OWASP
Open Web Application Security Project

<Are you focusing on the root causes?/>

A unified framework for web security

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https://www.pluribus-one.it

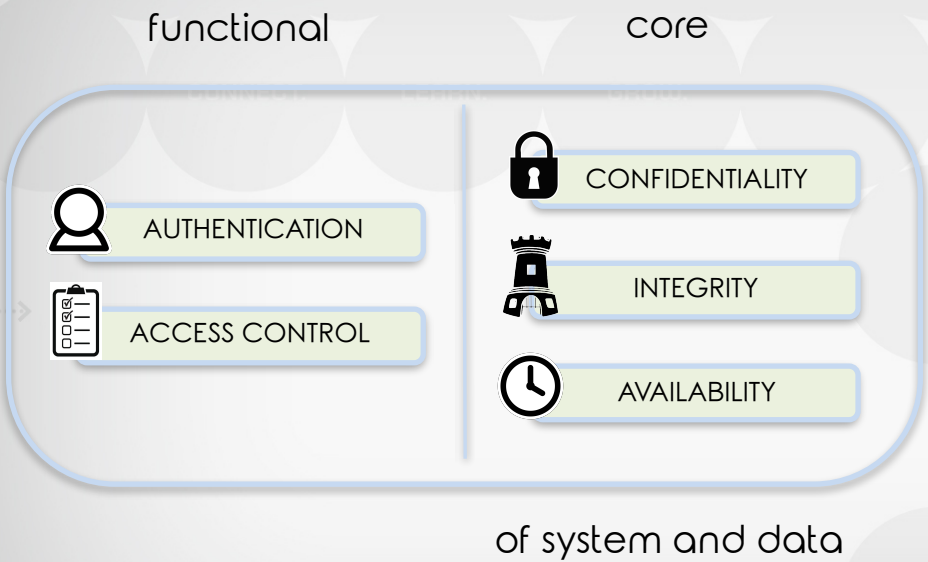
OWASP Italy Day
Cagliari, 19th October 2018

Key Security Requirements

core

of system and data

Key Security Requirements



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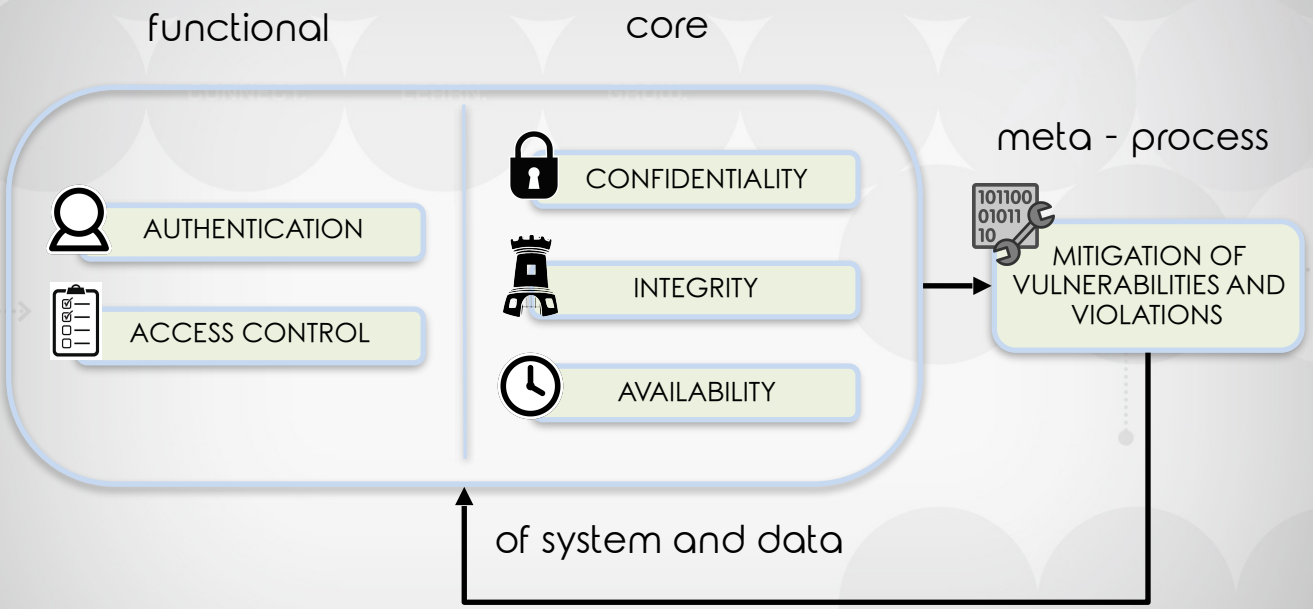

