#webappsec #yowwest15 https://joind.in/14594

Web Application Security

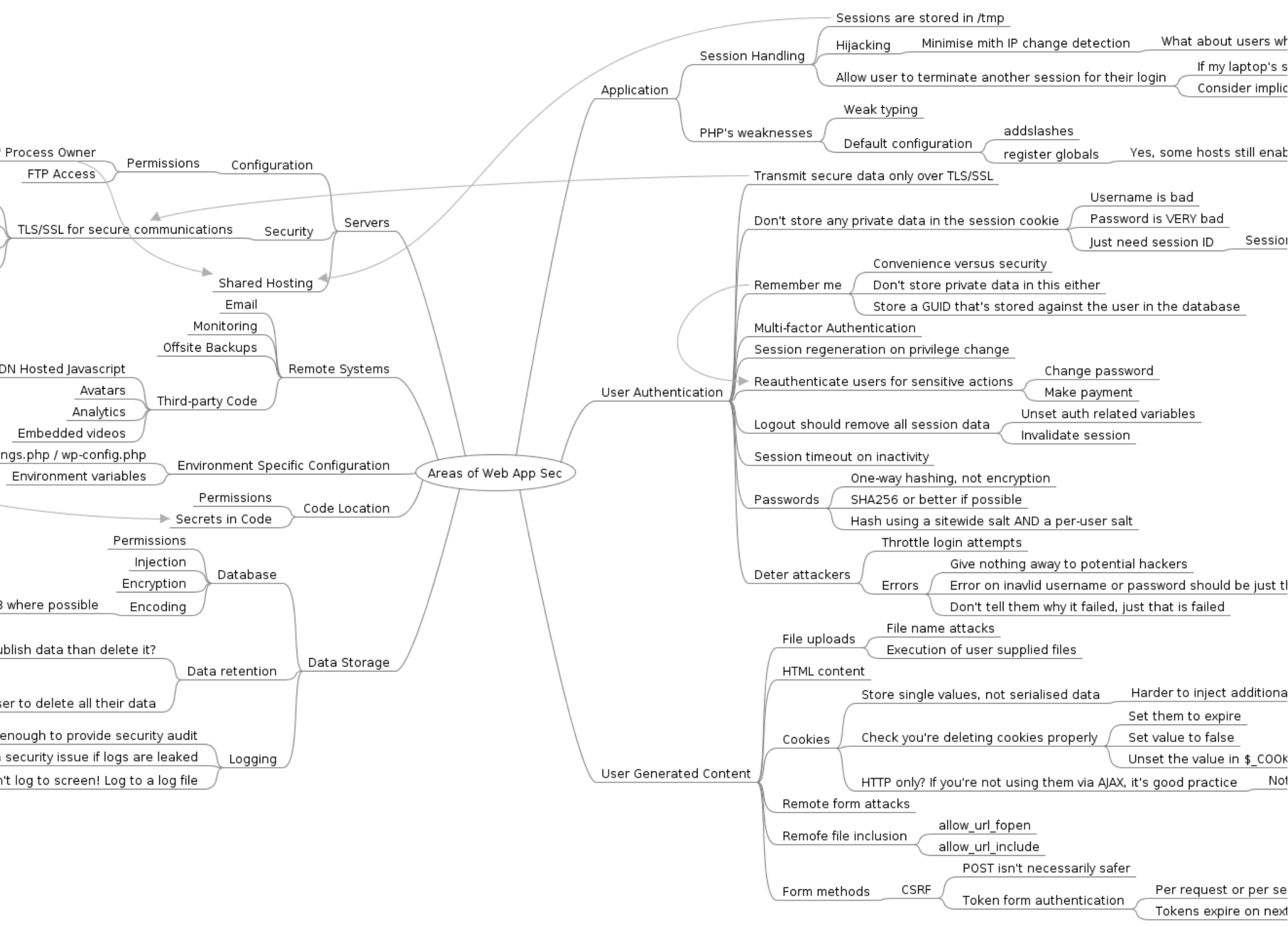
Winning When The Odds Are Against You

Ben Dechrai
@bendechrai

CTO FOR HIRE

YOW! West, Perth, 2015

What Is Web Application Security?



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Where to Start?

owasp.org

OWASP

Open Web Application Security Project

OWASP
Open Web Application Security Project

Top Ten Cheat Sheet

Injection	Cross Site Scripting
Weak authentication & session management	Insecure Direct Object Reference
Cross Site Request Forgery	Security Misconfiguration
Insufficient Cryptographic Storage	Failure to Restrict URL access
Insufficient Transport Layer Protection	Unvalidated Redirects and Forwards

