



The International Governance & Risk Institute

Use of Technology to Detect Collusive Practices

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Tackling Corruption and Collusion in Public Procurement: Latin
America and the Caribbean

September 12, 2013

Panama City, 2013

Overview

- Challenges of Gathering Evidence from the Internet.
- Automating Collusion Detection in Public Procurement.
- Combining Manual and Automated Bid Analyses

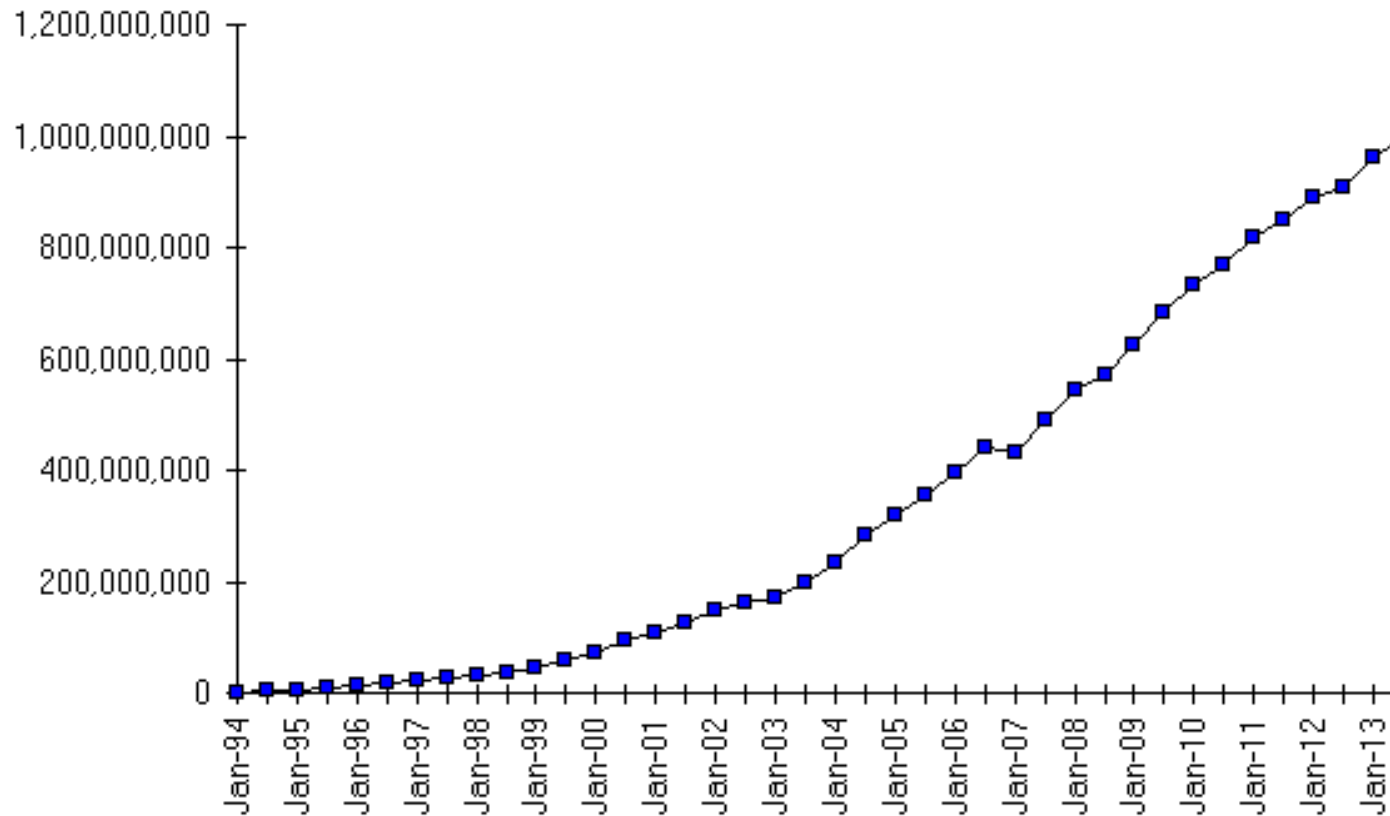
Challenges of Gathering Evidence from the Internet

- Size of the Internet
- Search Engines
- Invisible Web
- Social Media
- Gathering & Evidencing content.
- Compromise Issues & Internet Footprints

Size of the Internet

July 2013 - 996,230,757 Hosts

Internet Domain Survey Host Count



Source: Internet Systems Consortium (www.isc.org)

Size of the Internet

August 2013

- Google – 47+ bn
- Yahoo – 29.4 bn
- Bing – 30.9 bn
- Lycos – 30.4 bn
- Baidu – 4.5 bn (estimate)
- Yandex – 3.2 bn
- Terra – 2+ bn

Deep or Invisible Web

Google™

Ask™
.com
UK

altavista™

bing™

terra

excite®

blekko

GIGABLAST™

exalead®

YAHOO!®

semaGER.com
semantic search

iBoogie™

KARTOO

LYCOS

virgilio
Il bello di internet

Voodoo-it™

ixquick™

MetaGer
SUMA-EV

ЯНДЕКС

trazi.com

hispavista
conexcol.com

fastbot >>

DuckDuckGO

Yandex

TEOMA™

ezilon.com

Baidu 百度
www.baidu.com

WEB.DE

Buscar LIBERO.

MEGAPORT.HU

adonde.com
PORTAL Y BUSCADOR DEL PERÚ

izito

izito.com.py

busco.com

dögpile®

SurfWax
enabling knowledge

mamma
The Mother of All Search Engines®

voila

ACCOON

clush

Global Search Directory

Search Engines

What does Google know?

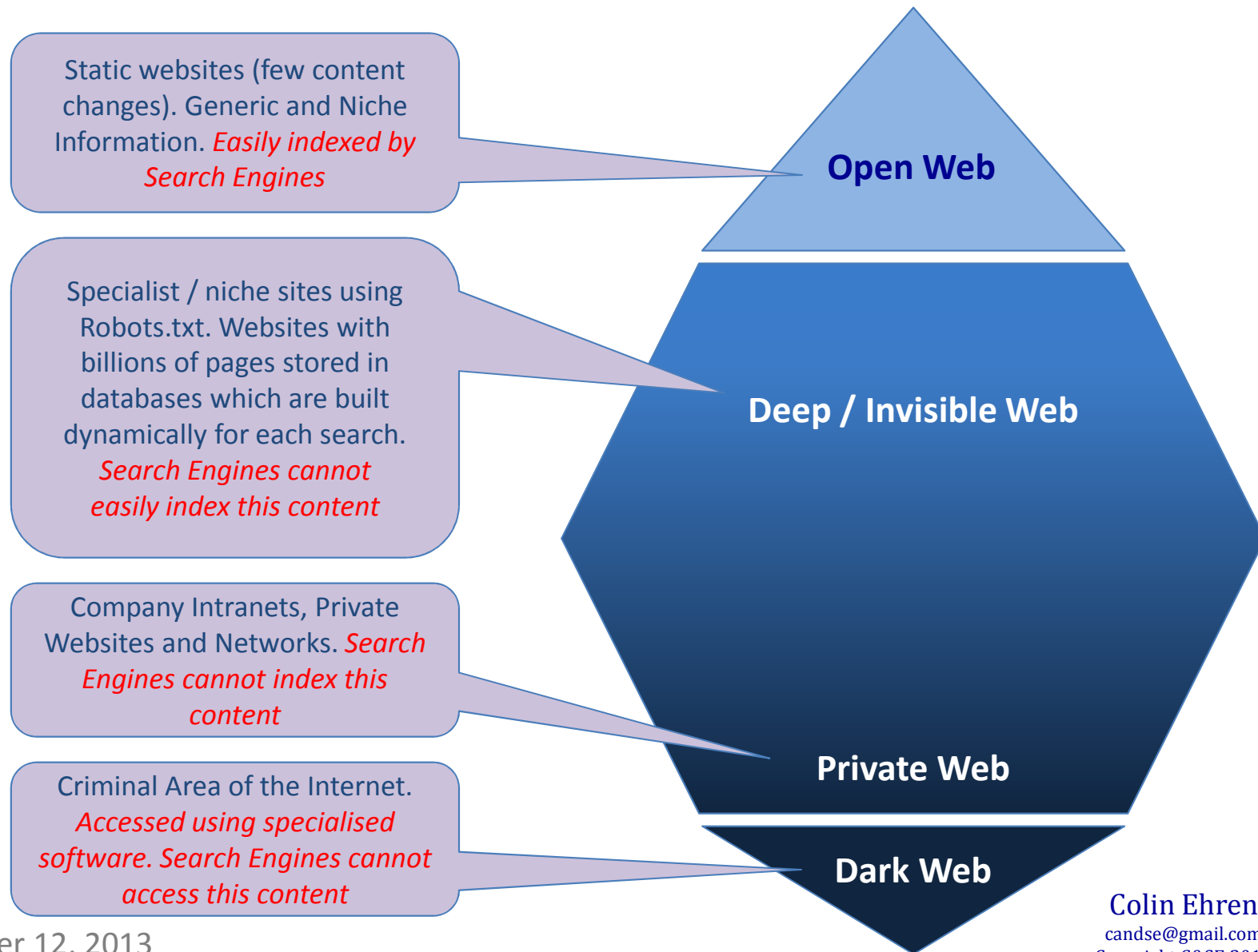
2007 - Eric Schmidt (Google CEO) estimated Google had indexed roughly 0.004% of the Internet.