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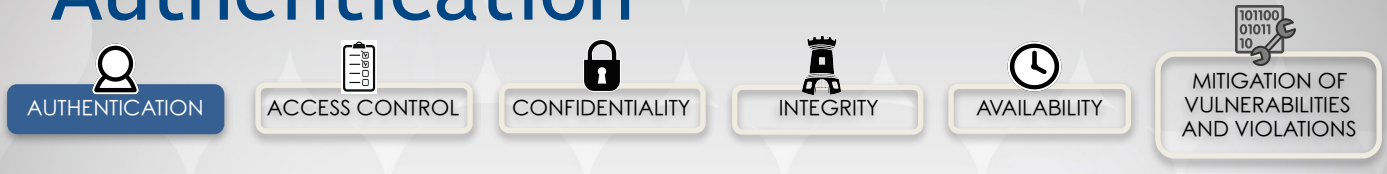

Who are you?

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The answer strongly relies on

- **confidential (Security through obscurity!)**
- and/or **unique**

information of an user (credentials)

- username, password, session id, biometrics, private key, telephone number, …

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OWASP Top 10-2017
A2-Broken Authentication

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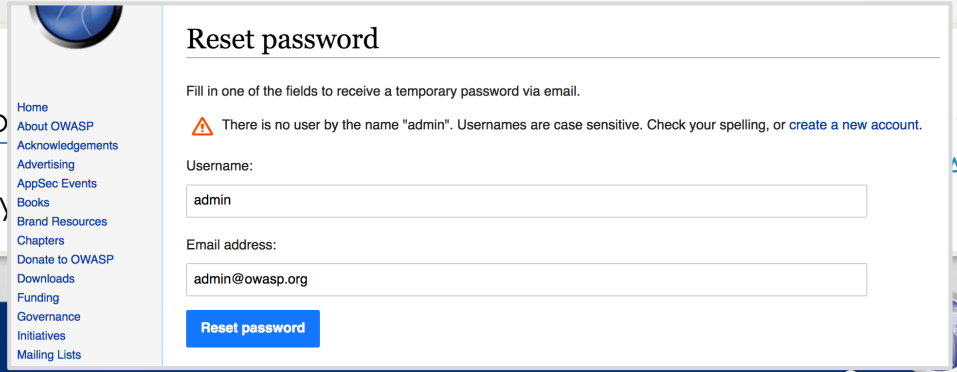

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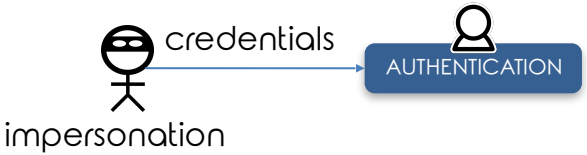

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1. Contextual Information
2. Anomaly detection
3. Notifications and logging

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È appena stato eseguito l'accesso al tuo Account Google da un nuovo dispositivo: Windows. Ti abbiamo inviato questa email per assicurarci che si tratti di un accesso eseguito da te.

CONTROLLA L'ATTIVITÀ

Access Control

Who can do what?

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- needs authentication first (who are you?)

