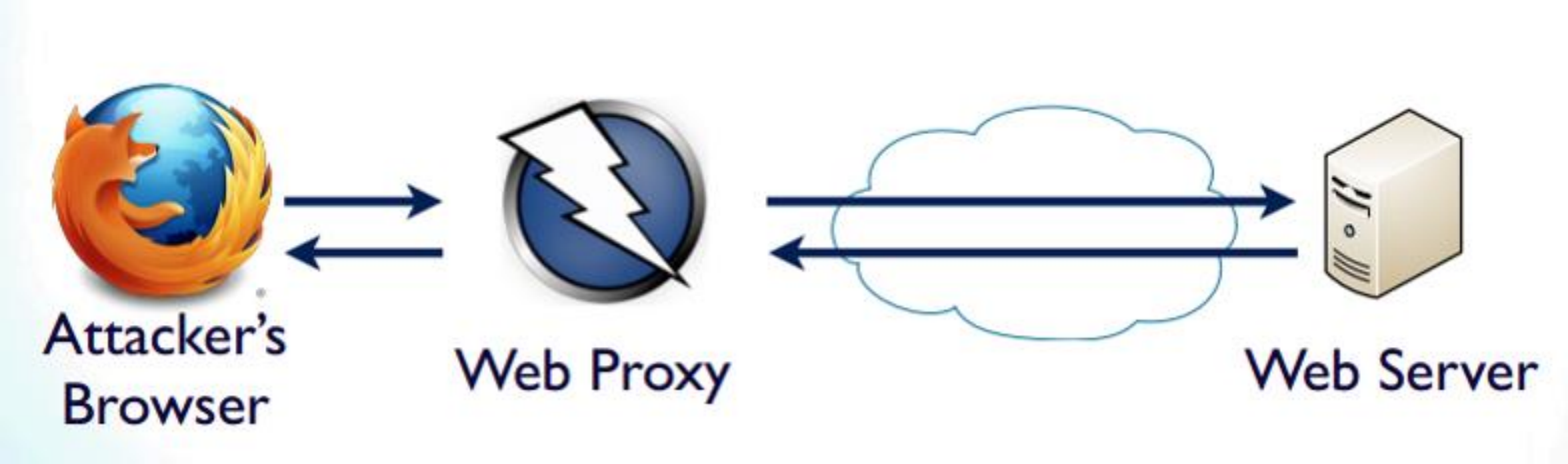
https://owasp.org/www-project-web-security-testing-guide/

OWASP ZAP

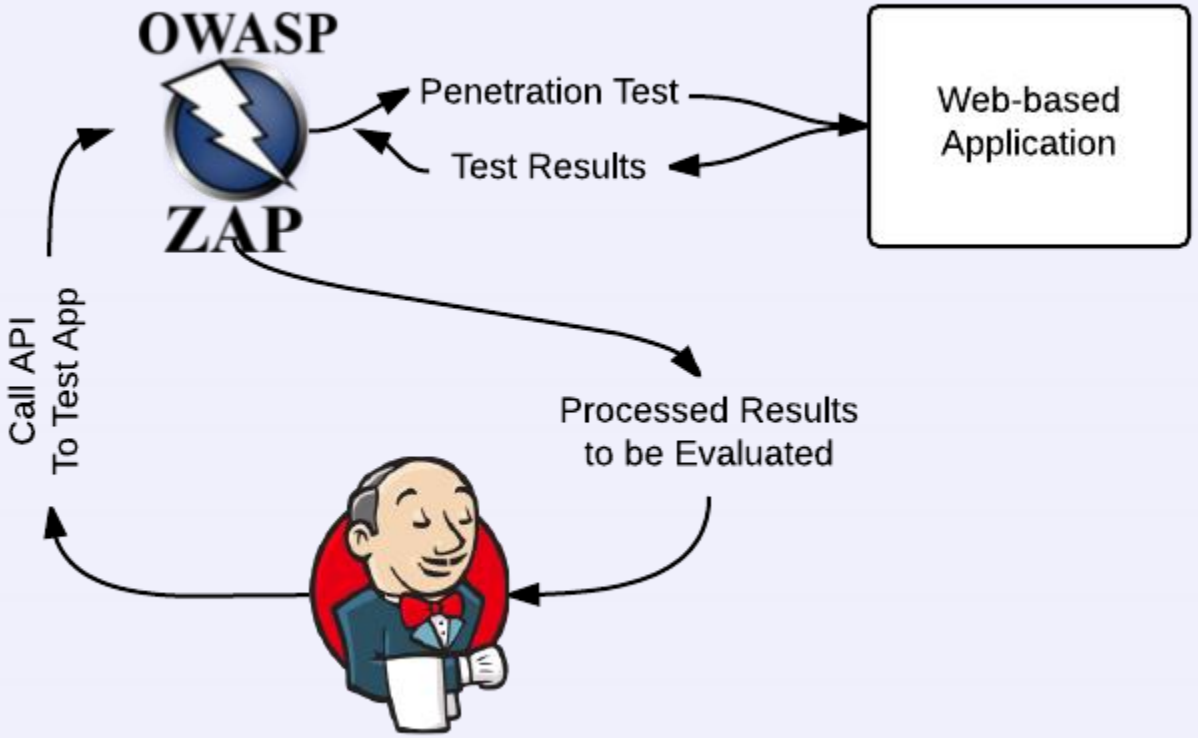
OWASP
The Open Web Application Security Project



