Lord of the Bing

Taking Back Search Engine Hacking From Google and Bing

16 FEB 2011 – HackCon 2011 – Oslo, Norway

Presented by:
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Stach & Liu, LLC
www.stachliu.com

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Agenda

OVERVIEW

- Introduction/Background
- Advanced Attacks
  - Google/Bing Hacking
- Advanced Defenses
  - Google/Bing Hacking Alerts
- Other OSINT Attack Techniques
- Future Directions

Goals

DROP KNOWLEDGE ON YOU

- *To improve* Google Hacking
  - Attacks and defenses
  - Advanced tools and techniques
- *To think differently* about exposures in publicly available sources
- To blow your mind!

Introduction/ Background

GETTING UP TO SPEED

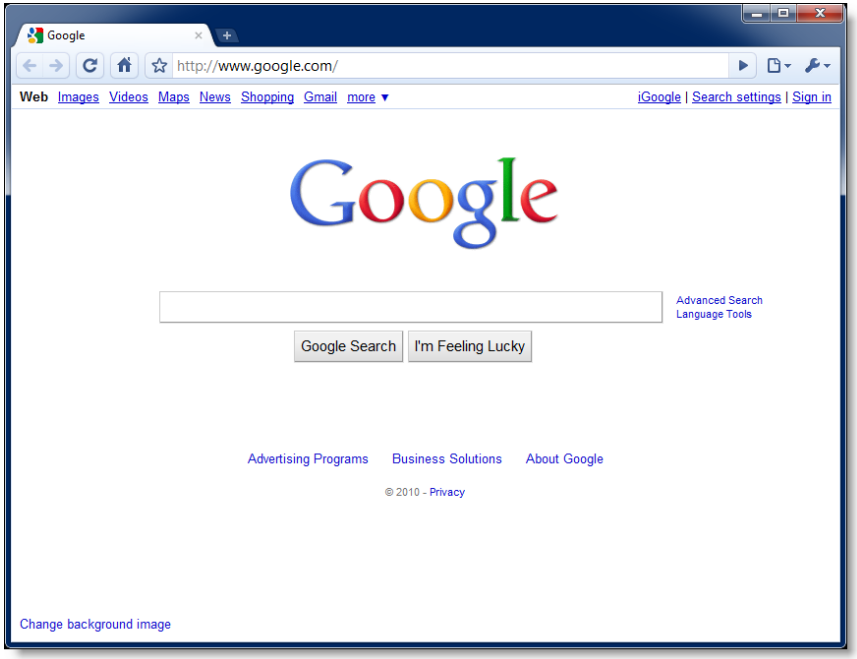
Open Source Intelligence

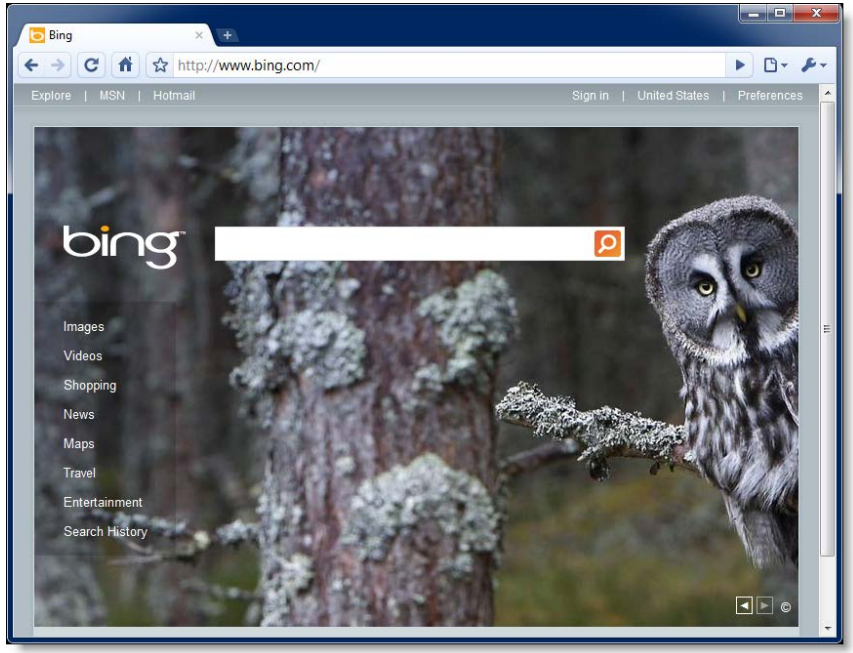
SEARCHING PUBLIC SOURCES

OSINT – is a form of intelligence collection management that involves finding, selecting, and acquiring information from *publicly available* sources and analyzing it to *produce actionable intelligence*.

Google/Bing Hacking

SEARCH ENGINE ATTACKS





Google/Bing Hacking

SEARCH ENGINE ATTACKS

Bing's source leaked!

```
class Bing {
   public static string Search(string
   query)
   {
      return Google.Search(query);
   }
}
```

Attack Targets

GOOGLE HACKING DATABASE

- Advisories and Vulnerabilities (215)
- Error Messages (58)
- Files containing juicy info (230)
- Files containing passwords (135)
- Files containing usernames (15)
- Footholds (21)
- Pages containing login portals (232)
- Pages containing network or vulnerability data (59)
- Sensitive Directories (61)
- Sensitive Online Shopping Info (9)
- Various Online Devices (201)
- Vulnerable Files (57)
- Vulnerable Servers (48)
- Web Server Detection (72)

Attack Targets

GOOGLE HACKING DATABASE

Old School Examples

- Error Messages
  - `filetype:asp  + "[ODBC SQL“`
  - `"Warning: mysql_query()" "invalid query“`
- Files containing passwords
  - `inurl:passlist.txt`

Quick History

GOOGLE HACKING RECAP

Dates	Event
2004	Google Hacking Database (GHDB) begins
May 2004	Foundstone SiteDigger v1 released
2005	Google Hacking v1 released by Johnny Long
Jan. 2005	Foundstone SiteDigger v2 released
Feb. 13, 2005	Google Hack Honeypot first release
Jan. 10, 2005	MSNPawn v1.0 released
Dec. 5, 2006	Google stops issuing Google SOAP API keys
…	…

Quick History

GOOGLE HACKING RECAP

Dates	Event
Mar. 2007	Bing disables inurl: link: and linkdomain:
Nov. 2, 2007	Google Hacking v2 released
Mar. 2008	cDc Goolag - gui tool released
Sept. 7, 2009	Google shuts down SOAP Search API
Nov. 2009	Binging tool released
Dec. 1, 2009	FoundStone SiteDigger v 3.0 released
2010	Googlag.org disappears

Advanced Attacks

WHAT YOU SHOULD KNOW

New Toolkit

STACH & LIU TOOLS

Google Diggity

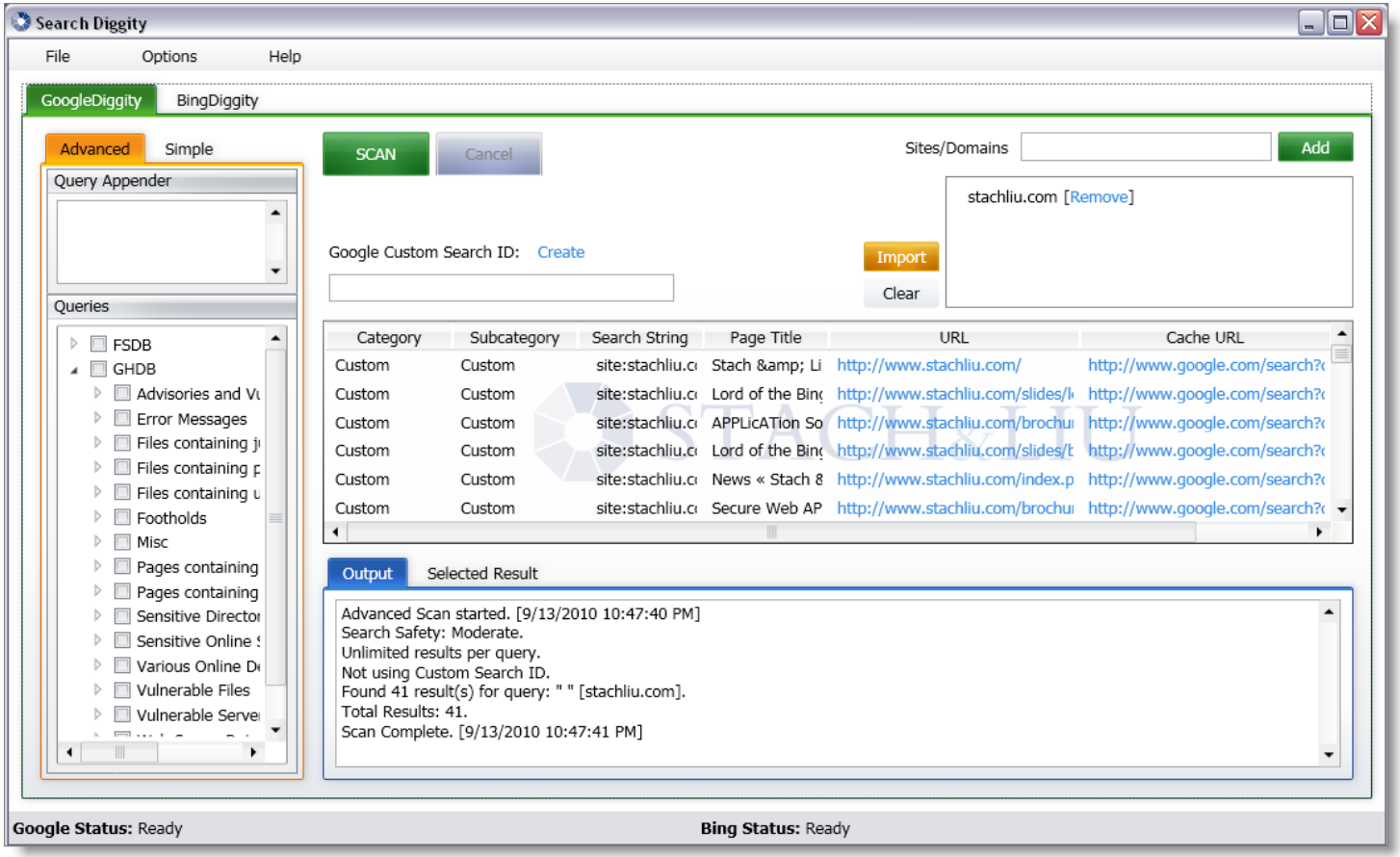
- Uses Google AJAX API
  - Not blocked by Google bot detection
  - Does not violate Terms of Service
- NEW • Can leverage Google custom search

