



Web hacks of 2007 and how to protect your web applications in 2008 with OWASP

Sebastien Deleersnyder, BeLux Chapter Board

Mar, 2008

OWASP
BeLux
Chapter

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The OWASP Foundation
<http://www.owasp.org>

Seba?

- Developer + Security = AppSec Consultant
- Started OWASP Belgium Chapter
- OWASP Board Member
- Work @ Telindus

Agenda

- OWASP
- Web hacks 2007
- What to do?
- BeLux chapter

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- Web hacks 2007
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OWASP

- The Open Web Application Security Project (OWASP)
- International not-for-profit charitable Open Source organization funded primarily by volunteers time, OWASP Memberships, and OWASP Conference fees
- Participation in OWASP is free and open to all

OWASP Mission

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



OWASP?

- Provide free resources to the community
 - ▶ Publications, Articles, Standards
 - ▶ Testing and Training Software
 - ▶ Local Chapters & Mailing Lists
- Dual license model:
 - ▶ Open Source Licenses
 - ▶ Commercial License for Members

Welcome to OWASP
the free and open application security community

Home
News
Projects
Downloads
Local Chapters
Conferences
Presentations
Video
Papers
Mailing Lists
About OWASP
Membership

- Guide
- Top Ten
- WebGoat
- CLASP
- WebScarab
- Contracting
- Testing
- Code Review
- More...

Statistics - Recent Changes

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.

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The OWASP mail list...

[Get Started](#)
Find out more...

[Contact OWASP](#)
owasp@owasp.org

[Become a Member](#)
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. 16-18

The Open Web Application Security Project

AppSec Seattle Conference

Join us for our 5th AppSec Conference October 16-18 in Seattle. Microsoft's Michael Howard will be giving the keynote and you'll hear presentations on topics like Web Services Security, PCI status, Securing AJAX, the Microsoft Secure Development Lifecycle, all the new OWASP projects, and much more. Check the full [agenda](#) on the website.

OWASP is a not-for-profit, and the OWASP AppSec Conference incredible bargain (\$450, \$400 for OWASP members, and \$250 for students). You can attend one of 3 full-day training sessions on the 16th, and the main conference is two full days of presentations, panels and discussion on the 17th and 18th. You can read all the [details](#) then [register](#) online.

OWASP Community (add)

