

Here Comes Everything: Preparing for the Linked Web of Data

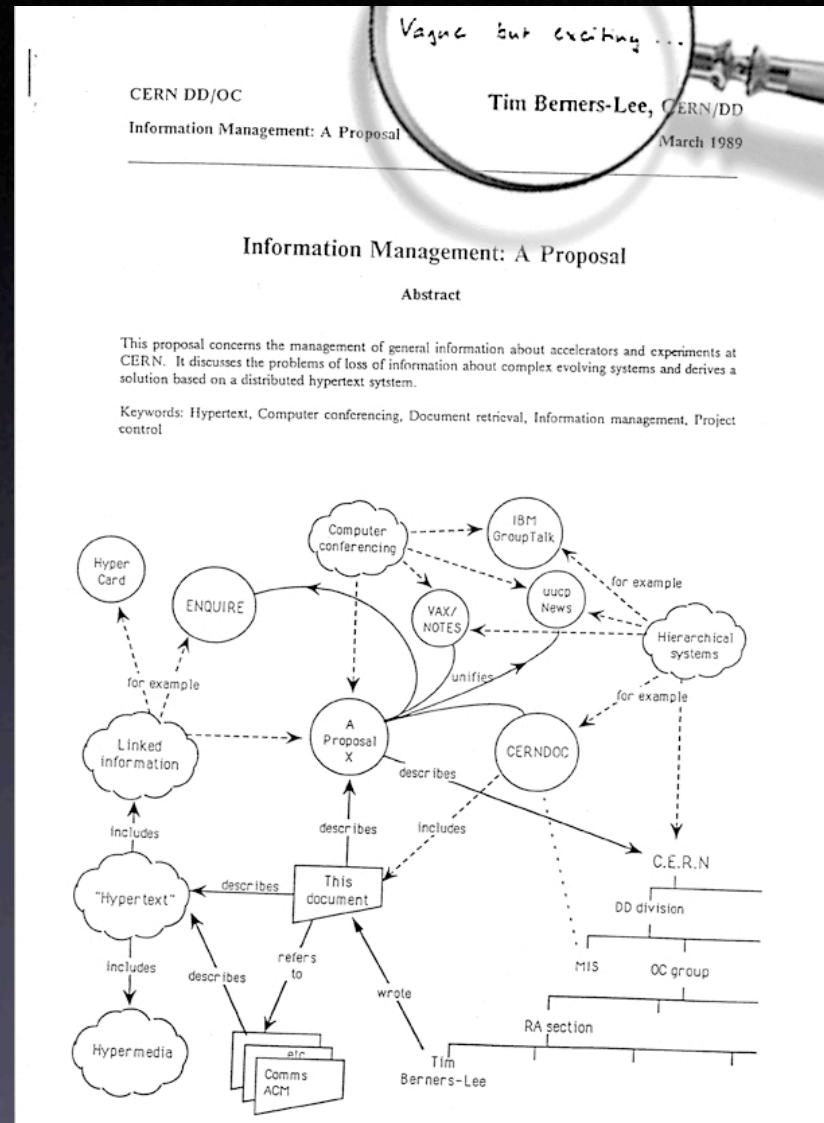
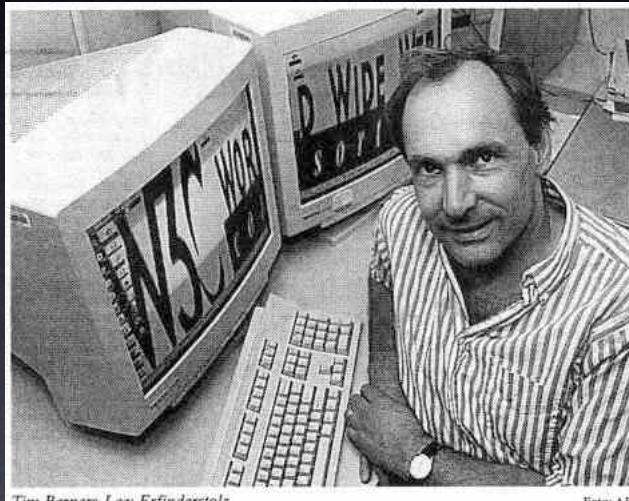
Wendy Hall
Nigel Shadbolt

GSE Annual Conference
25 January 2010
London

Part 1 - Here Comes Everything

Wendy Hall

GSE Annual Conference
25 January 2010
London



Lessons learnt:

Big is beautiful:
the network is everything (tbl)

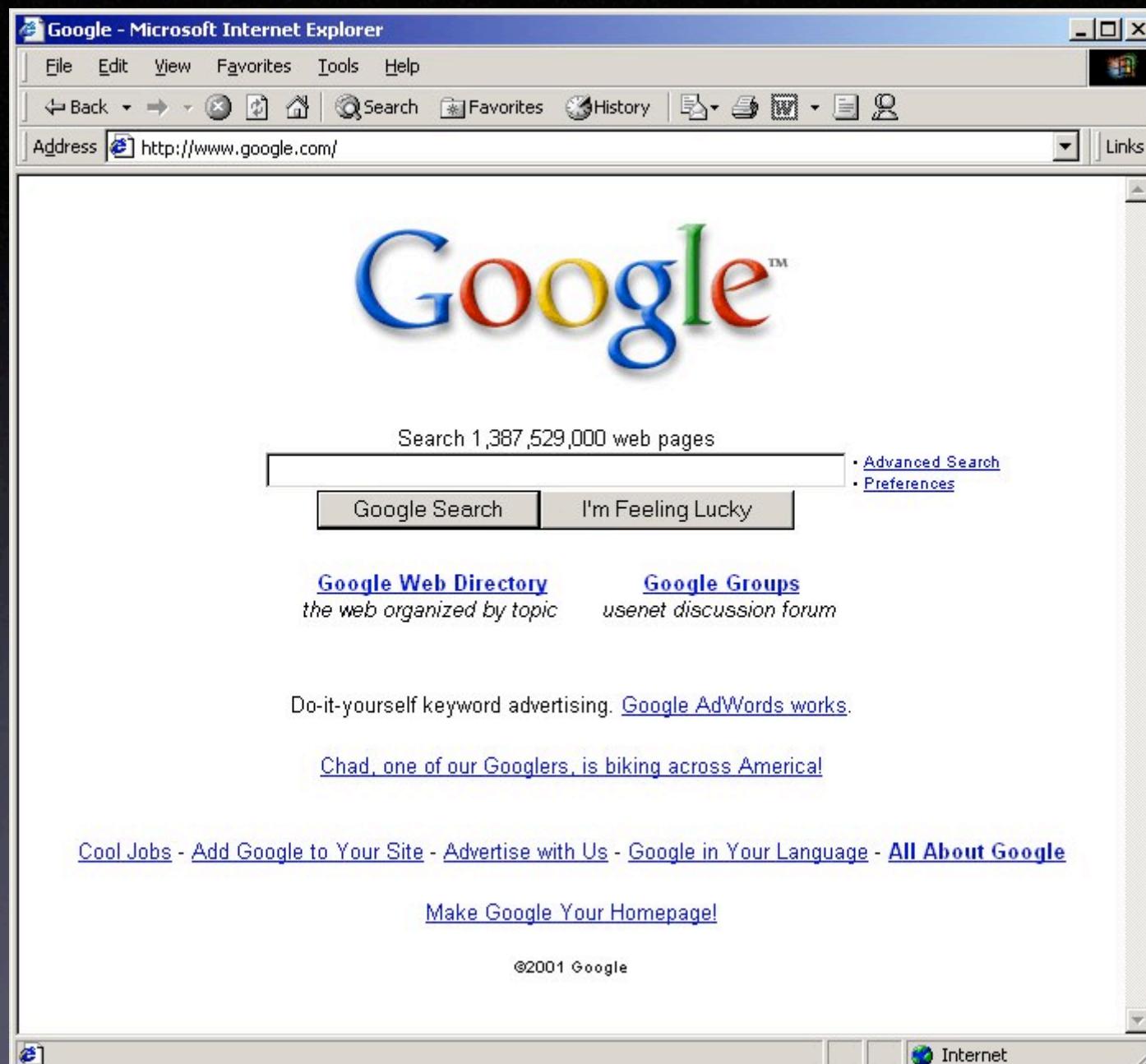
Scruffy works: let the links fail to make it scale (tbl)