Bing Diggity

- Uses Bing 2.0 SOAP API
- Company/Webapp Profiling
  - Enumerate: URLs, IP-to-virtual hosts, etc.
- NEW • Bing Hacking Database (BHDB)
  - Vulnerability search queries in Bing format

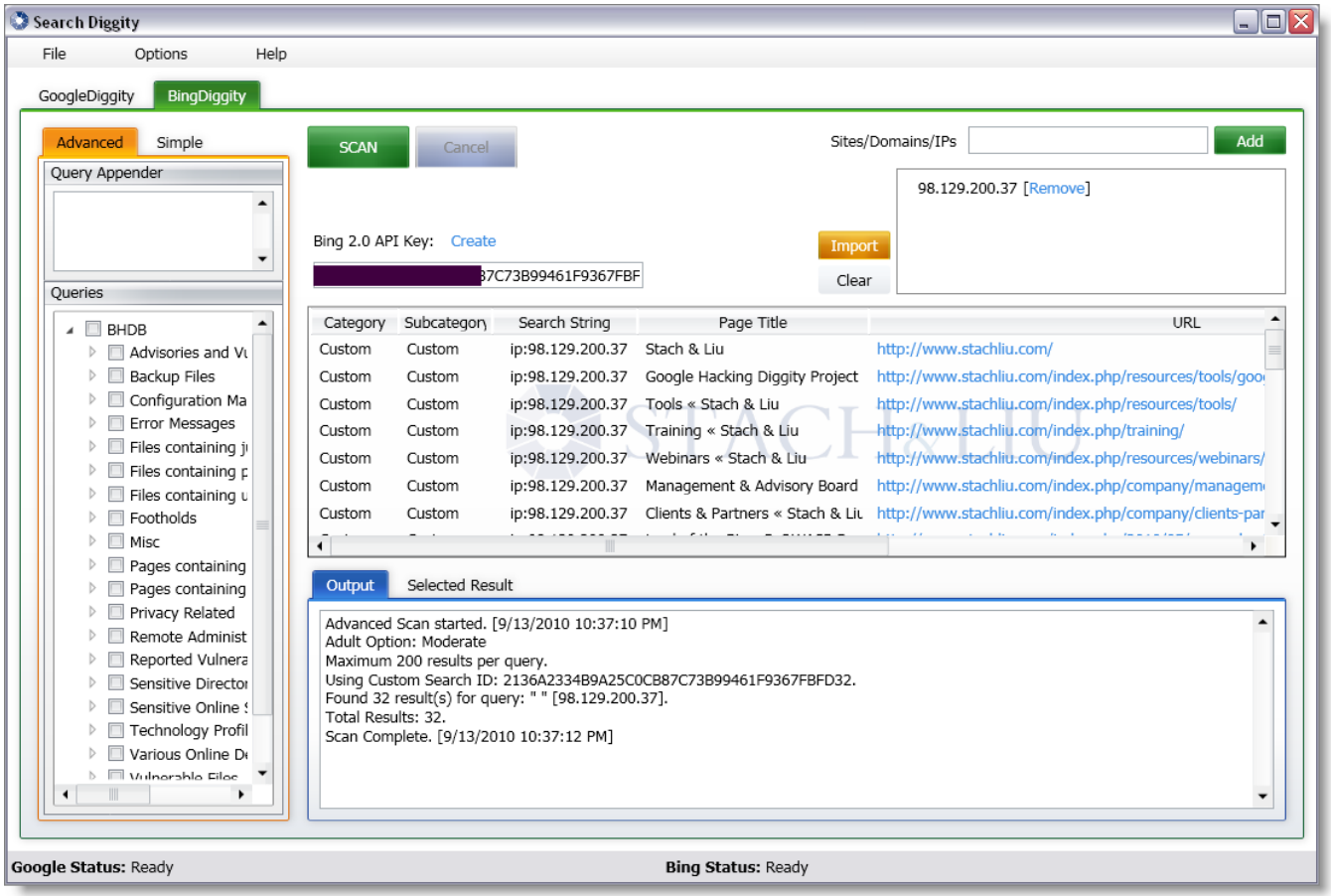
New Toolkit

GOOGLEDIGGITY



New Toolkit

BINGDIGGITY



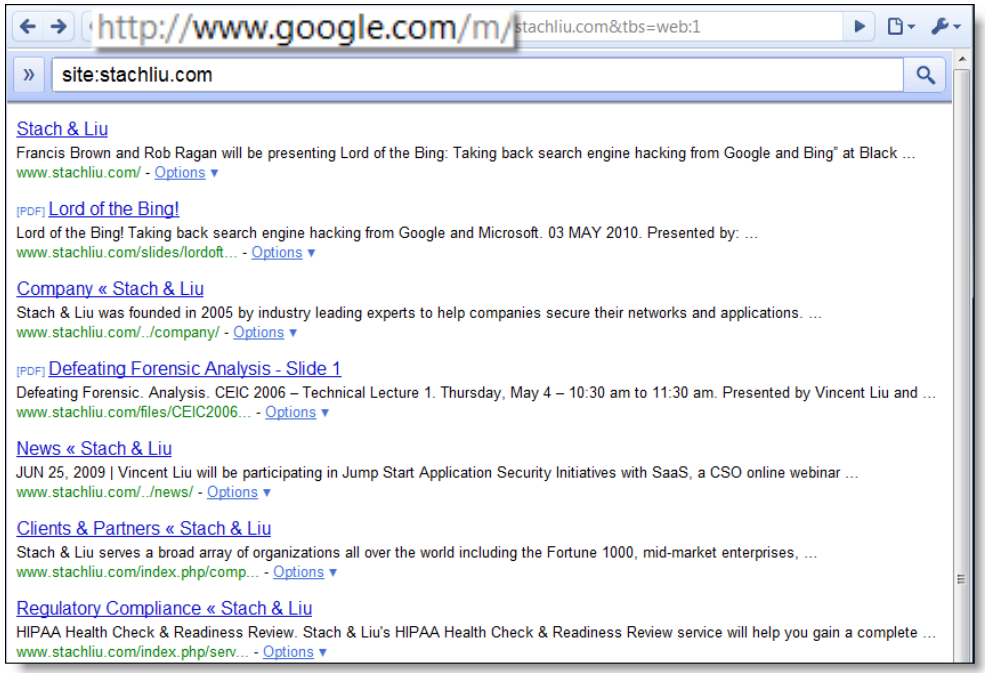
New Toolkit

STACH & LIU TOOLS

GoogleScrape Diggity

- Uses Google mobile interface
  - Light-weight, no advertisements
  - *Violates* Terms of Service
- Bot detection avoidance
  - Distributed via proxies
  - Spoofs User-agent and Referer headers
  - Random &userip= value
  - Across Google servers

COMING SOON



New Hack Databases

ATTACK QUERIES

BHDB – Bing Hacking Data Base

- First ever Bing hacking database
- Bing hacking limitations
  - Disabled inurl:, link: and linkdomain: directives in March 2007
  - No support for ext:, allintitle:, allinurl:
  - Limited filetype: functionality
    - Only 12 extensions supported

Example - Bing vulnerability search:

- GHDB query
  - `"allintitle:Netscape FastTrack Server Home Page"`
- BHDB version
  - `intitle:"Netscape FastTrack Server Home Page"`

