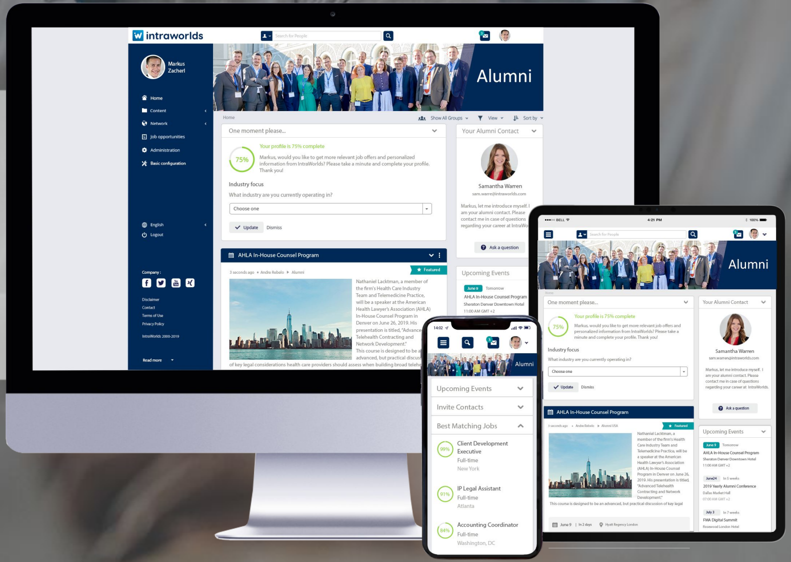
intraworlds

Web Application Security

WBU December 4th 2019



About IntraWorlds

IntraWorlds is a global provider of cloud-based talent relationship and alumni management software

- Established: 2002
- Employees: 50+
- Locations:

Munich

New York

Tampa

Pilsen

intraworlds

Clients 150+

IntraWorlds is proud to be a trusted partner of FORTUNE 1000 as well as leading law firms:

- Davis Polk
- Akin Gump
- Paul Hastings
- Sidley Austin

- Allen & Overy
- Mayer Brown
- White & Case
- Hogan Lovells

Internship

IWorkshop

Topics for Bachelor thesis

Demo

https://github.com/intraworlds/workshop-web-security

ISO 27001

INFORMATION SECURITY MANAGEMENT SYSTEM

ISO 27001

ISMS

Human Resources
Access control
Cryptography
Physical and environmental security
Communications security
...
and many more

Development security

Coding standards, Security principles, Penetration testing

Question

What’s penetration testing?

Development security

OWASP

Open Web Application Security Project

https://www.owasp.org

OWASP top 10

List of most common security issues

Question

Most common attacks on the Web?

SQL Injection

Security issues

(SQL) Injection

SQL injection

```
$sql = ‘SELECT * FROM user WHERE id = ‘ . $_GET[‘id’];
```

demo

SQL injection

```
$sql = ‘SELECT * FROM user WHERE id = :id‘;
$stmt = $pdo->prepare($sql);
$stmt->execute([‘:id’ => $_GET[‘id’]]);
```