July 2008 – Google had identified 1 trillion (1,000,000,000,000) unique URL's.

Everything is on the Internet.

It is estimated that 80% of Open Source information exists in Books, Magazines, Literature and other Media.

Invisible Web



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Invisible Web

July 2001, Michael Bergman produced a white paper for www.brightplanet.com

- 400 to 550 times larger than the World Wide Web.
- 7,500 terabytes of information compared to 19 terabytes on WWW.
- 550 billion documents compared to 30 billion on the WWW.
- 200,000+ deep Web sites.
- 60 of the largest sites collectively contained over 40x the information on the WWW.

2004 Study - identified 330,000+ Deep Web sites.

Has grown almost exponentially since.

Social Media

- Austria, Belgium , Croatia, Cyprus, Czech Republic, Denmark, Finland, FYR of Macedonia, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Norway, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey & UK - **Facebook, Youtube**
- Bulgaria – **Facebook, VBox7, Youtube**
- Estonia – **Facebook, Youtube, VKontakte**
- France – **Facebook, Skyrock, Youtube**
- Hungary – **Facebook, Iwiw, Youtube**
- Latvia – **Youtube, Draugiem, Facebook**
- Lithuania – **Facebook, Youtube, One**
- Netherlands – **Facebook, Hyves, Youtube**
- Poland – **Facebook, Youtube, Chomikuj**
- Portugal – **Facebook, Youtube, Twitter**
- Romania – **Facebook, Youtube, Hi5**

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Social Media

- China.
 - Qzone, Tencent Weibo, Sina Weibo, RenRen
- Russia.
 - Vkontakte, Youtube, Odnoklassniki, Facebook, Livejournal
- India.
 - Facebook, Youtube, Orkut, Ibibo
- Georgia
 - Facebook, Youtube, Odnoklassniki, VKontakte
- Brazil
 - Facebook, Youtube, Twitter, Orkut
- Panama
 - Facebook, Youtube, Twitter

blurty
Create Journals
Update Journals
Journals
Find Users
Random
Read
Search
Create New
Communities



myGamma
myWorld
mobile Community
8 CarDomain
years old!



myspace.com
a place for friends

listography, your life in lists
create. share. read.

sconex
Your High School Online

Bebo **photobucket**
Video and Image Sharing

care2
Make a Difference!

Bolt

eons

downlink
BETA

hi5

kaneva beta

LIVE JOURNAL
Create an Account Post to Journal

xanga.com
THE WEBLOG COMMUNITY

You Tube

Faceparty
THE BIGGEST PARTY ON EARTH

FOTOLOG

VampireFreaks.com

Mashable! social networking 2.0
All MySpace YouTube Bebo Facebook Xanga

last.fm
the social music revolution

Gaia ONLINE

Music forte

friendster

Windows Live Spaces

MOG BETA
VALIDATING MUSIC GEEKS SINCE 2006

MULTIPLY

SECOND LIFE

VOX

profileheaven v2.0
...FUN IN THE AFTERLIFE!

ODEO

myYearbook BETA
YOU'VE GOT FRIENDS!

www.mymidshare.com
MIDIs and MP3s

imovs
beyond instant messaging

WAYN
WHERE ARE YOU NOW?

TagWorld

LibraryThing BETA
StumbleUpon

orkut beta
PICZO

OUTERWORLDS
Where Virtual Reality
And Real People Meet!

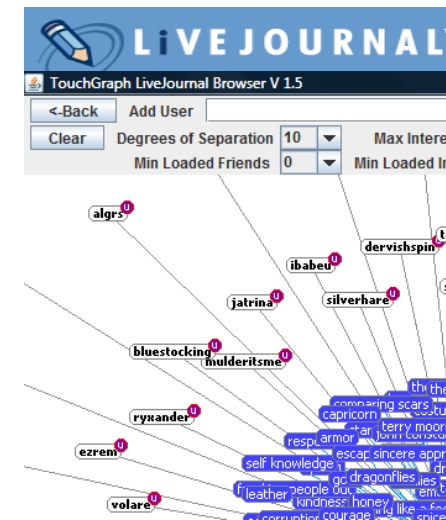
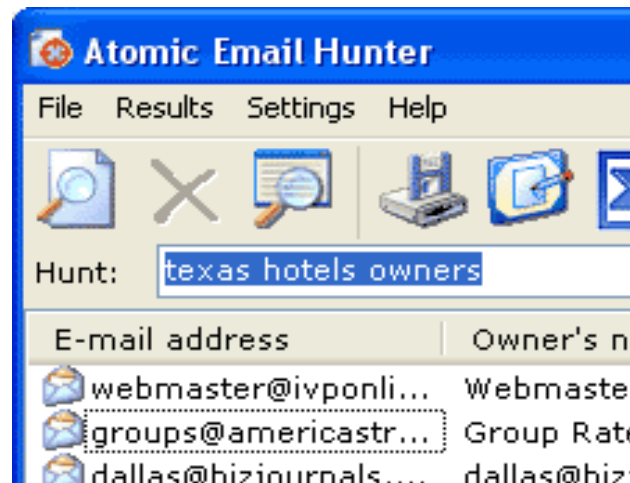
Traditional Social Media Tools

- Internet Relay Chat
- Usenet Talk Groups
- Google Groups / Yahoo Groups
- MSN/Skype, Yahoo, AOL Messengers and Chat Rooms
- E-mail
- Dedicated Discussion Forums
- Dating – Muslim Match, Uniform Match, Adult Friend
- Reunion Sites.

Gathering Data

Common Issue – Large amounts of data

- Social Media Tools
- Data Extraction Tools.
- Visualisation Tools



Gathering Data



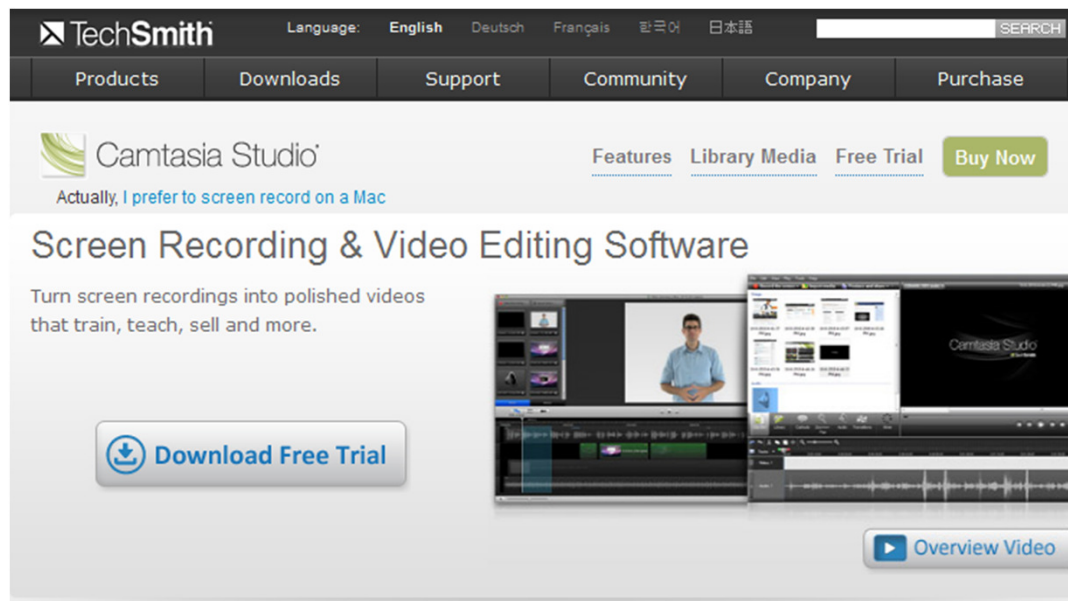
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Evidencing Data

Prove it or Lose it

All your efforts will be wasted unless you can prove what you found.



The screenshot shows the TechSmith website for Camtasia Studio. At the top, there is a navigation bar with the TechSmith logo, a language selector (English, Deutsch, Français, 한국어, 日本語), and a search bar. Below the navigation bar are links for Products, Downloads, Support, Community, Company, and Purchase. The main content area features the Camtasia Studio logo, a "Buy Now" button, and a "Free Trial" link. The headline reads "Screen Recording & Video Editing Software" and the sub-headline says "Turn screen recordings into polished videos that train, teach, sell and more." There is a "Download Free Trial" button with a download icon and an "Overview Video" button with a play icon. A video player shows a person presenting the software interface.

Evidencing Data

General Rules

- Captured data should be given unique file names when saved.
- Data from different investigations kept separately.
- Data from different investigations must not be saved to the same CD/DVD disk.
- Separate CD/DVD disk should be used for each person subject to the investigation.

Evidencing Data

Original Notes

- Full record of the Investigators actions
- Made contemporaneously at the time or as soon as possible after.
- Content – Acts as basis for Statement.
- May be many months until Court case.
- Importance cannot be over stated.