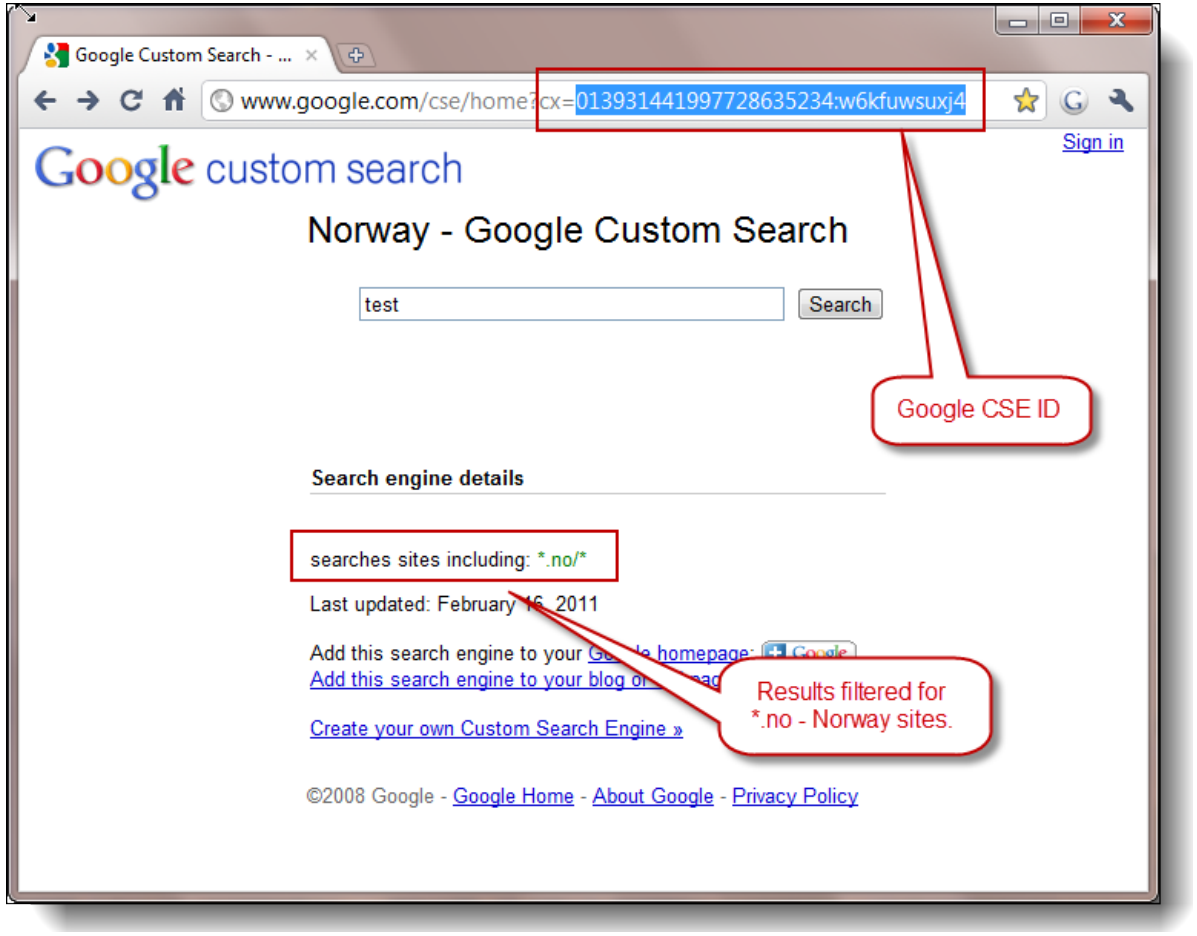
BaiduDiggity

CHINA SEARCH ENGINE

- COMING SOON!

Google Custom Search

NORWAY SEARCH ENGINE



NEW GOOGLE HACKING TOOLS

DEMO

Traditional Defenses

GOOGLE HACKING DEFENSES

- "Google Hack yourself" organization
  - Employ tools and techniques used by hackers
  - Remove info leaks from Google cache
    - Using Google Webmaster Tools
- Regularly update your robots.txt.
  - Or robots meta tags for individual page exclusion
- Data Loss Prevention/Extrusion Prevention Systems
  - Free Tools: OpenDLP, Senf
- Policy and Legal Restrictions

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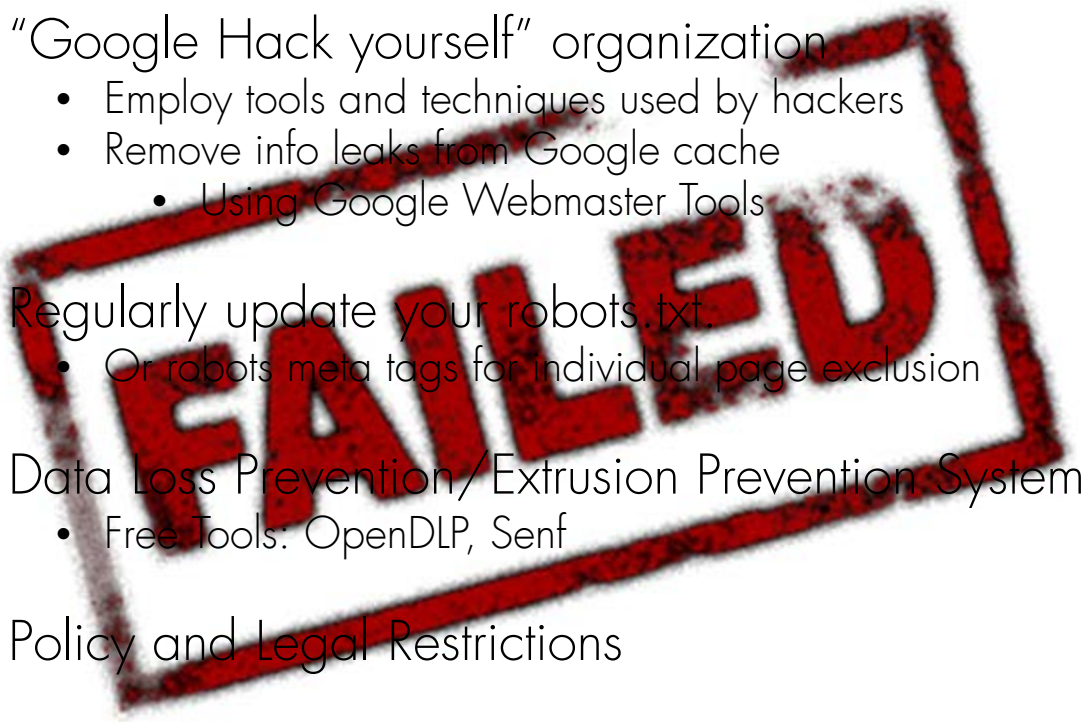


Advanced Defenses

PROTECT YO NECK

STACH&LIU

Existing Defenses

"HACK YOURSELF"

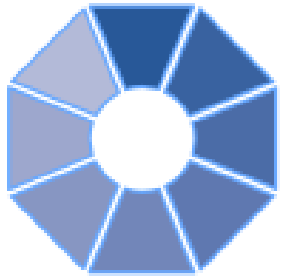
- ✓ Tools exist
- ✘ Convenient
- ✘ Real-time updates
- ✘ Multi-engine results
- ✘ Historical archived data
- ✘ Multi-domain searching

Advanced Defenses

NEW HOT SIZZLE

Stach & Liu now proudly presents:

- Google Hacking Alerts
- Bing Hacking Alerts

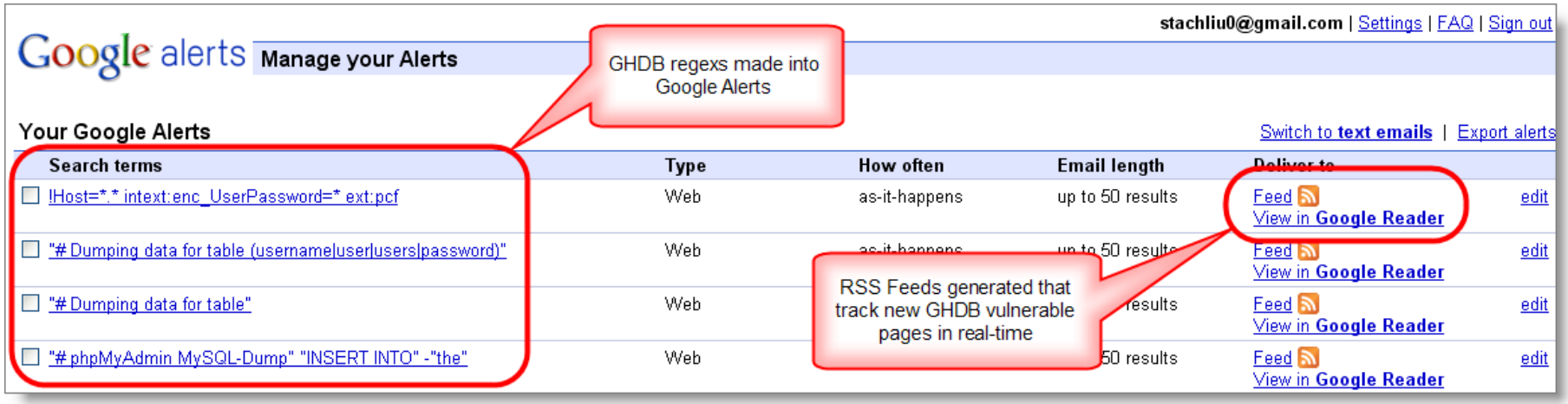


Google Hacking Alerts

ADVANCED DEFENSES

Google Hacking Alerts

- All hacking database queries using Google alerts
- Real-time vuln updates to >2400 hack queries via RSS
- Organized and available via Google reader importable file