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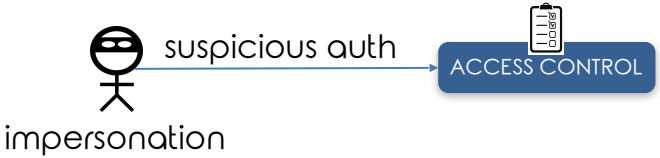

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Account protection and notification

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È stato bloccato un tentativo di accesso al tuo Account Google collegato

Confidentiality

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OWASP Top 10-2017 A3-Sensitive Data Exposure

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CONNECT. LEARN. GROW.

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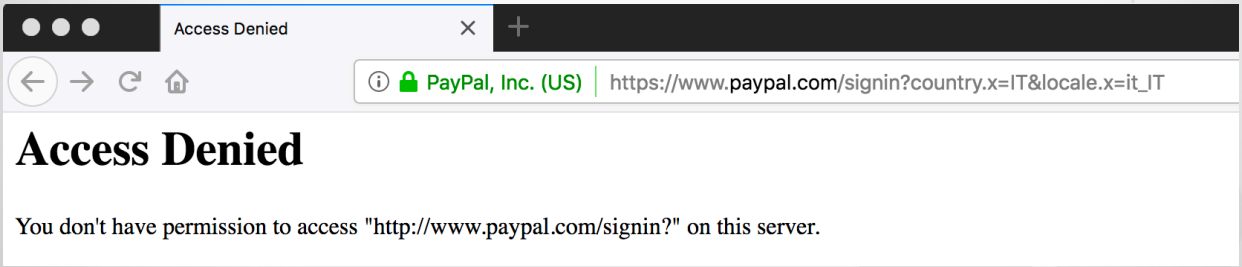

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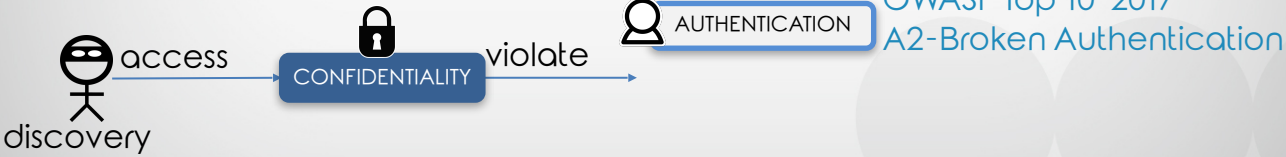

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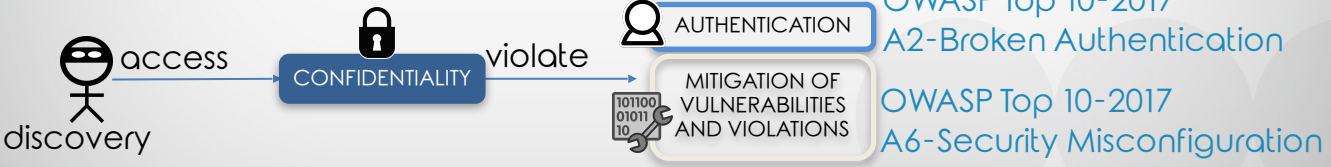

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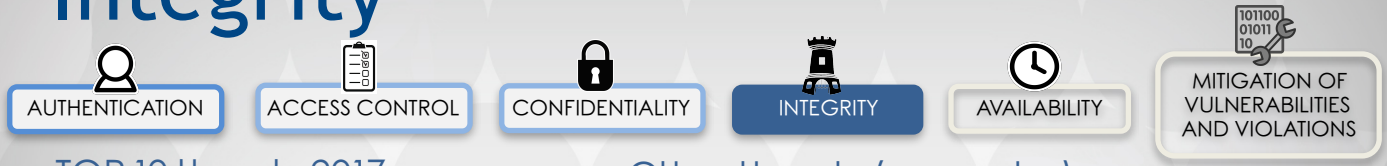