Evidencing Data

Preserving the Evidential Chain

- When moving Data the Evidential Chain must be preserved.
- Proving the Integrity of the Data – MD5 / SHA1 Hash
- Moving Data – CD / DVD Disk.
- Exhibiting Data – Evidential Bag
- Notes
- Stored Securely

Compromise Issues

Multiple ways to access the Internet;

- Corporate networked PC's
- Corporate stand-alone PC's
- Re-claimed stand-alone PC's
- Covert / Unattributed stand-alone PC's
- Covert / Unattributed networked PC's
- Working from Home (Stand-alone or Networked)
- Mobile Devices
- Internet Café's

Compromise Issues

Criminals are aware that the Organisations use the Internet for their Research or Investigations. There are several issues that surround these methods of access.

Recommendations

- Corporate Networked and Stand-Alone workstations should only be used for generic research such as obtaining Crime Trend information or Research Publications from accredited websites.
- All detailed or sensitive Internet research or Open Source Investigations should be undertaken on a covert or unattributed and registered PC, using a covert or unattributed Internet connection.

Compromise Issues

Why?

Your Internet Footprint could compromise yourself, your colleagues or an Investigation or Intelligence Operation that your Organisation or a Partner may be engaged in.

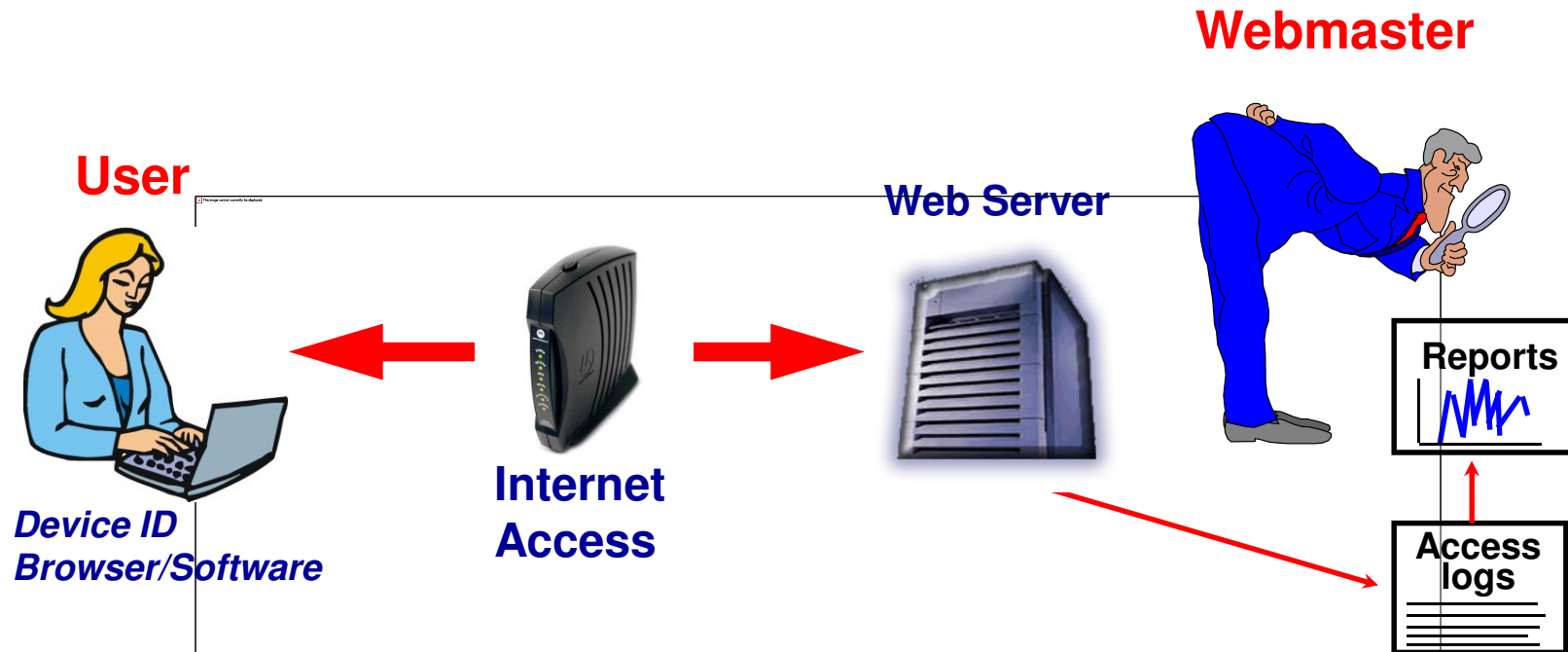
Compromise Issues

Every time you use the Internet you leave your footprints on the websites that you visit.

The size of your whole footprint depends on the 'environment variables' that your computer and internet browser pass and on your web activity.



Compromise Issues

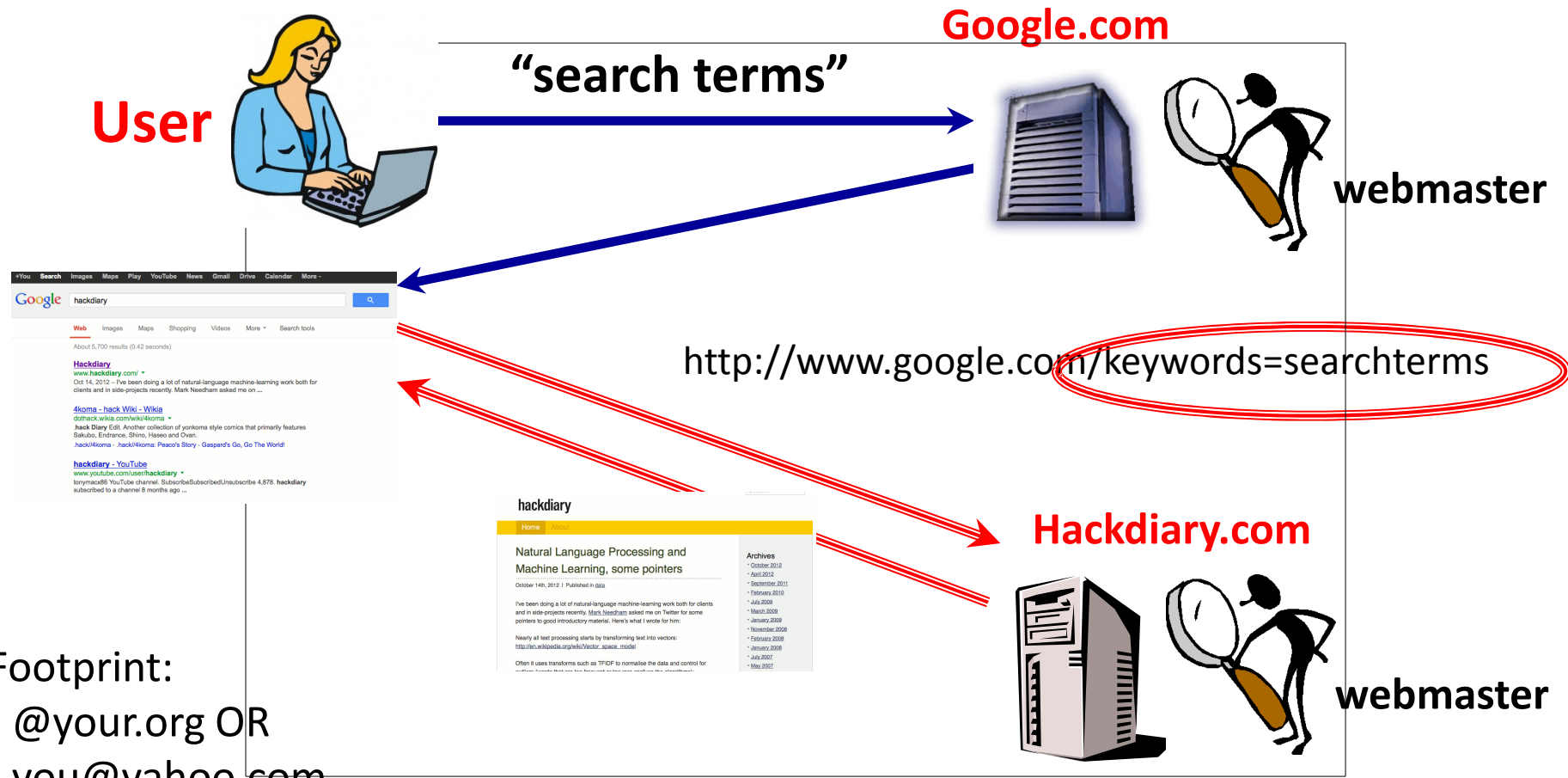


- When you click on a hyperlink your browser sends your 'Internet footprint' to a Web Server so that it can find what you want and send it back to you.
- The Webmaster in control of the Web Server can view your 'footprint' to gain information about you or your organization (physical location, ISP, your interests, type of PC/Software, etc.)

