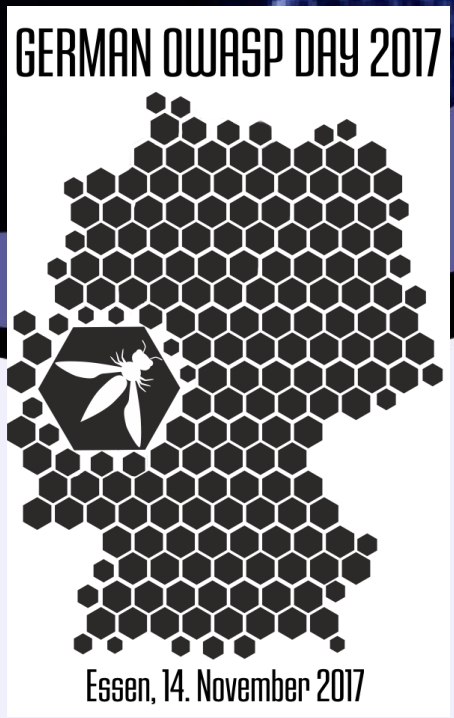
Building Secure Software With OWASP

OWASP

The Open Web Application Security Project



About Me

Martin Knobloch

+10 years developer experience

+10 years information security experience

Dutch OWASP Chapter Leader since 2007

OWASP AppSec-Eu/Research 2017 PC Chair

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OWASP


OWASP
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Welcome to OWASP
the free and open application security community
Guide
Top Ten
WebGoat
CLASP
WebScarab
Contracting
Testing
Code Review
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OWASP Overview
The Open Web Application Security Project (OWASP) is dedicated to finding and fighting the causes of insecure software. Everything here is free and open source. The OWASP Foundation is a 501c3 not-for-profit charitable organization that ensures the ongoing availability and support for our work. Participation in OWASP is free and open to all.
Join webappsec!
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Find out more...
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owasp@owasp.org
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Support our efforts...
Featured Story
Announcing the OWASP Sprajax Project - the first AJAX Security Scanner
OWASP thanks Denim Group for the donation of Sprajax, an open source security scanner for AJAX-enabled applications. Sprajax, a Microsoft .Net-based application is the first web security scanner developed specifically to scan AJAX web applications for security vulnerabilities.
"Denim Group is committed to furthering the field of application security," said Dan Cornell, principal of Denim Group, "and by donating Sprajax to OWASP, we intend to generate more discussion around security
OWASP Conferences
Register for OWASP AppSec Conference in Seattle Oct. 16-
Oct 17-18
The Open Web Application Security Project
AppSec Seattle
Join us for our 5th AppSec Conference October 16-18 in Seattle. Microsoft's Michael Howard will be giving the keynote and you'll h presentations on topics like Web Services Security, PCI status, Securing AJAX, the Microsoft Secure Development Lifecycle, all t new OWASP projects, and much more. Check the full agenda website.
OWASP is a not-for-profit, and the OWASP AppSec Conference incredible bargain ($450, $400 for OWASP members, and $250 fc students). You can attend one of 3 full-day training sessions on th 16th, and the main conference is two full days of presentations, p and discussion on the 17th and 18th. You can read all the details then register online.
OWASP Community (add)

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OWASP TopTen 2013

A1 - Injection

A2 - Broken Authentication and Session Management

A3 - Cross Site Scripting (XSS)