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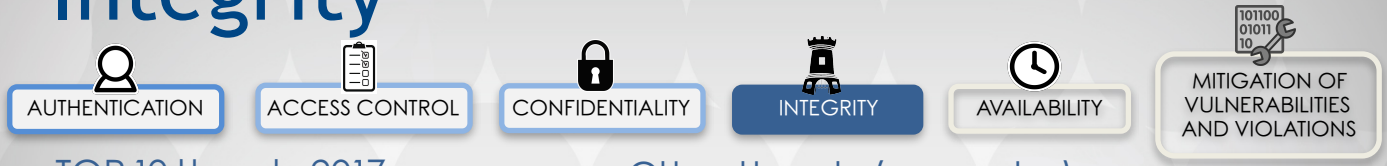

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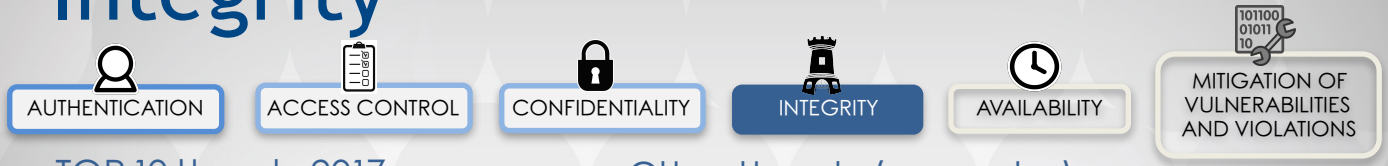

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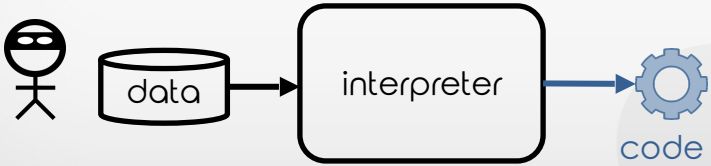

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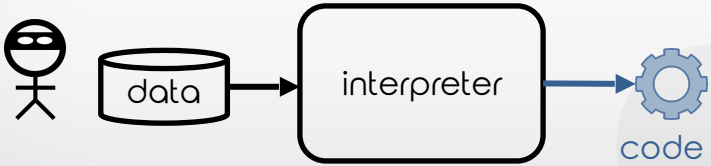

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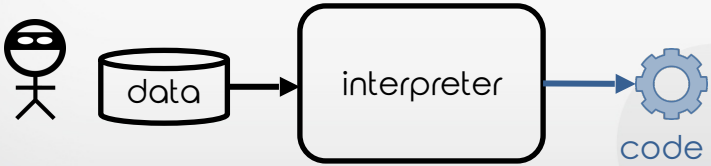

Let's call them as: Data→Code threats

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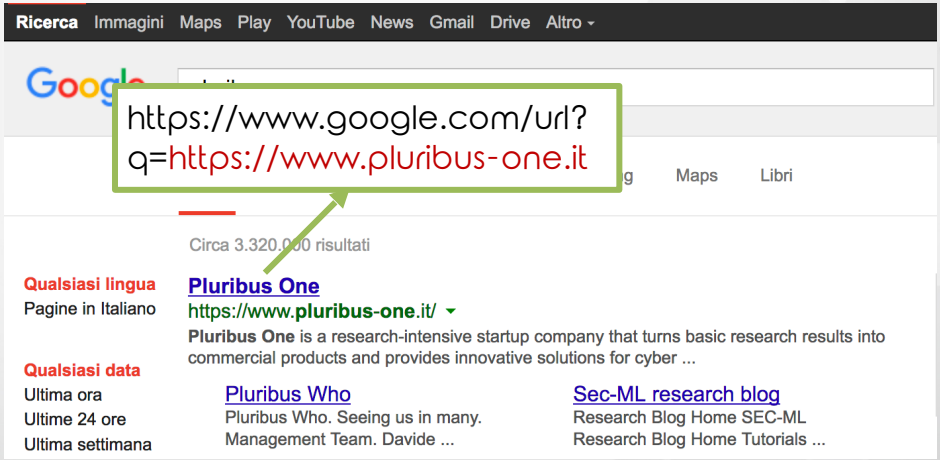
Normal Data→Code functionalities

- E.g. Google URL redirect service
  - used to track “clicks”