OWASP
Open Web Application Security Project

Top Ten Cheat Sheet

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Demo

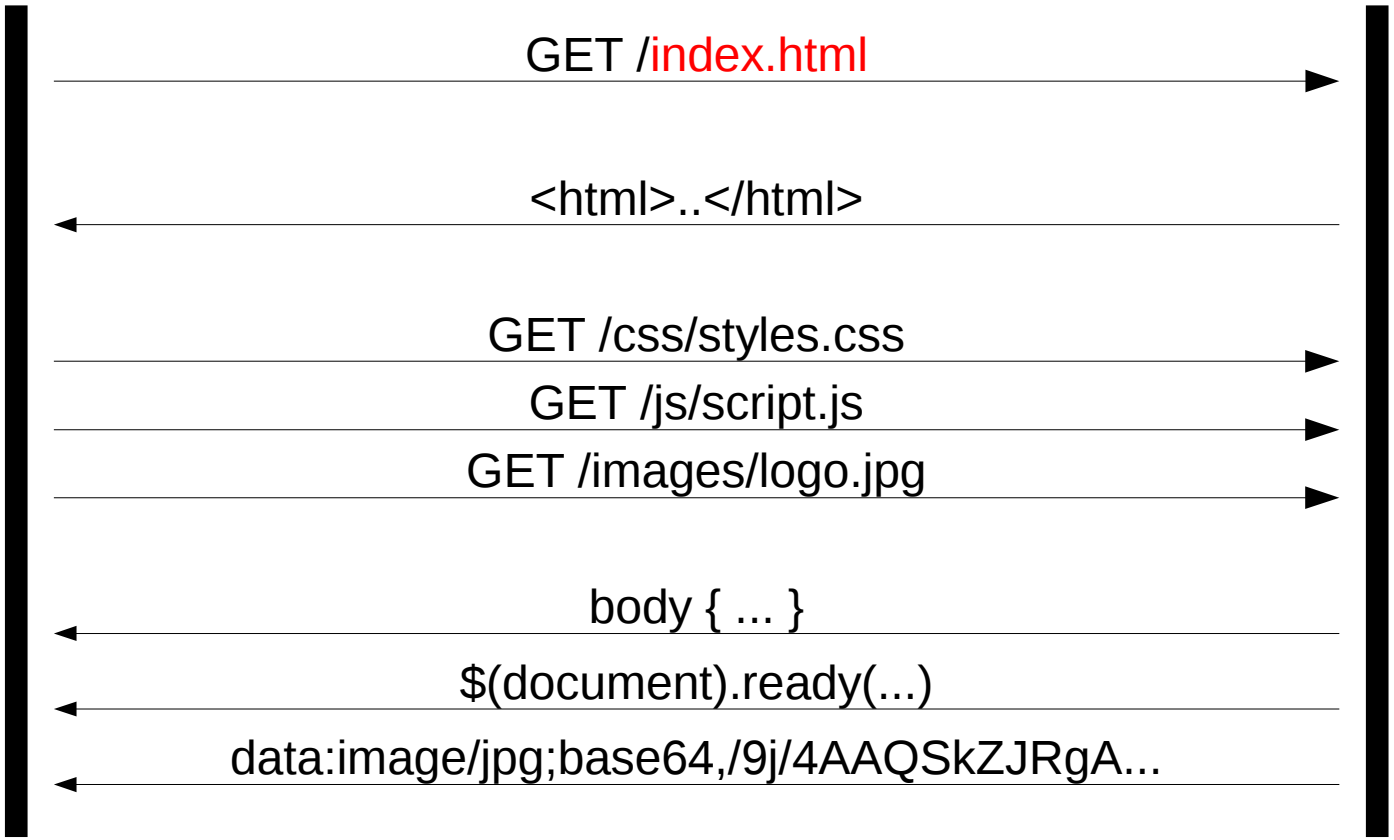
Solutions?

Think like your favourite programming language...

Not in your favourite programming language...

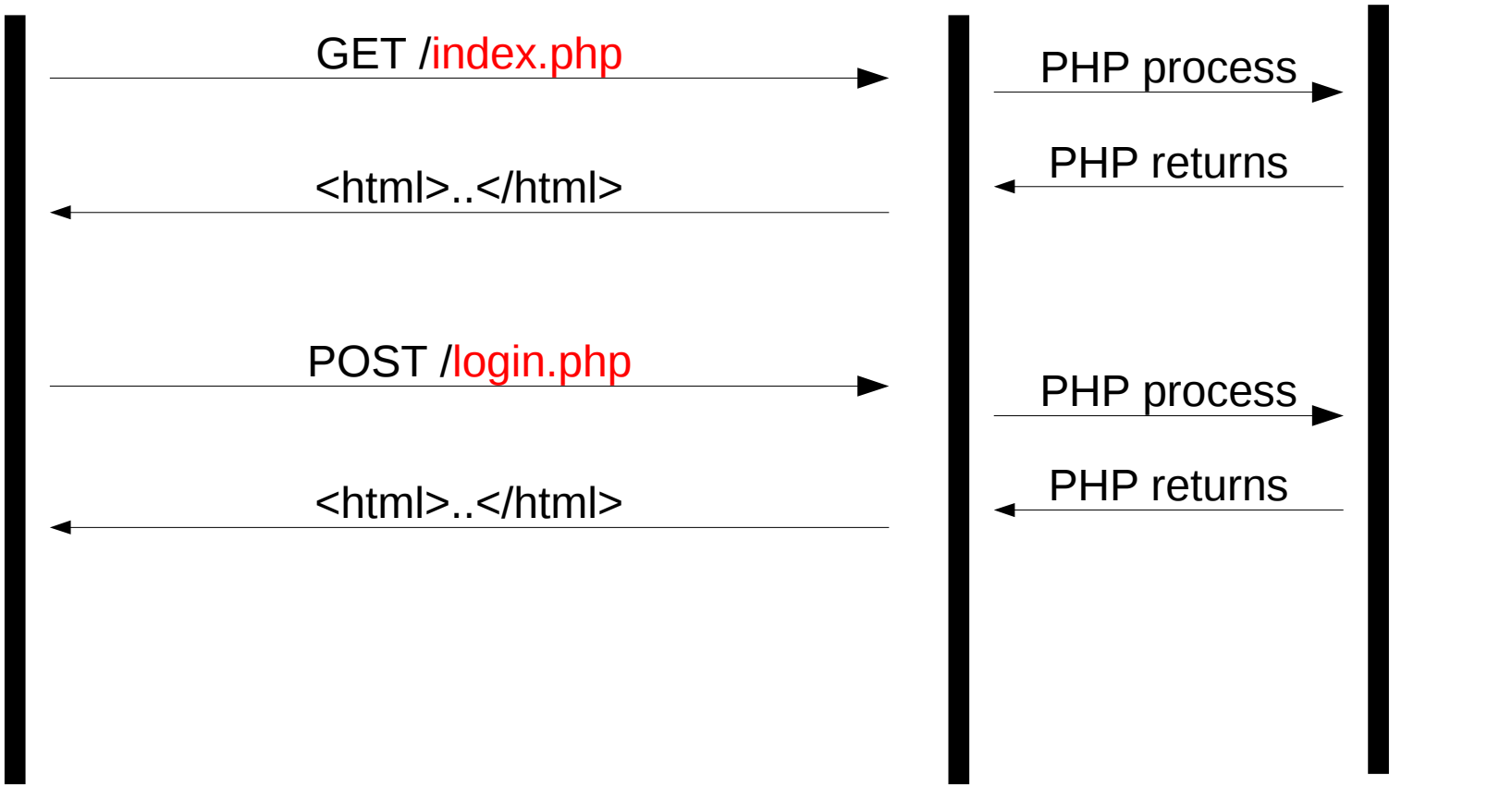
Think LIKE your favourite programming language...