A4 - Insecure Direct Object References

A5 - Security Misconfiguration

A6 - Sensitive Data Exposure

A7 - Missing Function Level Access Control

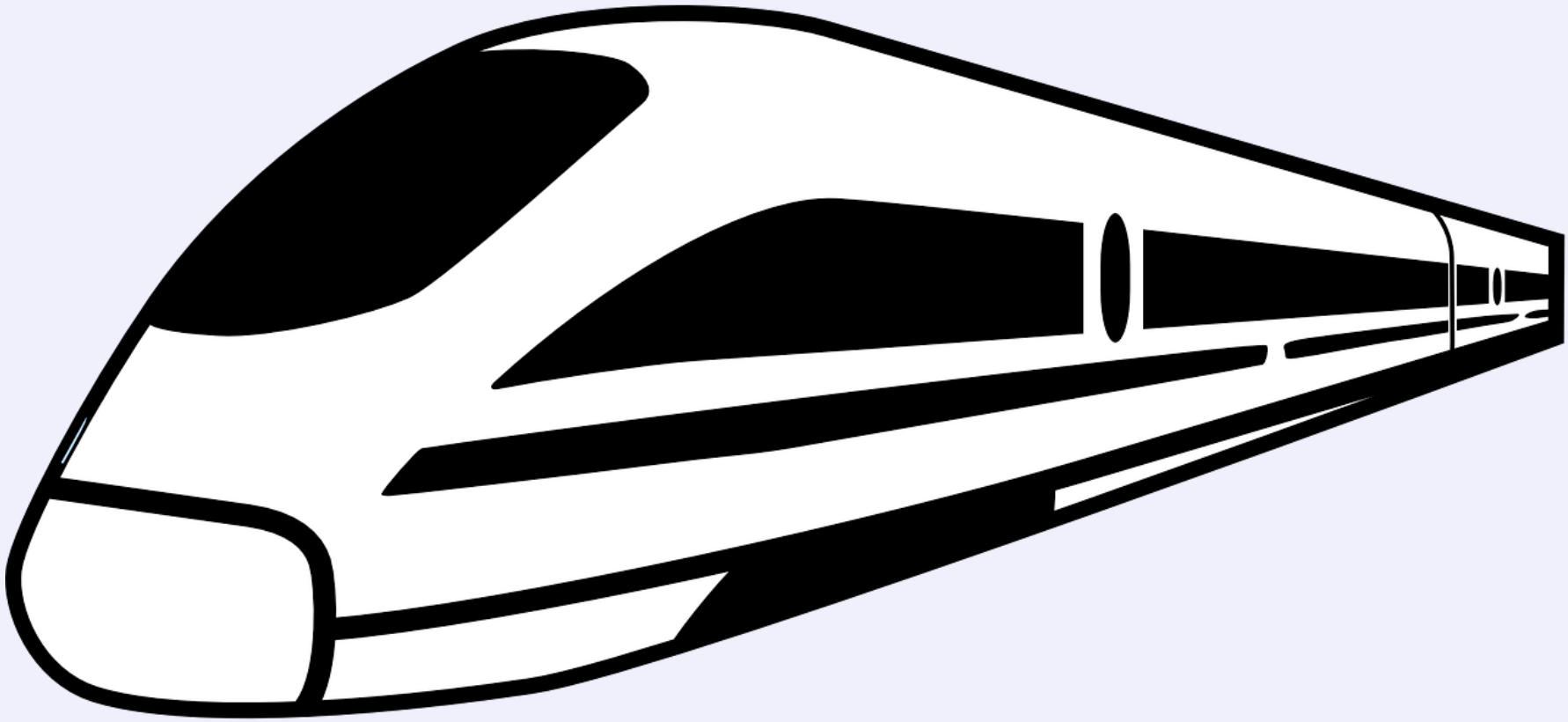
A8 - Cross-Site Request Forgery

A9 - Using Components with known Vulnerabilities

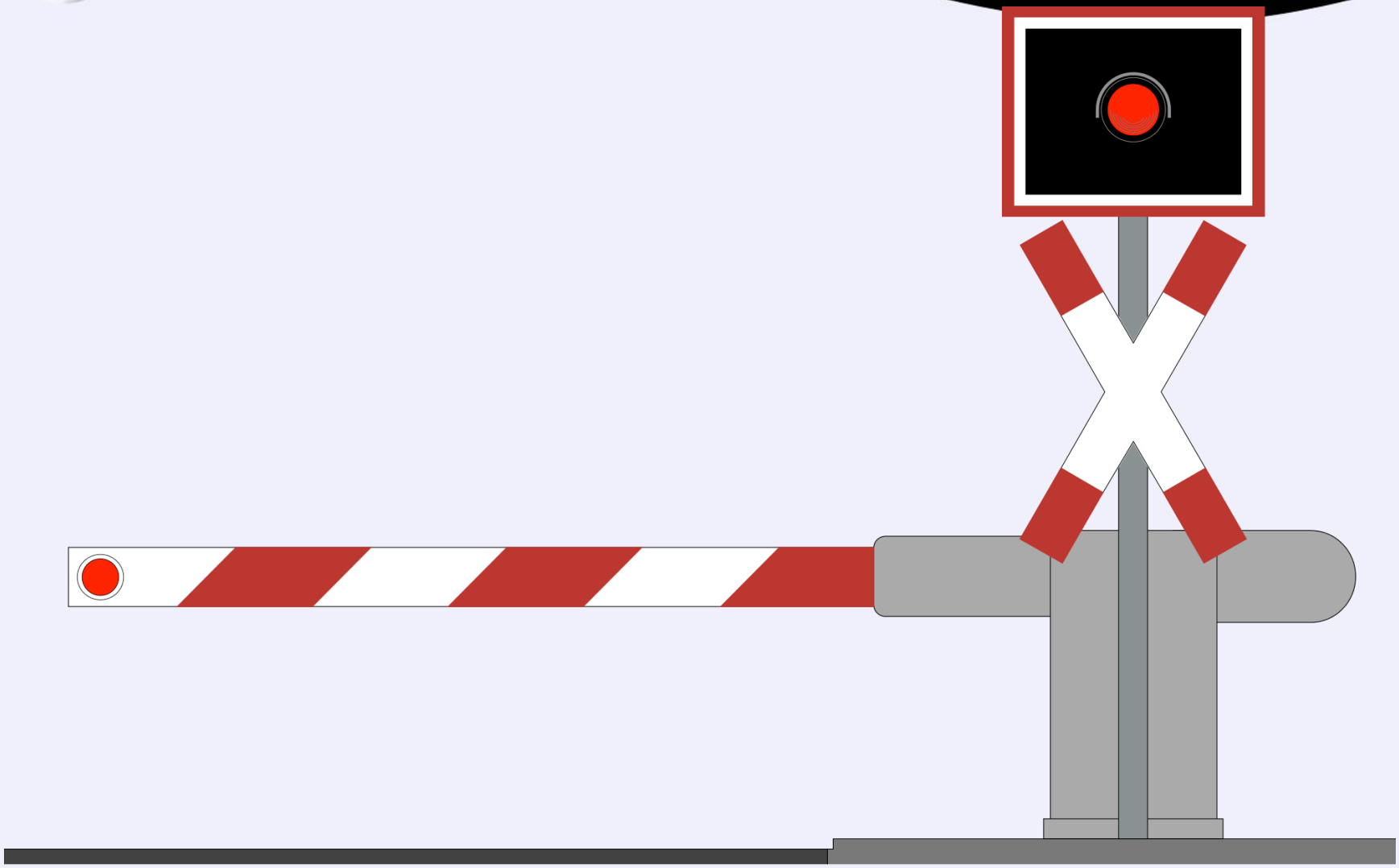
A10 - Unvalidated Redirects and Forwards

https://www.owasp.org/index.php/Category:OWASP_Top_Ten_Project

Continuous development



..but



..Fail?