Go Search

What links here

Agenda

- OWASP
- **Web hacks 2007**
- What to do?
- BeLux chapter

Key Application Security Vulnerabilities



OWASP

The Open Web Application Security Project
<http://www.owasp.org>

www.owasp.org/index.php?title=Top_10_2007

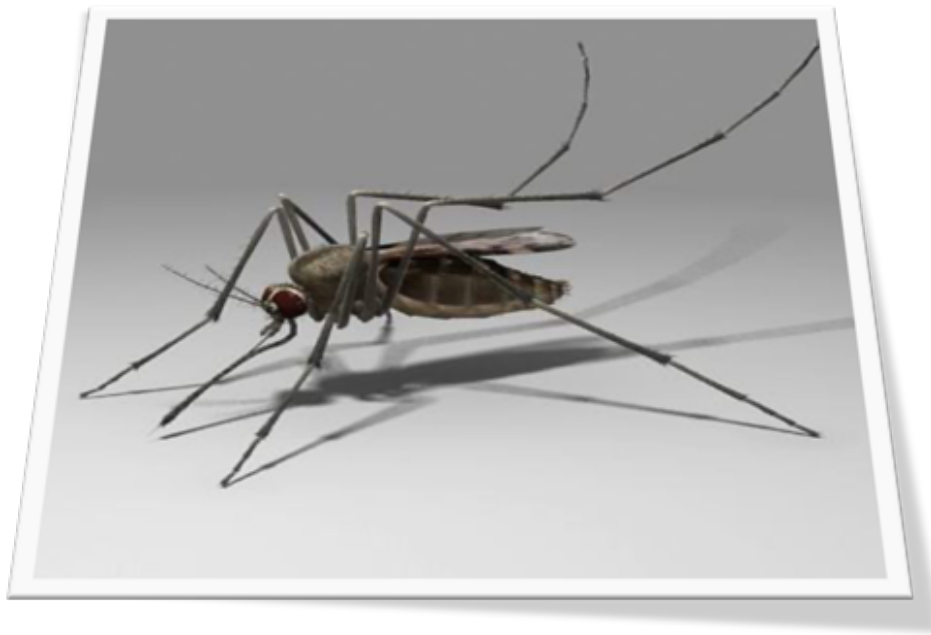


Top Ten Web Hacks 2007

1. XSS Vulnerabilities in Common Shockwave Flash Files
2. Universal XSS in Adobe's Acrobat Reader Plugin
3. Firefox's JAR: Protocol issues
4. Cross-Site Printing (Printer Spamming)
5. Hiding JS in Valid Images
6. Firefoxurl URI Handler Flaw
7. Anti-DNS Pinning (DNS Rebinding)
8. Google GMail E-mail Hijack Technique
9. PDF XSS Can Compromise Your Machine
10. Port Scan without JavaScript

Honorable Mention: Microsoft ASP.NET Request Validation Bypass Vulnerability (POC)

Public Health Warning



- XSS and CSRF have evolved
- Any website you visit could infect your browser
- An infected browser can do anything you can do
- An infected browser can scan, infect, spread
- 70-90% of web applications are 'carriers'

Examples

- Nov-07: IndiaTimes.com Visitors Risk High Exposure To Malware
 - ▶ “an entire cocktail of downloader Trojans and dropper Trojans” **434** malicious files (including scripts, binaries, cookies, and images)
- Of the sites hosing malware in 2007, 51% were legitimate sites that have been broken into (*)

(*) survey by WebSense

Recent Mass Web Attacks

- Mar-6: more than 101,000 Google search results that appeared to lead to pages of legitimate sites actually directed end users to sites that attempted to install malware (Dancho Danchev)

[Search results for "photos a poil <IFRAME src=//72.232.39.252/a ...](#)

What's new on ZDNet Asia. Search All, News, Insight, Reviews, Blogs, TechGuides, Photo Gallery, Videos, Jobs, IT Library, Downloads. Go. Create alert ...

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[Search results for "pee-a-poo <IFRAME src=//72.232.39.252/a/> .html ...](#)

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[Search results for "port grimaud beachwear <IFRAME src=//72.232 ...](#)

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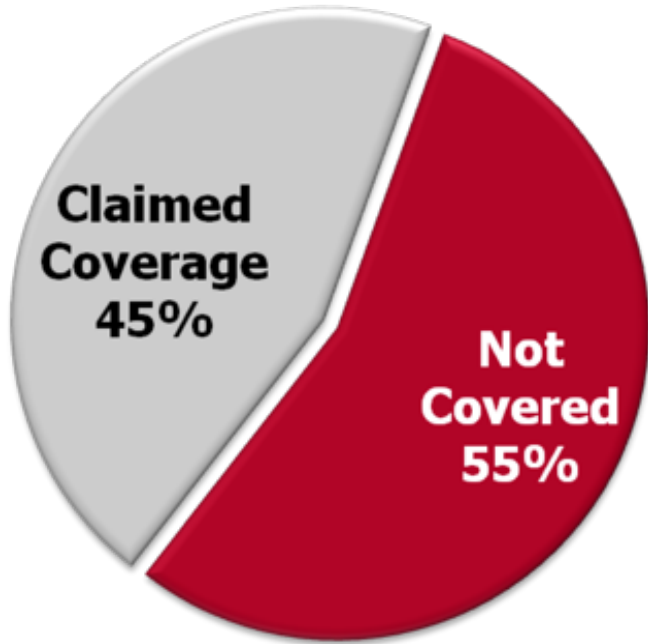
Recent Mass Web Attacks

- Mar-12: McAfee discovered 10K-20K JS-injected IFRAME web sites (majority .ASP) redirecting to malicious sites (trojans...)
- Mar-13: McAfee discovered 200K SQLi and XSS-injected phpBB web sites redirecting to malicious sites (exe downloads...)