Democracy rules: open and free (tbl)

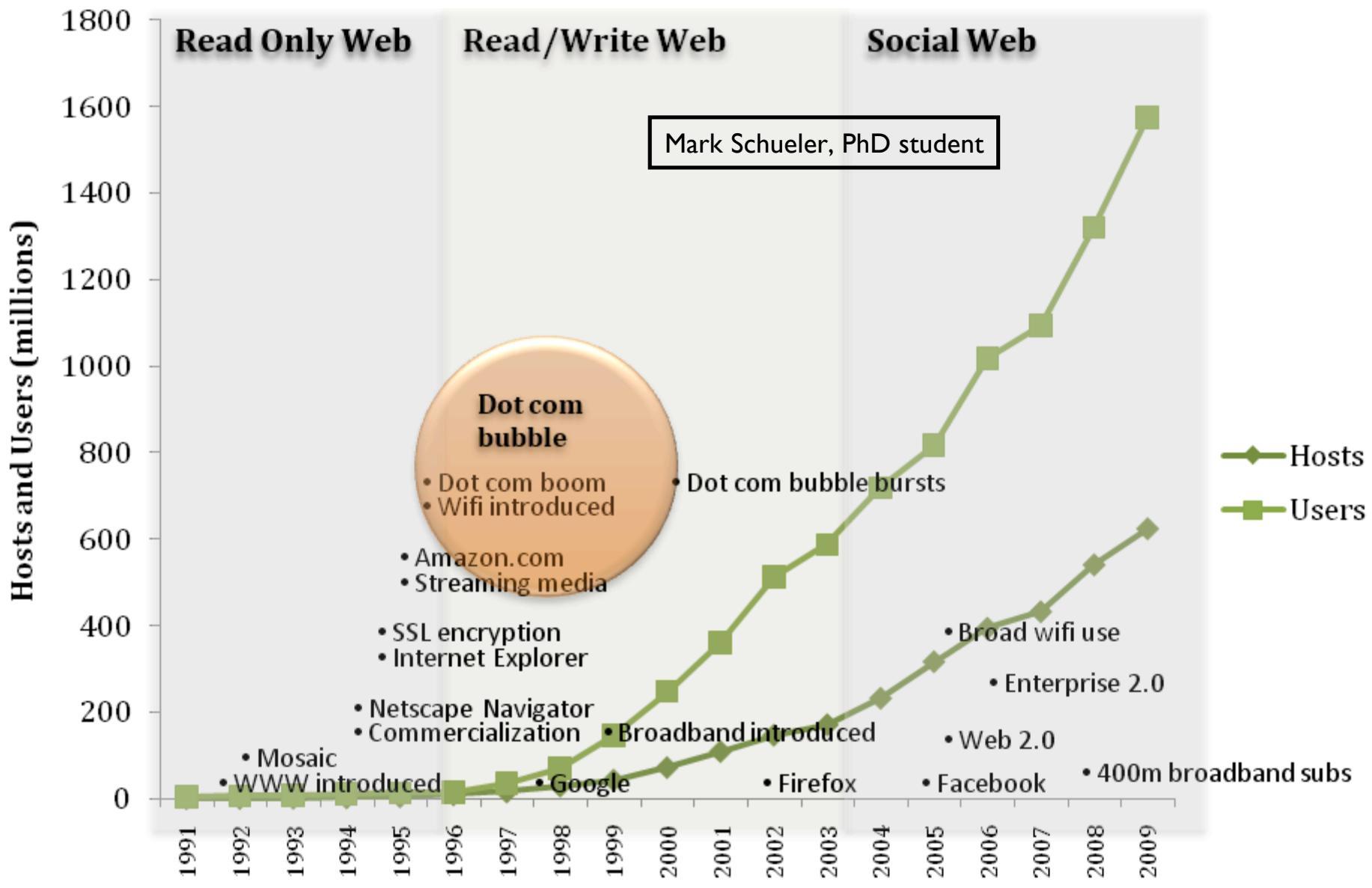
Open, non-proprietary, universal standards

But as the Web got bigger

Couldn't find information easily just by following links



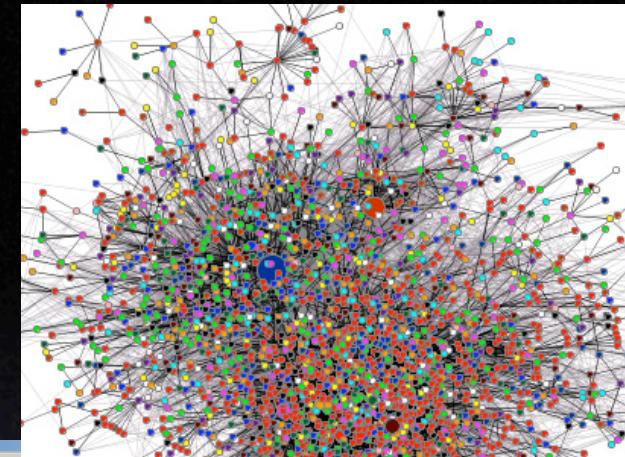
Internet Growth - Usage Phases - Tech Events



