# 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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# 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

# www.owasp.org

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WebGoat
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More...

Statistics · Recent Changes

## Welcome to OWASP

the free and open application security community

About · Searching · Editing · New Article · OWASP Categories

### 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! 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-

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 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 fo 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)

# Agenda

- OWASP
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- What to do?
- BeLux chapter

# Key Application Security Vulnerabilities

- A1: Cross Site Scripting (XSS)
- A2: Injection Flaws
- A3: Malicious File Execution
- A4: Insecure Direct Object Reference
- A5: Cross Site Request Forgery (CSRF)
- A6: Information Leakage and Improper Error Handling
- A7: Broken Authentication and Session Management
- A8: Insecure Cryptographic Storage
- A9: Insecure Communications
- A10: Failure to Restrict URL Access

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)

**Blog poll Jeremiah Grossman (WhiteHatSec)**

# Public Health Warning

- XSS and CSRF have evolved
- Any website you visit could infect your browser
- An infected browser can do <u>anything</u> 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% where 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 ...
www.zdnetasia.com/search/results.htm?query=photos+a+poil+%3CIFRAME%20src=//72.232.39.252/a/%3E.html - 43k - 17 hours ago - Cached - Similar pages

Search results for "pictures of a gorila <IFRAME src=//72.232 ...
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Search results for "picture of a bintrong <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…)

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- OWASP
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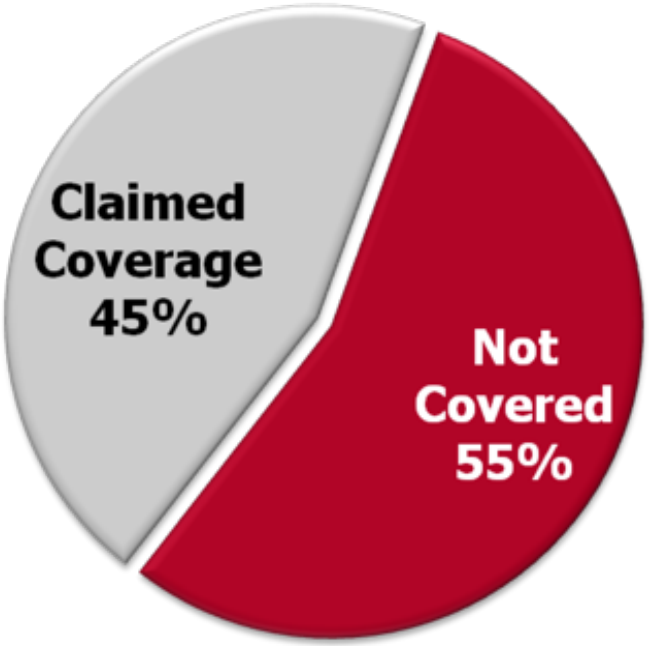
# Tools – At Best 45%




- 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

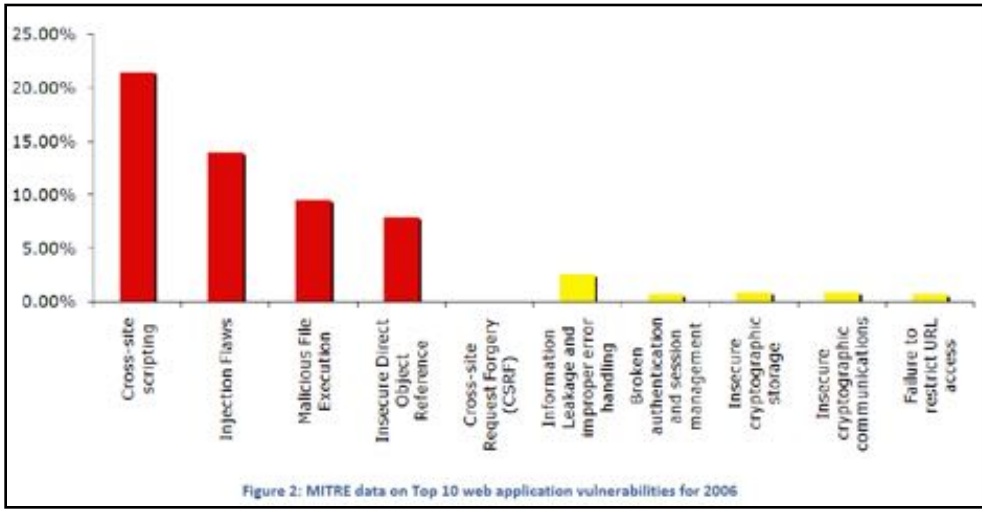
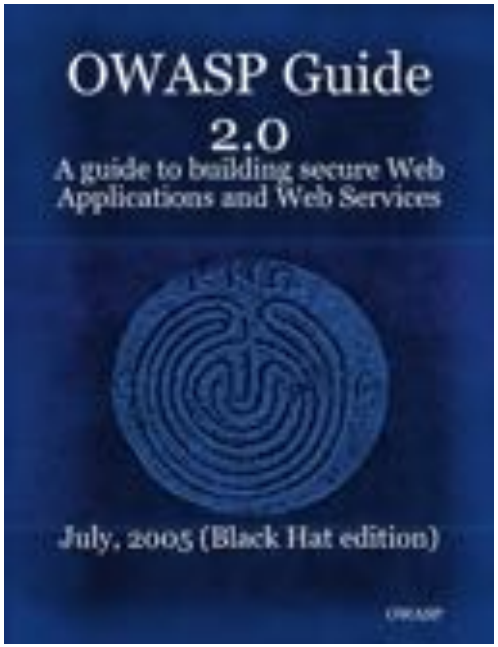