Agenda

- OWASP
- Web hacks 2007
- **What to do?**
- BeLux chapter

Tools – At Best 45%

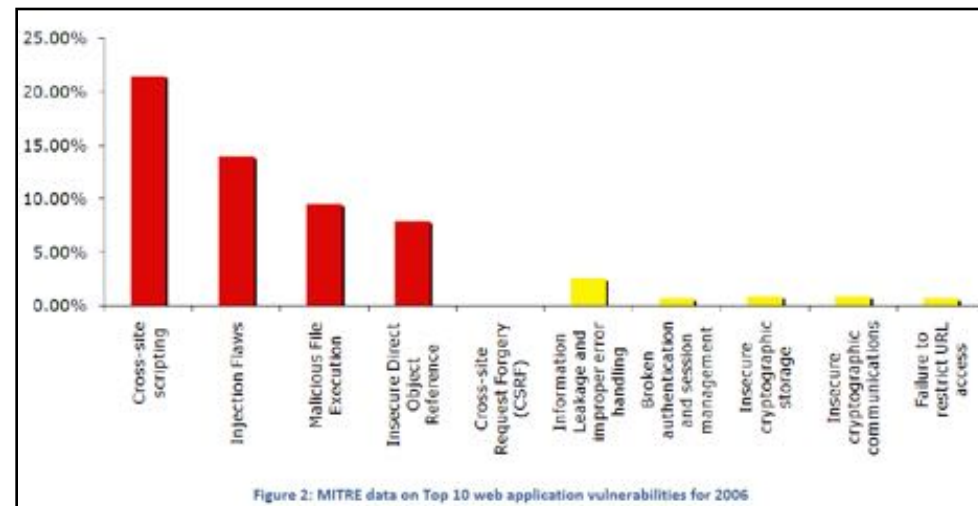
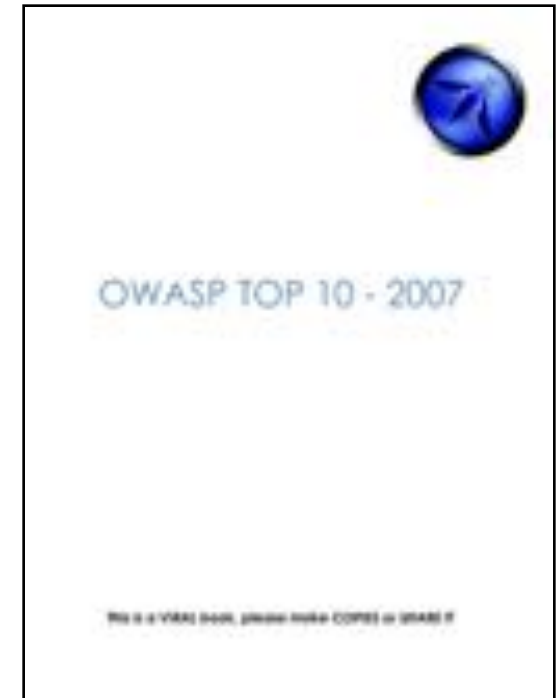


- MITRE found that all application security tool vendors' claims put together cover only 45% of the known vulnerability types (over 600 in CWE)
- They found very little overlap between tools, so to get 45% you need them all (assuming their claims are true)



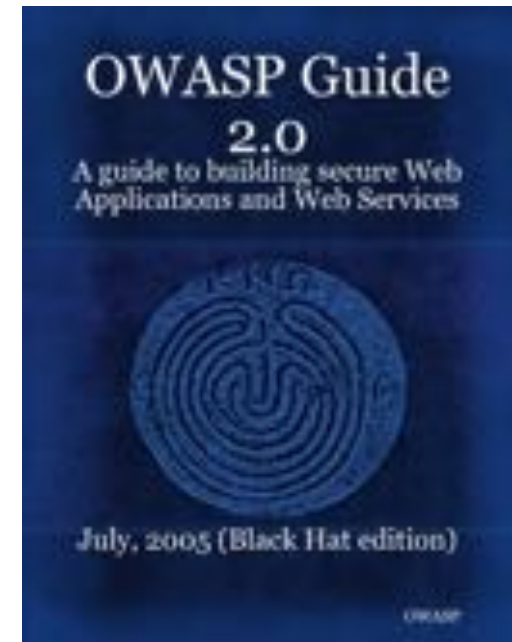
the OWASP Top Ten

- ▶ Awareness tool
- ▶ Educate developers, designers, architects and organizations
- ▶ Tip of the iceberg
- ▶ Vulnerability / verification / Protection