Compromise Issues

- Footprints are left on every web server of every web page that you visit.
- Be aware of what footprints you are leaving before visiting websites which could implicate your organization.
- Should you visit: **badguy.com** from a **Government / Police Internet Connection?**
- Your footprints can include;
 - The name of your computer (or gateway).
 - The IP address of your computer, or proxy gateway.
 - The URL of the page you were previously viewing. (*Web masters use this to see what web pages lead visitors to their site.*)

Compromise Issues



Footprint:

- @your.org OR
- you@yahoo.com

- google.com webmaster knows your “search terms”
- == hackdiary.com webmaster knows what “search terms” you used to find them.

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Compromise Issues

In Summary - Your internet footprint could compromise an investigation or intelligence operation that your organisation or Law Enforcement Agency may be engaged in.

Browser ID: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; AWARELockDown2001; .NET CLR 1.1.4322)
Browser: Microsoft Internet Explorer Version 6.0
Operating System: Windows 2000
Referrer: http://www.google.co.uk/search?q=am+i+secure&hl=en&lr=&start=10&sa=N
Your IP Address : 195.173.172.10
IP Address Behind Firewall
Your hostname: mailgate.exitstrategy.co.uk
Your AS : 2529 ARIN ASN block
Your Country: GB
Your Abuse Contact : abuse@demon.net
Additional Software :

Compromise Issues

The screenshot shows a forum page with a search bar at the top containing the text 'awarelockdown2001'. Below the search bar, a navigation bar includes links for 'Home / Forums Index / Hardware and OS Related Technologies / Website Technology Issues'. The forum title is 'Website Technology Issues'. A search result is displayed with the text 'These terms have been highlighted: awarelockdown2001 [remove highlighting]'. The post content is as follows:

AWARELockDown2001
What user agent is this?

dunne

#:672992

What user agent would "awarelockdown2001" be, anyone know? The host IP traces back to ls4689-s0.metpolice.router.uk.quza.net, which is, ah, "interesting".

Compromise Issues

Browser ID : Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; AWARELockDown2001; .NET CLR 1.1.4322)
Browser:Microsoft Internet Explorer Version 6.0
Operating System:Windows 2000
Referrer: http://www.google.co.uk/search?q=am+i+secure&hl=en&lr=&start=10&sa=N
Your IP Address : 195.173.172.10
IP Address Behind Firewall
Your hostname: mailgate.exitstrategy.co.uk
Your AS : 2529 ARIN ASN block
Your Country: GB
Your Abuse Contact : abuse@demon.net
Additional Software :

Compromise Issues



Web

[METROPOLICE SERVICE](#)

195.173.172.10 resolved to mailgate.exitstrategy.co.uk DNS Query Results: ; <<>>
DIG 9.2.2 <<>> any mailgate.exitstrategy.co.uk ;; global options: printcmd ...
[www.fathers.ca/metropole_service.htm](#) - 54k - [Cached](#) - [Similar pages](#)

[Usage Statistics wwwave.org - September 2003](#)

4, 40, 2.31%, 31, 2.49%, 326, 3.91%, 4, 0.72%, **195.173.172.10**. 5, 38, 2.19%, 0,
0.00%, 8, 0.09%, 0, 0.00%, 66.196.65.37 ...
[www.wwwave.org/logs/usage_200309.html](#) - 107k - [Cached](#) - [Similar pages](#)

[MAKE EM LAUGH - Queen's Royal Hussars Bulletin Board](#)

IP: **195.173.172.10**. Gordon E Glazebrook Member. Posts: 345 From:UK ... IP:
195.173.172.10. John Foster Member. Posts: 82 From:Catterick North Yorkshire ...
[bb.qrh.org.uk/Forum1/HTML/000305-9.html](#) - 85k - [Cached](#) - [Similar pages](#)

[195.173.172.10](#)

UnhappyTummy. (). 09/06/04 11:42 PM. Re: I need some love.. Hello! *** Lots
and lots of hugs *** I'm so sorry you are feeling so lonely ...
[www.helpforibs.com/messageboards/ubbthreads/printthread.php?Board=livingroom&main=104211&type=post](#) -

Compromise Issues

Browser ID : Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; AWARELockDown2001; .NET CLR 1.1.4322)
Browser:Microsoft Internet Explorer Version 6.0
Operating System:Windows 2000
Referrer: http://www.google.co.uk/search?q=am+i+secure&hl=en&lr=&start=10&sa=N
Your IP Address : 195.173.172.10
IP Address Behind Firewall
Your hostname: mailgate.exitstrategy.co.uk
Your AS : 2529 ARIN ASN block
Your Country: GB
Your Abuse Contact : abuse@demon.net
Additional Software :

Compromise Issues

Google Web Images Groups News Froogle more »

"mailgate.exitstrategy.co.uk" Search [Advanced Search](#) [Preferences](#)

Search: the web pages from the UK

Web

METROPOLICE SERVICE
195.173.172.10 resolved to **mailgate.exitstrategy.co.uk** DNS Query Results: ; <<>>
DiG 9.2.2 <<>> any **mailgate.exitstrategy.co.uk** ;; global options: printcmd ...
[www.fathers.ca/metropole_service.htm](#) - 54k - [Cached](#) - [Similar pages](#)

UK screen - Page Statistics for HOPCYN BIRD
... **mailgate.exitstrategy.co.uk**, 22/03, [http://www.google.co.uk/search?hl=en&lr=&cr=countryUK7Coun...](#) UK. crawler9.googlebot.com, 19/03, US. ...
[www.ukscreen.com/cast/hopcyn/stats](#) - 24k - [Supplemental Result](#) - [Cached](#) - [Similar pages](#)

eXTReMe Tracking
11 Nov, Fri, 14:31:05, **mailgate.exitstrategy.co.uk**, MSIE 6, Windows 2000. 11 Nov, Fri, 14:33:43, ip-83-134-196-33.dsl.scarlet.be, MSIE 6, Windows 98 ...
[extremetracking.com/open;unique?tag=whgig2](#) - 51k - [Cached](#) - [Similar pages](#)

eXTReMe Tracking
... 08 Mar, Mon, 05:54:16, 195.179.14.60, MSIE 5, Windows NT. 08 Mar, Mon, 06:01:31, **mailgate.exitstrategy.co.uk**, MSIE 5, Windows 2000. Last 20 Days, Unique Visitors ...
[extremetracking.com/open;unique?tag=euroligh](#) - 51k - [Supplemental Result](#) - [Cached](#) - [Similar pages](#)

Compromise Issues

Browser ID : Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; AWARELockDown2001; .NET CLR 1.1.4322)
Browser:Microsoft Internet Explorer Version 6.0
Operating System:Windows 2000
Referrer: http://www.google.co.uk/search?q=am+i+secure&hl=en&lr=&start=10&sa=N
Your IP Address : 195.173.172.10
IP Address Behind Firewall
Your hostname: mailgate.exitstrategy.co.uk
Your AS : 2529 ARIN ASN block
Your Country: GB
Your Abuse Contact : abuse@demon.net
Additional Software :

Network Whois record

Queried whois.ripe.net with "-B 195.173.172.10"...

```
% This is the RIPE Whois query server #2.
% The objects are in RPSL format.
%
% Note: the default output of the RIPE Whois server
% is changed. Your tools may need to be adjusted. See
% http://www.ripe.net/db/news/abuse-proposal-20050331.html
% for more details.
%
% Rights restricted by copyright.
% See http://www.ripe.net/db/copyright.html
```

```
% Information related to '195.173.172.0 - 195.173.172.15'
```

```
inetnum:      195.173.172.0 - 195.173.172.15
netname:      METROPOLICE
descr:        Metropolitan Police Service
descr:        London SW1H
country:      GB
admin-c:      AC2375-RIPE
tech-c:       AC2375-RIPE
status:       ASSIGNED PA
mnt-by:       AS2529-MNT
mnt-lower:    AS2529-MNT
mnt-routes:   AS2529-MNT
notify:       hostmaster@demon.net
changed:      hostmaster@demon.net 20030121
source:       RIPE

person:       Alan Cooper
address:      Metropolitan Police Service
address:      London SW1H
phone:        +44-20 8649 3658
notify:       hostmaster@demon.net
mnt-by:       AS2529-MNT
nic-hdl:      AC2375-RIPE
changed:      hostmaster@demon.net 20030121
source:       RIPE
```

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Compromise Issues

```

Browser ID: Mozilla/4.0 (compatible; MSIE
AWARELockDown2001; .NET CLR 1.1.4322)
Browser:Microsoft Internet Explorer Versio
Operating System:Windows 2000
Referrer: http://www.google.co.uk/search
q=am+i+secure&hl=en&lr=&start=10&sa=N
Your IP Address : 195.173.172.10
IP Address Behind Firewall
Your hostname: mailgate.exitstrategy.co.u
Your AS : 2529 ARIN ASN block
Your Country: GB
Your Abuse Contact : abuse@demon.net
Additional Software :
    
```

The screenshot shows a Google search for "am i secure". The search results are as follows:

- Web**
- F-Secure Computer Virus Information Pages: MyDoom.AM**
F-Secure Anti-Virus detects Mydoom.AM worm with the following update: [FSAV_Database_Version]. Version=2005-01-25_01 ...
[www.f-secure.com/v-descs/mydoom_am.shtml](#) - 28k - [Cached](#) - [Similar pages](#)
- F-Secure Computer Virus Information Pages: Navidad.b**
<http://www.europe.f-secure.com/download-purchase/> ... [Analysis: Alexey Podrezov, F-Secure Corp.; Nov 2000 - Jan 2001] ...
[www.f-secure.com/v-descs/navidad.shtml](#) - 22k - [Cached](#) - [Similar pages](#)
- Access Manager 1.3 - Fast, Easy and Secure Password Storage**
Access Manager is a password management tool that provides fast, easy and **secure** password storage. Access Manager is free for personal use.
[www.accessmanager.co.uk/](#) - 19k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)
- Security Events and Webcasts: Upcoming Live Security Webcasts**
Microsoft Executive Circle Webcast: Security360 with Mike Nash: Integrating the Edge in Network **Security**. November 15, 2005, 9:00 **AM**-10:00 **AM** Pacific Time ...
[www.microsoft.com/events/security/upcoming.mspx](#) - 35k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)
- Microsoft Security Newsletter Welcome to the Microsoft Security ...**
November 16, 9:30 **AM**-10:30 **AM** Pacific Time Kai Axford, **Security** Specialist, ... November 22, 11:00 **AM**-Noon Pacific Time Dennis Hurst, Sr. **Security** Engineer, ...
[www.microsoft.com/technet/security/secnews/newsletter.htm](#) - 100k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)
- Am I Hacked? The Comprehensive Windows Security Check and Linux ...**
Check various databases to see if you are listed and perform a quick portscan of your system.
[www.amihacked.com/](#) - 9k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)
- eWEEK.com - Enterprise Technology News and Reviews**
eWEEK Breaking information technology news, hardware, **security**, networking and ... 16, starting @ 11 **am** ET Join David Cohen, Co-Founder of Wi-Fi Alliance, ...
[www.eweek.com/](#) - 101k - 12 Nov 2005 - [Cached](#) - [Similar pages](#)

Compromise Issues

Beware

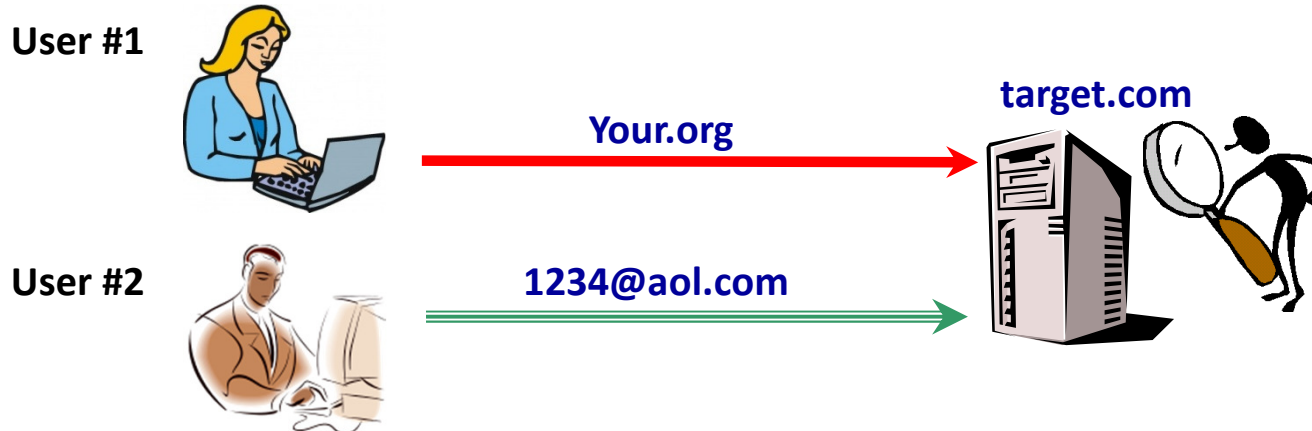
Parallel Surfing can associate a Covert or non-attributed PC to the your organisation. Parallel Surfing would occur when the same websites or Search Terms are researched on a Corporate workstation and then those same sites or Search Terms are researched on a Covert or non-attributed workstation.

Webmasters can run reports that identify who has been using the same Search Terms, etc.

Compromise Issues

The “parallel surfing” Problem...

- User #1: leaves “your.org” footprints whilst visiting “target.com”
- === User #2: leaves “Covert” footprints whilst visiting “target.com”



The “Covert” User may now be recognized as an “your.org” visitor.

Compromise Issues

195.173.172.10

195.173.172.10

antnicuk

antnicuk@msn.com

antnicuk nicola

192.com

Compromise Issues



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Rotary in a Westfield???

Register FAQ Members List Calendar

User Name: User Name Remember Me?
Password: Log in

Post Reply Page 5 of 11 « First < 3 4 **5** 6 7 > Last »

19th March 2010, 08:53 AM #101



antnicuk
MRC Guest

Join Date: Feb 2004
Location: england
Posts: 4,518

Brian, i assume you have seen the light and finally going full 'blown' with your induction 😊

Quote

19th March 2010, 04:36 PM #102



dubber91
MRC Guest

Join Date: Aug 2005
Location: elsewhere
Posts: 591

hmmmmmmmm really fast Pineapple. Cut up. And served. on something between 9 and 11 plates.

Carl - i'll give you a ring at some point! Progress has been slow!!!

Quote

19th March 2010, 07:17 PM #103



kiwimazda
MRC Full Club Member

Join Date: May 2005
Location: cyber space
Posts: 1,178

No honestly I like eating fruit and Veg and steak

The thing is there is nowt happening on the car so I might as well waffle on about something else

I am seriously missing my rotary 😞

I promise to be back with something special 😊 soon

Quote

September 12, 2013

lin Ehren
se@gmail.com
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Compromise Issues

195.173.172.10

195.173.172.10

antnicuk

antnicuk@msn.com

antnicuk nicola

192.com

Compromise Issues

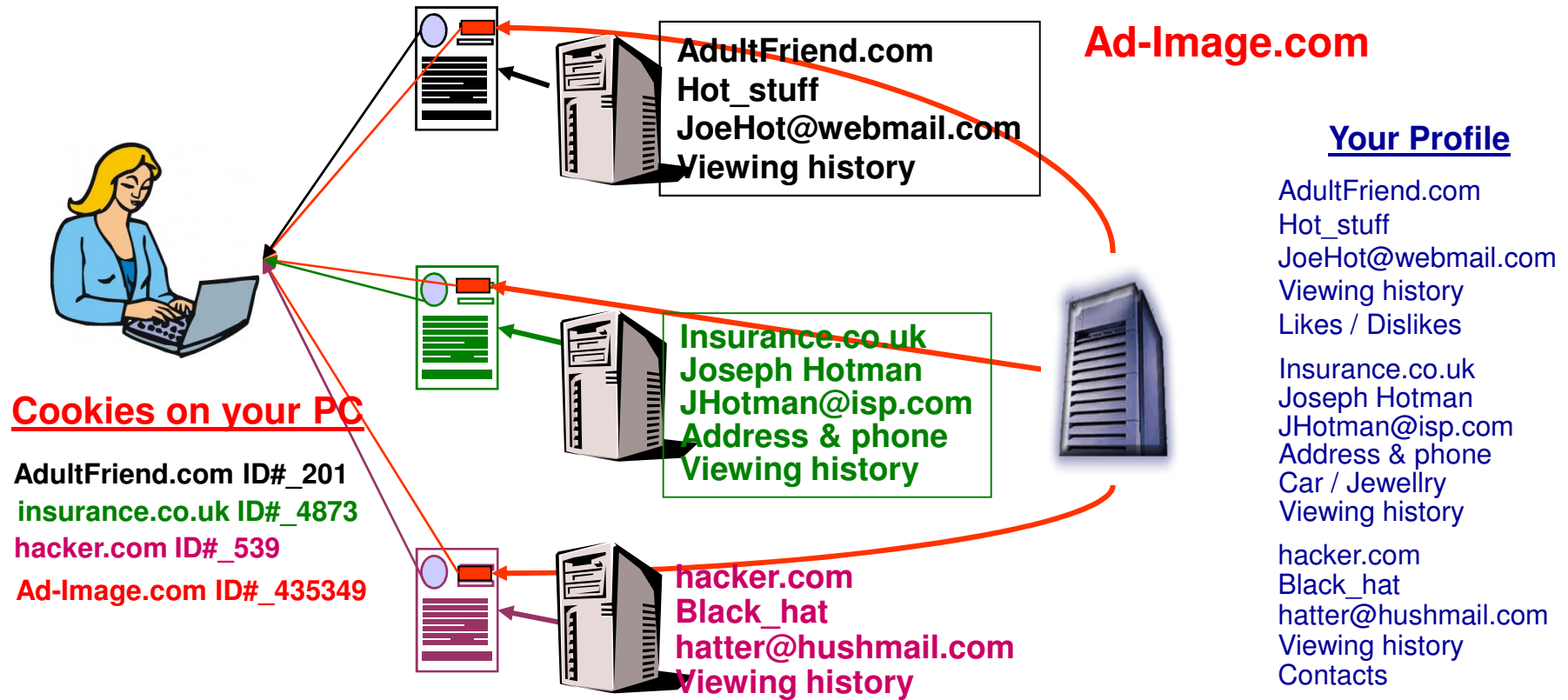
Beware

Your footprints are left on every website that you visit. If those websites display adverts or images from 3rd parties, your footprints are sent automatically to them as well.