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OWASP Testing Guide

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

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OWASP Pro Active CONTROLS

- Verify for Security Early and Often
- Parameterize Queries
- Encode Data
- Validate All Inputs
- Implement Identity and Authentication Controls
- Implement Appropriate Access Controls
- Protect data
- Implement Logging and Intrusion Detection
- Leverage Security Frameworks and Libraries
- Error and Exception Handling

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

open SAMM

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Governance

Strategy & Metrics
Policy & Compliance
Education & Guidance

Construction

Threat Assessment
Security Requirements
Secure Architecture

Verification

Design Review
Code Review
Security Testing

Deployment

Vulnerability Management
Environment Hardening
Operational Enablement

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

OWASP Guide for CISOs

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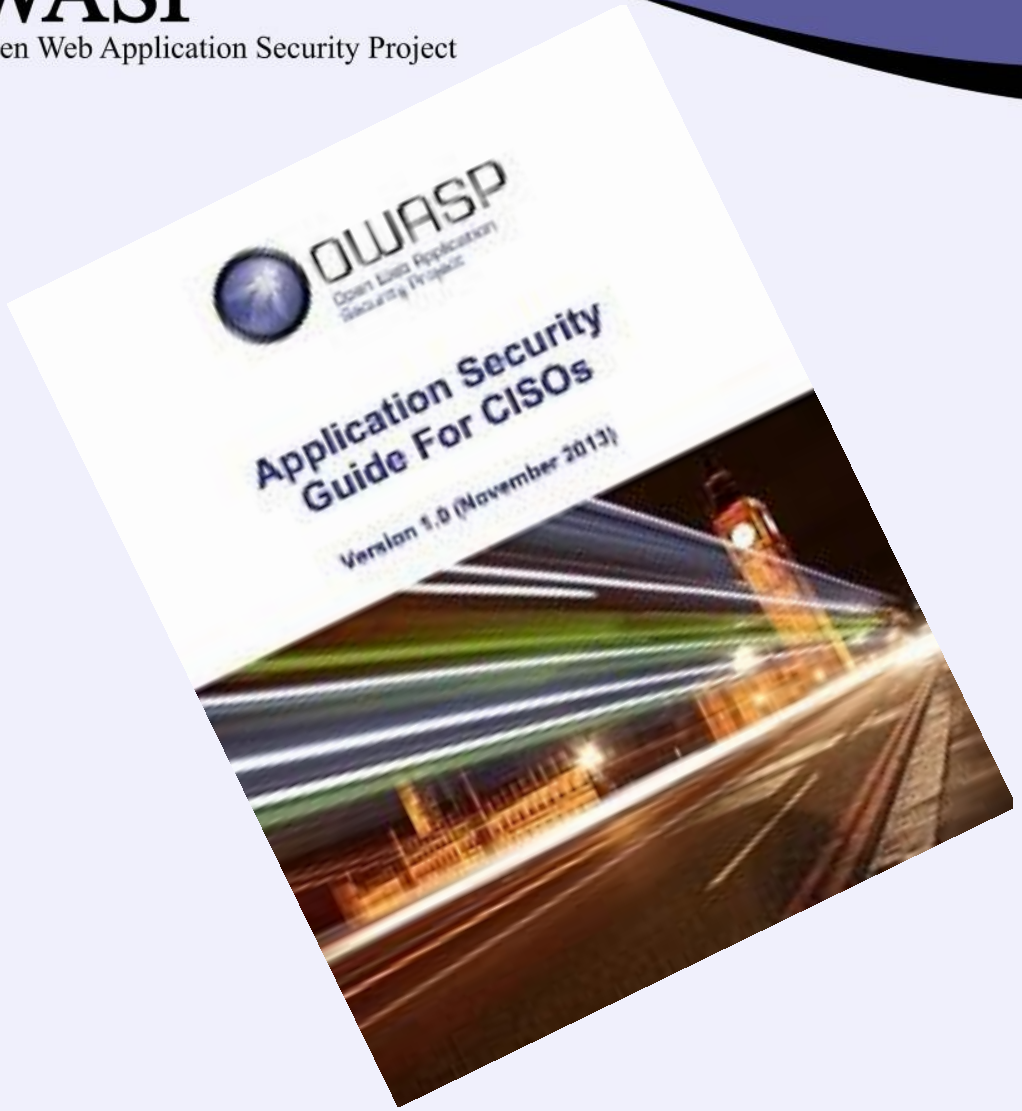

https://www.owasp.org/index.php/Application_Security_Guide_For_CISOs

Continuous development

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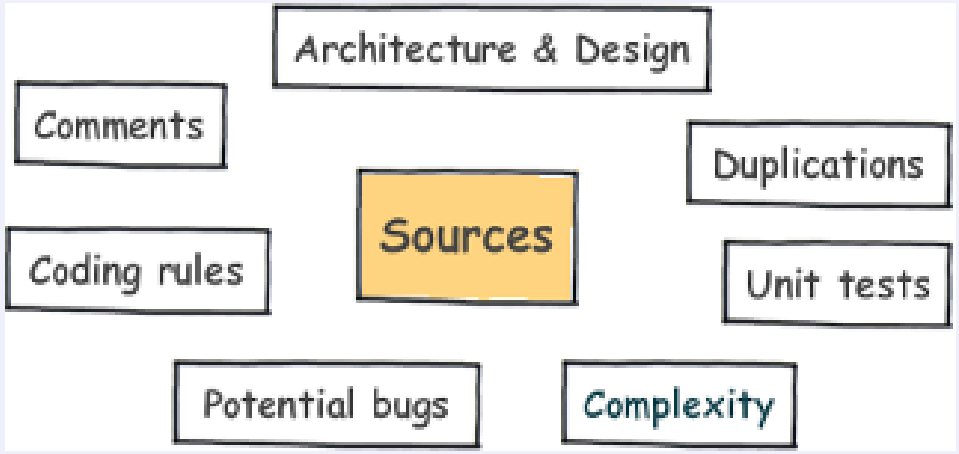