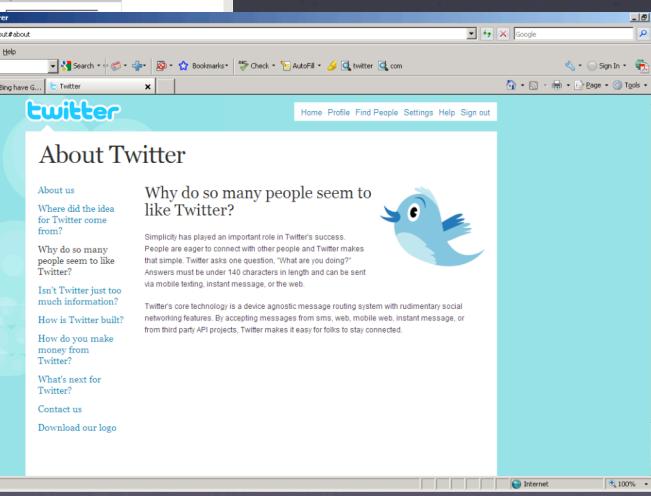
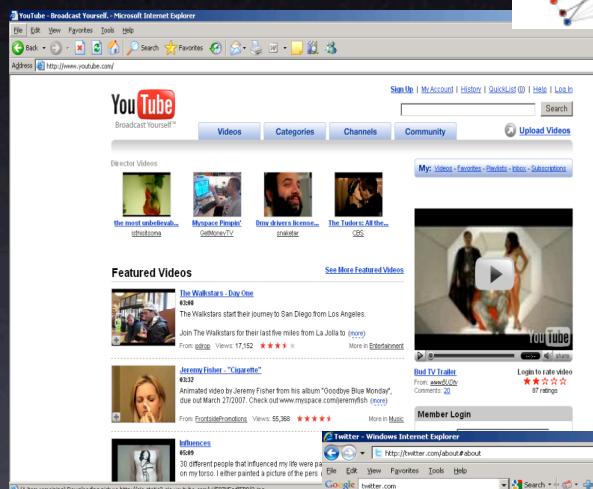
Note – events shown relate to the time axis only.

Web 2.0

- Wiki's
- Blogs
- Folksonomies
- Flickr
- YouTube
- MySpace
- Facebook
- Second Life
- Twitter



Blogosphere



About Twitter

Why do so many people seem to like Twitter?

Twitter has played an important role in Twitter's success. People are eager to connect with other people and Twitter makes that simple. Twitter asks one question: "What are you doing?" Answers must be under 140 characters in length and can be sent via mobile texting, instant message, or the web.

Simplicity has played an important role in Twitter's success. People are eager to connect with other people and Twitter makes that simple. Twitter asks one question: "What are you doing?" Answers must be under 140 characters in length and can be sent via mobile texting, instant message, or the web.

Twitter's core technology is a device agnostic message routing system with rudimentary social networking features. By accepting messages from sms, web, mobile web, instant message, or from third party API projects, Twitter makes it easy for folks to stay connected.

About us
Where did the idea for Twitter come from?
Why do so many people seem to like Twitter?
Isn't Twitter just too much information?
How is Twitter built?
How do you make money from Twitter?
What's next for Twitter?
Contact us
Download our logo

Wikipedia, the free encyclopedia - Windows Internet Explorer

http://en.wikipedia.org/wiki/Main_Page

File Edit View Favorites Tools Help

Google Wikipedia

W Wikipedia, the free encyclopedia realtimecollisiondetection.net

main page discussion view source history

Wikipedia is there when you need it — now it needs you.

\$0.9M USD \$7.5M USD

Donate Now

Welcome to Wikipedia, the free encyclopedia that anyone can edit.

3,102,741 articles in English

navigation

- Main page
- Contents
- Featured content
- Current events
- Random article

search

Go Search

interaction

- About Wikipedia
- Community portal
- Recent changes
- Contact Wikipedia
- Donate to Wikipedia
- Help

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link

WIKIPEDIA The Free Encyclopedia

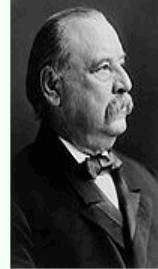
navigation

- Arts
- History
- Society
- Biography
- Mathematics
- Technology
- Geography
- Science
- All portals

Overview · Editing · Questions · Help

Contents · Categories · Featured content · A-Z index

Today's featured article

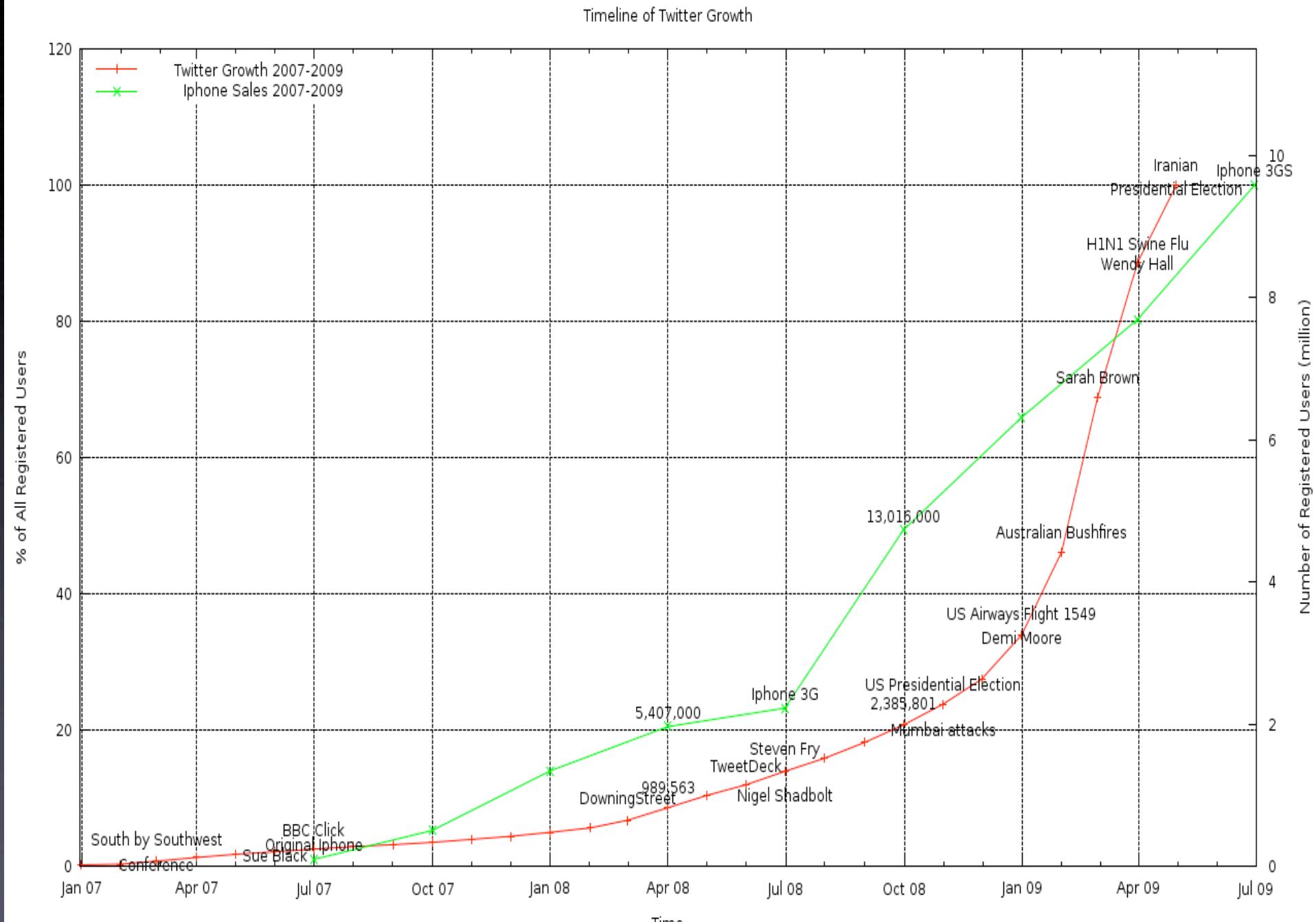
 Grover Cleveland (1837–1908) was both the 22nd and 24th President of the United States. Cleveland is the only President to serve two non-consecutive terms (1885–1889 and 1893–1897) and therefore is the only individual to be counted twice in the numbering of the presidents. He was the winner of the popular vote for President three times—in 1884, 1888, and 1892—and was the only Democrat elected to the Presidency in the era of Republican political domination that lasted from 1860 to 1912. Cleveland's admirers praise him for his honesty, independence, integrity, and commitment to the principles of classical liberalism. As a leader of the Bourbon Democrats, he opposed imperialism, taxes, subsidies and inflationary policies, but as a reformer he also worked against corruption, patronage, and bossism. Critics complained that he had little imagination and seemed overwhelmed by the nation's economic disasters—depressions and strikes—in his second term. Even so, his reputation for honesty and good character survived the troubles of his second term. (more...)