https://owasp.org/www-project-zap/
https://www.zaproxy.org/



https://owasp.org/www-project-zap/
https://www.zaproxy.org/

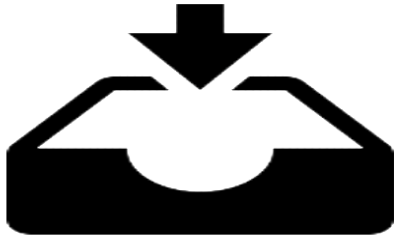


https://owasp.org/www-project-zap/
https://www.zaproxy.org/

AppSec Pipeline

OWASP
The Open Web Application Security Project

Stages of an AppSec Pipeline



The first stage of an AppSec Pipeline which handles inbound requests of the AppSec program. These can be new apps, existing apps that have never been assessed, apps which have been assessed before or retesting of previous security findings. These tools aim to tame the inflow of work into the AppSec Pipeline.

INTAKE TOOLS

The second stage of an AppSec Pipeline which prioritizes inbound requests and assesses their testing needs based on the risk level. The more risky the app, the more activities are assigned. These tools aim to provide automation and orchestration to reduce the startup time of the testing stage.

TRIAGE TOOLS

The third stage of an AppSec Pipeline which runs one or more tests in parallel to assess the security posture of of an application. Ideally, these testing or at least their setup should be automated. Priority should be given to tools that can be run programmatically and produce results with few false positives.

TEST TOOLS

The forth and final stage of an AppSec Pipeline which collects and normalizes the data created during testing. Any duplicate findings should be removed so that the same issue found by multiple tools is only reported once. Here we link to issue tracking systems, produce reports, and otherwise provide data for stakeholders.