Security issues

XSS

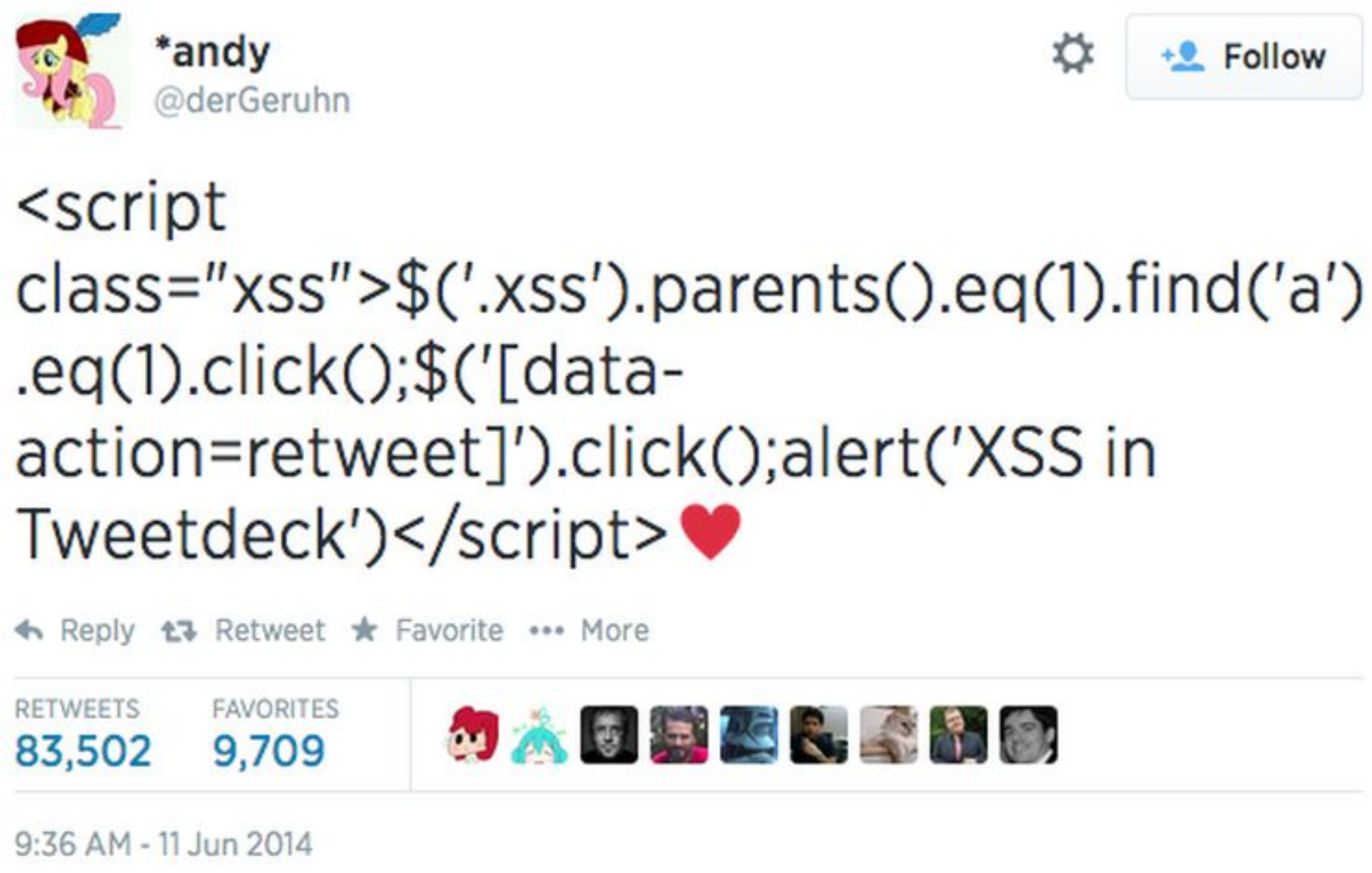
Cross-site scripting

XSS

```
echo ‘You are searching for ‘ . $_GET[‘query’];
```

demo

Self-retweeting tweet



*andy
@derGeruhn

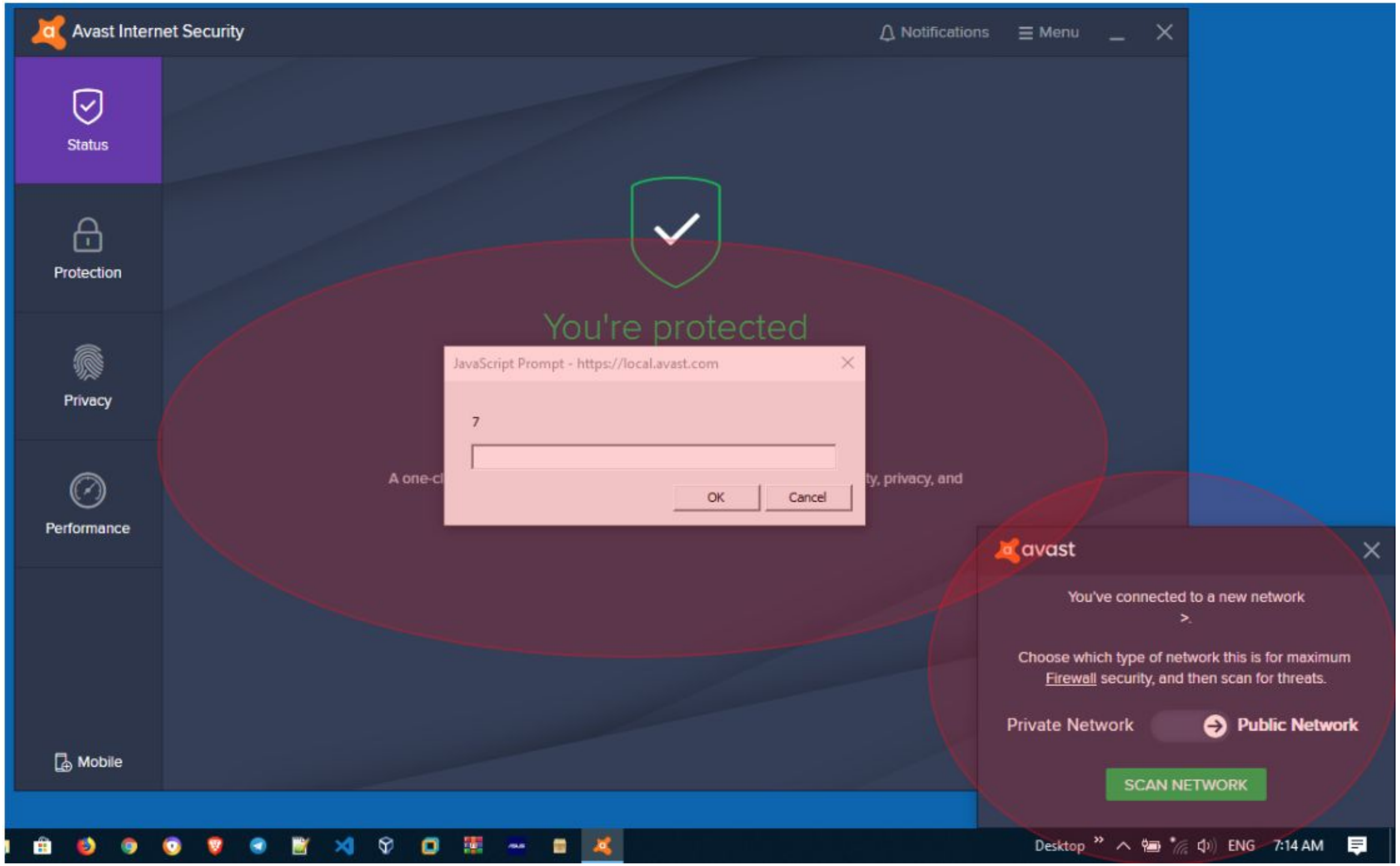
```
<script class="xss">$('.xss').parents().eq(1).find('a').eq(1).click();$('[data-action=retweet]').click();alert('XSS in Tweetdeck')</script>♥
```