Google Hacking Alerts

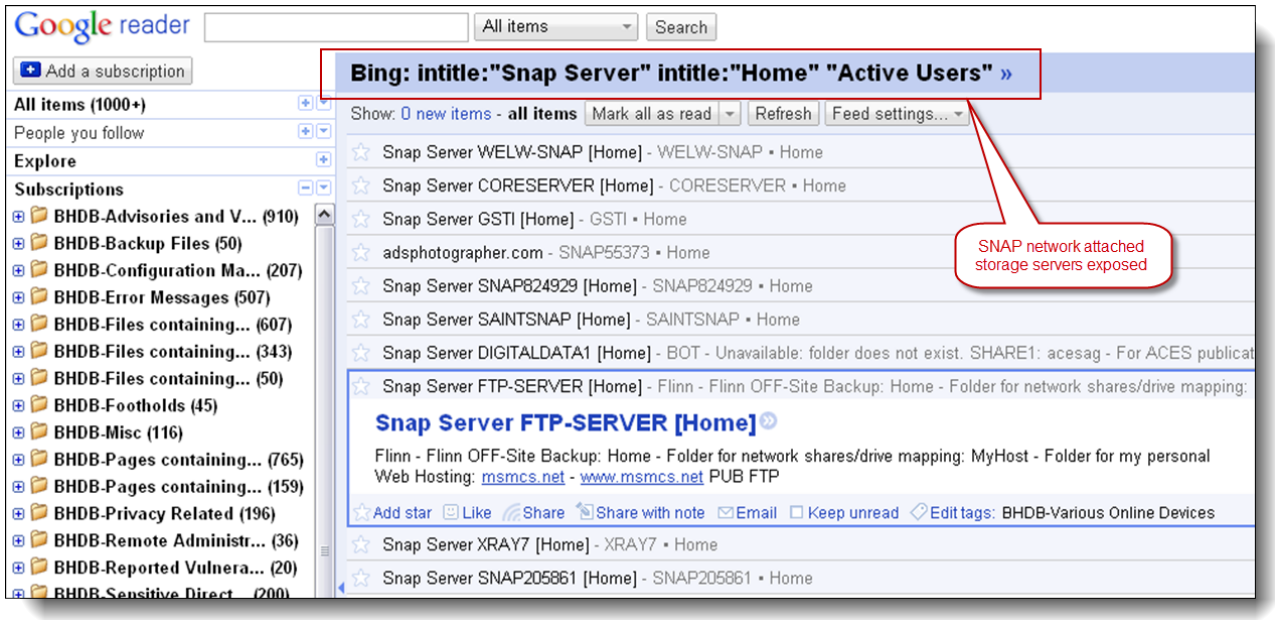
ADVANCED DEFENSES

Bing Hacking Alerts

ADVANCED DEFENSES

Bing Hacking Alerts

- Bing searches with regexs from BHDB
- Leverage &format=rss directive to turn into update feeds
- Real-time vuln updates to >900 Bing hack queries via RSS

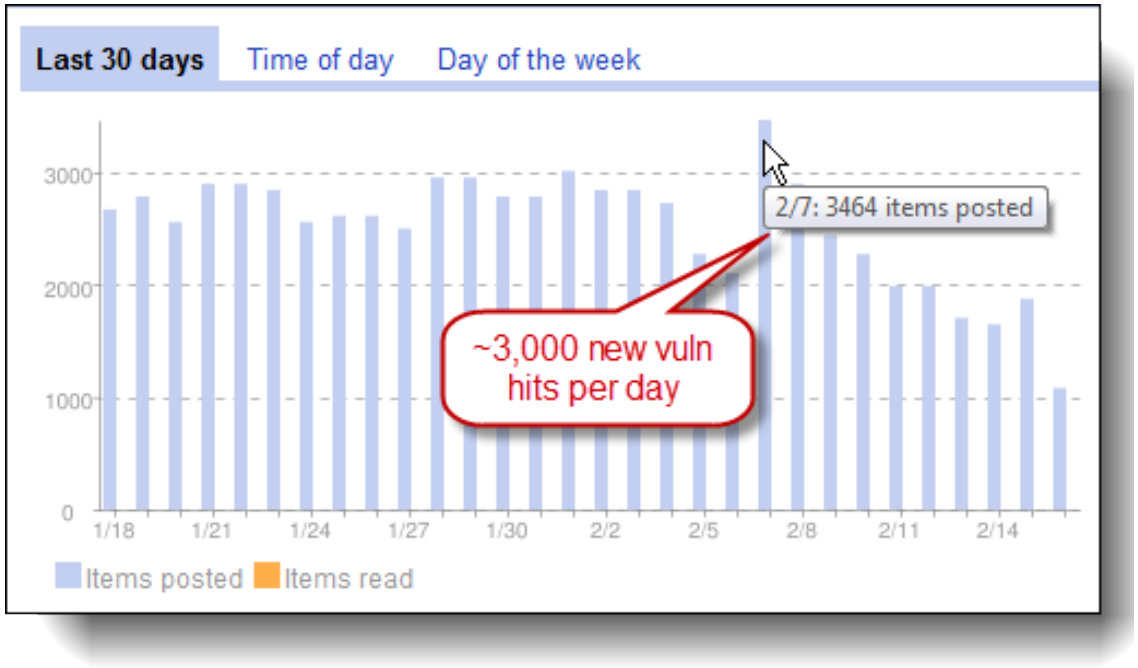


Bing/Google Alerts

LIVE VULNERABILITY FEEDS

World's Largest Live Vulnerability Repository

- Daily updates of *~3000 new hits per day*



Bing/Google Alerts

THICK CLIENTS TOOLS

Google/Bing Hacking Alert Thick Clients

- Google/Bing Alerts *RSS feeds as input*
- Allow user to *set one or more filters*
  - e.g. *"yourcompany.com"* in the URL
- Several *thick clients* being released:
  - Google Desktop Gadget
    - OS independent client
  - Droid app (coming soon)

COMING SOON

ADVANCED DEFENSE TOOLS

DEMO

New Defenses

"GOOGLE/BING HACK ALERTS"

- ✓ Tools exist
- ✓ Convenient
- ✓ Real-time updates
- ✓ Multi-engine results
- ✓ Historical archived data
- ✓ Multi-domain searching

Other OSINT Attacks

WHAT YOU SHOULD KNOW

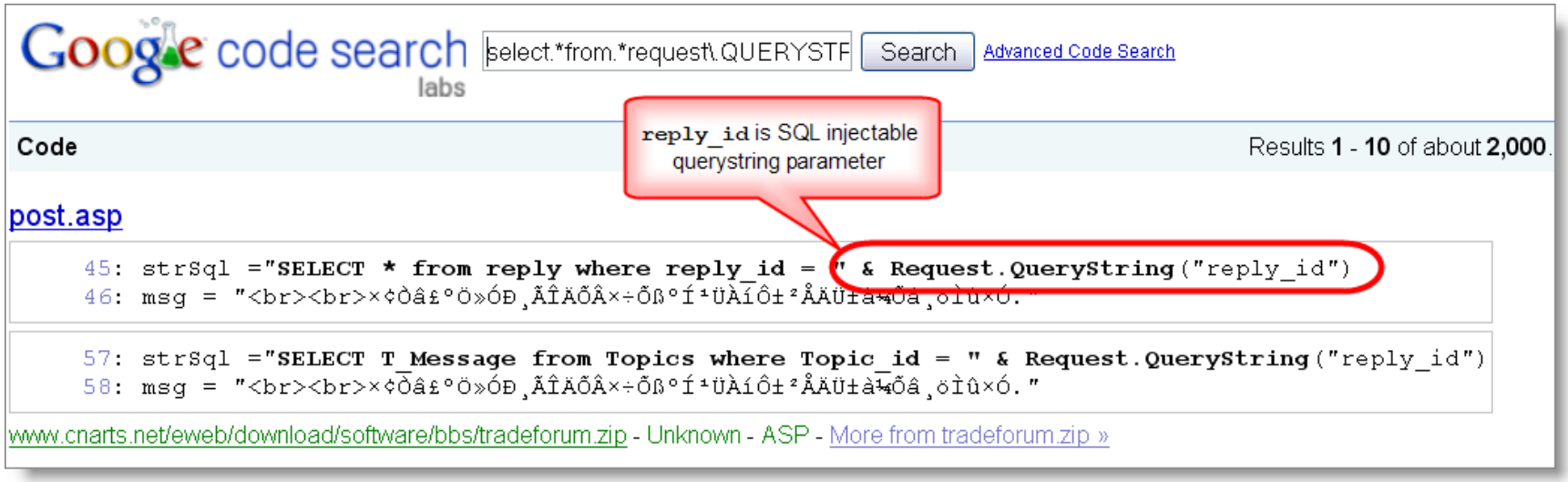
Google Apps Explosion

SO MANY APPLICATIONS TO ABUSE

Google Code Search

VULNS IN OPEN SOURCE CODE

- Regex search for vulnerabilities in public code
- Example: SQL Injection in ASP querystring
  - select.*from.*request\.QUERYSTRING