HTTP

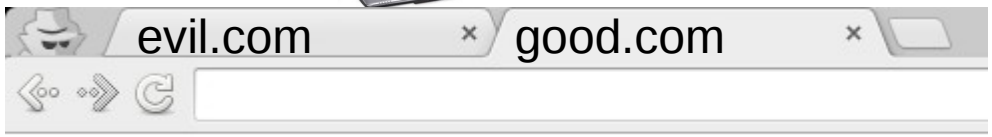

GET /index.html
<html>..</html>
GET /css/styles.css
GET /js/script.js
GET /images/logo.jpg
body { ... }
$(document).ready(...)
...

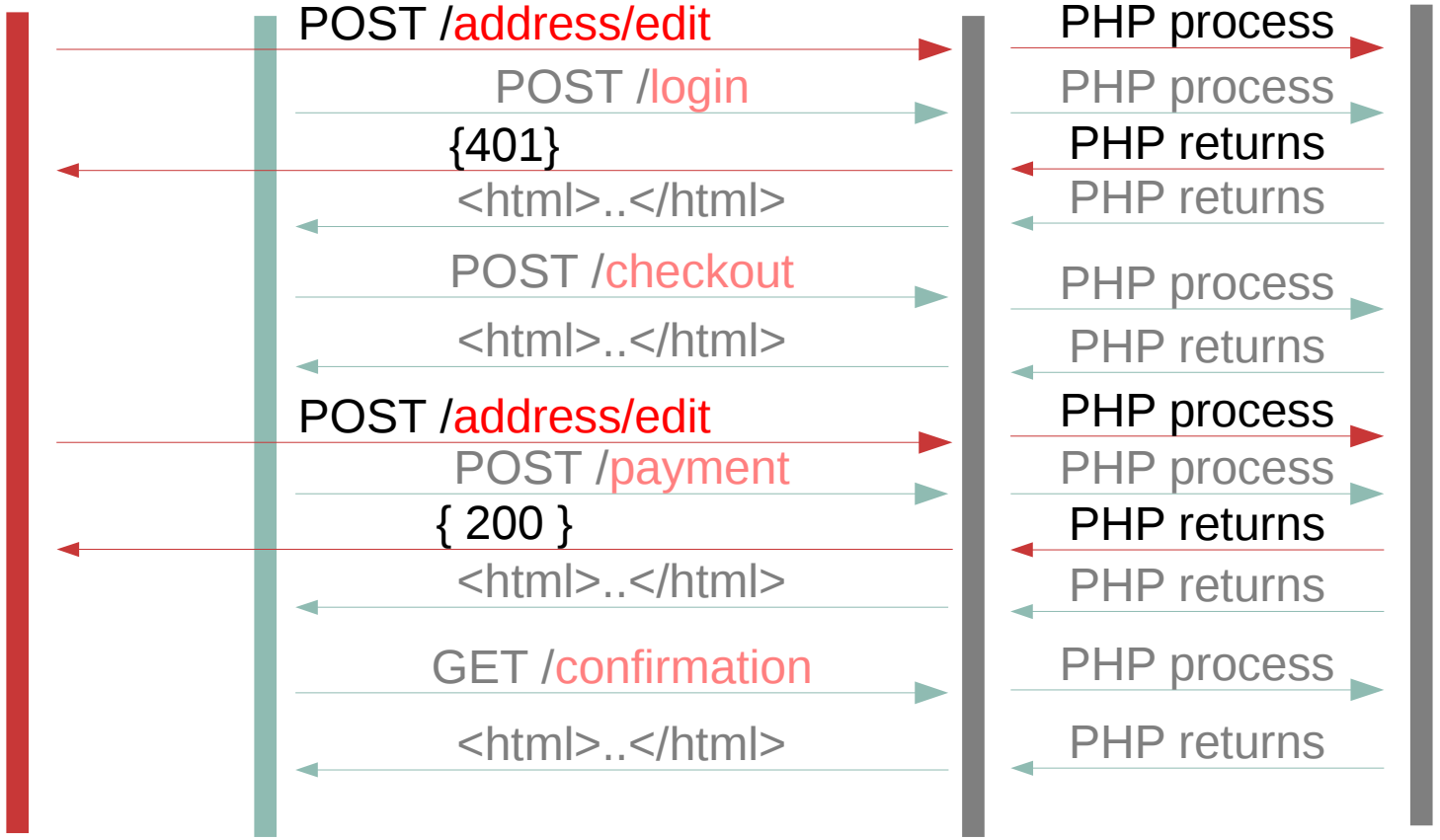
HTTP


php


GET /index.php
PHP process
PHP returns
<html>..</html>
POST /login.php
PHP process
PHP returns
<html>..</html>