Recently featured: Werner Mölders – Electron – Han Dynasty

In the news

- At least 104 people are killed in a mine explosion in Heilongjiang, People's Republic of China.
- Continued flooding affecting Great Britain and Ireland (affected areas pictured) results in two deaths.
- Egypt recalls its ambassador to Algeria in a dispute following a qualifying match between the nations for the 2010 FIFA World Cup.
- Prime Minister of Belgium Herman Van Rompuy is chosen as the first permanent President of the European Council.
- British politician Catherine Ashton is selected as the first High Representative of the European Union for Foreign Affairs and Security Policy.
- A United States district court finds the Army Corps of Engineers was negligent in maintaining New Orleans levees that contributed to flooding during Hurricane Katrina.

Internet 100%



Galaxy Zoo 2 - Windows Internet Explorer

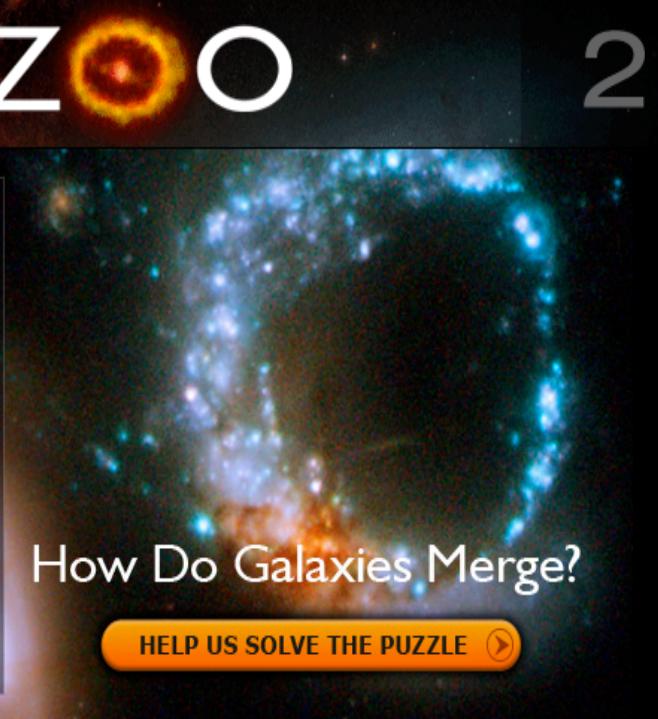
http://www.galaxyzoo.org/ Google

File Edit View Favorites Tools Help

Google Galaxy Zoo Search Sidewiki Bookmarks Check Translate AutoFill Galaxy Zoo Sign In Page Tools

Galaxy Zoo Galaxy Zoo 2

GALAXY ZOO 2



GALAXY ZOO
UNDERSTANDING COSMIC MERGERS

By colliding galaxies on your computer, you can help us trace the past, present and future of Galaxy Zoo mergers

How Do Galaxies Merge?

HELP US SOLVE THE PUZZLE

Home The Story So Far The Science How To Take Part Classify Galaxies Forum Zoo Media Blog FAQ Contact Us

Welcome to Galaxy Zoo, where you can help astronomers explore the Universe

New, more detailed images added - see here for details

The Galaxy Zoo files contain almost a quarter of a million galaxies which

Classifier Log In

[Click here to log in](#)

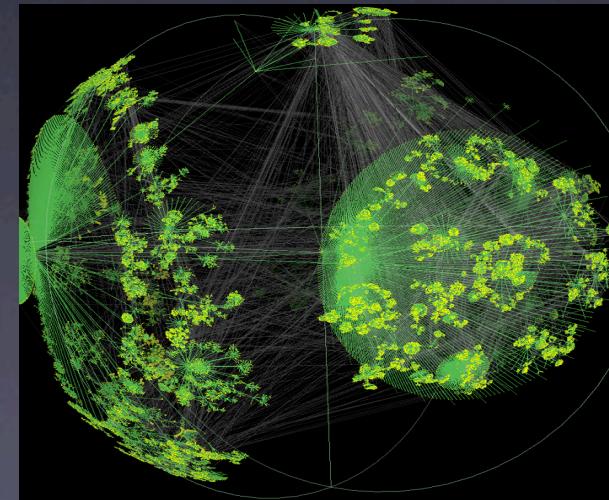
Register
 Forgotten Password?