Maven™

sonarqube

AppSec Pipeline

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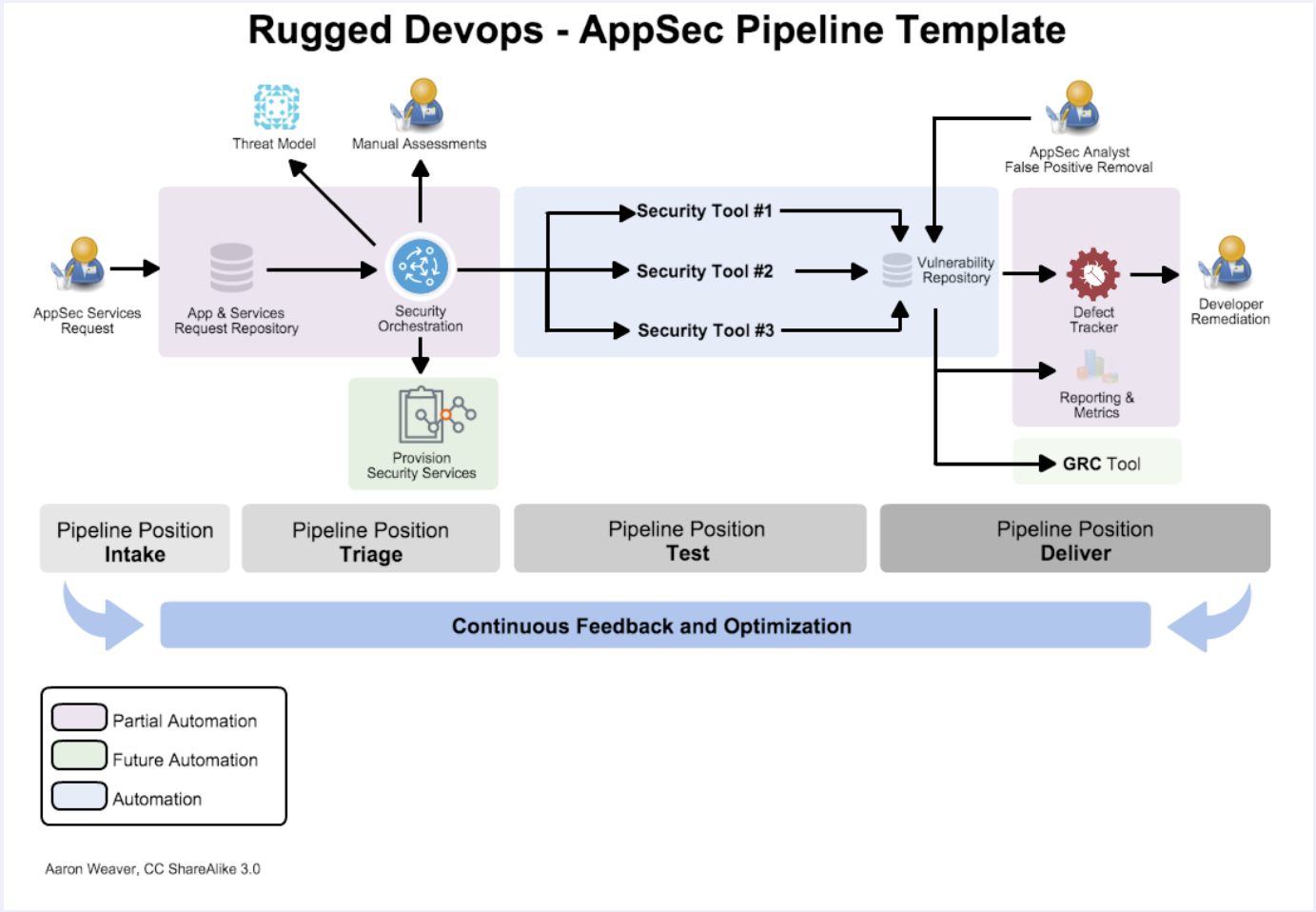

https://www.owasp.org/index.php/OWASP_AppSec_Pipeline

AppSec Pipeline

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https://www.appsecpipeline.org/index.html

AppSec Pipeline

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Intake Tools:

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.

https://www.appsecpipeline.org/index.html

AppSec Pipeline

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Triage 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.

https://www.appsecpipeline.org/index.html

AppSec Pipeline

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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.

https://www.appsecpipeline.org/index.html

AppSec Pipeline

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Delivery 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.

https://www.appsecpipeline.org/index.html

ASVS

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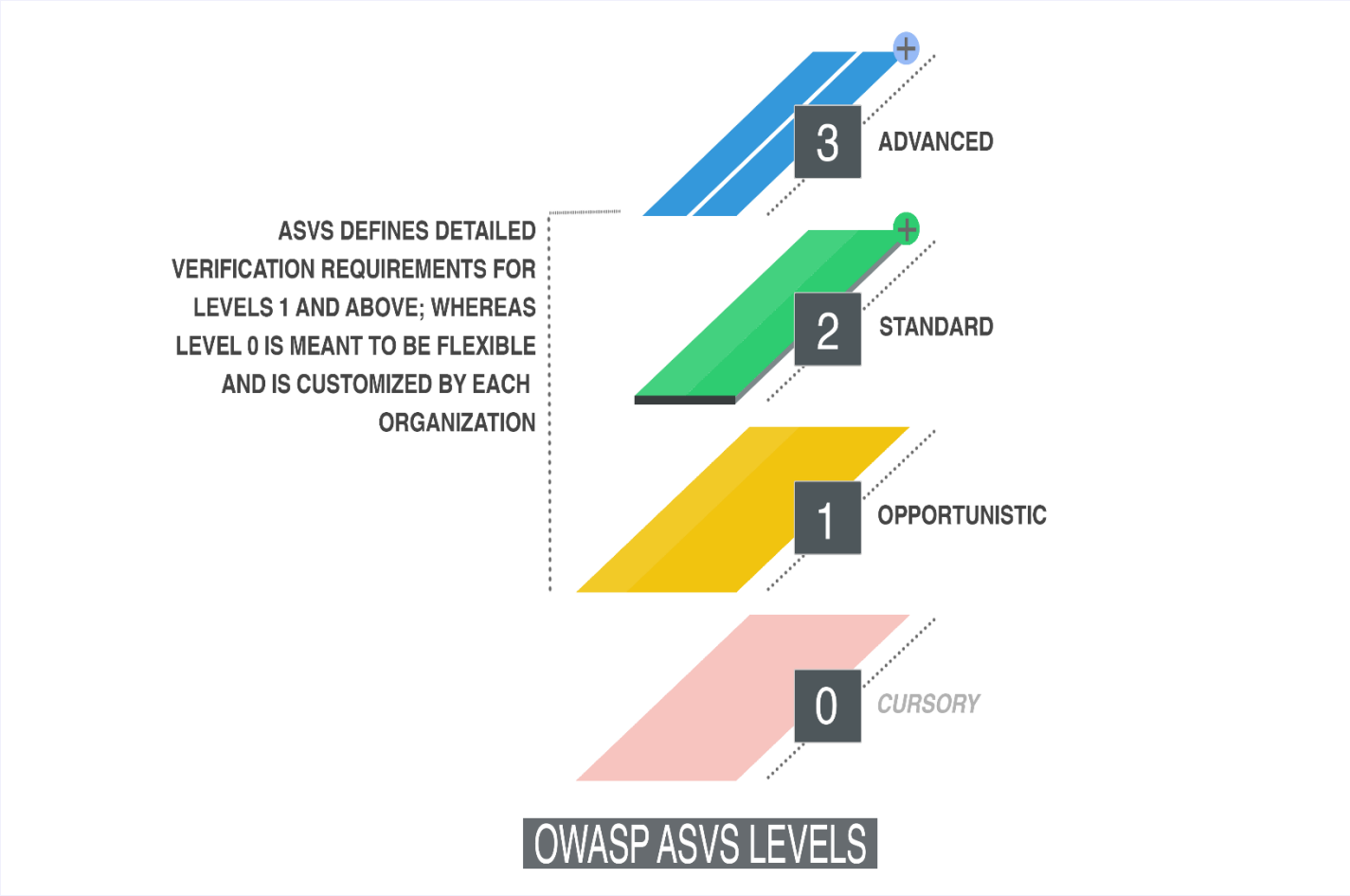