RETWEETS 83,502
FAVORITES 9,709

9:36 AM - 11 Jun 2014

source: https://www.zdnet.com/article/tweetdeck-wasnt-actually-hacked-and-everyone-was-silly/

Avast AntiVirus Desktop XSS



You're protected

JavaScript Prompt - https://local.avast.com

7

You've connected to a new network

>

Choose which type of network this is for maximum Firewall security, and then scan for threats.

source: https://medium.com/bugbountywriteup/5-000-usd-xss-issue-at-avast-desktop-antivirus-for-windows-yes-desktop-1e99375f0968

XSS

```php
echo ‘You are searching for ‘ . htmlspecialchars($_GET[‘query’]);
```

CSP

Content-Security-Policy

CSRF

Cross-site request forgery

CSRF

```
if ($isAuthenticated) payTo($_REQUEST[‘user_id’]);
```

demo

CSRF

```
$csrfMatches = $_SESSION[‘csrf’] == $_POST[‘csrf’];

if ($isAuthenticated && $csrfMatches)
    payTo($_POST[‘user_id’]);


$_SESSION[‘csrf’] = bin2hex(random_bytes(16));
```

Directory Traversal

Directory Traversal

```
https://example.com?download=../../../etc/passwd
```

demo

Security issues

Sensitive data exposure

Sensitive data exposure

```
$password = md5(`APm9FK7Yn`);
```

demo

Tabnabbing

Tabnabbing

```
<a href=”example.com” target=”_blank”>
```

Tabnabbing

```
window.opener.location = “https://phish.example.com”;
```

Tabnabbing

```
<a href=”example.com” target=”_blank” rel=”noopener”>
```

Security misconfigurations

Security misconfigurations

```
apt-get install mongodb

service mongod start
```

XML External Entities (XXE)

Weak authentication and session management

Using Components with known vulnerabilities

Best practices

Question

What’s most important?

… in web security

Best practices

Everything is user input

form data, files, headers

Best practices

Implement with frameworks/libraries if possible

basic security out-of-the-box

Best practices

Learn about security headers

browsers will prevent many attacks in the first place

Best practices

Learn about secure configuration

or use cloud

Best practices

Learn about secure configuration

or use cloud

Best practices

Add CAPTCHA on public pages

keep that pesky robots away

Best practices

Use password manager

never reuse passwords

Best practices

Use 2FA if possible

especially on github/gitlab, etc.

Best practices

Use strong cryptography

bcrypt for passwords, SHA256 for hashing

Best practices

Make a plan what to do in case of security attack

you'll be hacked if successful

Sources

https://github.com/intraworlds/workshop-web-security

https://facebook.com/intraworldscz/