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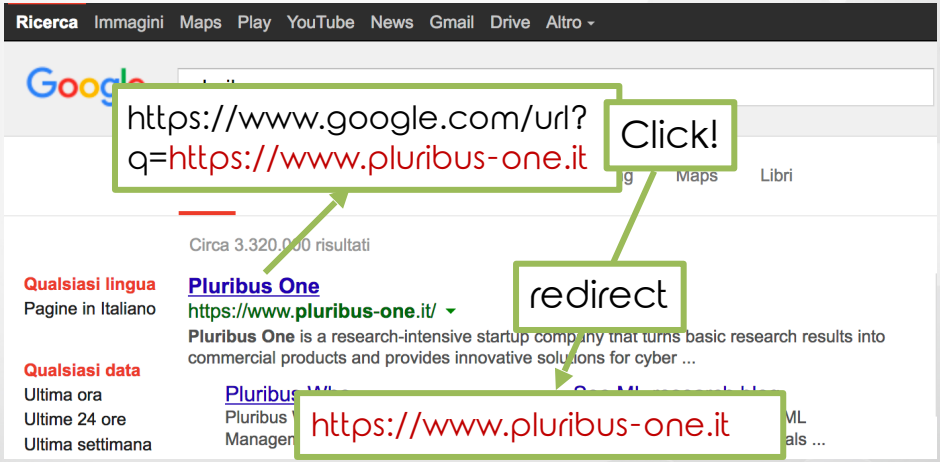

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Gentile Cliente,

il tuo ID Apple è stato utilizzato per accedere a iCloud da un browser web.

Data e ora: 19 febbraio 2018, 08:48 PDT

Indirizio IP , Luogo: 180.162.205.30, China – Shanghai

Se recententemente hai eseguito l'accesso a iCloud, puoi ignorare questa email.

Se recententemente non hai eseguito l'accesso a iCloud e ritieni che qualcun altro possa aver eseguito l'accesso al tuo account, clicca sul link seguente per riavviare il informazioni Il mio ID Apple.

Cordiali saluti,

Supporto Apple

https://www.google.com/url?q=http://phishing.url

REAL-WOLD PHISHING EMAIL AGAINST APPLE USERS!

Integrity

Normal Data→Code functionalities may be abused!

- Google URL redirect **service** used to track clicks
  - exposed to ”Unvalidated Redirects and Forwards - TOP 10 2013”

may be **abused** to bypass spam filters
  - Thanks to Google URLs reputation

- Mitigation measures require **contextual data**
  - E.g., in this case, Google might look at
    - referer URL
    - cookies

    to assess if the user is actually coming from a search page or not

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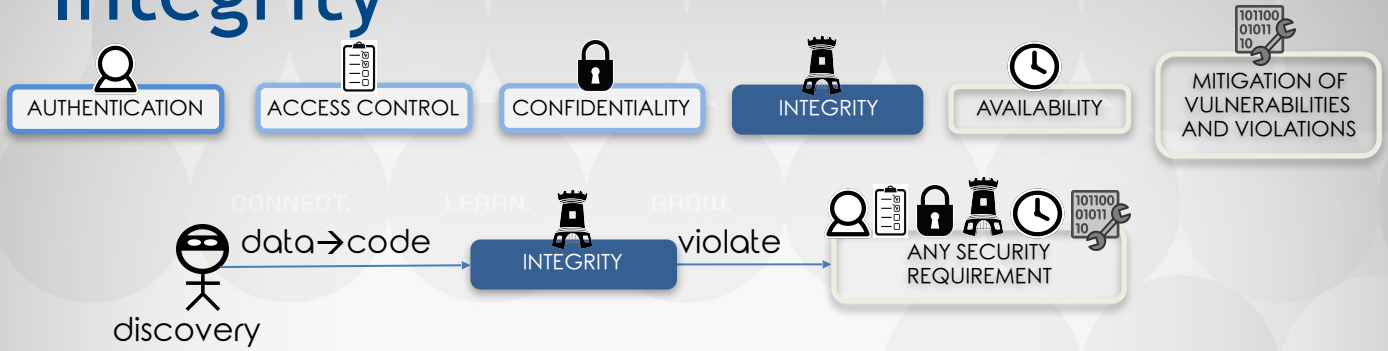

How to deal with Data→Code threats?