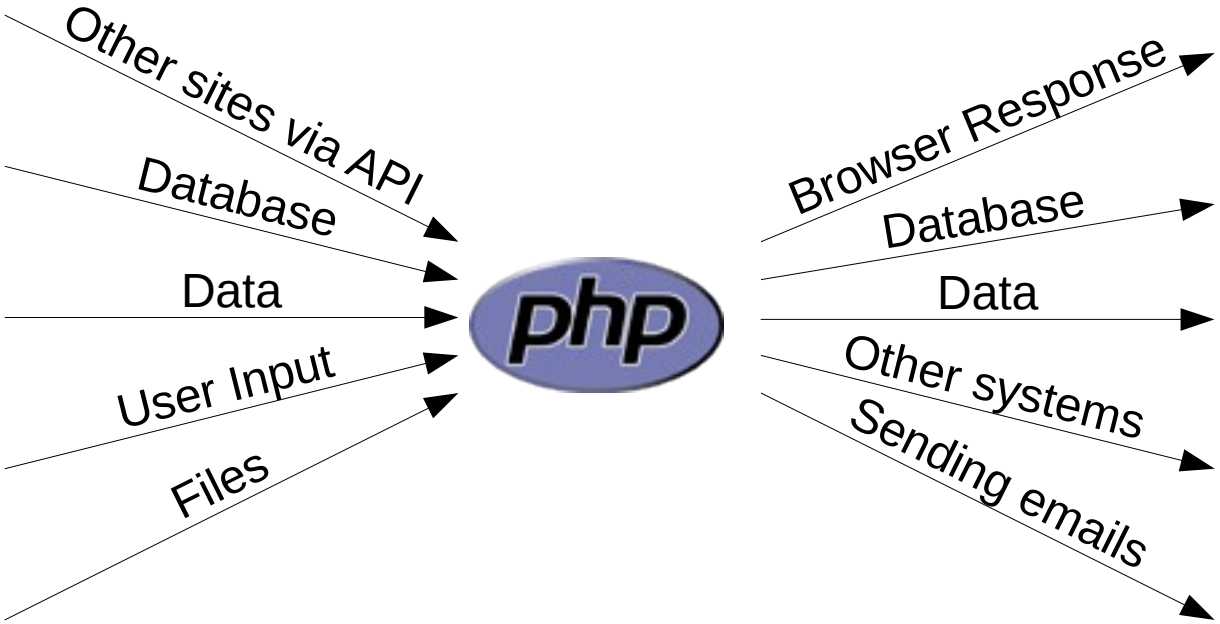
Cross-Site Request Forgeries



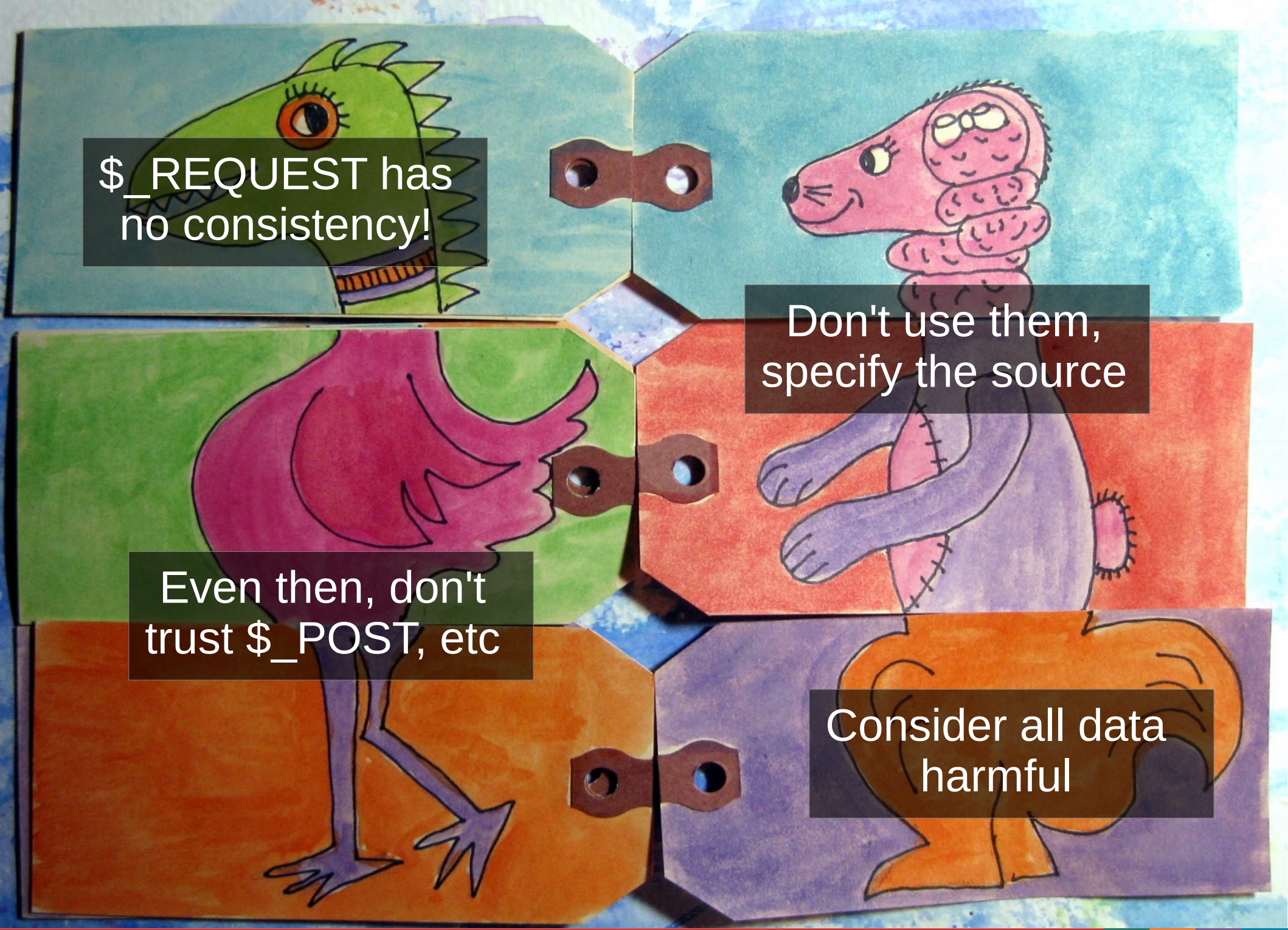


PHP Ain't Clever

(hint, not many programming languages are!)