https://www.owasp.org/index.php/OWASP_Application_Security_Verification_Standard_Project

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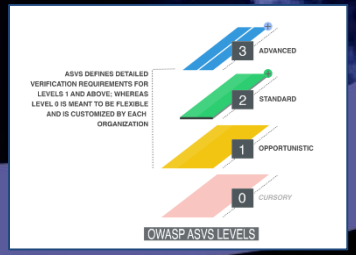

- V1: Architecture, design and threat modeling
- V2: Authentication Verification Requirements
- V3: Session Management Verification Requirements
- V4: Access Control Verification Requirements
- V5: Malicious input handling verification requirements
- V7: Cryptography at rest verification requirements
- V8: Error handling and logging verification requirements
- V9: Data protection verification requirements
- V10:Communications security verification requirements
- V11: HTTP security configuration verification requirements
- V13: Malicious controls verification requirements
- V15: Business logic verification requirements
- V16: Files and resources verification requirements
- V17: Mobile verification requirements
- V18: Web services verification requirements
- V19. Configuration

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

Cornucopia

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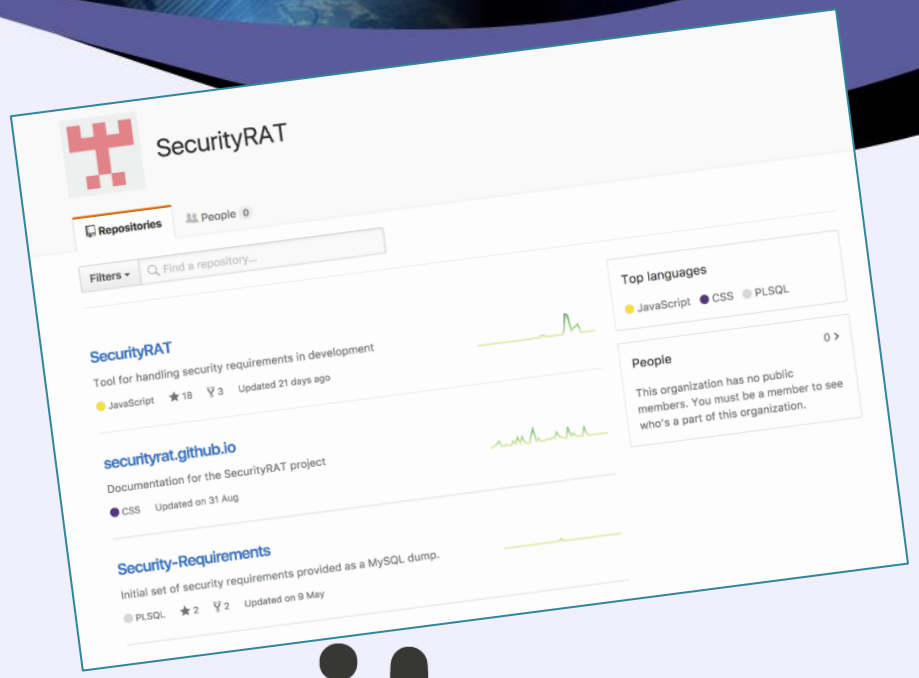
https://www.owasp.org/index.php/OWASP_Cornucopia

C

Security RAT



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

Security RAT

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Security RAT (Requirement Automation Tool) is a tool supposed to assist with the problem of addressing security requirements during application development. The typical use case is:

- specify parameters of the software artifact you're developing based on this information, list of common security requirements is generated
- go through the list of the requirements and choose how you want to handle the requirements
- persist the state in a JIRA ticket (the state gets attached as a YAML file)
- create JIRA tickets for particular requirements in a batch mode in developer queues
- import the main JIRA ticket into the tool anytime in order to see progress of the particular tickets