the OWASP Guide

- 1 Frontispiece
- 2 About The Open Web Application Security Project
- 3 Introduction
- 4 What are web applications?
- 5 Policy Frameworks
- 6 Secure Coding Principles
- 7 Threat Risk Modeling
- 8 Handling E-Commerce Payments
- 9 Phishing
- 10 Web Services
- 11 Ajax and Other "Rich" Interface Technologies
- 12 Guide to Authentication
- 13 Guide to Authorization
- 14 Session Management
- 15 Data Validation
- 16 Interpreter Injection
- 17 Canonicalization, locale and Unicode
- 18 Error Handling, Auditing and Logging
- 19 File System
- 20 Distributed Computing
- 21 Buffer Overflows
- 22 Administrative Interface
- 23 Guide to Cryptography
- 24 Configuration
- 25 Software Quality Assurance
- 26 Deployment
- 27 Maintenance
- 28 GNU Free Documentation License
- 29 Reference



OWASP WebGoat

Bypass a Path Based Access Control Scheme - Microsoft Internet Explorer

http://localhost:WebGoat/attack?Screen=5&menu=210

Logout

Bypass a Path Based Access Control Scheme

OWASP WebGoat V5.1

Home Show Params Show Cookies Show Logs Show Solution Lesson Plans

Admin Functions

Restart this Lesson

General

Code Quality

Concurrency

Unvalidated Parameters

Access Control Flaws

Using an Access Control Matrix

Bypass a Path Based Access Control Scheme

LAB: Role Based Access Control

Stage 1: Access Control

Stage 2: Access Control

Stage 3: Access Control

Stage 4: Access Control

Stage 5: Access Control

Sanitize Admin Access

Authentication Flaws

Session Management Flaws

Cross-Site Scripting (XSS)

Buffer Overflows

Injection Flaws

Improper Error Handling

Insecure Storage

Denial of Service

Insecure Configuration

Web Services

The 'guest' user has access to all the files in the lesson_plans directory. Try to break the access control mechanism and access a resource that is not in the listed directory. After selecting a file to view, WebGoat will report if access to the file was granted. An interesting file to try and obtain might be a file like tomcat/conf/tomcat-users.xml

Current Directory is: C:\WebGoat-5.1\tomcat\webapps\WebGoat\lesson_plans

Choose the file to view:

- AccessControlMatrix.html
- BackDoors.html
- BasicAuthentication.html
- BlindSqlInjection.html
- BufferOverflow.html
- ChallengeScreen.html
- ClientSideFiltering.html
- ClientSideValidation.html
- CommandInjection.html
- ConcurrencyCart.html
- CrossSiteScripting.html
- CSRF.html
- DangerousEval.html
- DBCrossSiteScripting.html
- DBSQLInjection.html