Figure 2: MITRE data on Top 10 web application vulnerabilities for 2006

# the OWASP Guide

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- 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
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# OWASP WebGoat

Bypass a Path Based Access Control Scheme - Microsoft Internet Explorer

Logout

Bypass a Path Based Access Control Scheme

OWASP WebGoat V5.1

Hints | Show Params | Show Cookies | Show Java | Show Solution | Lesson Plans

Restart this Lesson

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:

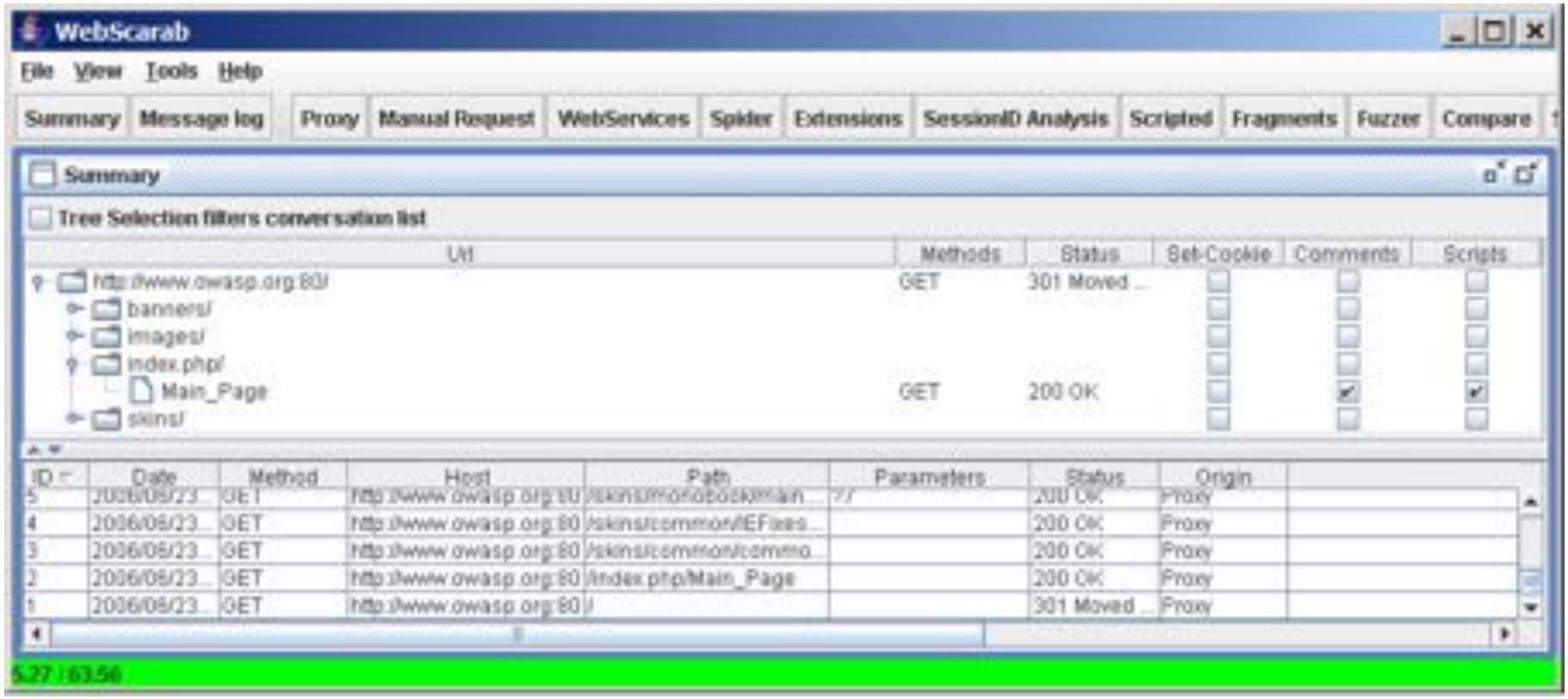
AccessControlMatrix.html
BackDoors.html
BasicAuthentication.html
BlindSqlInjection.html
BufferOverflow.html
ChallengeScreen.html
ClientSideFiltering.html
ClientSideValidation.html
CommandInjection.html
ConcurrencyCart.html
CrossSiteScripting.html
CSRF.html
DangerousEval.html
DBCrossSiteScripting.html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

View File

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

Local intranet

# OWASP WebScarab



# 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

OWASP TESTING
GUIDE
2007 V2

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# 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**