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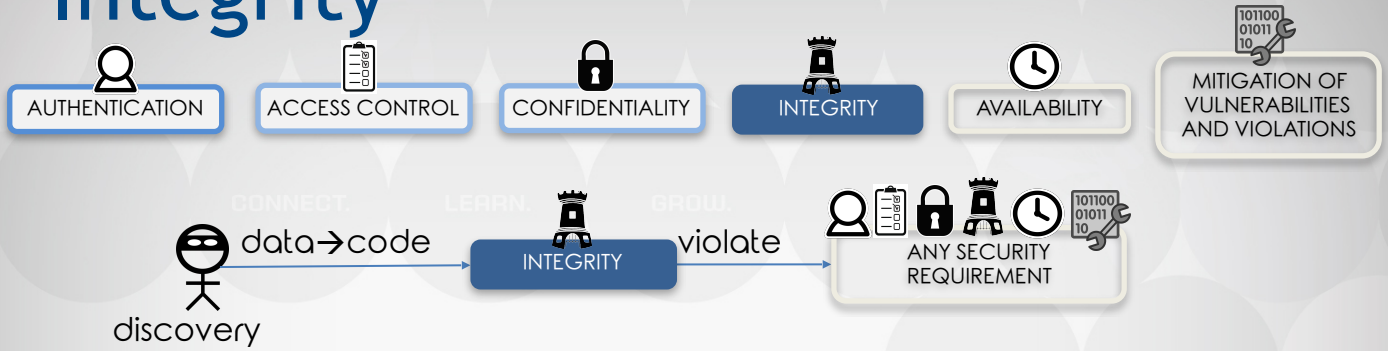
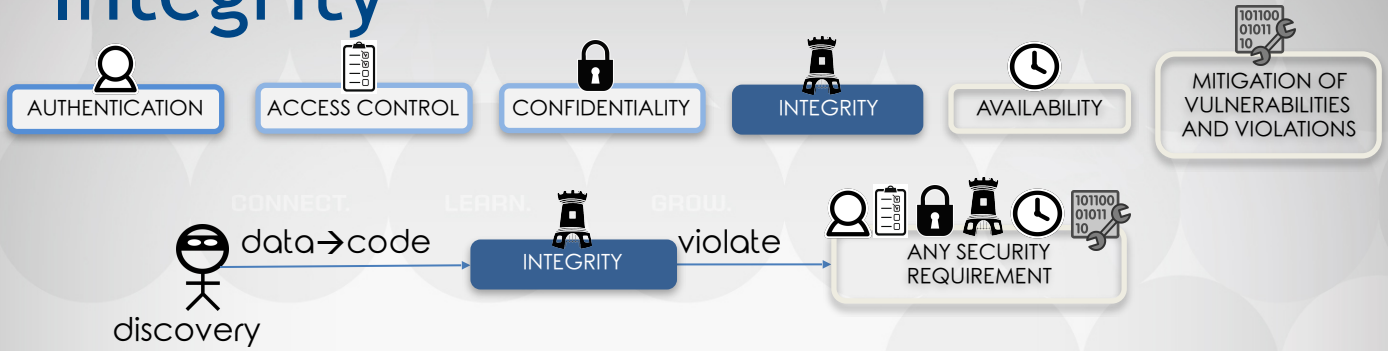


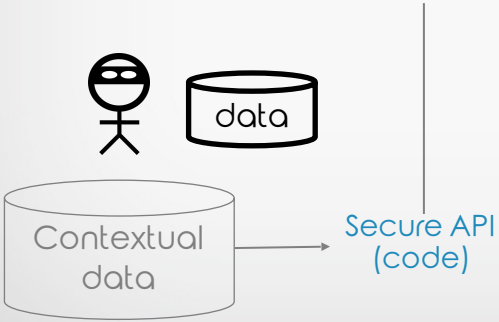
How to deal with Data→Code threats?