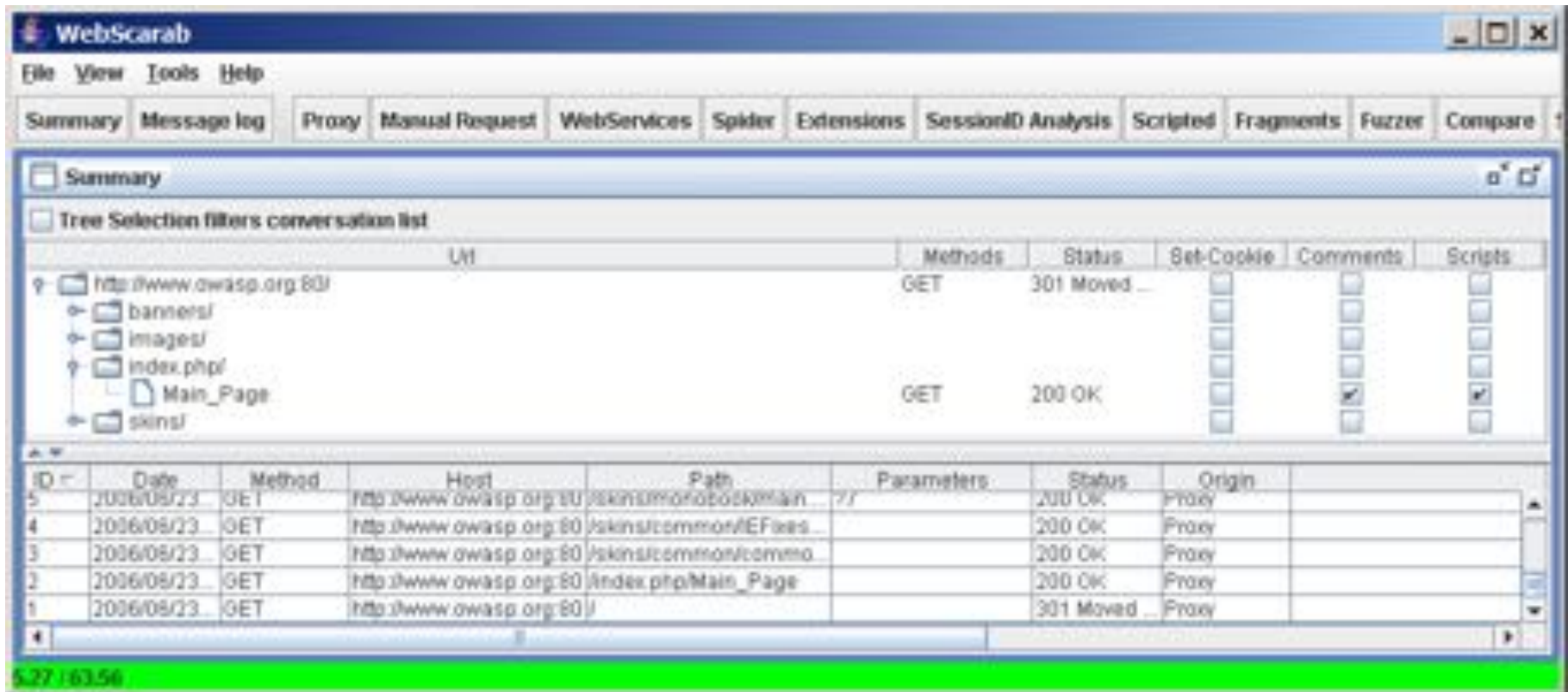
View File

Viewing file: C:\WebGoat-5.1\tomcat\webapps\WebGoat\lesson_plans

Local intranet



OWASP WebScarab



The screenshot displays the OWASP WebScarab application window. The title bar reads "WebScarab". The menu bar includes "File", "View", "Tools", and "Help". Below the menu bar is a toolbar with buttons for "Summary", "Message log", "Proxy", "Manual Request", "WebServices", "Spider", "Extensions", "SessionID Analysis", "Scripted", "Fragments", "Fuzzer", and "Compare".

The main interface is divided into two sections. The top section, titled "Summary", contains a tree view of the website structure. The tree shows the following items:

- http://www.owasp.org/80/ (Method: GET, Status: 301 Moved...)
- ├── banners/
- ├── images/
- ├── index.php/ (Method: GET, Status: 200 OK)
- │ └── Main_Page
- └── skins/