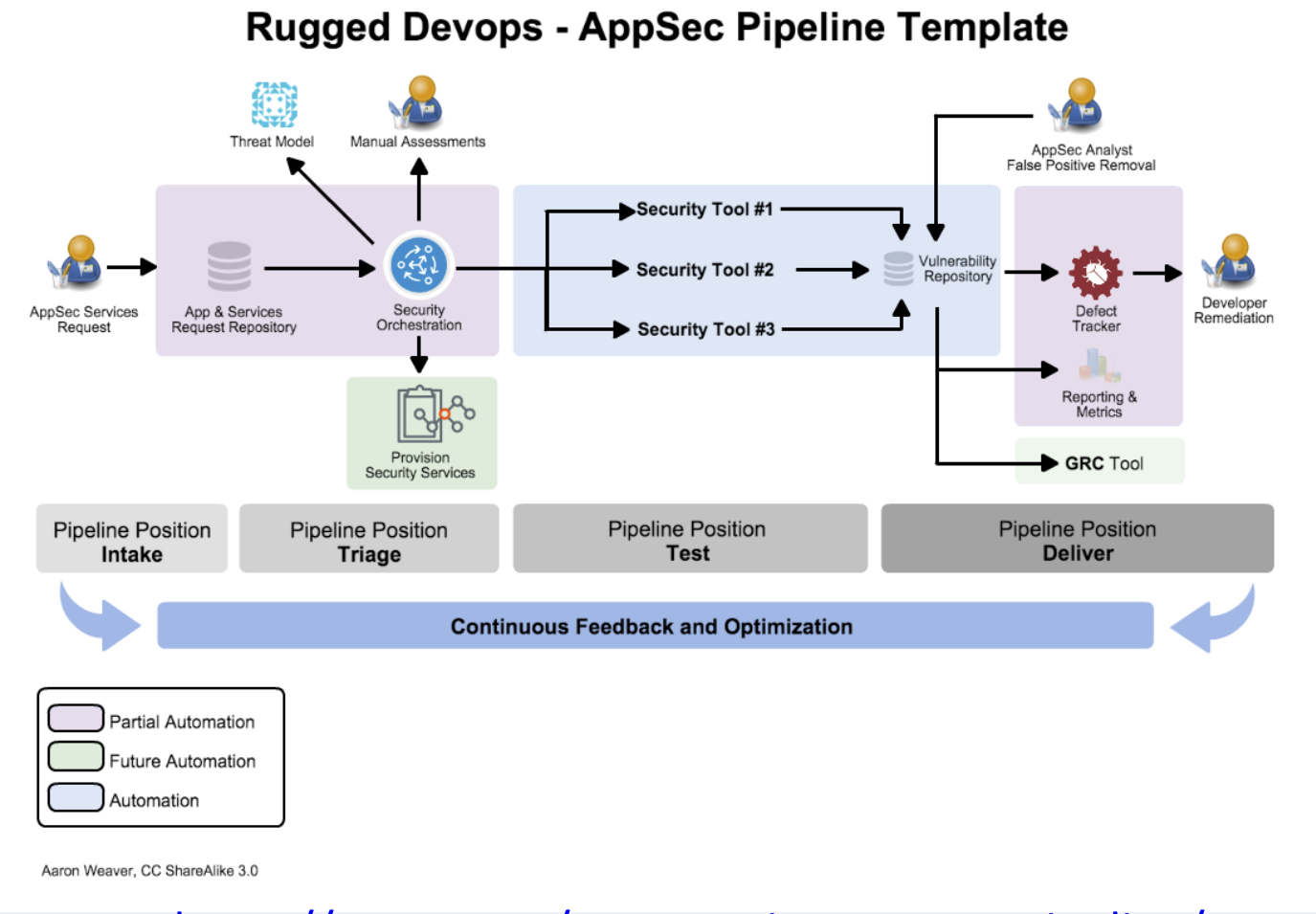
DELIVERY TOOLS

https://owasp.org/www-project-appsec-pipeline/

https://www.appsecpipeline.org/

AppSec Pipeline

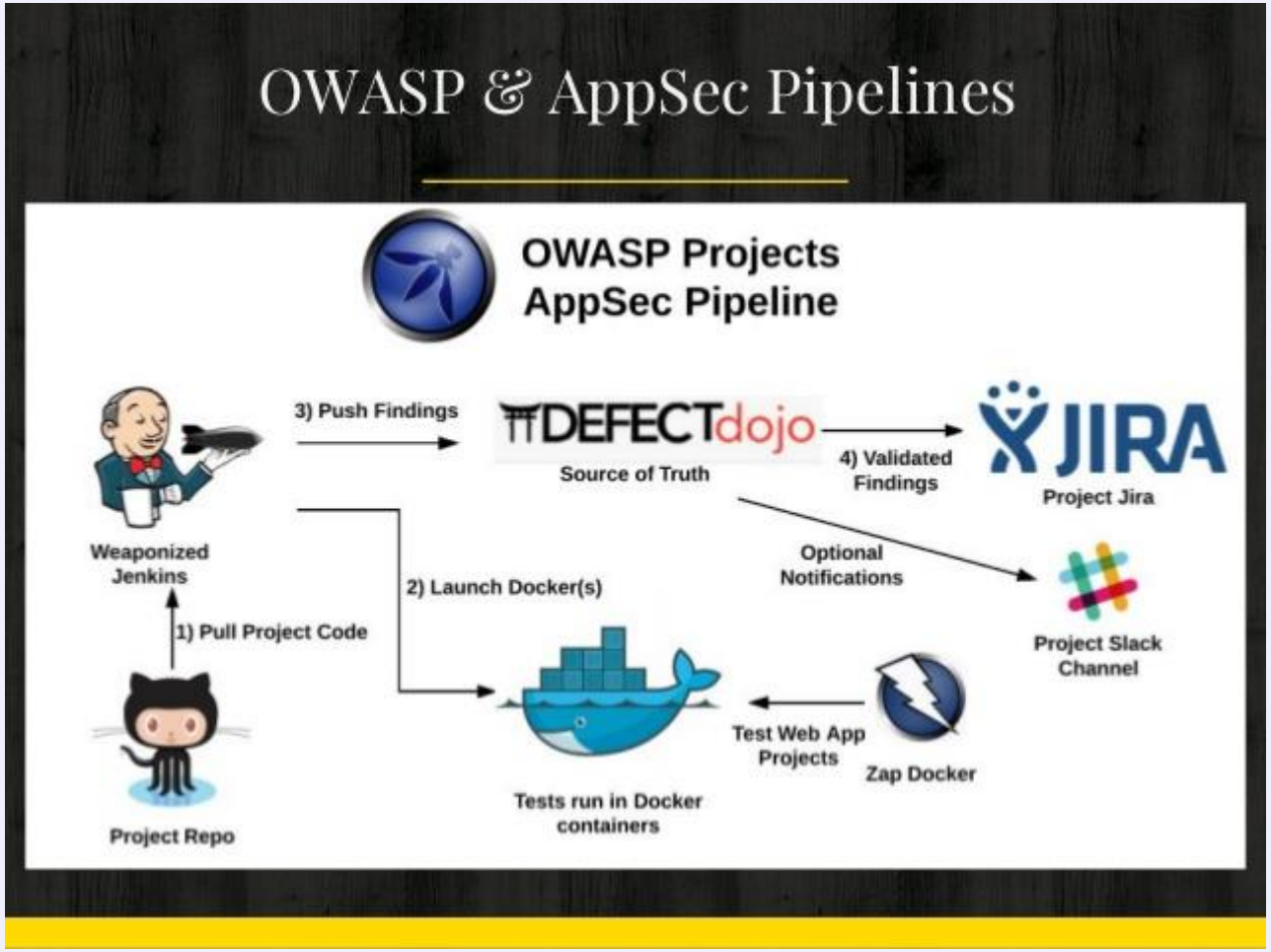
OWASP
The Open Web Application Security Project



