



# Automated Web Foo or FUD?

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<http://www.nta-monitor.com>



# GNUCITIZEN



# About DK

- Check Team Leader with UK's CESG Scheme
- Senior Security Analyst for a leading penetration testing company in the UK
- Works in both government and commercial sectors
- Core member of GNUCITIZEN group
- Developed a number of open source security tools (i.e. ASP-Auditor, TSF)
- Founder of BlogSecurity, michaeldaw.org and primary developer of wp-scanner
- Credited on several major web application vulnerability findings
- Research featured on Slashdot, eWeek, SecurityFocus and others



# Review

- Current Threats and the Attack Renaissance.
- Insight into the effectiveness of automated tools.
- Test less vs test all debate.
- Hybrid testing with the Technika Security Framework.

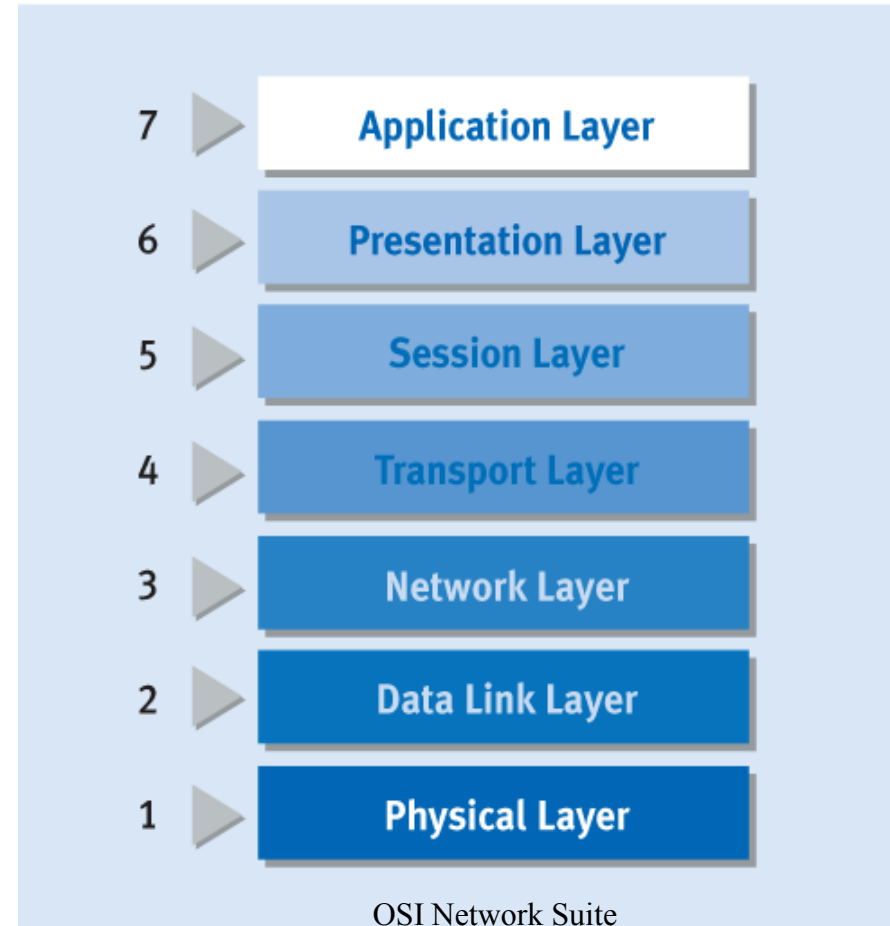
# Goals

1. Basic understanding of how automated security testing tools are constructed.
3. A greater awareness of the challenges that lie ahead with automated web application tools.
5. An introduction into browser scripting and the Technika Security Framework.
7. A better understanding of how security testing companies approach web application testing.
9. Some suggestions to improve the quality of web application tests.