Threat Dragon

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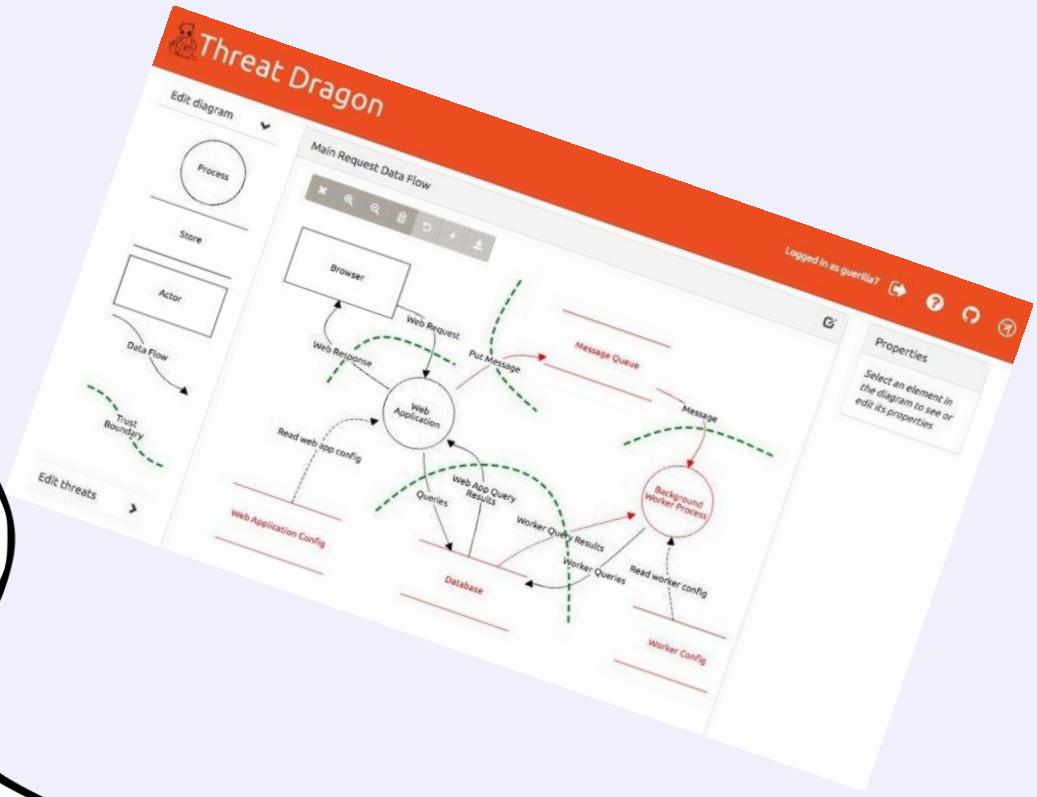

https://www.owasp.org/index.php/OWASP_Threat_Dragon

Cheat Sheet Series

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OWASP Cheat Sheets

[Collapse]

Cheat Sheets

V - T - E

Developer / Builder	3rd Party Javascript Management · Access Control · AJAX Security Cheat Sheet · Authentication (ES) · Bean Validation Cheat Sheet · Choosing and Using Security Questions · Clickjacking Defense · C-Based Toolchain Hardening · Cross-Site Request Forgery (CSRF) Prevention · Cryptographic Storage · Deserialization · DOM based XSS Prevention · Forgot Password · HTML5 Security · HTTP Strict Transport Security · Injection Prevention Cheat Sheet · Input Validation · JAAS · LDAP Injection Prevention · Logging · Mass Assignment Cheat Sheet · .NET Security · OWASP Top Ten · Password Storage · Pinning · Query Parameterization · Ruby on Rails · REST Security · Session Management · SAML Security · SQL Injection Prevention · Transaction Authorization · Transport Layer Protection · Unvalidated Redirects and Forwards · User Privacy Protection · Web Service Security · XSS (Cross Site Scripting) Prevention · XML External Entity (XXE) Prevention Cheat Sheet
Assessment / Breaker	Attack Surface Analysis · XSS Filter Evasion · REST Assessment · Web Application Security Testing
Mobile	Android Testing · IOS Developer · Mobile Jailbreaking
OpSec / Defender	Virtual Patching
Draft and Beta	Application Security Architecture · Business Logic Security · Command Injection Defense Cheat Sheet · Credential Stuffing Prevention Cheat Sheet · PHP Security · Regular Expression Security Cheatsheet · Secure Coding · Secure SDLC · Threat Modeling · Grails Secure Code Review · IOS Application Security Testing · Key Management · Insecure Direct Object Reference Prevention · Content Security Policy

All Pages In This Category

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

Security Knowledge Framework

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The security knowledge framework is here to support developers create secure applications. By analysing processing techniques in which the developers use to edit their data the application can link these techniques to different known vulnerabilities and give the developer feedback regarding descriptions and solutions on how to properly implement these techniques in a safe manner.

Dependency Check

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Dependency-Check is a utility that attempts to detect publicly disclosed vulnerabilities contained within project dependencies. It does this by determining if there is a Common Platform Enumeration (CPE) identifier for a given dependency. If found, it will generate a report linking to the associated CVE entries.