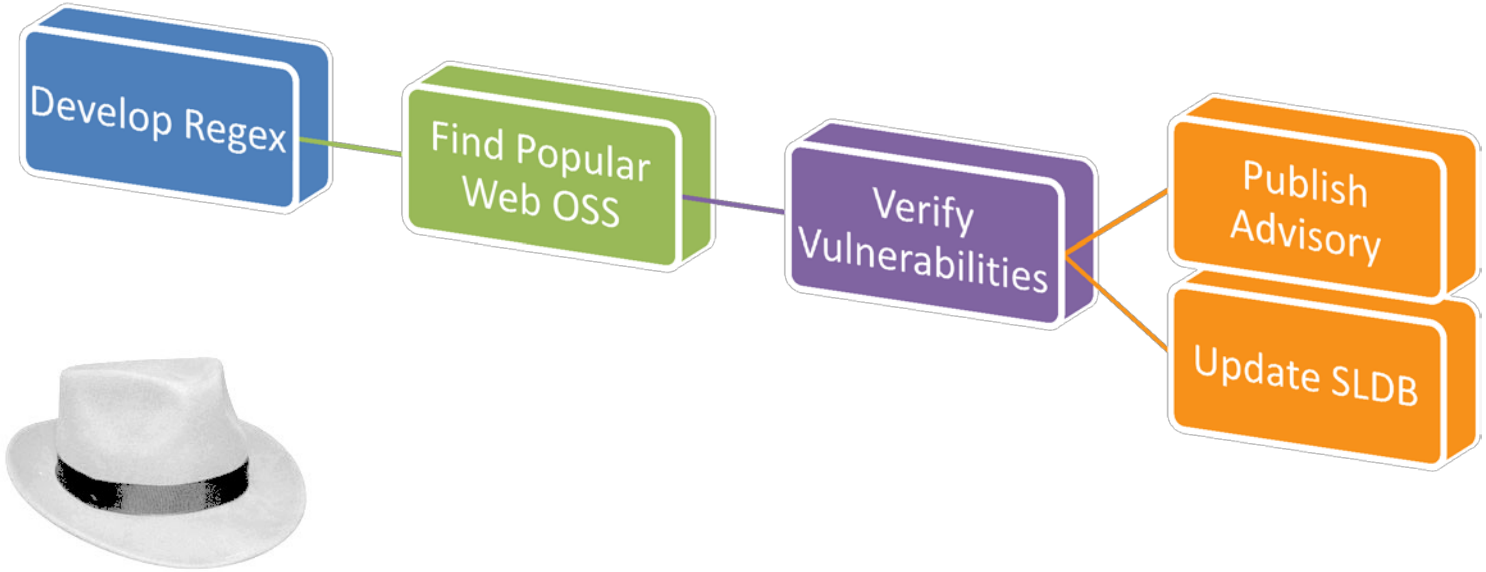


GOOGLE CODE SEARCH HACKING

DEMO

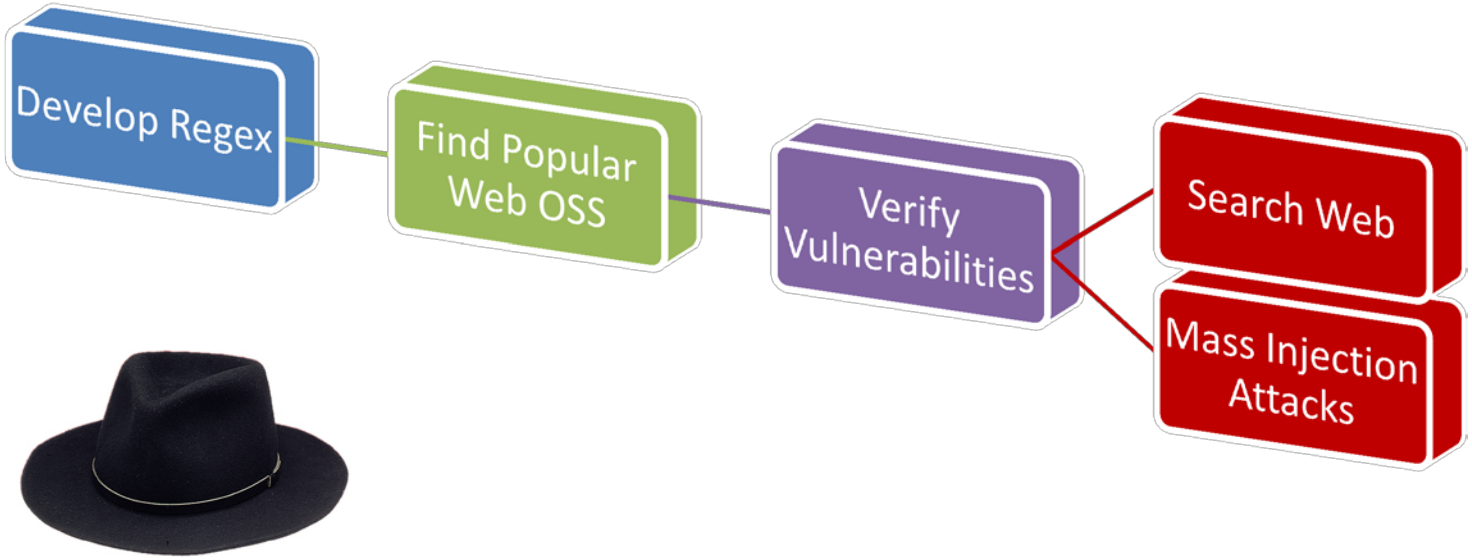
Google Code Search

VULNS IN OPEN SOURCE CODE



Google Code Search

VULNS IN OPEN SOURCE CODE



Black Hat SEO

SEARCH ENGINE OPTIMIZATION

- Use popular search topics du jour
- Pollute results with links to badware
- Increase chances of a successful attack

Google Trends

BLACK HAT SEO RECON

Malware Ads

BLACK HAT ADS

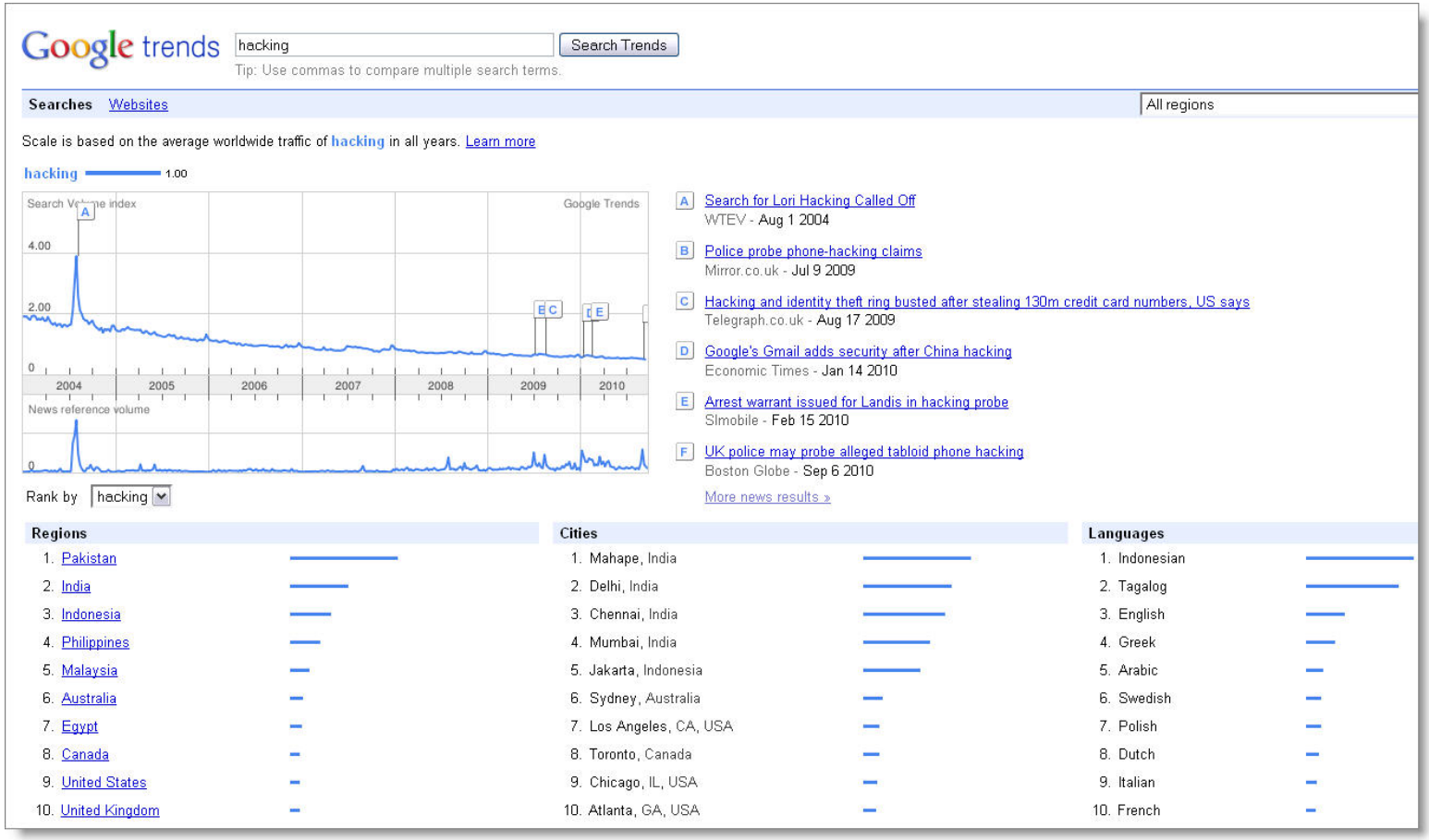
Defenses

BLACKHAT SEO DEFENSES

- Malware Warning Filters
  - Google Safe Browsing
  - Microsoft SmartScreen Filter
  - Yahoo Search Scan
- Sandbox Software
  - Sandboxie (sandboxie.com)
  - Dell KACE - Secure Browser
  - Office 2010 (Protected Mode)
  - Adobe Reader Sandbox (Protected Mode)
- No-script and Ad-block browser plugins