https://owasp.org/www-project-appsec-pipeline/

https://www.appsecpipeline.org/

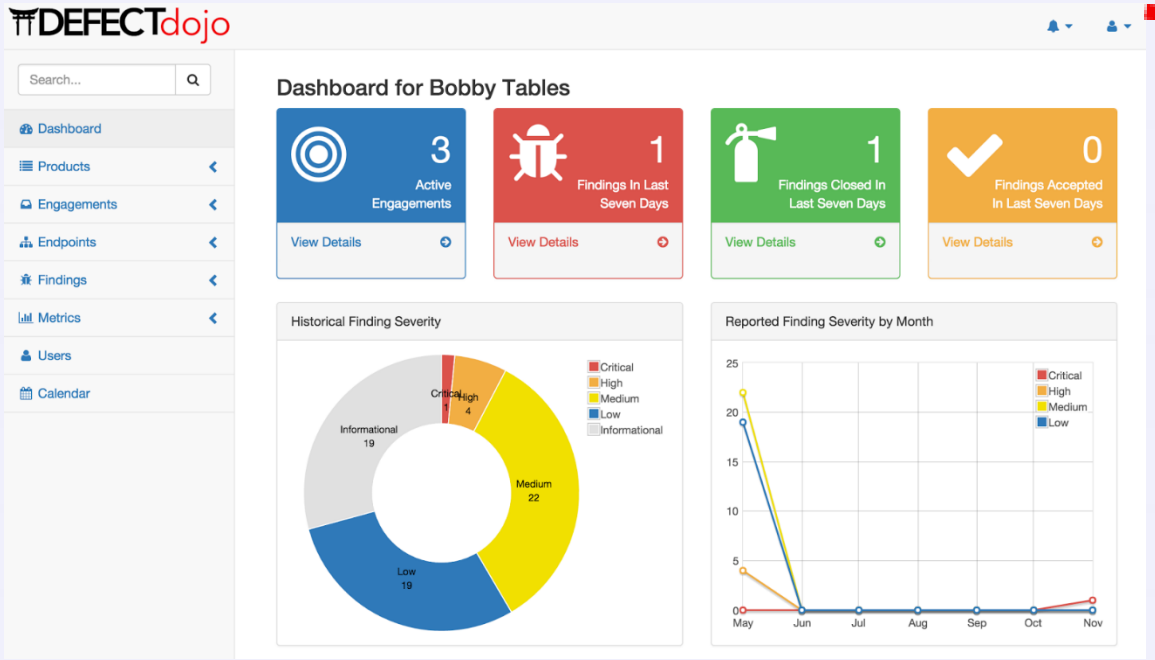
Defect Dojo


OWASP & AppSec Pipelines
OWASP Projects
AppSec Pipeline
3) Push Findings
DEFECTdojo
Source of Truth
4) Validated Findings
JIRA
Project Jira
Weaponized Jenkins
Optional Notifications
2) Launch Docker(s)
Project Slack Channel
1) Pull Project Code
Test Web App Projects
Zap Docker
Project Repo
Tests run in Docker containers