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

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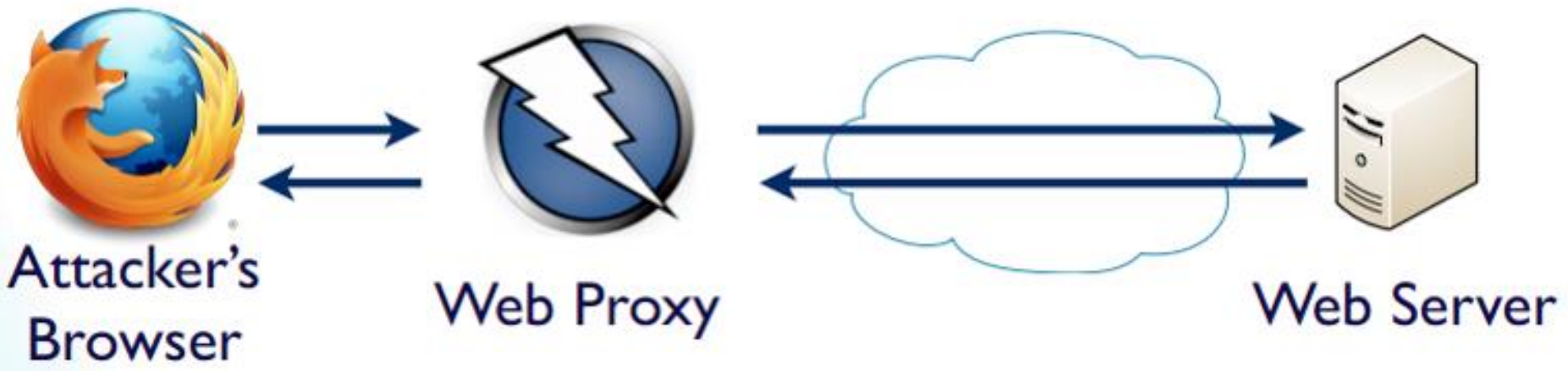
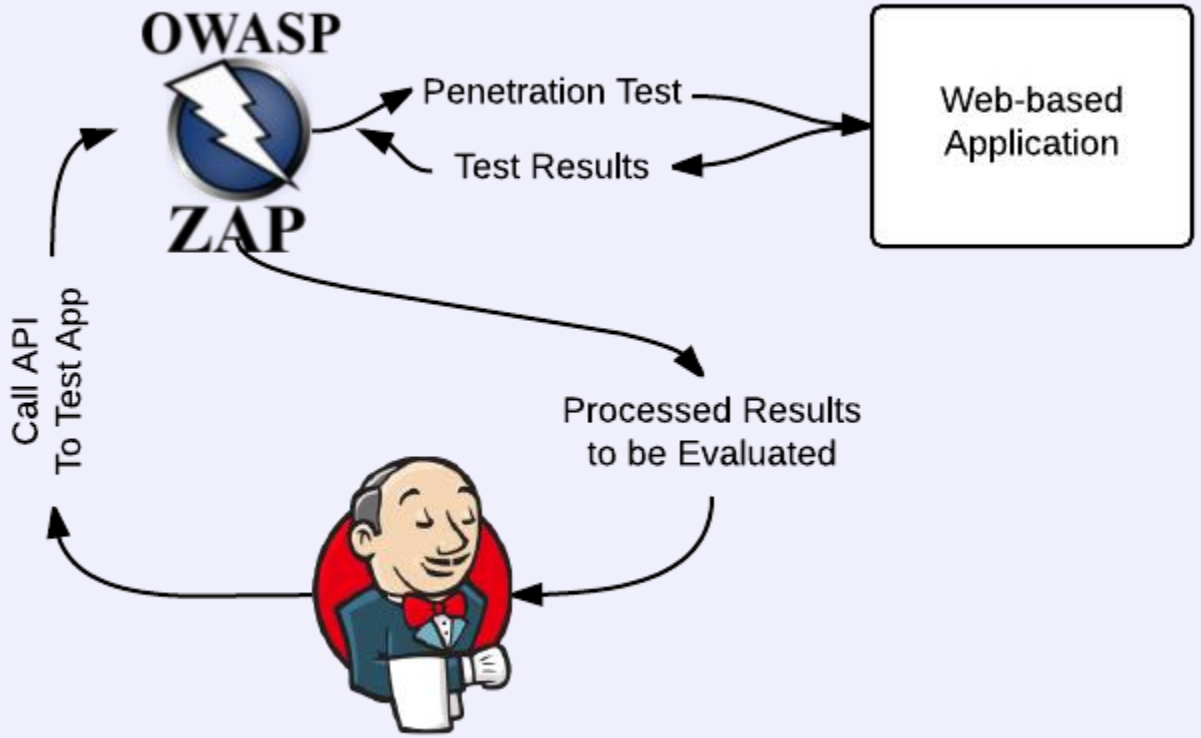


https://www.owasp.org/index.php/OWASP_Zed_Attack_Proxy_Project



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

Defect Dojo

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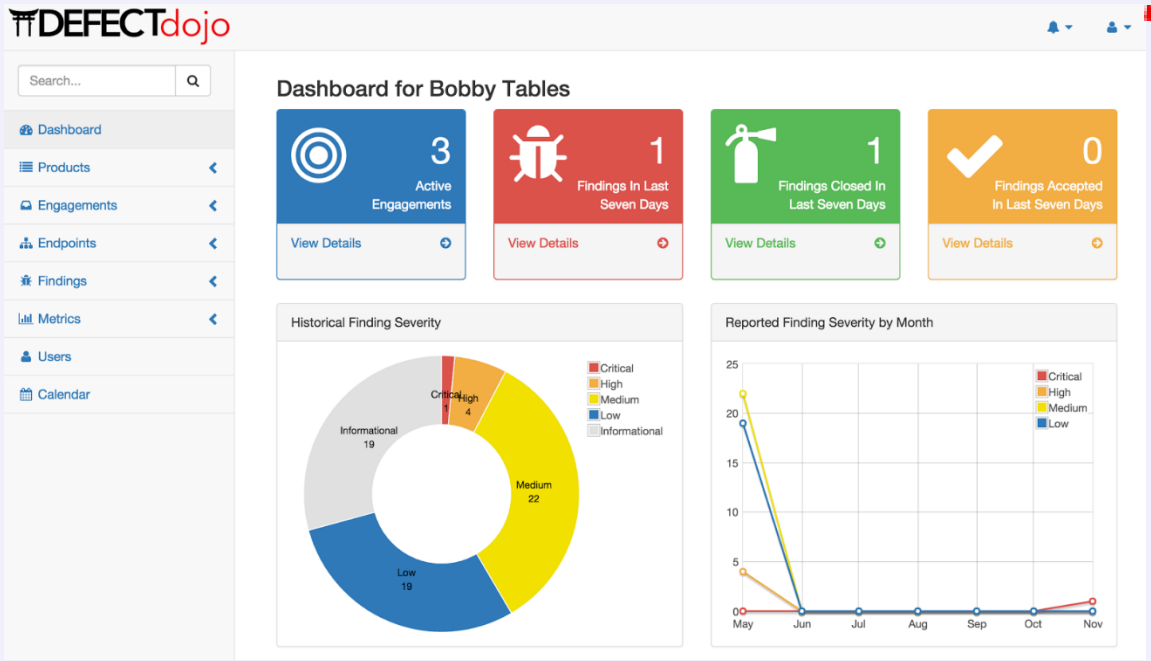
DEFECTdojo