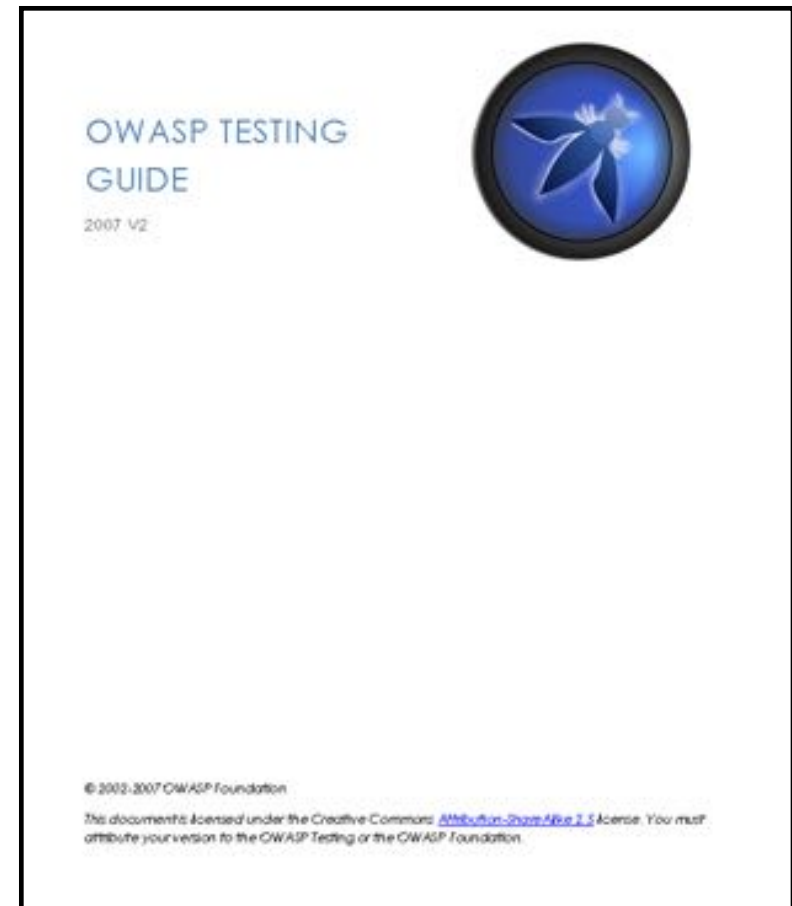
The bottom section is a table of HTTP requests. The table has the following columns: ID, Date, Method, Host, Path, Parameters, Status, and Origin.

ID	Date	Method	Host	Path	Parameters	Status	Origin
5	2006/08/23	GET	http://www.owasp.org/80	/skins/monorobot/oman...	??	200 OK	Proxy
4	2006/08/23	GET	http://www.owasp.org/80	/skins/common/EFiles...		200 OK	Proxy
3	2006/08/23	GET	http://www.owasp.org/80	/skins/common/commo...		200 OK	Proxy
2	2006/08/23	GET	http://www.owasp.org/80	/index.php/Main_Page		200 OK	Proxy
1	2006/08/23	GET	http://www.owasp.org/80	/		301 Moved ...	Proxy

The status bar at the bottom left shows "5.27 / 63.56".

Testing Guide v2: Index

- 1. Frontispiece**
 - 2. Introduction**
 - 3. The OWASP Testing Framework**
 - 4. Web Application Penetration Testing**
 - 5. Writing Reports: value the real risk**
- Appendix A: Testing Tools**
- Appendix B: Suggested Reading**
- Appendix C: Fuzz Vectors**



Testing Model

- 8 test sub-categories (for a total amount of 48 controls):
 - ▶ Information Gathering
 - ▶ Business logic testing
 - ▶ Authentication Testing
 - ▶ Session Management Testing
 - ▶ Data Validation Testing
 - ▶ Denial of Service Testing
 - ▶ Web Services Testing
 - ▶ AJAX Testing

How the Guide helps the security industry

Pen-testers

- ✓ A structured approach to the testing activities
- ✓ A checklist to be followed
- ✓ A learning and training tool

Organisations

- ✓ A tool to understand web vulnerabilities and their impact
- ✓ A way to check the quality of the penetration tests they buy