Google Trends

OTHER INTERESTING



Google Trends

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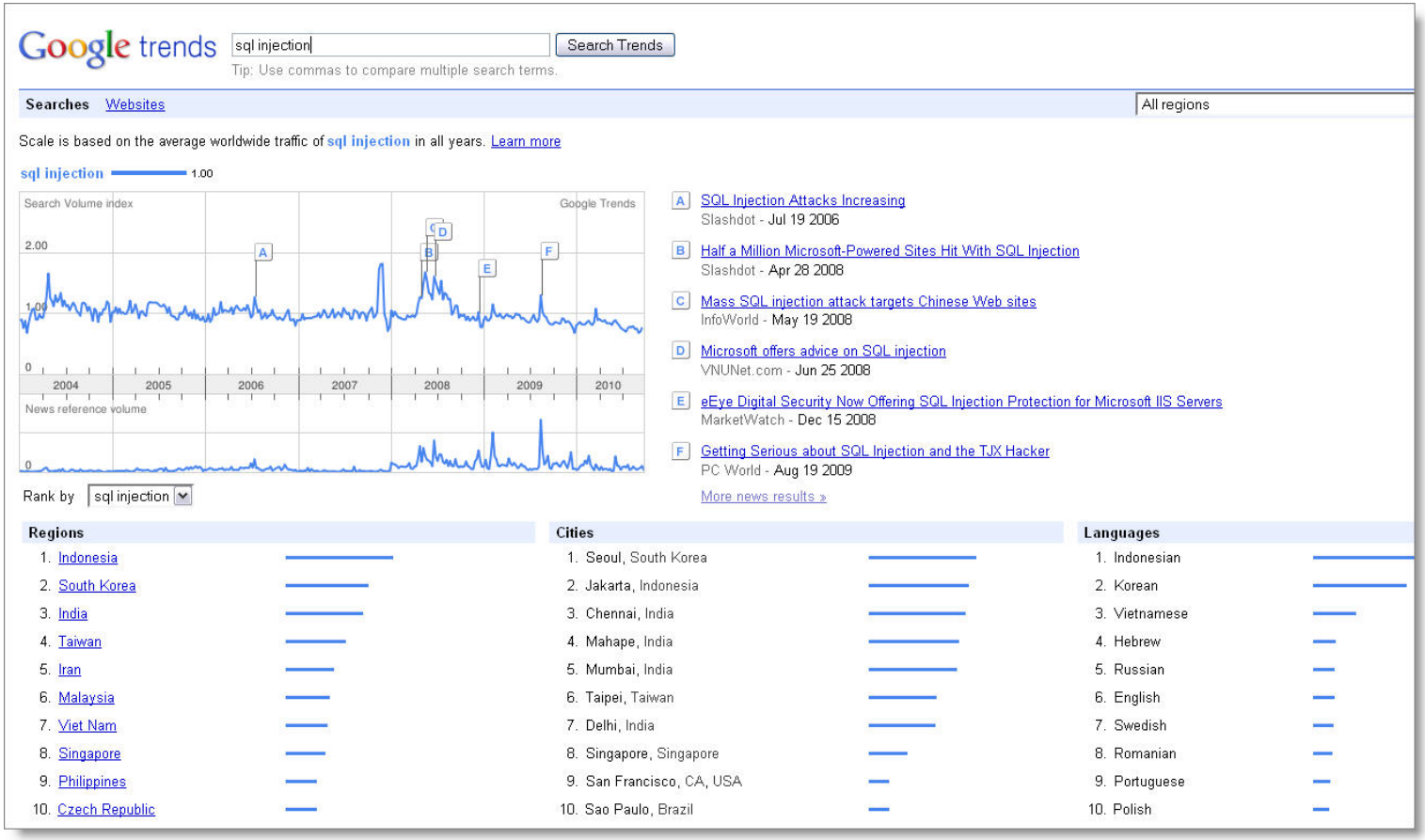

Google Trends

PREDICTING ELECTIONS

Mass Injection Attacks

MALWARE GONE WILD

Malware Distribution Woes

- Popular websites victimized, become malware distribution sites to their own customers

Massive Malware Hits Media Web Sites

Security researchers estimate that roughly 7,000 Web pages were compromised in a SQL injection attack this week, including *The Wall Street Journal* and *Jerusalem Post*.

By Mathew J. Schwartz, InformationWeek
June 10, 2010
URL: http://www.informationweek.com/stor

"Every time I load Jpost site, I get na
on Tuesday, referring to the Jerusale

Sure enough, the Web sites of the *Je*
and the Association of Christian Sch
sites serving malware to viewers.

From: www.itworld.com

Mass Web attack hits Wall Street Journal, Jerusalem Post

by Robert McMillan

June 9, 2010 —Internet users have been hit by a widespread Web attack that has compromised thousands of Web sites, including Web pages belonging to the Wall Street Journal and the Jerusalem Post.

Estimates of the total number of compromised Web sites vary between 7,000 and 114,000, according to security experts. Other compromised sites include Servicewomen.org and Intljobs.org.

Future Direction

PREDICTIONS

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Predictions

FUTURE DIRECTIONS

Data Explosion

- More data indexed, searchable
- Real-time, streaming updates
- Faster, more robust search interfaces

Google Involvement

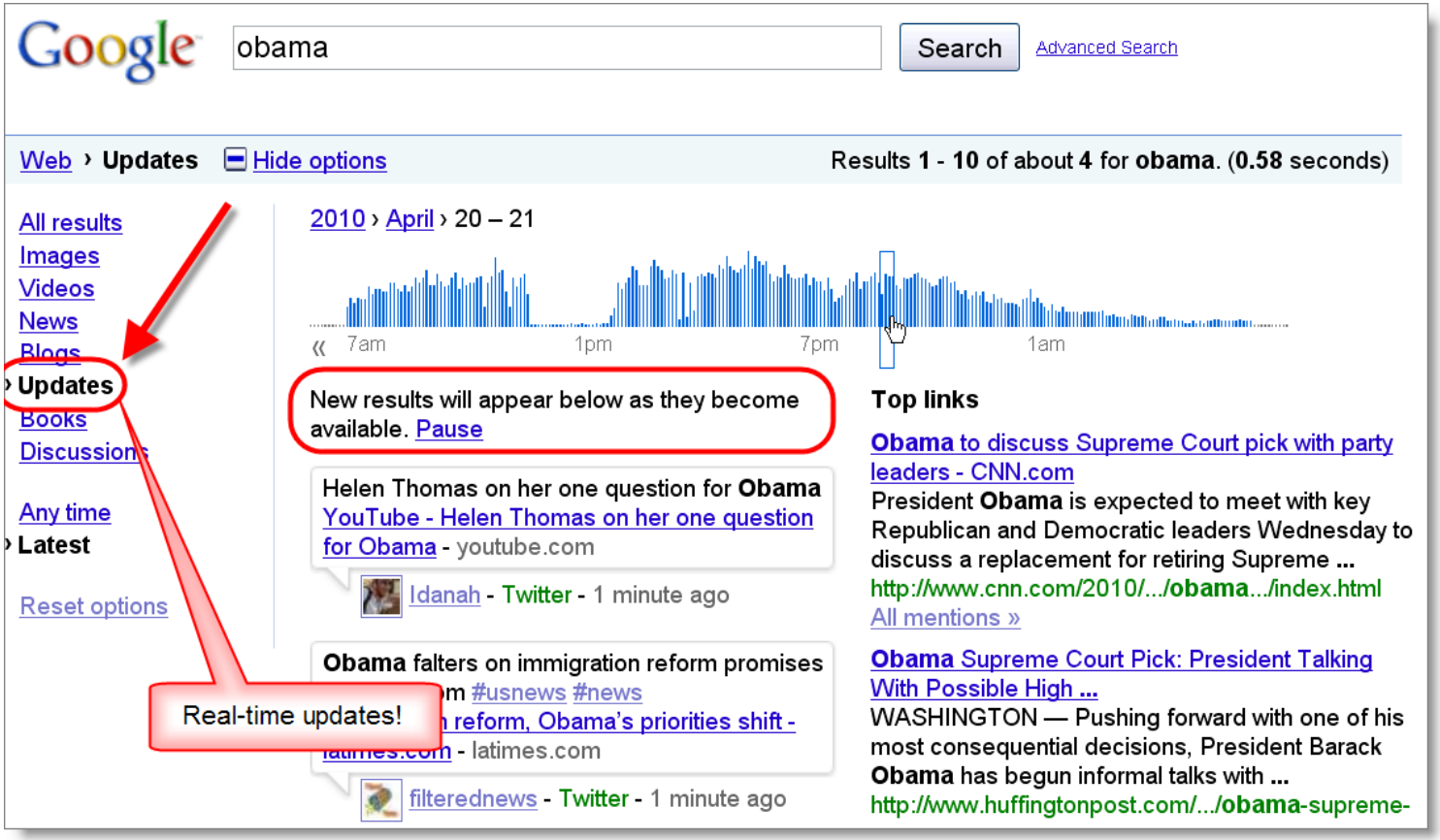
- Filtering of search results
- Better GH detection and tool blocking

Renewed Tool Dev

- Google Ajax API based
- Bing/Yahoo/other engines
  - Search engine aggregators
- Google Code and Other Open Source Repositories
  - MS CodePlex, SourceForge, …
- More automation in tools
  - Real-time detection and exploitation
  - Google worms