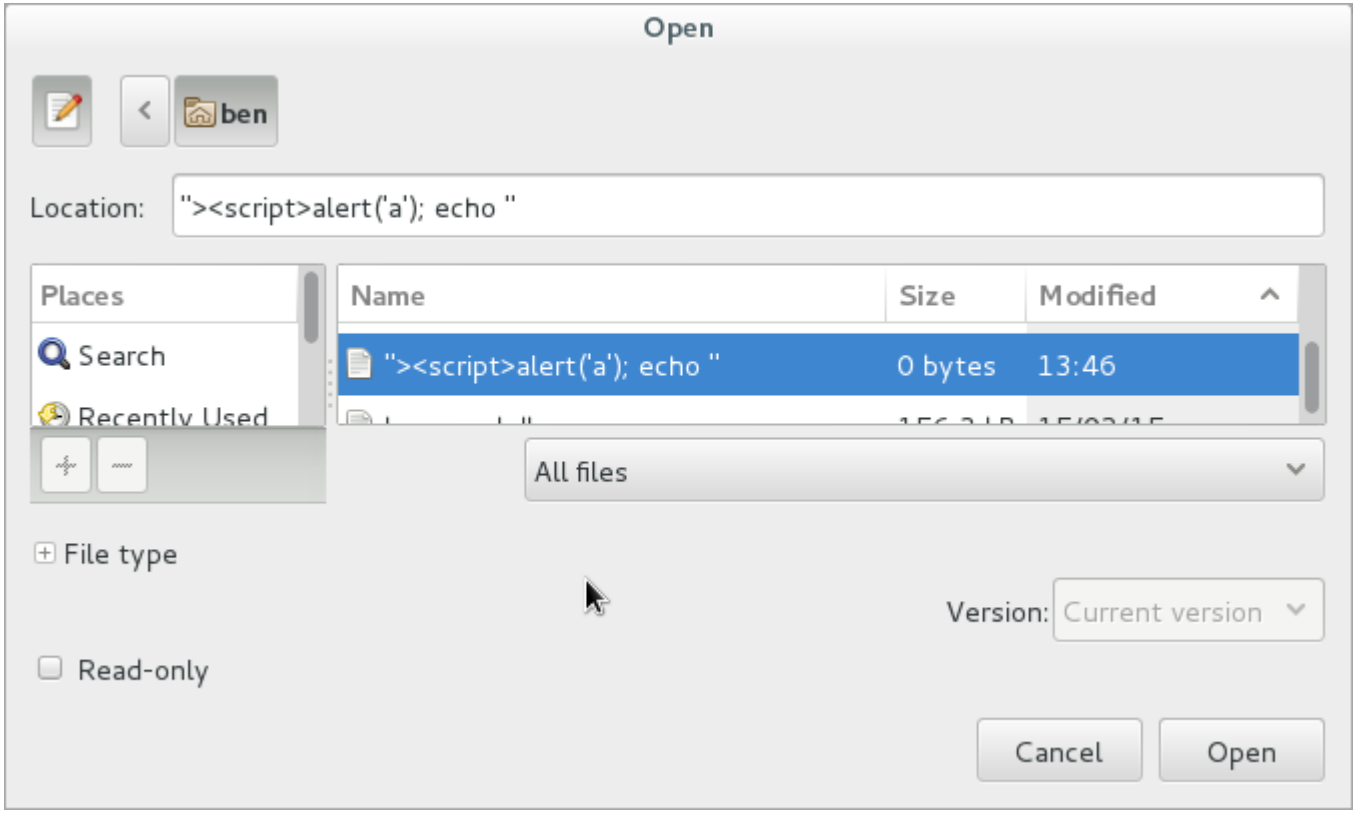
Piecing Data Together


$_REQUEST has no consistency!
Don't use them, specify the source
Even then, don't trust $_POST, etc
Consider all data harmful

Validate All Incoming Data

Look Out for Odd Entry Points

Look Out for Odd Entry Points



Email Addresses?

ben@dechrai.com

ben+yowwest15@dechrai.com

"Ben at YOW! West"@dechrai.com

Bḝn@169.254.141.29

Email Addresses?

```
(?:[a-z0-9!#$%&'*+/=?^_`{|}~-]+(?:\.[a-z0-9!#$%&'*+/=?^_`{|}~-]
+)*
  |  "(?:[\x01-\x08\x0b\x0c\x0e-\x1f\x21\x23-\x5b\x5d-\x7f]
      |  \\[\x01-\x09\x0b\x0c\x0e-\x7f])*")
@ (?:(?:[a-z0-9](?:[a-z0-9-]*[a-z0-9])?\.)+[a-z0-9](?:[a-z0-
9-]*[a-z0-9])?
  |  \[(?:(?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?)\.){3}
       (?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?|[a-z0-9-]*[a-z0-
9]:
          (?:[\x01-\x08\x0b\x0c\x0e-\x1f\x21-\x5a\x53-\x7f]
          |  \\[\x01-\x09\x0b\x0c\x0e-\x7f])+)
     \])
```

Email Addresses?

```
(?:[a-z0-9!#$%&'*+/=?^_`{|}~-]+(?:\.[a-z0-9!#$%&'*+/=?^_`{|}~-]
+)*
   |  "(?:[\x01-\x08\x0b\x0c\x0e-\x1f\x21\x23-\x5b\x5d-\x7f]
      |  \\[\x01-\x09\x0b\x0c\x0e-\x7f])*"
)
@ (?:(?:[a-z0-9](?:[a-z0-9-]*[a-z0-9])?\.)+[a-z0-9](?:[a-z0-
9-]*[a-z0-9])?
   |  \[(?:(?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?)\.){3}
      (?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?|[a-z0-9-]*[a-z0-
9]:
         (?:[\x01-\x08\x0b\x0c\x0e-\x1f\x21-\x5a\x53-\x7f]
         |  \\[\x01-\x09\x0b\x0c\x0e-\x7f])+)
    \])
```

Some people, when confronted with a problem, think, "I know, I'll use regular expressions."
Now they have two problems.

— Jamie Zawinksi

Email Addresses?

Send them an email!

Names?