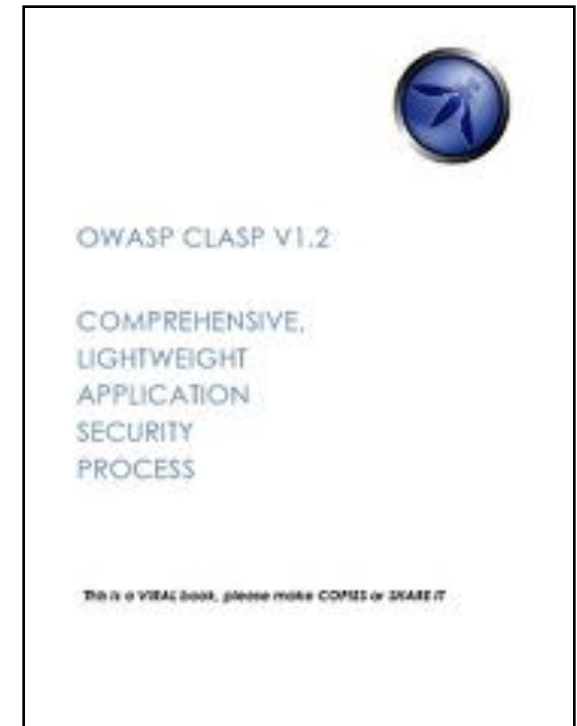
More in general, the Guide aims to provide a pen-testing standard that creates a 'common ground' between the pen-testing industry and its client.

This will raise the overall quality and understanding of this kind of activity and therefore the general level of security in our infrastructures

OWASP CLASP

■ Comprehensive, Lightweight Application Security Process

- ▶ Prescriptive and Proactive
- ▶ Centered around 7 AppSec Best Practices
- ▶ Cover the entire software lifecycle (not just development)



- Adaptable to any development process
 - CLASP defines roles across the SDLC
 - 24 role-based process components
 - Start small and dial-in to your needs

The CLASP Best Practices

1. Institute awareness programs
2. Perform application assessments
3. Capture security requirements
4. Implement secure development practices
5. Build vulnerability remediation procedures
6. Define and monitor metrics
7. Publish operational security guidelines

Want More ?

- OWASP .NET Project
- OWASP ASDR Project
- OWASP AntiSamy Project
- OWASP AppSec FAQ Project
- OWASP Application Security Assessment Standards Project
- OWASP Application Security Metrics Project
- OWASP Application Security Requirements Project
- OWASP CAL9000 Project
- OWASP CLASP Project
- OWASP CSRFGuard Project
- OWASP CSRFTester Project
- OWASP Career Development Project
- OWASP Certification Criteria Project
- OWASP Certification Project
- OWASP Code Review Project
- OWASP Communications Project O cont.
- OWASP DirBuster Project
- OWASP Education Project
- OWASP Encoding Project
- OWASP Enterprise Security API
- OWASP Flash Security Project
- OWASP Guide Project
- OWASP Honeycomb Project
- OWASP Insecure Web App Project
- OWASP Interceptor Project
- OWASP JBroFuzz
- OWASP Java Project
- OWASP LAPSE Project
- OWASP Legal Project
- OWASP Live CD Project
- OWASP Logging Project
- OWASP Orizon Project
- OWASP PHP Project O cont.
- OWASP Pantera Web Assessment Studio Project
- OWASP SASAP Project
- OWASP SQLiX Project
- OWASP SWAAT Project
- OWASP Sprajax Project
- OWASP Testing Project
- OWASP Tools Project
- OWASP Top Ten Project
- OWASP Validation Project
- OWASP WASS Project
- OWASP WSFuzzer Project
- OWASP Web Services Security Project
- OWASP WebGoat Project
- OWASP WebScarab Project
- OWASP XML Security Gateway Evaluation Criteria Project
- OWASP on the Move Project