Done

Internet 100%

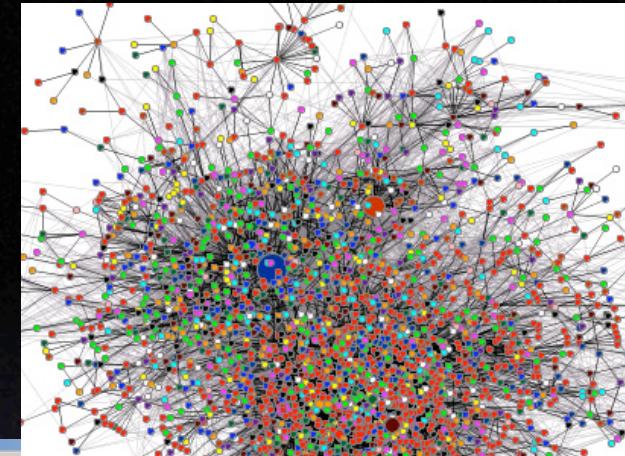
Web 1.0

A Web of Documents

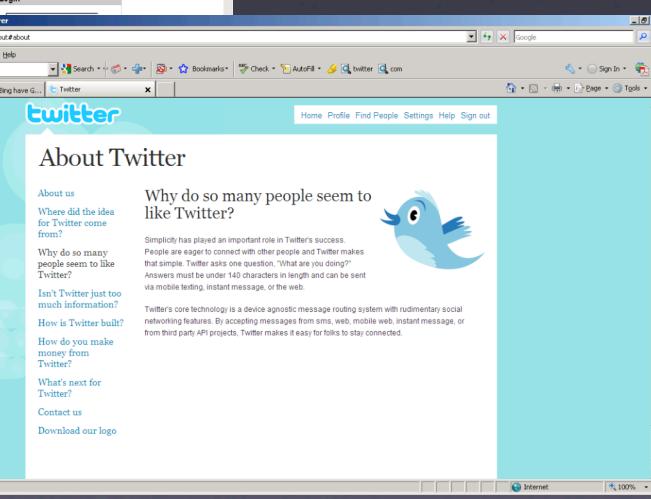
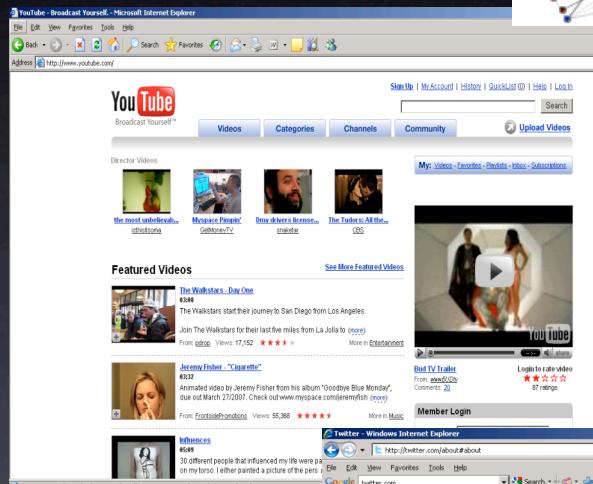


Web 2.0

- Wiki's
- Blogs
- Folksonomies
- Flickr
- YouTube
- MySpace
- Facebook
- Second Life
- Twitter



Blogosphere



About Twitter

Why do so many people seem to like Twitter?

Twitter has played an important role in Twitter's success. People are eager to connect with other people and Twitter makes that simple. Twitter asks one question: "What are you doing?" Answers must be under 140 characters in length and can be sent via mobile texting, instant message, or the web.

Simplicity has played an important role in Twitter's success. People are eager to connect with other people and Twitter makes that simple. Twitter asks one question: "What are you doing?" Answers must be under 140 characters in length and can be sent via mobile texting, instant message, or the web.

Twitter's core technology is a device agnostic message routing system with rudimentary social networking features. By accepting messages from sms, web, mobile web, instant message, or from third party API projects, Twitter makes it easy for folks to stay connected.

About us
Where did the idea for Twitter come from?
Why do so many people seem to like Twitter?
Isn't Twitter just too much information?
How is Twitter built?
How do you make money from Twitter?
What's next for Twitter?
Contact us
Download our logo

Tomorrow the Web of Linked Data

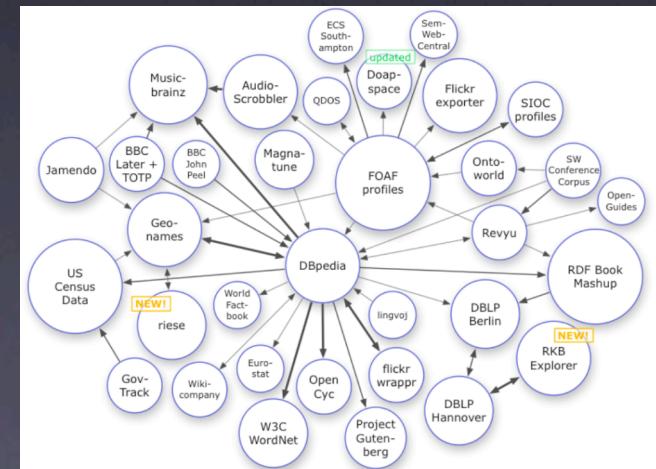
We're eager to share data for all sorts of reasons

What are the implications for business?

What are social and policy implications?

What will we do with it?

Web 3.0?



Linking Data

<http://www2002.org>



W W W 2 0 0 2

THE ELEVENTH INTERNATIONAL
WORLD WIDE WEB CONFERENCE

Sheraton Waikiki Hotel
Honolulu, Hawaii, USA
7-11 May 2002

CONFERENCE ORGANIZERS



International World Wide Web Conference Committee

1 LOCATION. 5 DAYS. LEARN. INTERACT.

Registered participants coming from:

Australia · Canada · Chile · Denmark · France · Germany · Ghana · Hong Kong · India · Italy · Ireland · Japan · Malta · New Zealand · The Netherlands · Norway · Singapore · Switzerland · The United States · Vietnam · Zambia

REGISTER NOW

On 7-11 May 2002, Honolulu, Hawaii will provide the backdrop for The Eleventh International World Wide Web Conference. This prestigious series of the International World Wide Web Conference Committee (IW³C²) attracts participants from around the world, and it provides a public forum for the World Wide Web Consortium (W3C) through the annual W3C track.

The conference is being organized by the International World Wide Web Conference Committee (IW³C²), the University of Hawaii and the Pacific Telecommunications Council (PTC).

FEATURED SPEAKERS (CONFIRMED)



Tim Berners-Lee, inventor of the World Wide Web and Director of the W3C who now holds the 3Com Founders chair at the Laboratory for Computer Science (LCS) at the Massachusetts Institute of Technology (MIT).



Richard A. DeMillo, vice president and chief technology officer for Hewlett-Packard Company.



Ian Foster, guru of "Grid Computing", associate



In a way that machines can “understand”....

[http://
www2002.org](http://www2002.org)

W W W 2 0 0 2

THE ELEVENTH INTERNATIONAL
WORLD WIDE WEB CONFERENCE

This is a type of object event and this is
its title

This is the URL of the web page for the
event

This is a type of object photograph and
the photograph is of Tim Berners-Lee

Tim Berners-Lee is an invited speaker at
the event

Conference
Committee

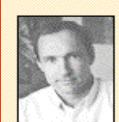
Sponsorship/
Exhibition
Opportunities

Volunteer
Information

Information
about Hawaii

Previous & Future
WWW Conferences

The conference is being organized by the International World Wide Web Conference Committee (IW³C²), the University of Hawaii and the Pacific Telecommunications Council (PTC).



Tim Berners-Lee, inventor of the World Wide Web and Director of the W3C who now holds the 3Com Founders chair at the Laboratory for Computer Science (LCS) at the Massachusetts Institute of Technology (MIT).