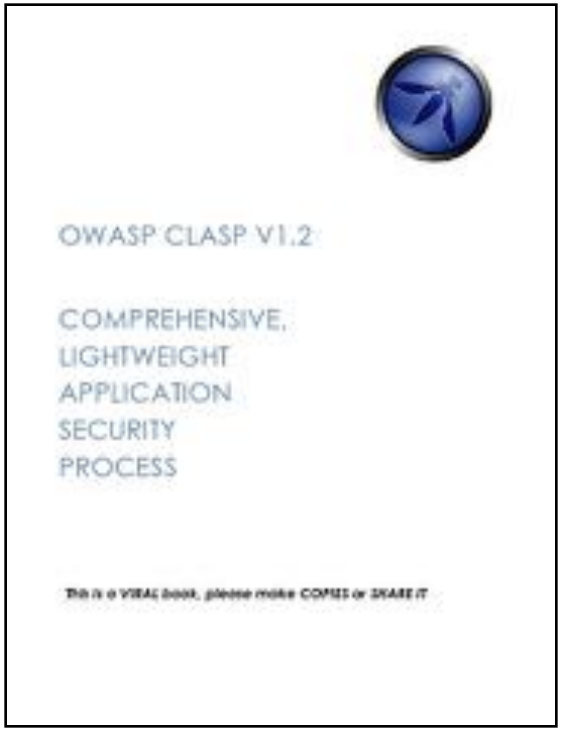
- ✓ A tool to understand web vulnerabilities and their impact
- ✓ A way to check the quality of the penetration tests they buy

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 & Luxemburg
- Local projects?

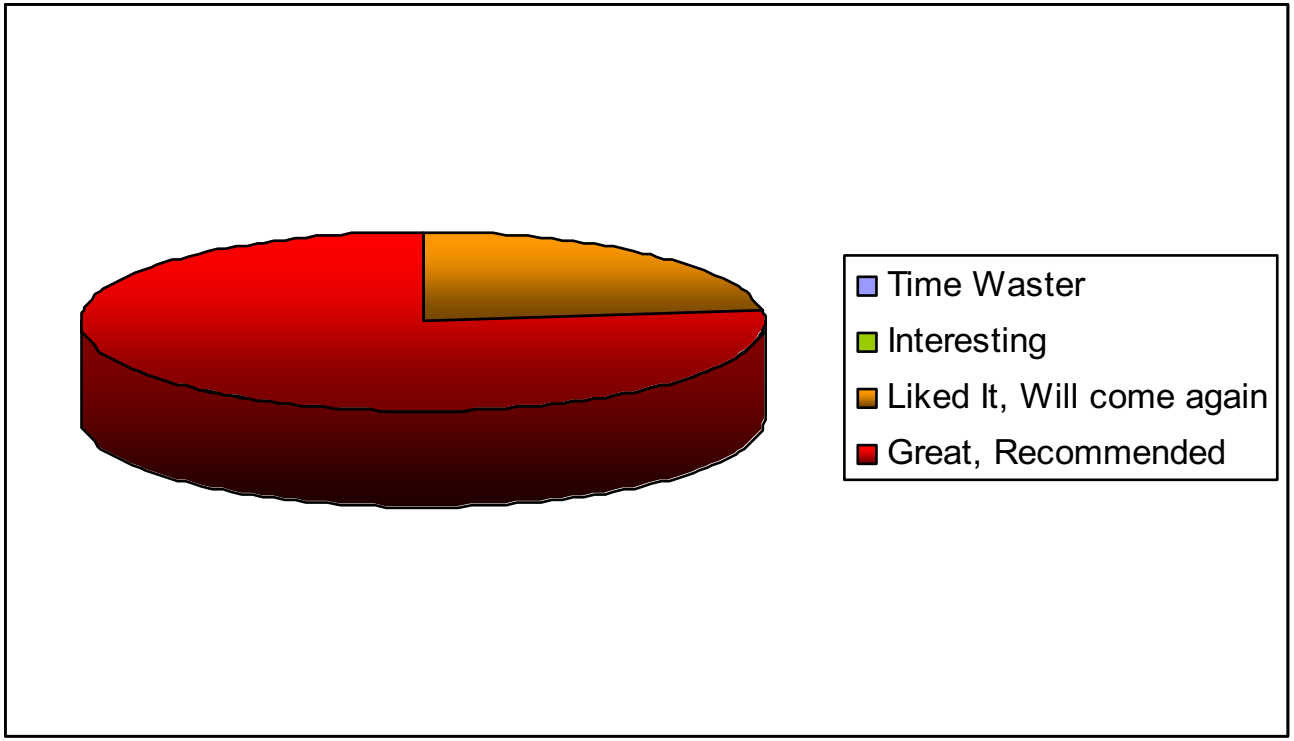
# Poll 2007 Q4: What is your opinion of the 2007 Owasp events?

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!**

# Subscribe to BeLux Chapter mailing list

- Post your (Web)AppSec questions
- Keep up to date!
- BE LinkedIn Group
- Get monthly newsletters
- Contribute to discussions!