You do not need to have visited the 3rd party site for them to obtain your information.

Compromise Issues

Web pages can include images or adverts from third parties.



Companies, such as “Ad-Image.com” are able to compile a significant profile on you and your surfing habits, which they are able to trade or sell to their partners or customers.

Compromise Issues



Ordering Pizza?

Automating Collusion Detection & Combining Manual and Automated Bid Analyses

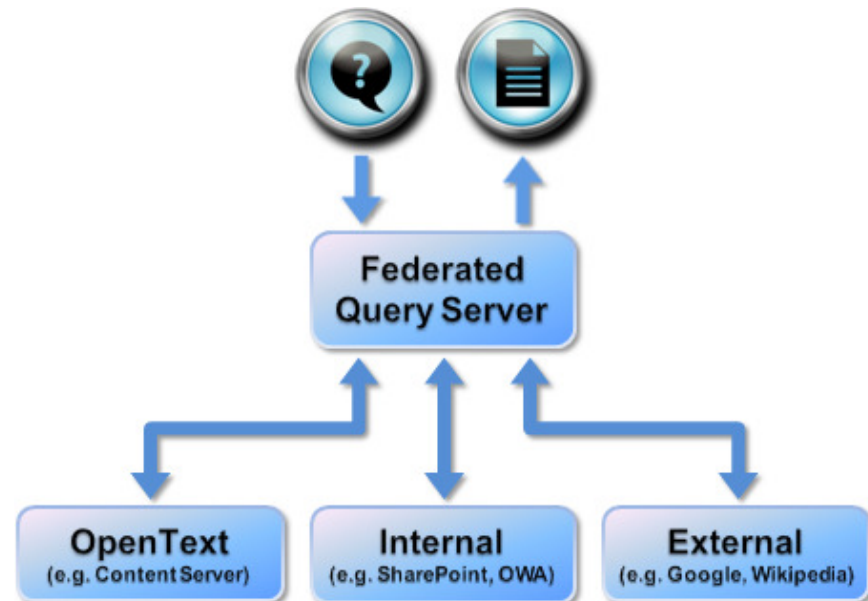
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candse@gmail.com
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Search Automation

Query Servers

- Integrated Solution
- Live Queries
- Automated Queries
- Builds own Database
- **Expensive**



Search Engine Alerts

The screenshot shows the Yahoo! Alerts page. At the top left is the 'YAHOO! ALERTS' logo. To its right is a search input field with a magnifying glass icon and the text 'Search'. Below the logo are two buttons: 'Create an Alert' and 'My Alerts'. A green banner below these buttons reads 'Yahoo! Alerts'. Underneath is a section titled 'Select one of the alert types from the list below.' which contains a grid of alert categories. On the left side of this grid is a yellow bell icon. The categories listed are: Breaking News, Daily News, Fantasy Sports, Horoscope, Local News (with a 'NEW!' tag), Stocks Summary, Stocks Watch, Travel Destinations, Weather, and Y! Search.



Data Extraction Tools

WebHarvy



Automation Anywhere

WebDataExtractor

Data Toolbar

The world easiest data scraping tool

Visual Web Ripper



mozenda™

WebHarvest
version 2.0

Web Data Extractor

The screenshot displays the 'Web Data Extractor 8.3' application window. The interface includes a menu bar (File, View, Help), a toolbar with icons for New, Edit, Open, Start, and Stop, and a status bar showing 'Jobs 15 / 15', 'Cur. speed 4.00 kbps', and 'Avg. speed 5.73 kbps'. A green waveform graph is visible in the top right corner. The main window contains a table with the following columns: Session, Meta tags, Emails (16), Phones (71), Faxes (70), Merged list, Urls, and Inactive sites (59). The 'Phones' column is currently selected, displaying a list of phone numbers, source URLs, and titles. A secondary window on the right shows a list of URLs being searched.

Phone	Source	Tag	URL	Title
08444122127	0844 4122127		http://www.budgetinsurance.com	Budget Car, Home and Van Insurance Budget Ins
08444122128	0844 4122128		http://www.budgetinsurance.com	Budget Car, Home and Van Insurance Budget Ins
08444122129	0844 4122129		http://www.budgetinsurance.com	Budget Car, Home and Van Insurance Budget Ins
08448710099	0844 8710099		http://www.budgetinsurance.com	Budget Car, Home and Van Insurance Budget Ins
18005254784	1-800-525-4784		http://www.campmor.com	Camping Gear & Outdoor Gear - Outerwear & Outd
18882267667	1-888-226-7667	phone	http://www.campmor.com	Camping Gear & Outdoor Gear - Outerwear & Outd
952011	95 2011		http://www.campmor.com	Camping Gear & Outdoor Gear - Outerwear & Outd
50222326178	+502-2232-6178		http://www.guatemalaweb.com/	Guatemala Travel, Tour Packages and Hotels
13056772280	1 (305)677-2280	Ph	http://www.guatemalaweb.com/	Guatemala Travel, Tour Packages and Hotels
13023619942	1(302) 361-9942		http://www.guatemalaweb.com/	Guatemala Travel, Tour Packages and Hotels
18668648283	1-866-864-8283		http://www.guatemalaweb.com/	Guatemala Travel, Tour Packages and Hotels
533244	53-3244		http://www.guatemalaweb.com/	Guatemala Travel, Tour Packages and Hotels
05151210	05-15-12 10		http://photo.net/	Photography community, including forums, reviews
05151218	05-15-12 18		http://photo.net/	Photography community, including forums, reviews
05161200	05-16-12 00		http://photo.net/	Photography community, including forums, reviews
120300	120-300		http://photo.net/	Photography community, including forums, reviews
220120511	2 2012-05-11		http://photo.net/	Photography community, including forums, reviews
2026475225	202-647-5225		http://www.state.gov/travel/	Travel
1503528	+1 503-528		http://www.bootsnail.com/	Around the World Travel Community for Indie Trav
5011000	501-1000		http://www.statravel.com/	Book cheap student and teacher flights, hotels and
9067745190	906-774-5190		http://www.uptravel.com/	Upper Peninsula Michigan, UP Michigan Travel &
8006823333	(800) 682-3333		http://www.gate1travel.com/	Tours, Vacation Packages, Escorted Tour, Travel
18004420568	1-800-442-0568	call	http://www.lastminutetravel.com/hp.aspx	Last Minute Travel - Best Deals: Hotels, Packages
37165423180	371) 654 23 180		http://www.lidotleti.lv/	Letas aviobiletas, viesnicas, celojumi
7812370280	781-237-0280	Telepho	http://thetravelinstitute.com/	The Travel Institute
7812373860	781-237-3860		http://thetravelinstitute.com/	The Travel Institute
8005424282	800-542-4282	Toll-Free	http://thetravelinstitute.com/	The Travel Institute
8774390277	(877) 439-0277	call	http://travel.aol.com/	Travel Guides and Information - AOL Travel
00605165	006-0516-5		http://en.wikipedia.org/wiki/Time_travel	Time travel - Wikipedia, the free encyclopedia
0141005343	0-14-100534-3		http://en.wikipedia.org/wiki/Time_travel	Time travel - Wikipedia, the free encyclopedia
019509591	0-19-509591		http://en.wikipedia.org/wiki/Time_travel	Time travel - Wikipedia, the free encyclopedia
0195130960	0-19-513096-0		http://en.wikipedia.org/wiki/Time_travel	Time travel - Wikipedia, the free encyclopedia

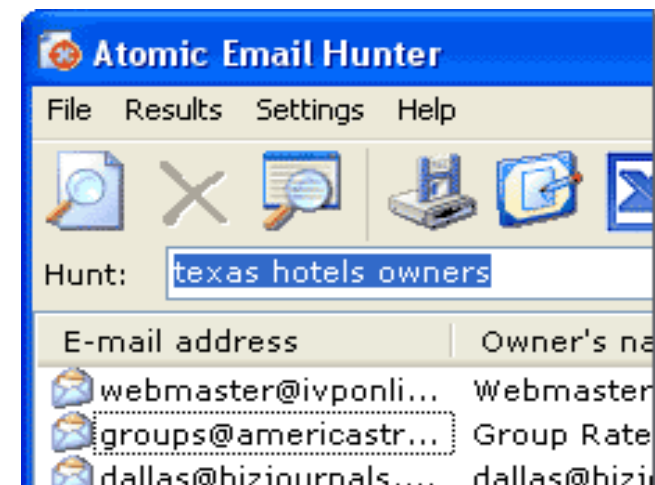
September

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Data Extraction Tools



- Atomic E-Mail Hunter
- Atomic Web Spider
- Atomic Whois Explorer
- Atomic Newsgroup Explorer
- Atomic E-Mail Studio



Assimilation of Data

Huge data volumes

- Petabytes of data (1 Petabyte (1000 terabytes) = approx 3000 million documents)