Agenda

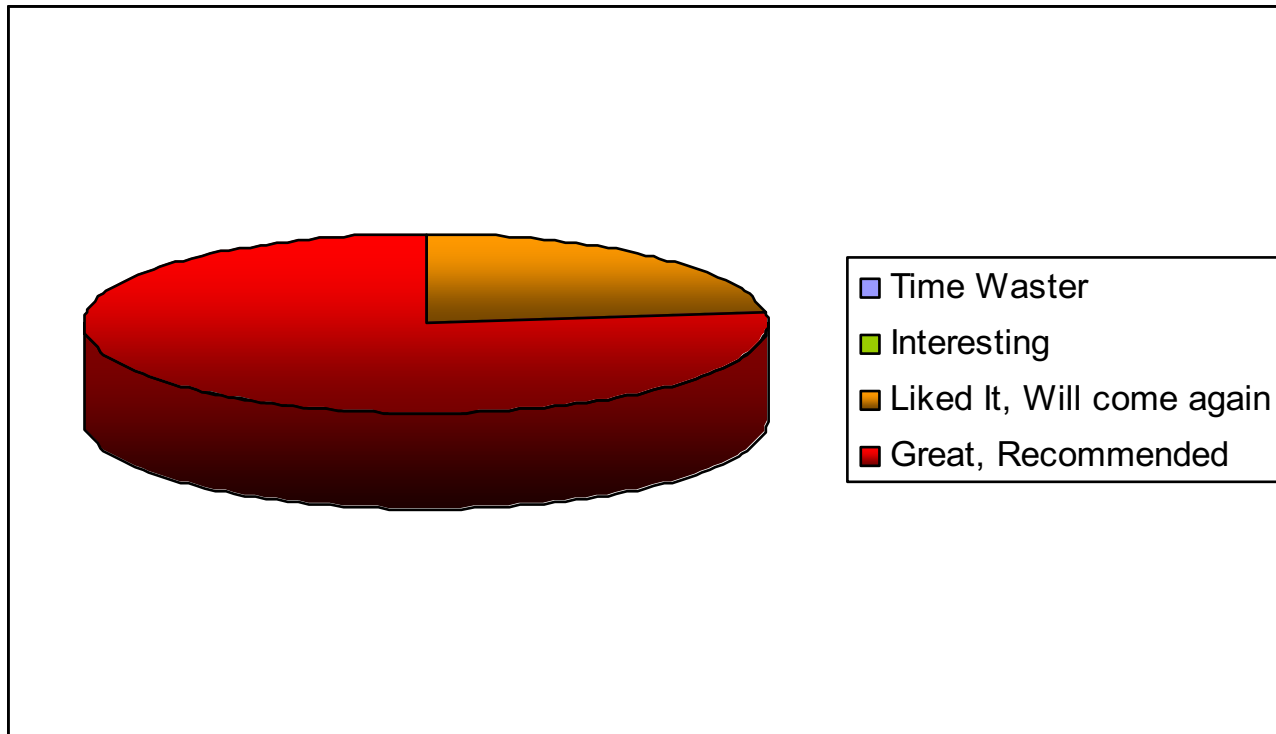
- OWASP
- Web hacks 2007
- What to do?
- **BeLux chapter**

BeLux Chapter - What do we have to offer?

- Meetings (Be:4, Lux:2 per year)
- Local Mailing List
- Presentations & Groups
- Open forum for discussion
- Meet fellow InfoSec professionals
- Create (Web)AppSec awareness in Belgium & Luxembourg
- Local projects?

Poll 2007 Q4: What is your opinion of the 2007 Owasp events?

- a) A waste of time
- b) Somewhat interesting, but I will not come anymore
- c) I liked it, and will maybe come to some chapter meetings next year
- d) Great! I would recommend it to everybody implicated or interested in (Web)AppSec



OWASP EU08

- Ghent (Aula) – May 19-22, 2008
- Refereed papers track, Vendor Expo, CTF
- Two day tutorials – two day conference
- Sneak preview
 - ▶ Keynotes: Mark Curphey, Gary McGraw, Dieter Gollmann
 - ▶ Topics by: Dinis Cruz, Ivan Ristic, Brian Chess, pdp, ... and many more

That's it...

■ Any Questions?

<http://www.owasp.org/index.php/Belgium>

<http://www.owasp.org/index.php/Luxembourg>

seba@owasp.org

Thank you!

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- Contribute to discussions!