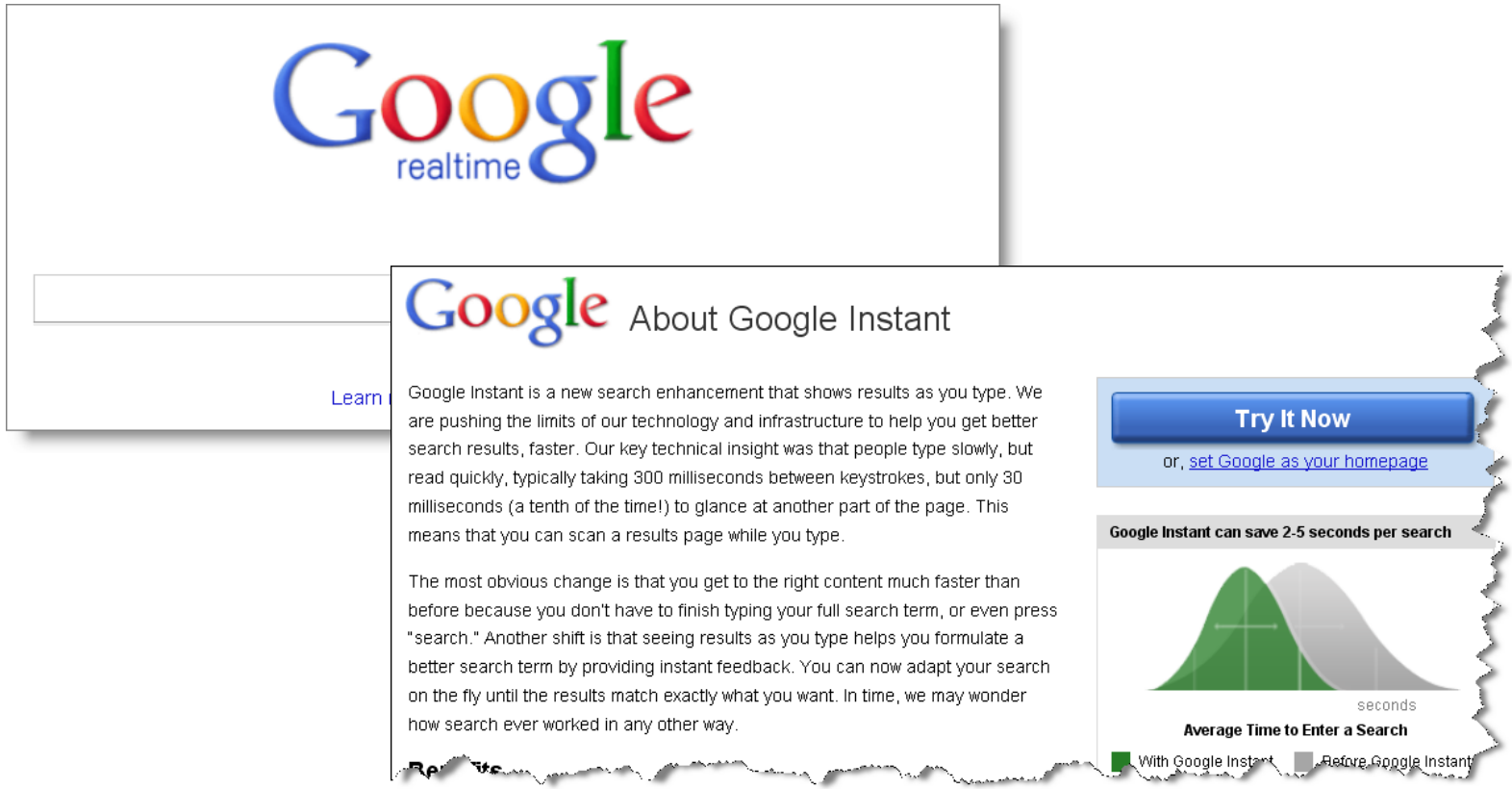
Real-time Updates

FUTURE DIRECTIONS



Predictions Update

GOOGLE REALTIME/INSTANT



Predictions Update

RENEWED TOOL DEV

New maintainers of the GHDB – 09 Nov 2010

- http://www.exploit-db.com/google-hacking-database-reborn/

Google Hacking Database Reborn

9th November 2010 - by admin

The incredible amount of information continuously leaked onto the Internet, and therefore accessible by Google, is of great use to penetration testers around the world. Johnny Long of Hackers for Charity started the Google Hacking Database (GHDB) to serve as a repository for search terms, called Google-Dorks, that expose sensitive information, vulnerabilities, passwords, and much more.

GOOGLE HACKING-DATABASE

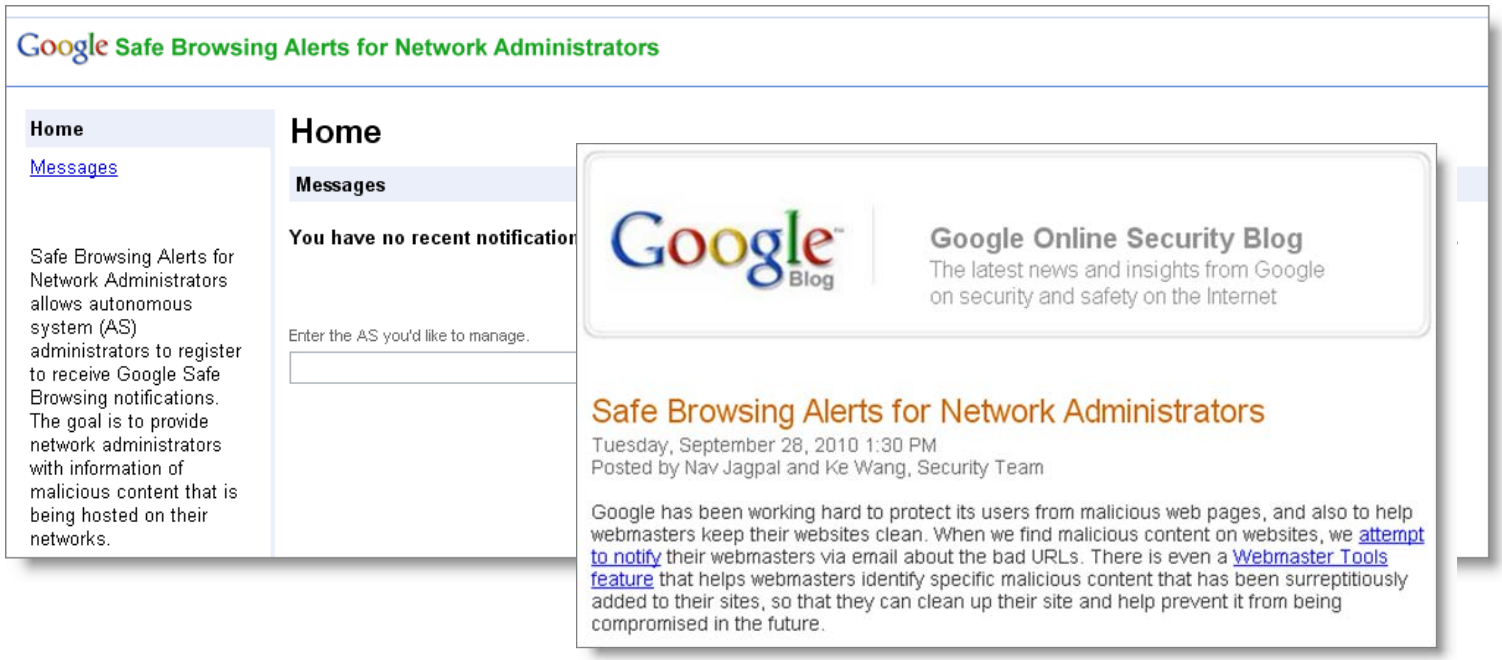
As Johnny is now pursing his mission in Uganda, he has graciously allowed us at The Exploit Database to pick up where the GHDB left off and resurrect it. It is with great excitement that we announce that the GHDB is now being hosted by us and actively maintained again. This will allow us to tie the GHDB directly into our database of exploits providing the most current information possible.

Predictions Update

SEEMS STRANGELY FAMILIAR

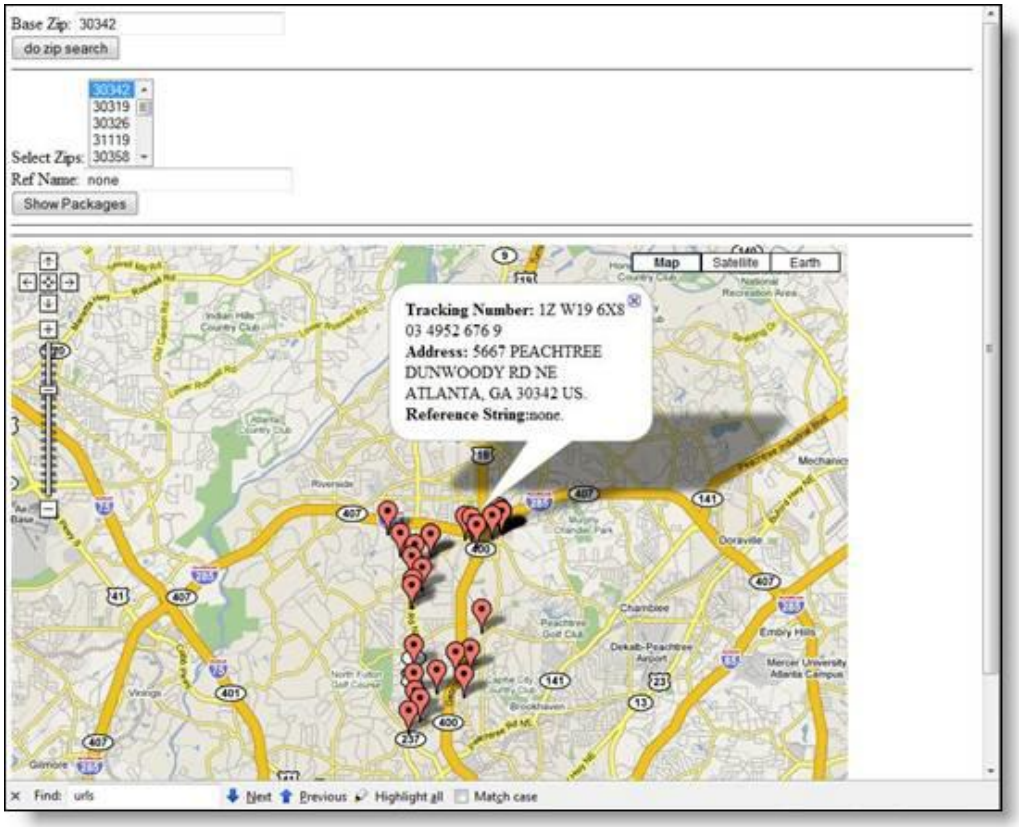
Google Safe Browsing Alerts for Network Administrators