Diverse sources

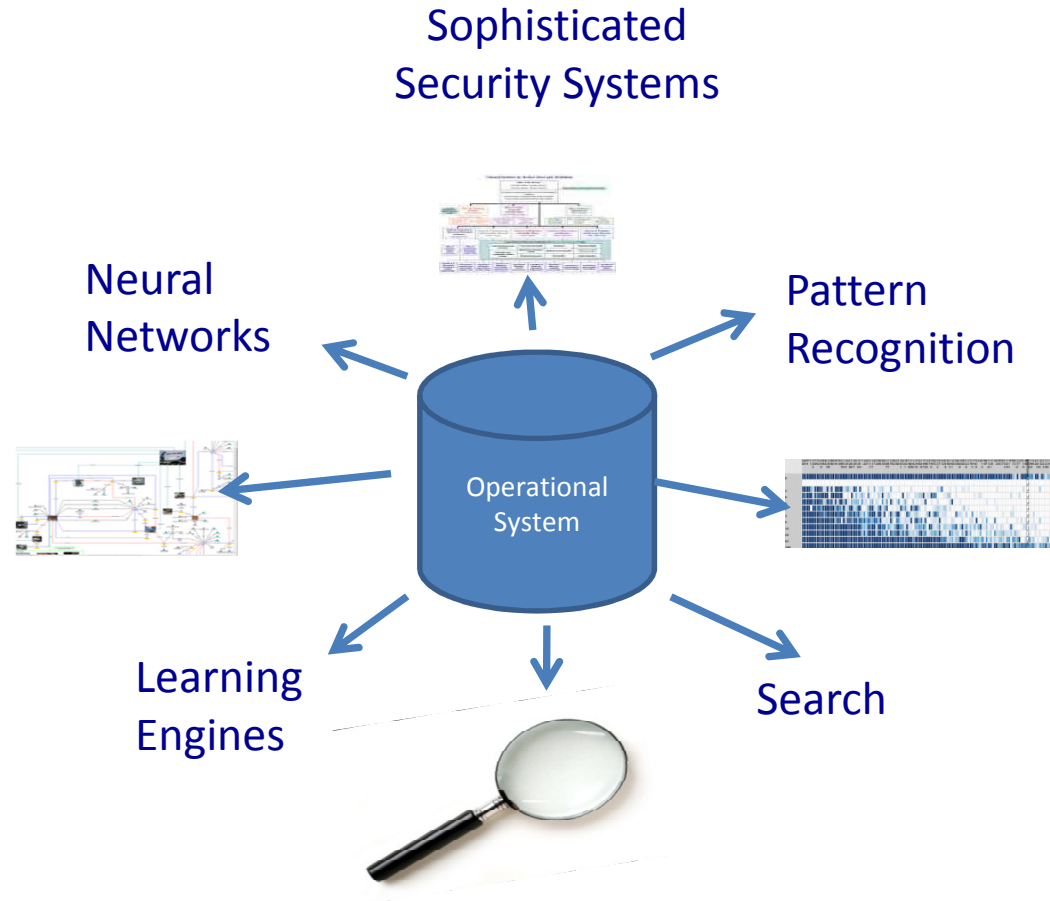
- The Internet – www, blogs, twitter, social networks, virtual worlds, chat-rooms
- Internal – E-mail, Office Systems, Knowledge Management and Analyst Reports
- Computers, storage devices, mobile phones

Integration of data

- Multiple formats
 - Structured, unstructured (text)
 - Languages / alphabets
- Organisationally
 - Across departments
 - Across boundaries (different legislation)
 - Between organisations

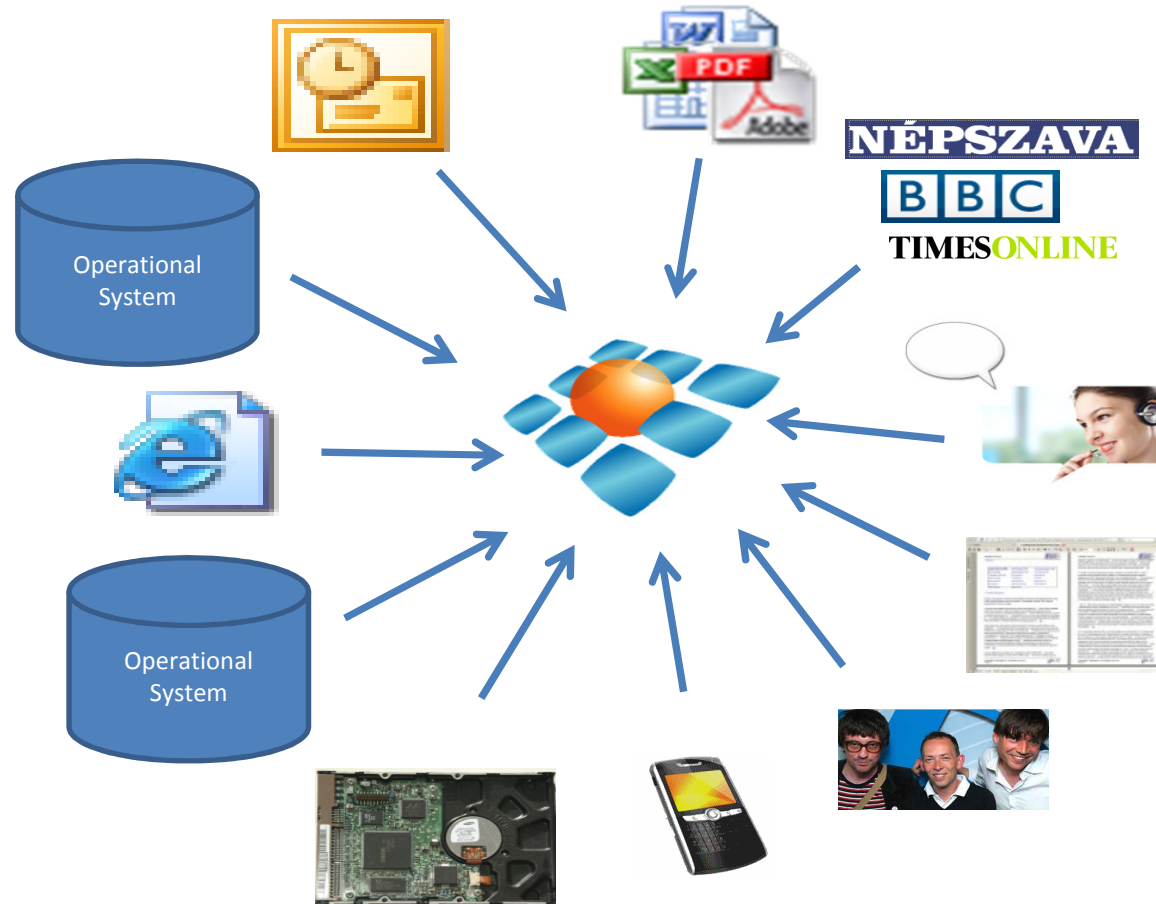
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Traditional Software