Ian Foster, guru of "Grid Computing", associate

FEATURED SPEAKERS (CONFIRMED)

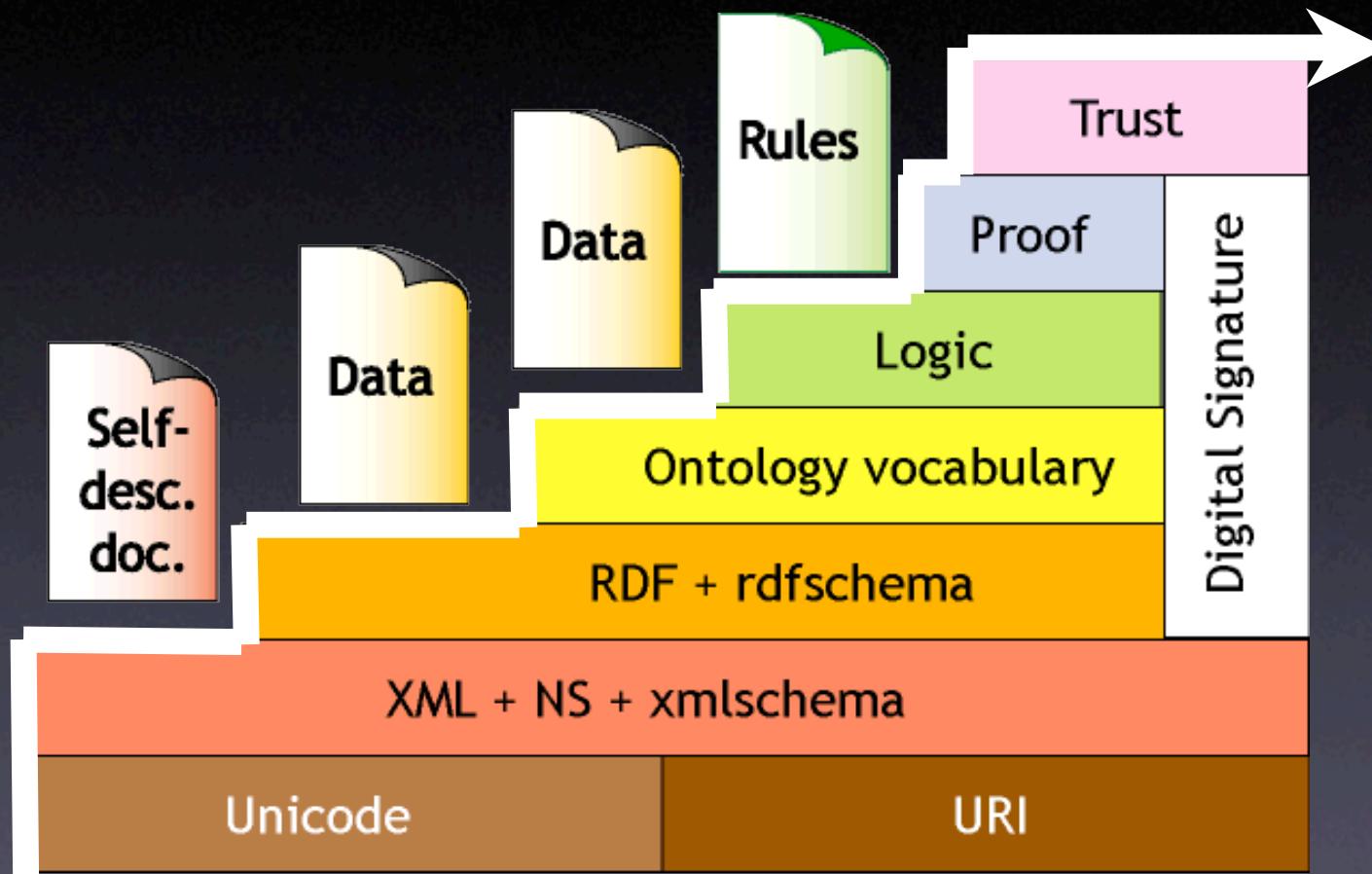


Richard A. DeMillo, vice president and chief technology officer for Hewlett-Packard Company.



McArthur Prize Winner,

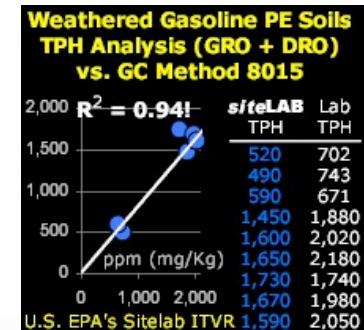
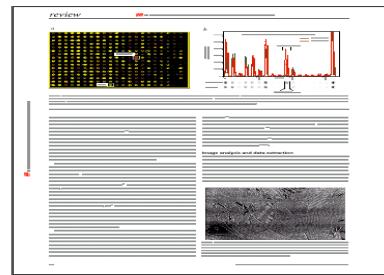
The Semantic Web



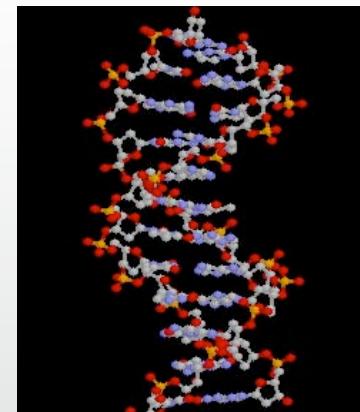
Semantic Web LayerCake (Berners-Lee, 99; Swartz-Hendler, 2001)

Can mark up and link any resource...

- Publications...
- Multimedia...
- Databases...
- Scientific structures...
- Workflow...
- People...



Web data set (XHTML)