Defect Dojo

OWASP
The Open Web Application Security Project

DEFECTdojo



https://owasp.org/www-project-defectdojo/
https://www.defectdojo.org/

OWASP WebGoat

OWASP
The Open Web Application Security Project

https://owasp.org/www-project-webgoat/

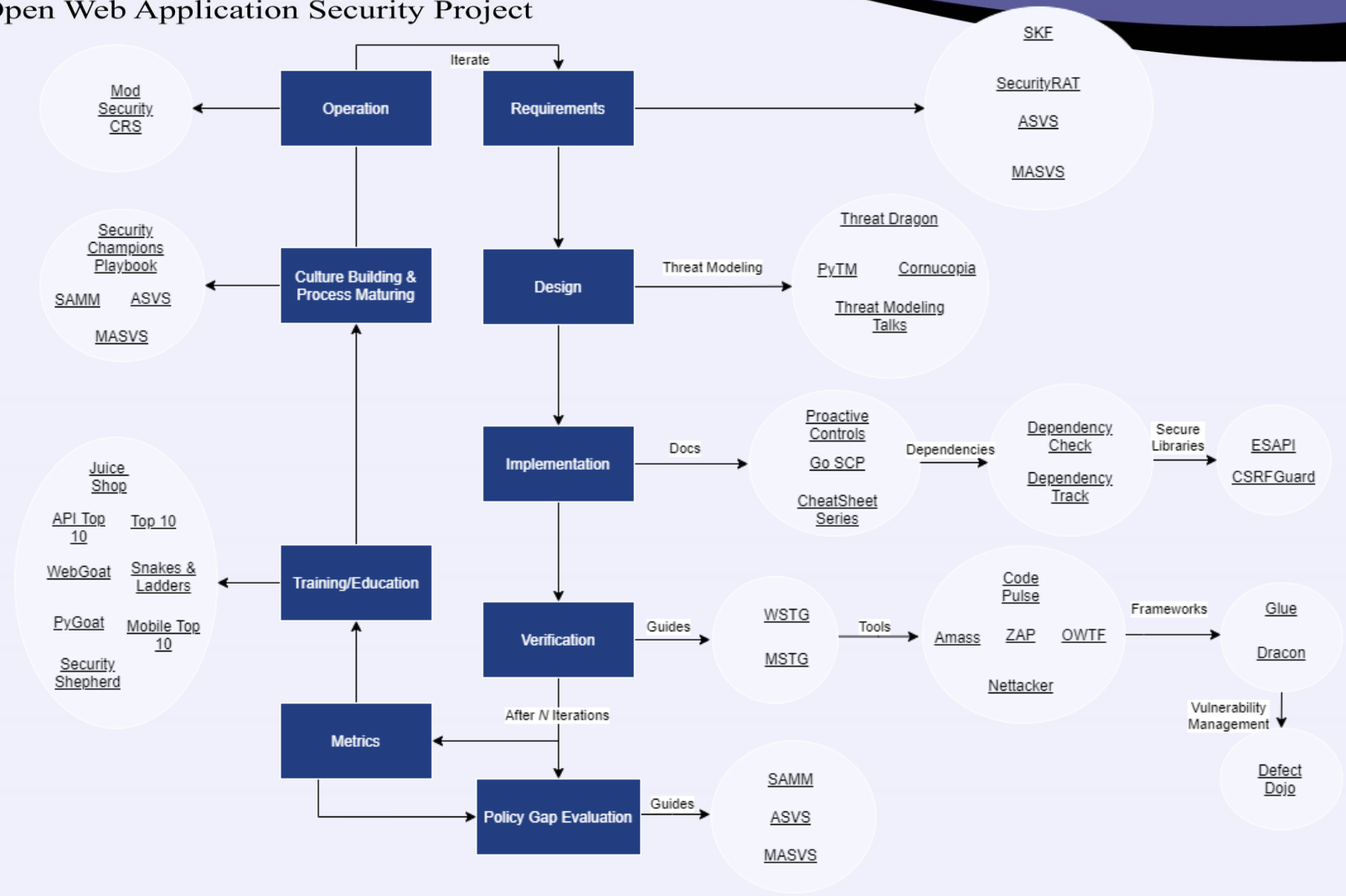
OWASP Juice Shop

OWASP
The Open Web Application Security Project

https://owasp.org/www-project-juice-shop/

Application Security Wayfinder

OWASP
The Open Web Application Security Project



https://owasp.org/www-project-integration-standards/