Data traditionally held in isolated silos

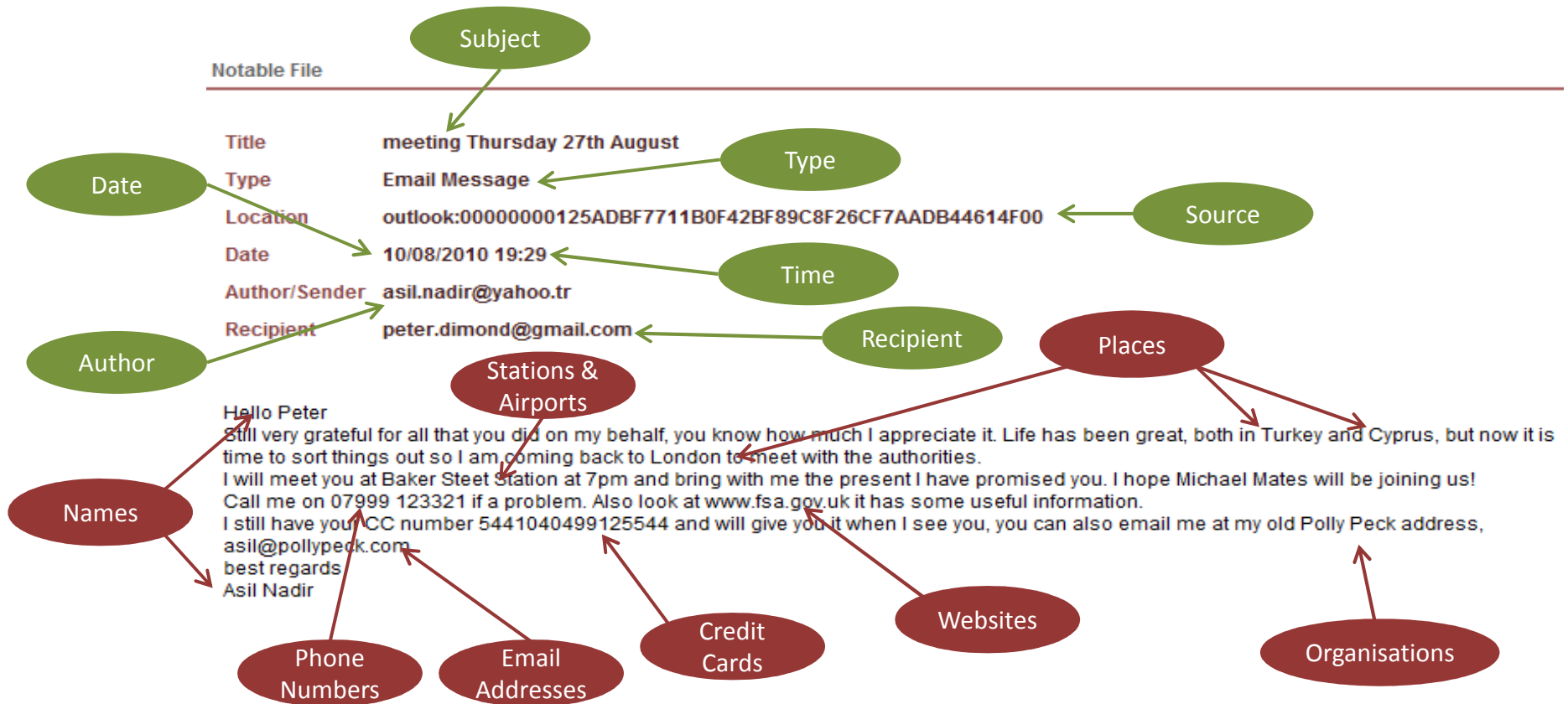
Next Generation Software



Integration of all types of data

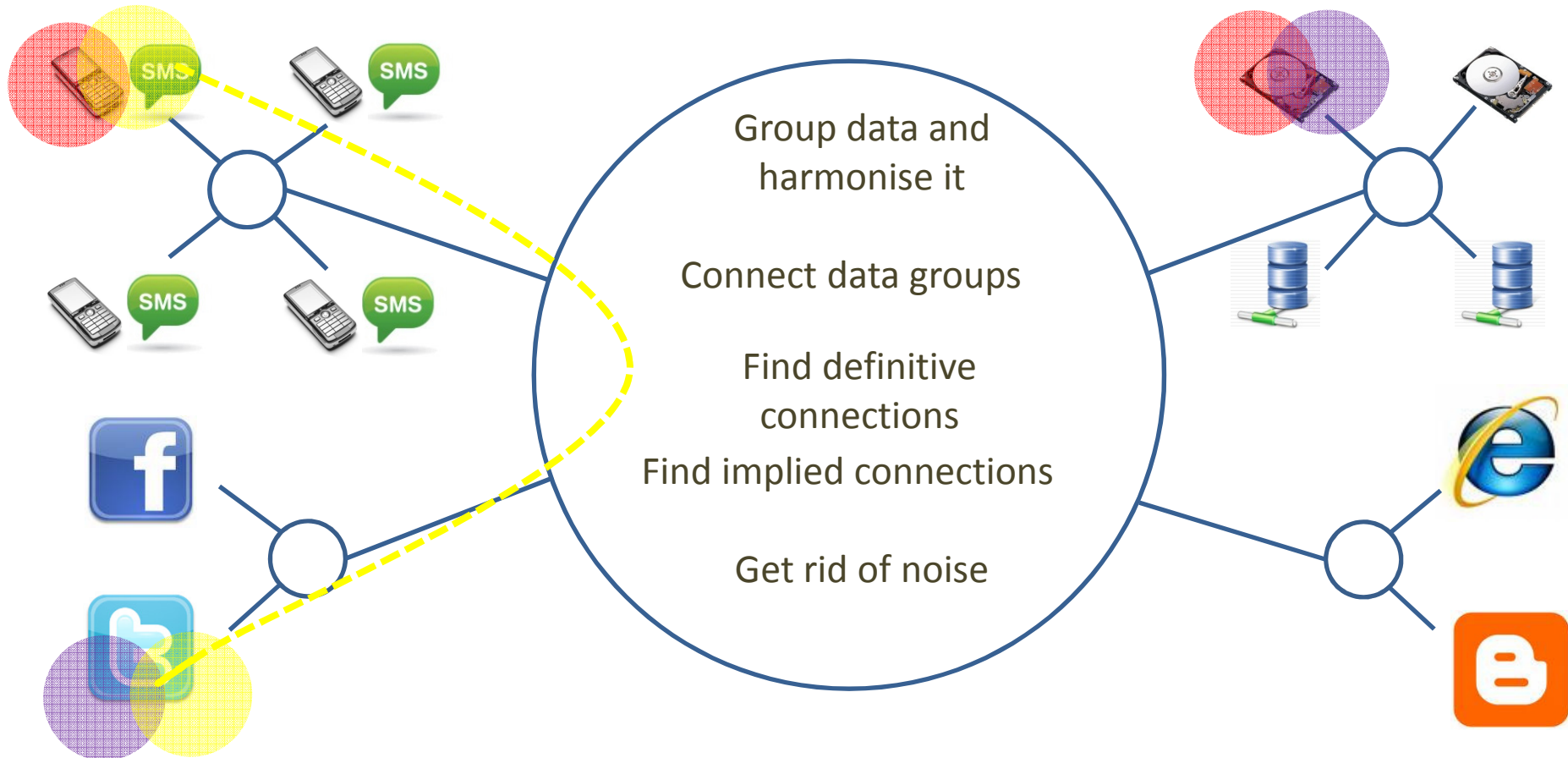
Next Generation Software

Entity Abstraction



Next Generation Software

Links and Relationships

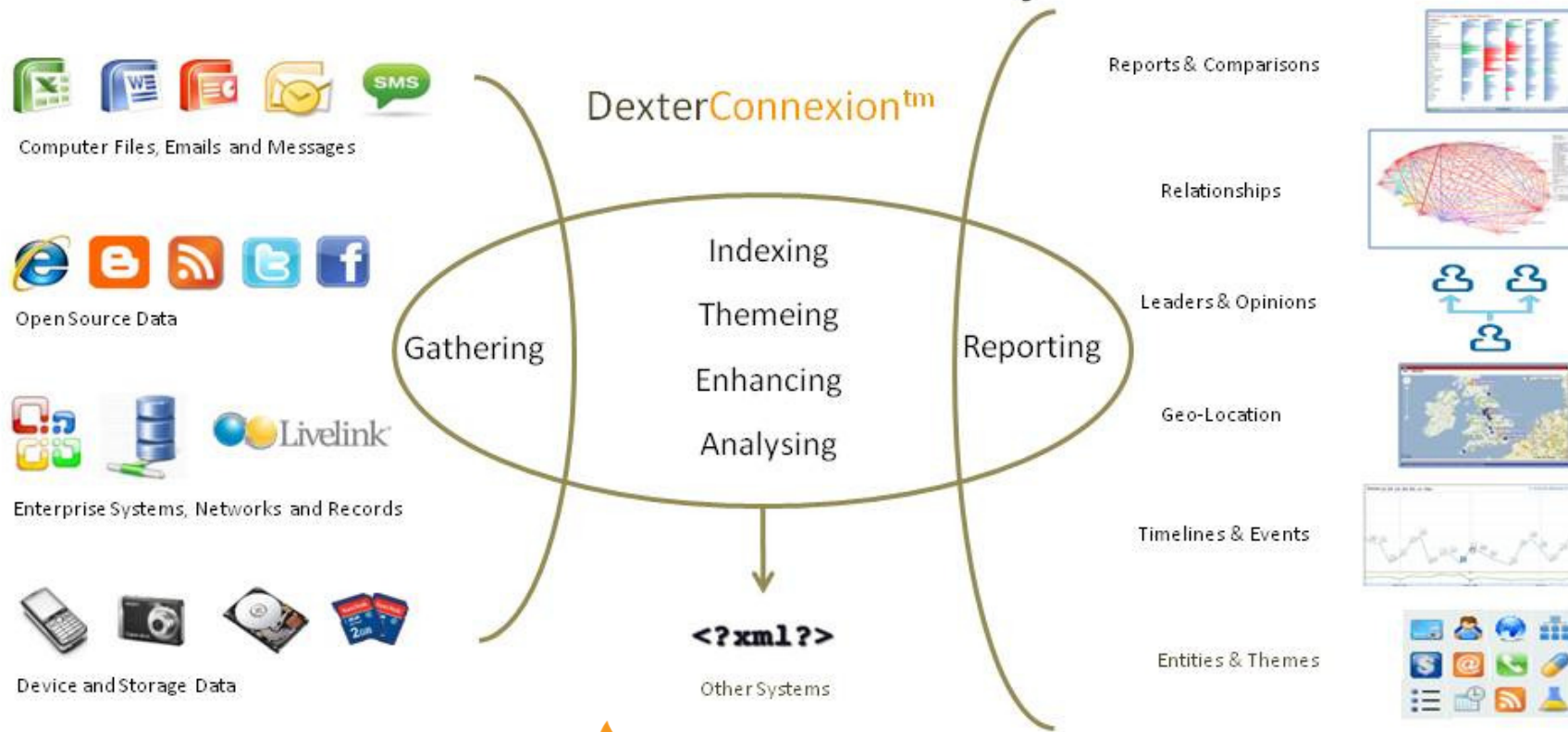


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Next Generation Software

Information Discovery Platform



<http://www.dexterintel.com/>

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Any Questions?

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Use of Technology to Detect Collusive Practices

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Tackling Corruption and Collusion in Public Procurement: Latin
America and the Caribbean

September 12, 2013

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