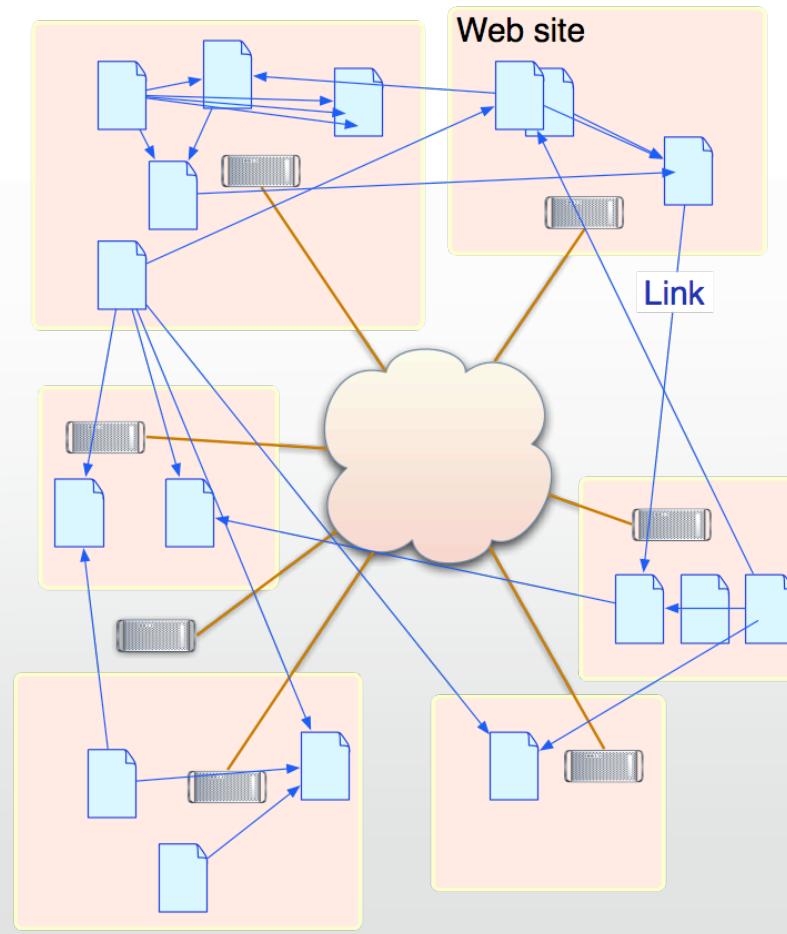


Part 2 - Preparing for the Linked Web of Data

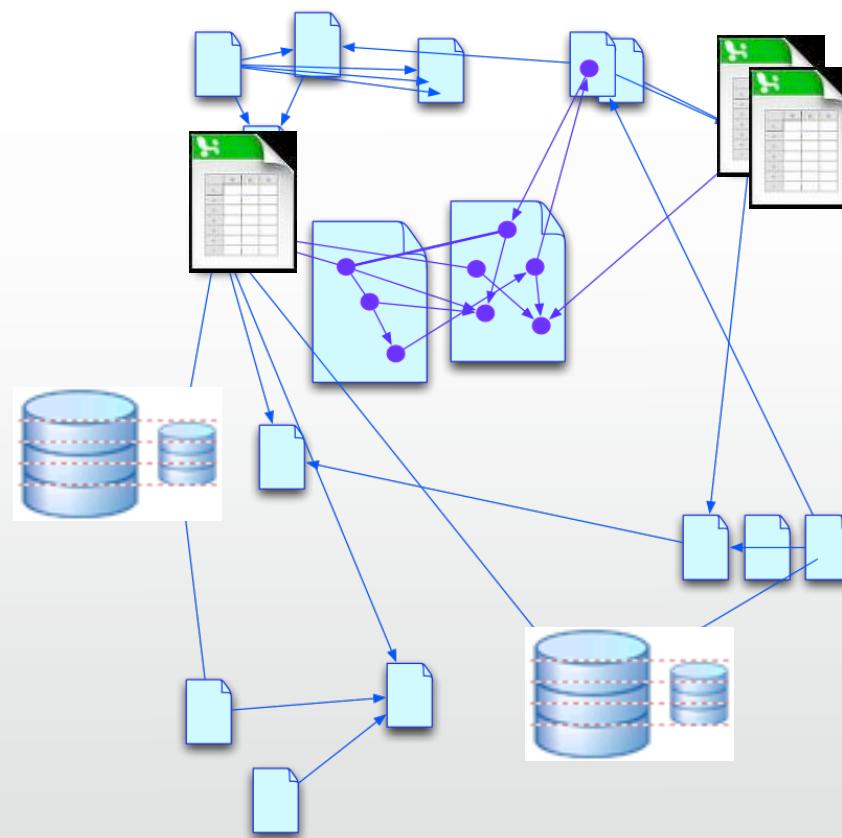
Nigel Shadbolt

GSE Annual Conference
25 January 2010
London

From a Web of documents...



To a Web of data...



Technical Principles

The four micro principles of the Semantic Web

1. All entities of interest, such as information resources, real-world objects, and vocabulary terms should be identified by URI references.
2. URI references should be dereferenceable, meaning that an application can look up a URI over the HTTP protocol and retrieve RDF data about the identified resource.
3. Data should be provided using the RDF/XML syntax
4. Data should be interlinked with other data.

The Semantic Web Revisited

*Nigel Shadbolt and Wendy Hall, University of Southampton
Tim Berners-Lee, Massachusetts Institute of Technology*



Nigel Shadbolt is a professor of artificial intelligence in the School of Electronics and Computer Science at Southampton University. Contact him at nrs@ecs.soton.ac.uk.



Tim Berners-Lee is the director of the World Wide Web Consortium, a senior researcher at the Massachusetts Institute of Technology's Computer Science and Artificial Intelligence Laboratory, and a professor of computer science in the Department of Electronics and Computer Science at Southampton University. Contact him at timbl@w3.org.



Wendy Hall is a professor of computer science in the School of Electronics and Computer Science at Southampton University. Contact her at wh@ecs.soton.ac.uk.

Principle 1: URIs

- Uniform Resource identifier
- A Web based identifier
- You can dereference them – get something back
- Information about objects, relations, properties and values

<http://id.ecs.soton.ac.uk/person/2686>

<http://rdf.ecs.soton.ac.uk/person/2686>

<http://rdf.ecs.soton.ac.uk/project/464>

<http://rdf.ecs.soton.ac.uk/publication/11065>

<http://education.data.gov.uk/doc/school/120805>

<http://southampton.rkbexplorer.com/id/person-02686>

http://dbpedia.org/resource/Nigel_Shadbolt

Principle 2: Dereferencable

- Uniform Resource identifier
- A Web based identifier
- You can dereference them – get something back
- Information about objects, relations, properties and values

▼ Southampton ECS People: Professor Nigel R Shadbolt		
	Description	This rdf document contains information about a person Southampton. http://www.ecs.soton.ac.uk/people/nrs
	Source	Southampton ECS People: Professor Nigel R Shadbo
	Title	2009-11-26T10:53:20Z
	Date Created	Ontology
	type	Southampton ECS People: Professor Nigel R Shadbo
	label	Professor
Nigel Shadbolt	Appellation	Shadbolt
	Family Name	Professor Nigel R Shadbolt
	Full Name	Nigel R
	Given Name	http://id.ecs.soton.ac.uk/role/2686
	Role	http://id.ecs.soton.ac.uk/project/221
	member Of	http://id.ecs.soton.ac.uk/project/293
		http://id.ecs.soton.ac.uk/project/312
		http://id.ecs.soton.ac.uk/project/353
		http://id.ecs.soton.ac.uk/project/361
		http://id.ecs.soton.ac.uk/project/381
		http://id.ecs.soton.ac.uk/project/395
		http://id.ecs.soton.ac.uk/project/443
		http://id.ecs.soton.ac.uk/project/44
		http://id.ecs.soton.ac.uk/project/45
		http://id.ecs.soton.ac.uk/project/463
		http://id.ecs.soton.ac.uk/project/464
		http://id.ecs.soton.ac.uk/project/465
		http://id.ecs.soton.ac.uk/project/466
		http://id.ecs.soton.ac.uk/project/467
		http://id.ecs.soton.ac.uk/project/508
		http://id.ecs.soton.ac.uk/project/623
		http://id.ecs.soton.ac.uk/project/629
		http://id.ecs.soton.ac.uk/project/630
	type	Person
	family name	Shadbolt
	givenname	Nigel R
	homepage	http://users.ecs.soton.ac.uk/nrs/
	img	http://www.ecs.soton.ac.uk/image.php?id=person_268
		http://www.ecs.soton.ac.uk/image.php?id=person_268&checksum=6c2158b33a0c10e328ec62f9ed1cc73
	mbox	mailto:nrs@ecs.soton.ac.uk
	name	Professor Nigel R Shadbolt

Principle 3: RDF back

- Uniform Resource identifier
- A Web based identifier
- You can dereference them – get something back
- Information about objects, relations, properties and values