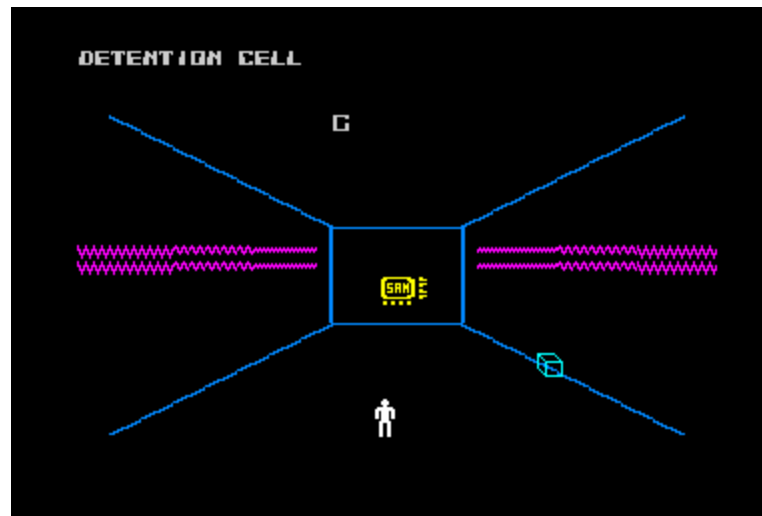
# Current Threats

- Gartner Group says 90% of web applications have serious vulnerabilities.
- Symantec says 78% of attacks are at the web application level.
- Mitre last year stated that application-level attacks, such as XSS and SQLI, are replacing buffer overflows as the favourite hacker initiative.



# Attack Renaissance

- Traditional vulnerabilities target the server
- New age attacks target the client - XSS as the catalyst



# Find Less vs Find All

## Find all approach

- Try locate and report all vulnerabilities

## Find less approach

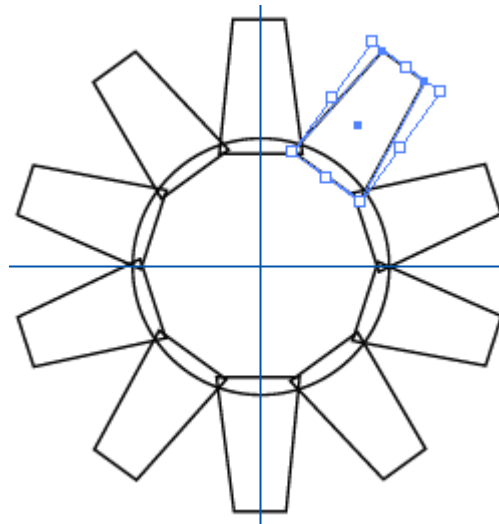
- Locate less and report the cause of the problem





# Simple Automation

Target & Virtual Hosts > Spider & Locate > Sort  
&Unique > Identify > Test > Result > Report



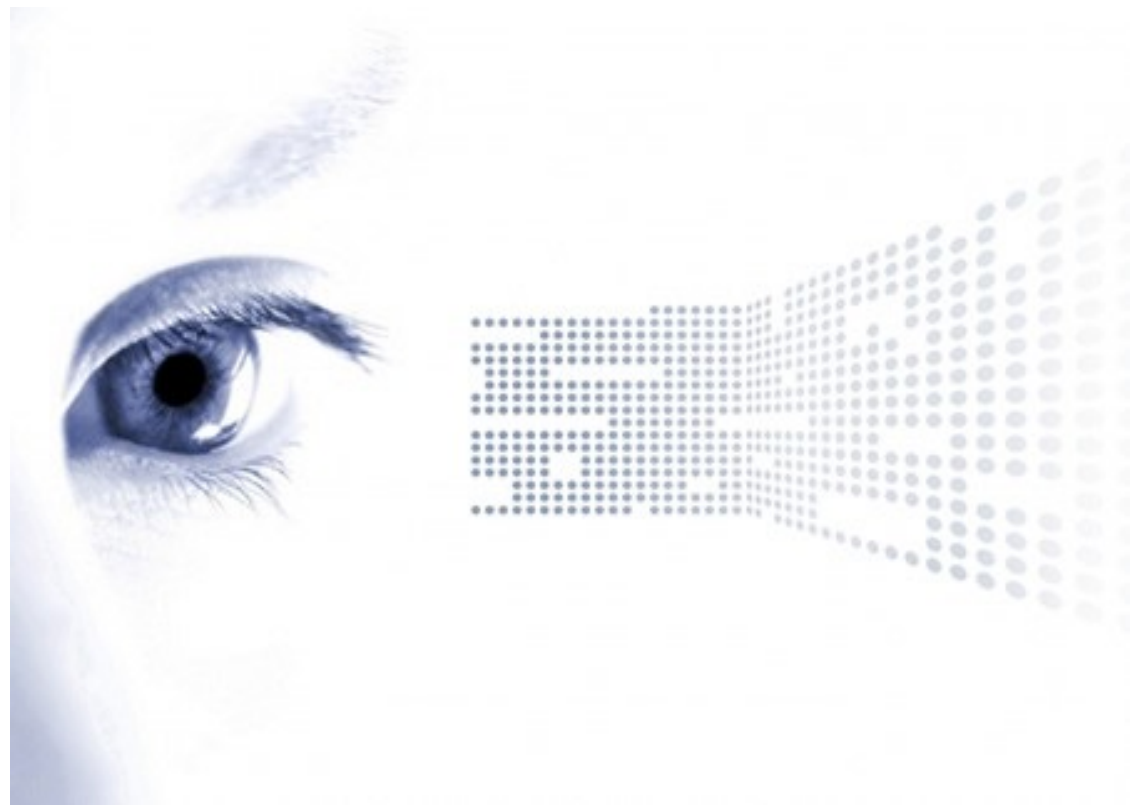
# Auto Limitations “find all”