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

Defect Dojo

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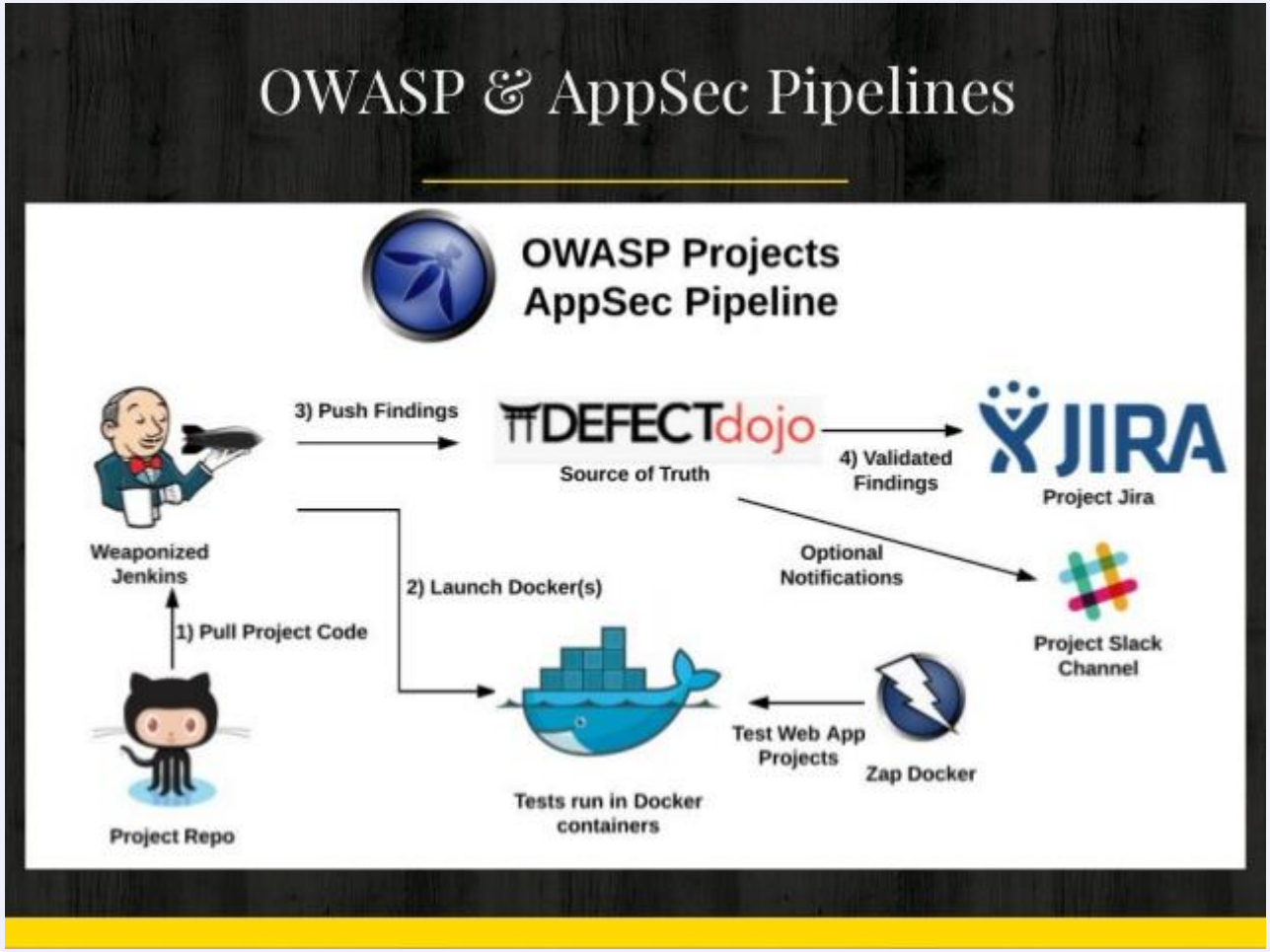

OWASP Testing Guide

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

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

OWASP Projects Overview

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O-Pipeline

O-SAMM

Training	Requirements	Design	Implement	Verify	Release	Respond
O-Webgoat	O-SecurityRAT	O-SecurityRAT	O-Tool benchmark, O-Dependency check	Dynamic code analysis to detect vulnerabilities: ??	Create incident response plan	Execute incident response plan
O-Shepherd		Attack surface analysis: O-Cheat sheets on the topic	Static code analysis to detect vulnerabilities: • SCA tools • OWA[illegible] review gu[illegible]e	Fuzz testing & Penetration te[illegible] O-Z[illegible]	C[illegible]ct[illegible]al [illegible]cu[illegible]ty r[illegible]view	O-De[illegible]tDo[illegible]
		T[illegible]rea[illegible] mod[illegible]ing [illegible]hostack – MS threat modeling tool (STRIDE DREAD), O-Cornucopia, O-pasta) O-Thread Dragon		Attack surface review:?? O-DefectDojo	Certify release and archive	
Controls: • O-Cheat sheets • O-coding guides • O-Technowledge bases • O-SKF (ASVS) • O-ASVS • O-Testing guide	Some controls in requirements form, esp ASVS	Some controls in design esp SKF	Some controls in implementation + O-Coding libraries (eg HTML sanitizer)	• Controls to verify (test, review) esp. O-Testing guide		

Work in progress