Secure API (code)

Integrity



How to deal with Data→Code threats?



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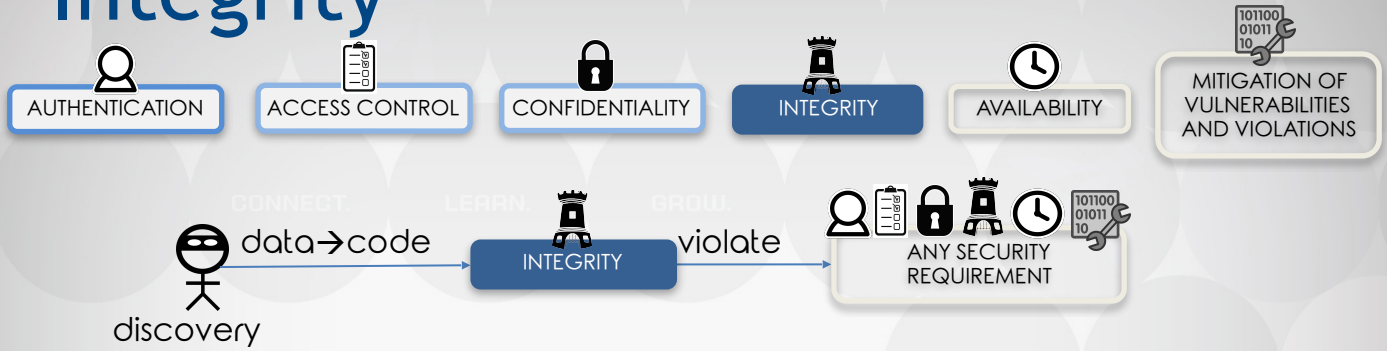

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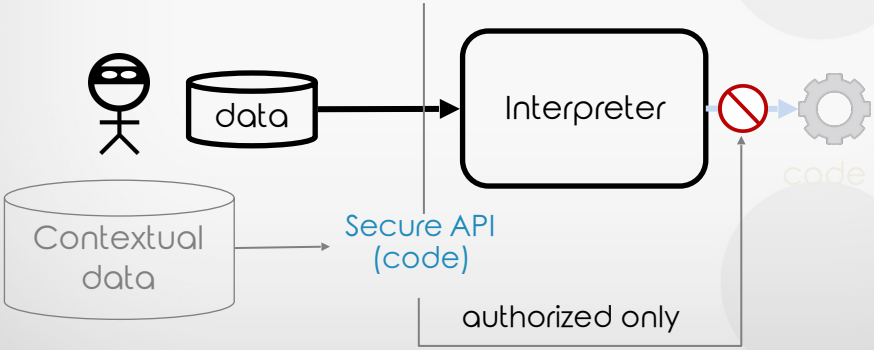

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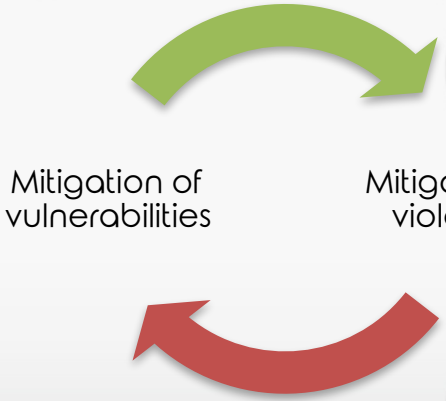
- OWASP Denial of Service Cheat Sheet (DRAFT)

Mitigation of vulnerabilities and violations

AUTHENTICATION | ACCESS CONTROL | CONFIDENTIALITY | INTEGRITY | AVAILABILITY | MITIGATION OF VULNERABILITIES AND VIOLATIONS