- Script Parsing
- Business and/or application logic
- False Negatives/Positives
- Non-RFC applications
- State or flow
- Challenge-Response
- Cost
- Custom URLs
- Training
- Denial of Service risks



# Manual Limitations "Find less approach"

- Time
- Emotional stability
- Skill level
- Find less approach



# The Auto-Worth Model

$$(F + BA + T) * R = AW$$

Flow (state)

Business/Application Logic

Technology (i.e. Flash)

Role of web application



# A Couple Suggestions

- Define clearly the purpose and role of the application to be tested
- Use the Auto-Worth Model as a base
- Manual security testers should follow a testing procedure
- A hybrid approach may be best



# Technika

Automated Browser Exploitation Tool  
and  
Browser Scripting Tool



## Technika – Write Script

- ❑ *Snippet from tech.store for persistent storage*

```
tech.store.pop = function(_sarray, key) {  
  
    var _l = _sarray.length;  
  
    for (i=0; i<_l; i++) {  
        var _key = key + i;  
        sessionStorage.removeItem(_key, _sarray[i]);  
    }  
    console.log(_sarray.length + " records removed.");  
  
};
```



# Technika – Save as bookmarklet

The screenshot shows a Mozilla Firefox browser window with the address bar set to `http://www.gnucitizen.org/projects/technika/`. The page title is "GNUCITIZEN". The Firebug console is open, showing the following JavaScript code:

```
/* type your bookmarklet */  
  
var script = document.createElement('script');  
script.src = 'http://www.gnucitizen.org/projects/attackapi/AttackAPI-standalone.js';  
script.type = 'text/javascript';script.defer = true;  
document.getElementsByTagName('head')[0].appendChild(script);  
  
/* you can dynamically test it with Firebug */
```

Below the code, there are two buttons: "Build Bookmarklet" and "Load Bookmarklet". The browser's status bar at the bottom shows "Done", "Proxy: None", "1337", and "18:03".





# Technika Security Framework

**tech.dspider** - DOM link spider; because we utilize the DOM, the results are instant.

**tech.forms** - GET/POST form parser.

**tech.mutate** - By specifying a payload and regex, we can mutate our target arrays and build tests.

**tech.scan** - tech.scan is our actual engine that will handle our GET and POST requests.

**tech.mNikto** - Mini-Nikto was named after the popular web application tool Nikto if you haven't already guessed. We called it mini-nikto as it currently only contains a very small database.

**tech.explorer** - This is one of my favorite tools in the TS framework. It uses Yahoo! AJAX API (JSON) to fetch links and perform other Google hacking type queries outside of our current DOM. This is really useful even when it is not security related.

**tech.store** - Utilizes the Firefox sessionStorage to allow us to persistently store arrays.

And much MORE!!



# Technika Security Framework

Technika demo video placeholder and tool introduction.



# Summary

1. The application layer is enemy number 1!
3. Increased attacks in the future due to the Attack Renaissance
5. Remember the Auto-Worth model in planning and even during the web application testing process.
7. The hybrid approach will almost always present the best results.
9. We hope to start developing Technika to a semi-stable state, but its definitely a project to start getting involved in.



# Credits and Refs

## Credits:

GNUCITIZEN GROUP – <http://gncitizen.org>

NTA-Monitor – <http://www.nta-monitor.com>

## Refs:

Robert Auger - <http://www.cgisecurity.com/articles/scannerchallenges.shtml>

Technika - <http://www.gncitizen.org/projects/technika/>

Technika Security Framework -

<http://www.gncitizen.org/blog/introducing-technika-security-framework/>

Jeremiah Grossman – Challenges of Web Application Testing