(see http://is.gd/validating_names)

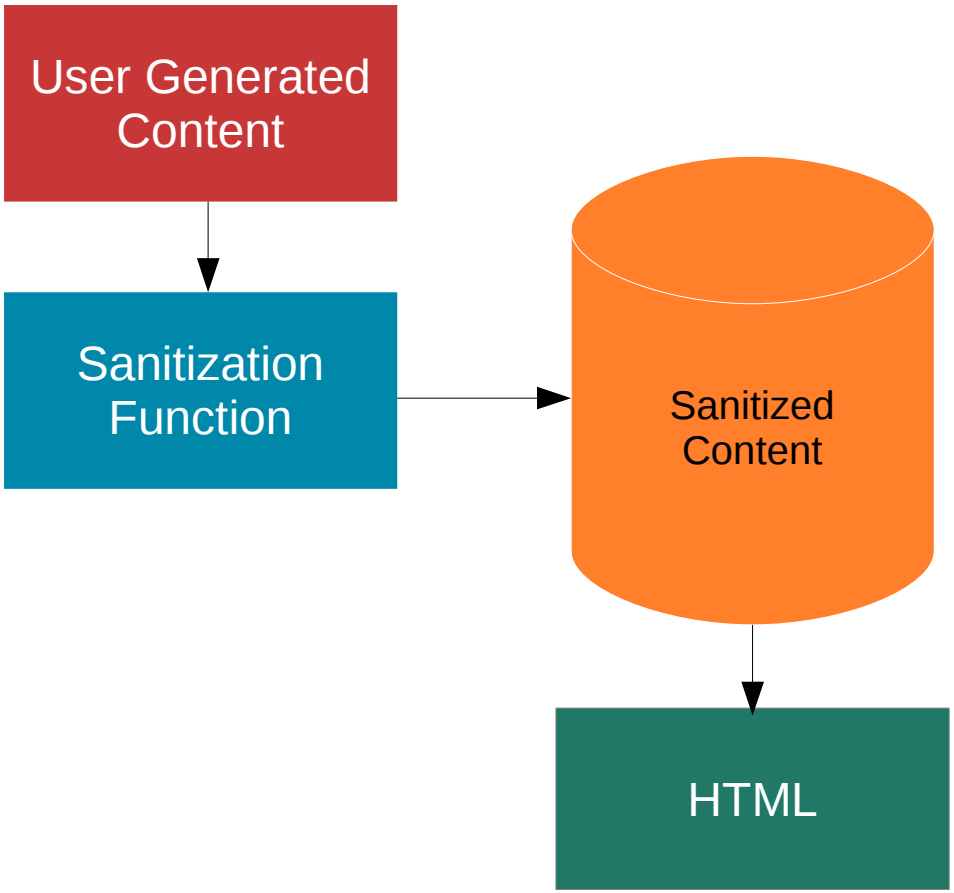
Falsehoods Programmers Believe About Names

1. People have exactly one canonical full name.
2. People have exactly one full name which they go by.
3. People have, at this point in time, exactly one canonical full name.
4. People have, at this point in time, one full name which they go by.
5. People have exactly N names, for any value of N.
6. People's names fit within a certain defined amount of space.
7. People's names do not change.
8. People's names change, but only at a certain enumerated set of events.
9. People's names are written in ASCII.
10. People's names are written in any single character set.
11. People's names are all mapped in Unicode code points.
12. People's names are case sensitive.
13. People's names are case insensitive.
14. People's names sometimes have prefixes or suffixes, but you can safely ignore those.
15. People's names do not contain numbers.

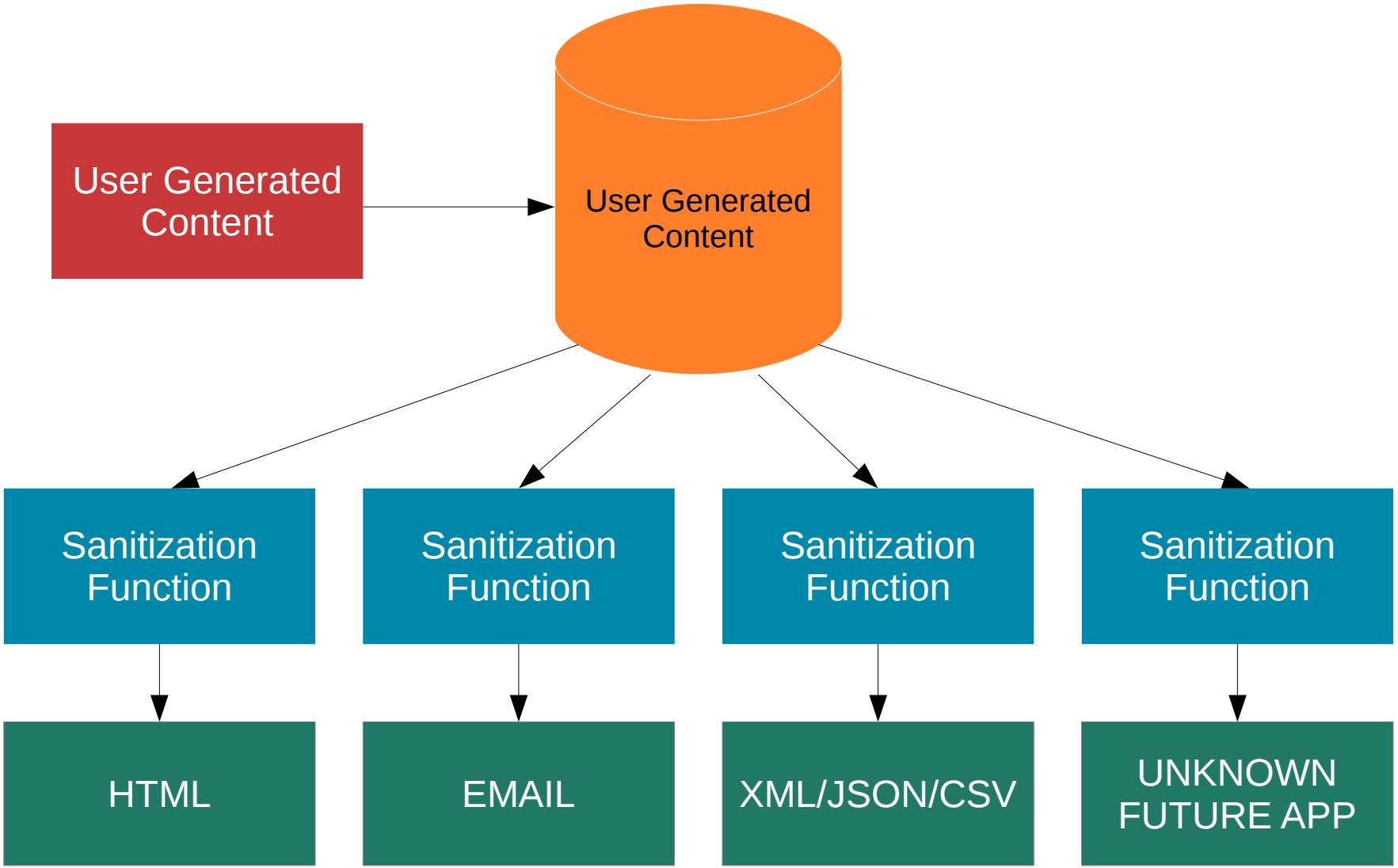
Names?