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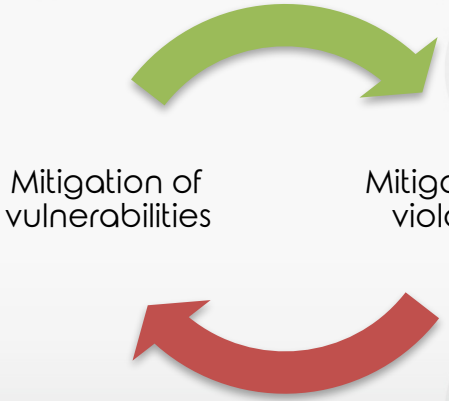

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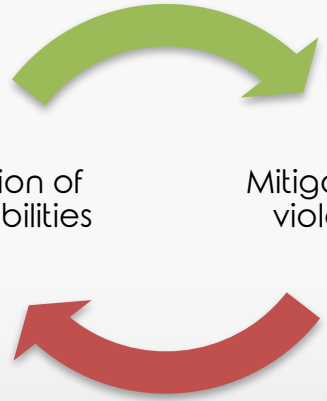

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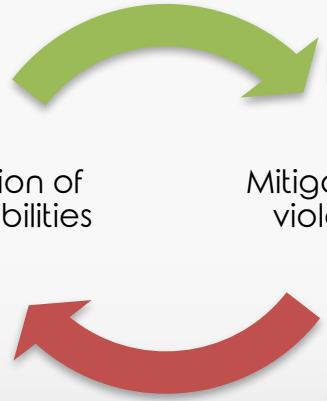

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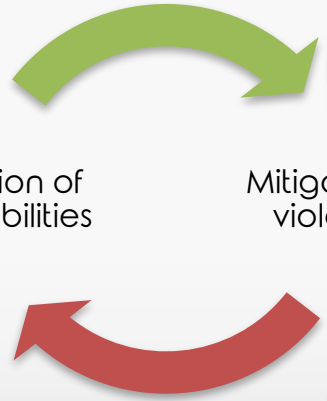

A10:2017 – Insufficient Logging & Monitoring

Anomaly-based detection

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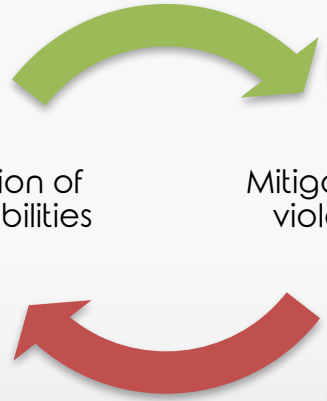

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Anomaly-based detection

Smart Load Balancing Web Application Firewall

TOP 10 Threats and Key Security Violations

TOP 10 Threat 2017	Security Violation
1. Injection	 Integrity (Data→Code)
2. Broken Authentication	 Authentication
3. Sensitive Data Exposure	 Confidentiality
4. XML External Entities (XXE)	 Integrity (Data→Code)
5. Broken Access Control	 Access Control
6. Security Misconfiguration	 Mitigation of vulnerabilities & violations
7. Cross-Site Scripting (XSS)	 Integrity (Data→Code)
8. Insecure Deserialization	 Integrity (Data→Code)
9. Using Components with Known Vulnerabilities	 Mitigation of vulnerabilities & violations
10. Insufficient Logging & Monitoring	 Mitigation of vulnerabilities & violations

Key Security Violations and TOP 10 Threats

Security Violation	TOP 10 Threat 2017
Integrity (Data→Code)	 1. Injection
	 4. XML External Entities (XXE)
	 7. Cross-Site Scripting (XSS)
	 8. Insecure Deserialization
Authentication	 2. Broken Authentication
Confidentiality	 3. Sensitive Data Exposure
Access Control	 5. Broken Access Control
Mitigation of vulnerabilities & violations	 6. Security Misconfiguration
	 9. Using Components with Known Vulnerabilities
	 10. Insufficient Logging & Monitoring
Availability	 - (*)

(*) Last appearance in 2004: A9. Application Denial of Service

Thanks!

Questions are more than welcome

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Pluribus One

seeing one in many

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