- Google's new service which greatly resembles MalwareDiggity
- Imitation is the sincerest form of flattery…



Sensitive Info Mashup

GOOGLE MAPS + SENSITIVE INFO DISCLOSURE



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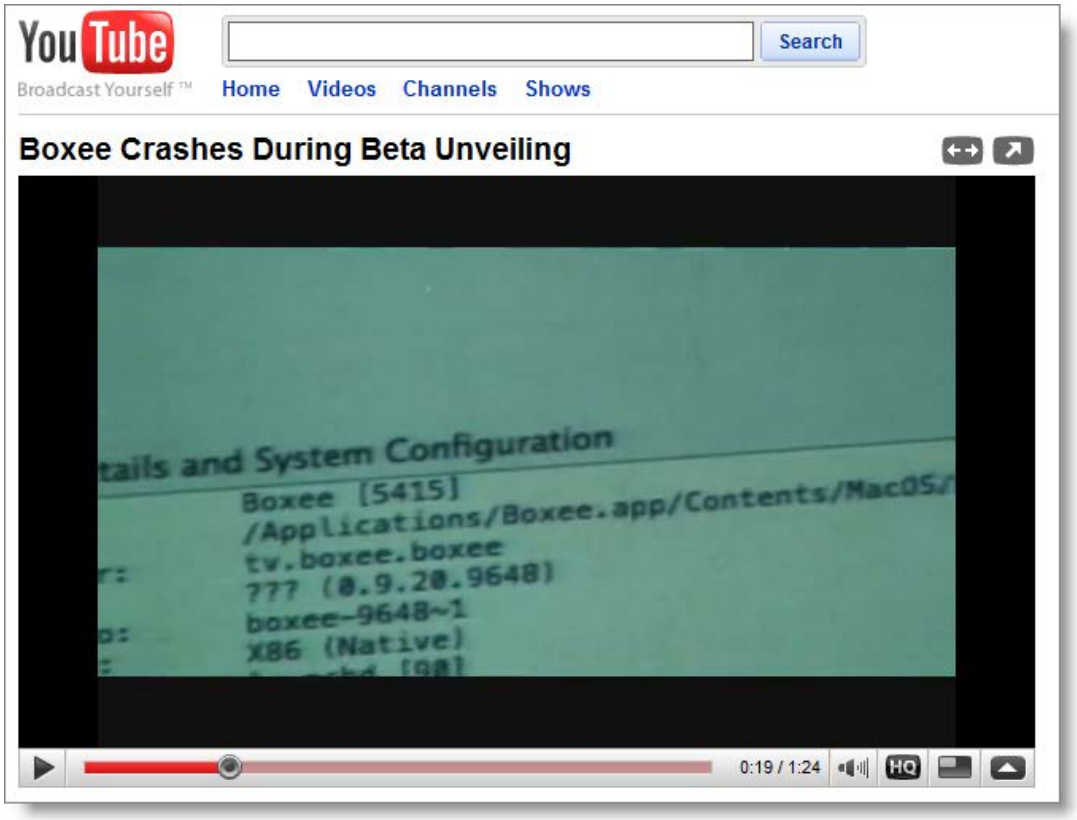
Youtube Info Leak

YOUTUBE + SENSITIVE INFO DISCLOSURE



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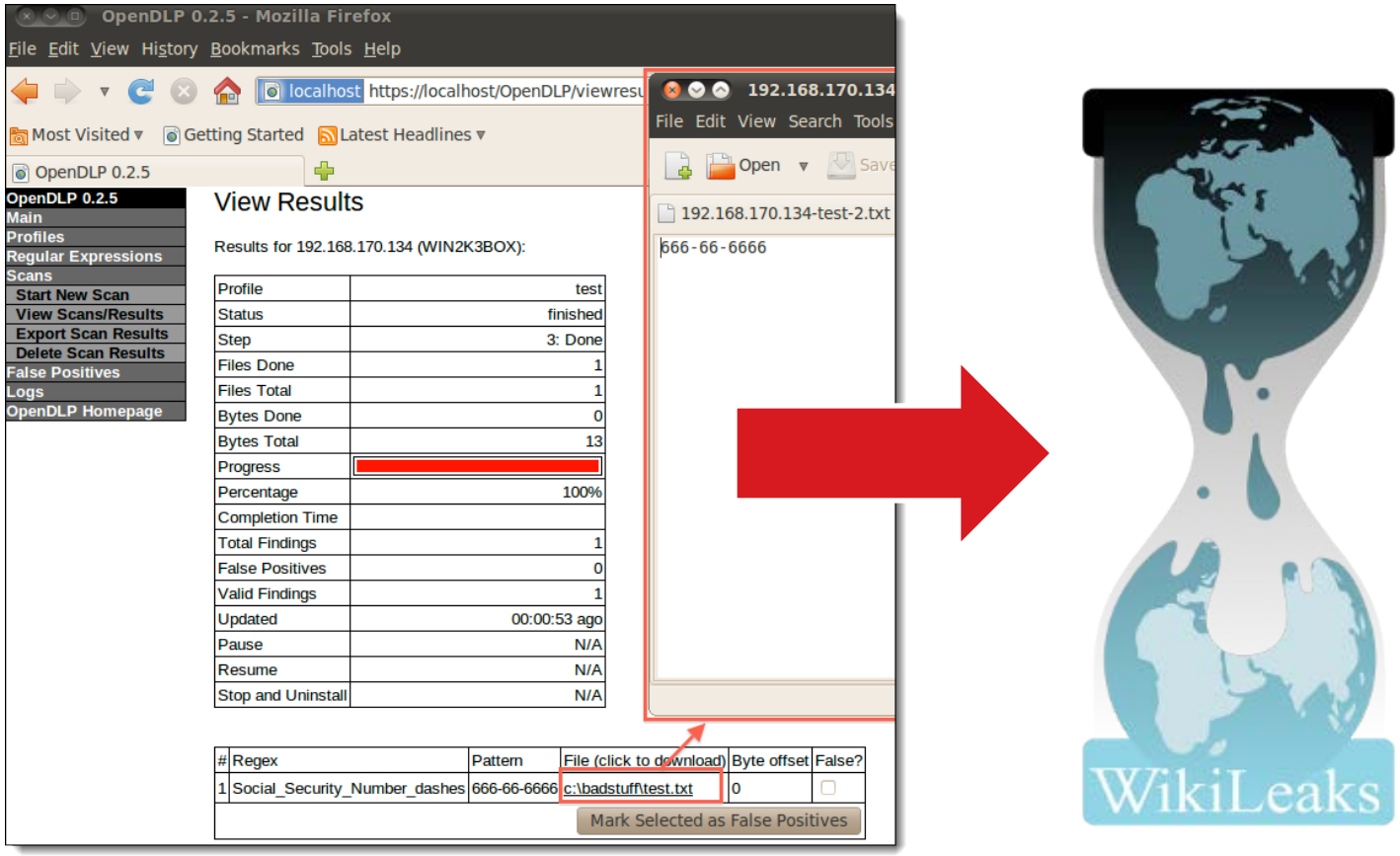
WikiLeaks Auto-Generator

FUTURE DIRECTIONS



Questions?
Ask us something
We'll try to answer it.

For more info:
Email: contact@stachliu.com
Project: diggity@stachliu.com
Stach & Liu, LLC
www.stachliu.com

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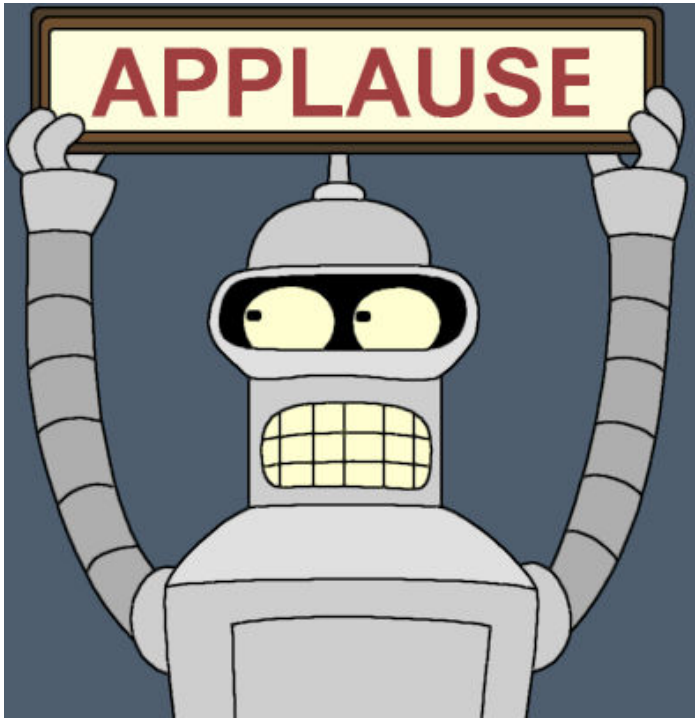
Thank You



Stach & Liu Google Hacking Diggity Project info:
http://www.stachliu.com/index.php/resources/tools/google-hacking-diggity-project/