- Who decides if a name is valid?
  - Josè Smith
  - Laʒamon
  - Þórinn Eikinskjaldi
  - Πηληϊάδεω Ἀχιλῆος
  - Federico del Sagrado Corazón de Jesús García Lorca

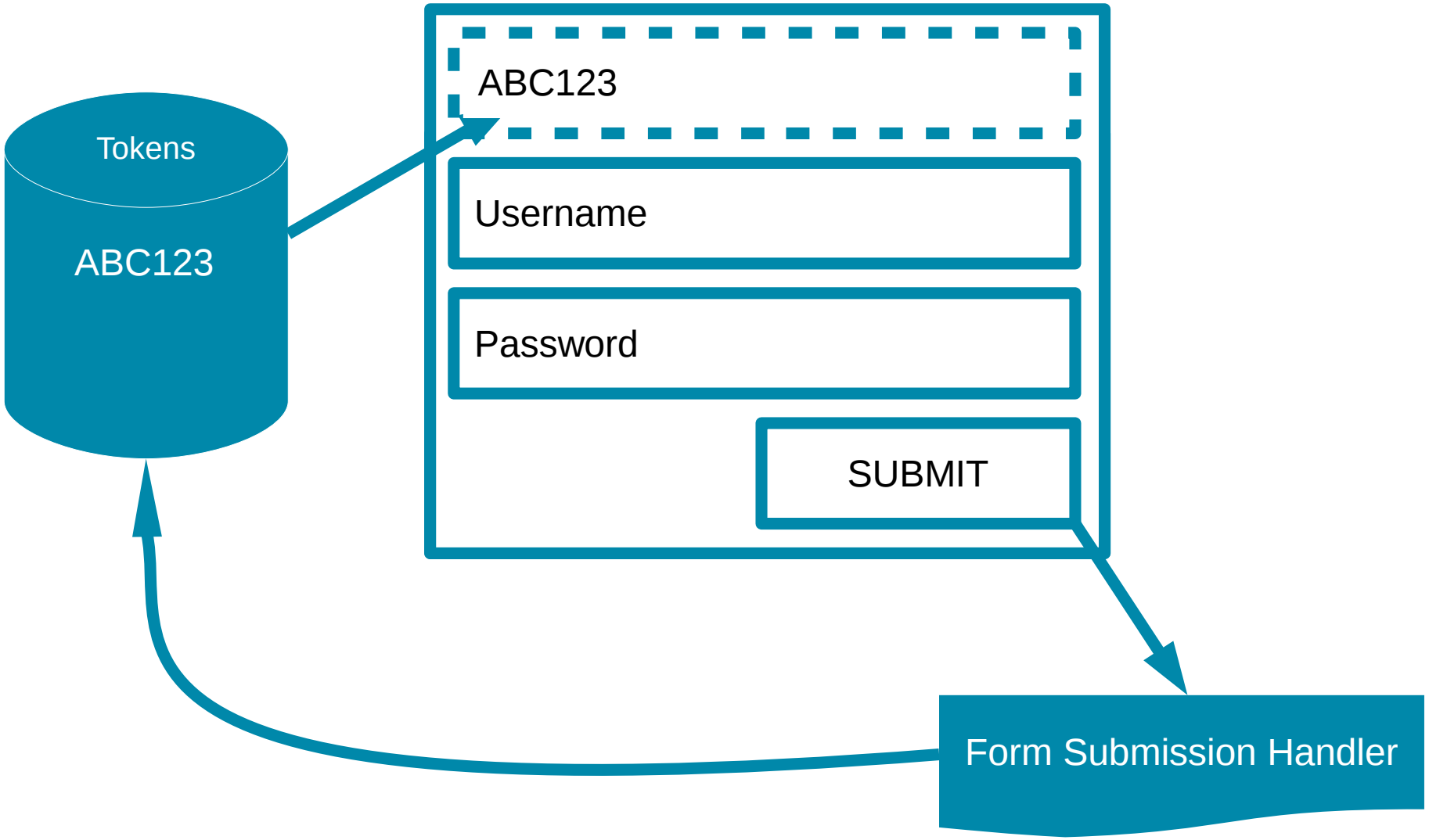
Sanitize Data



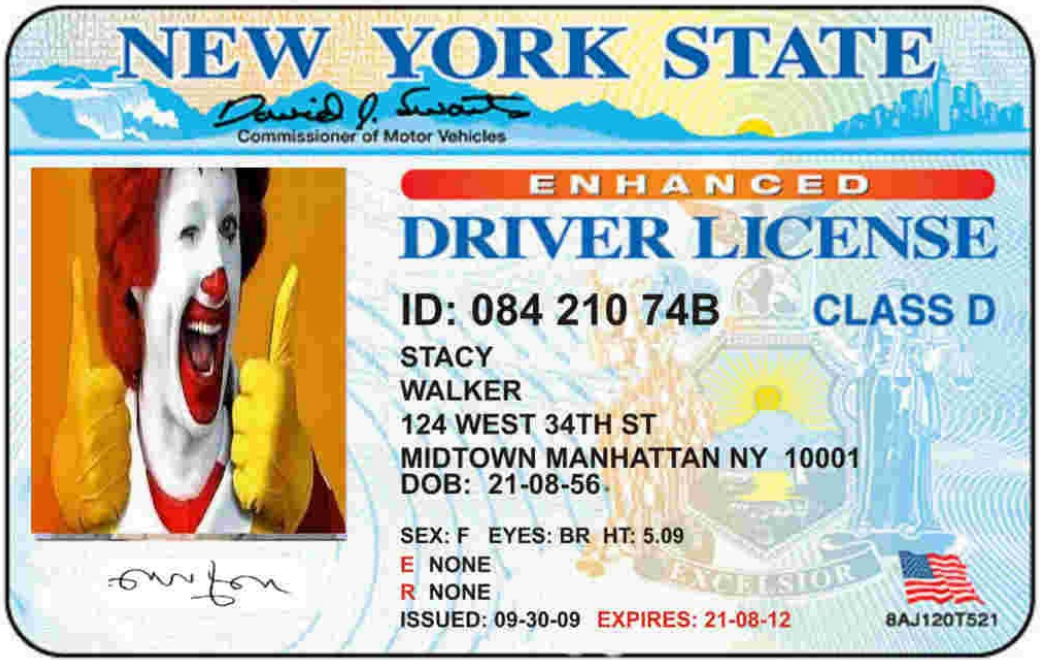
Sanitize on Output



Cross-Site Request Forgeries



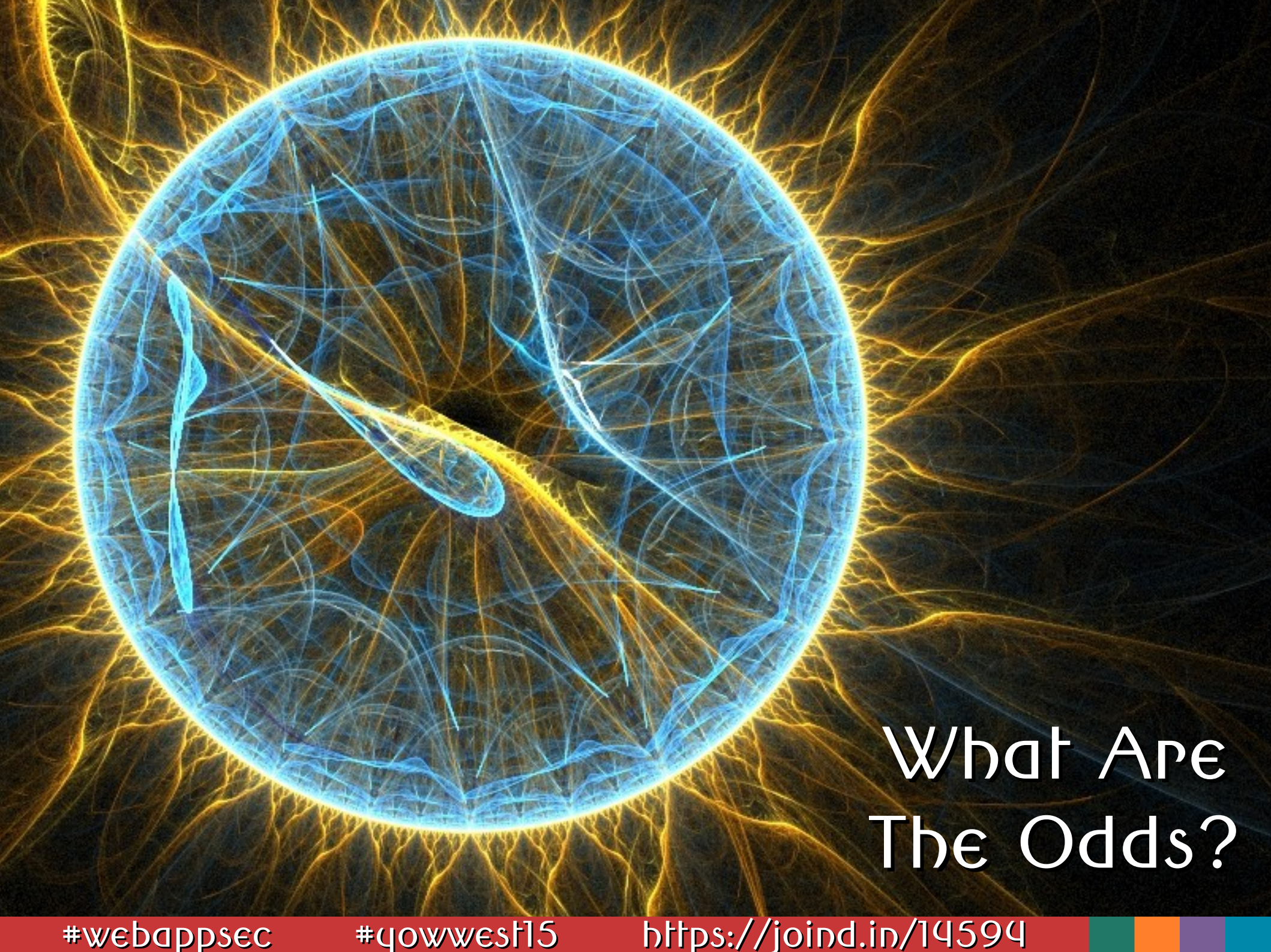
Cross-Site Request Forgeries



Referrers can be easily forged;

don't rely on them

```
curl
    --referer="http://good.com"
    --data "username=admin&password=complex"
    http://good.com/user/login/
```


What Are
The Odds?

Making Prototypes Live

"That's great! Let's make it live!"

– Almost every CEO ever

Making Prototypes Live

References

- OWASP Top 10 Cheat Sheet

Credits

- Security Camera image by Henning Mühlinghaus
- Piecing Data by José Manuel Ríos Valiente
- Flip Book Animals by Jamie Fingal
- Customs and Immigation From learnz.org.nz
- Flight Tracks screenshot from flightaware.com
- Conception image by Lynn (Gracie's mom)
- Scooter Security by EpicFail.com

CTO FOR HIRE

Ben Dechrai
@bendechrai

Thank You!

Questions?

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YOW! West, Perth, 2015