▼ Southampton ECS Projects: MIMEX: Multivariant Information Management and Exploitation		
Southampton ECS Projects: MIMEX: Multivariant Information Management and Exploitation	Description	This rdf document contains information about a University of Southampton. http://www.ecs.soton.ac.uk/research/projects/4
http://id.ecs.soton.ac.uk/project/443	Source	Southampton ECS Projects: MIMEX: Multivariant Information Management and Exploitation
	Title	2009-11-26T10:58:31Z
	Date Created	
	type	
	label	
	associated With	
	associated With Unit	
	Name	General Dynamics
	Theme	Organization
		University of Cardif
		Organization
		Ministry of Defenc
		Organization
		http://id.ecs.soton.ac.uk/UoS/ECS
		MIMEX: Multivariant Information Management
		http://id.ecs.soton.ac.uk/theme/106
		http://id.ecs.soton.ac.uk/theme/127
		http://id.ecs.soton.ac.uk/theme/130
		http://id.ecs.soton.ac.uk/theme/38
		http://id.ecs.soton.ac.uk/theme/66
		https://www.edefence.org/mimex
		http://id.ecs.soton.ac.uk/group/iam
		in Calendar Clock
		day
		hour
		minute
		month
		year
		type
	ends	2006-07-03T00:00:00Z
		Instant
		in Calendar Clock
		day
		hour
		minute
		month
		year
		type
		2009-03-31T00:00:00Z
		Instant

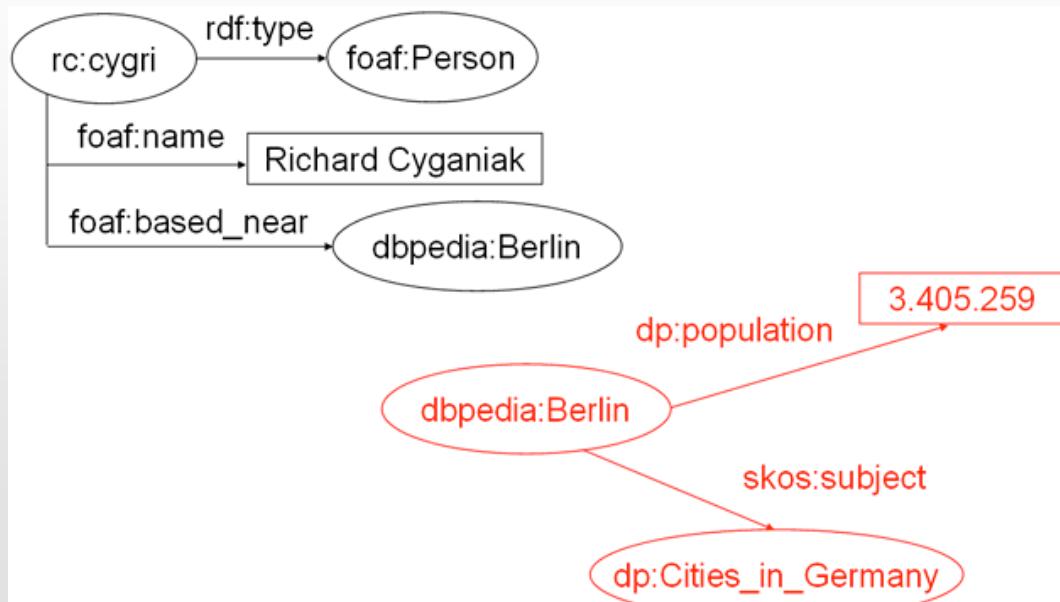
Essential RDF

- Statements about resources in the form of subject-predicate-object
- A knowledge representation language for the Web
- Represents information as sets of triples
- Every element of a triple can be a URI or literal
- Sets of RDF triples can be represented as graphs

rc:cygri	rdf:type	foaf:Person.
rc:cygri	foaf:name	"Richard Cyganiak" .
rc:cygri	foaf:based_near	dbpedia:Berlin .
dbpedia:Berlin	dp:population	"3,405,259"
dpedia:Berlin	skos:subject	dp:Cities_in_Germany.

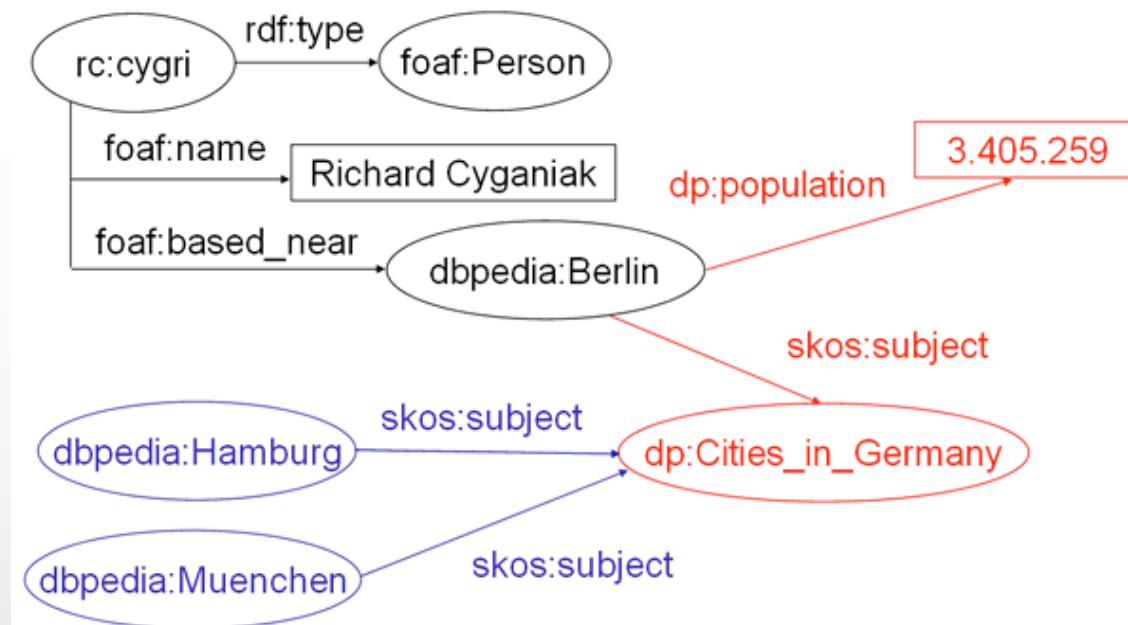
Essential RDF

- Statements about resources in the form of subject-predicate-object
- A knowledge representation language for the Web
- Represents information as sets of triples
- Every element of a triple can be a URI or literal
- Sets of RDF triples can be represented as graphs



Chris Bizer et al

Principle 4: Link data



Chris Bizer et al

Principle 4: Link data

<http://rdf.ecs.soton.ac.uk/person/2686>

<http://southampton.rkbexplorer.com/id/person-02686>

http://dbpedia.org/resource/Nigel_Shadbolt

The screenshot shows two side-by-side browser windows. Both windows have a header with the SIGMA logo and navigation links for Help, About, and Forum. The left window is for the URL <http://southampton.rkbexplorer.com/id/person-02686>. It shows a list of facts under the heading 'Sources (20) Approved (0) Rejected (0)'. The facts include:

- 1 Nigel R Shadbolt 316 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/person-02686>
- 2 AKT Selected Papers 2004 4 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-12485>
- 3 INSTRUCTA-Phase II 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2408>
- 4 Techniques of Temporal ... 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2409>
- 5 Expert Systems - A Natur... 5 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2374>
- 6 Research and Development... 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2272>
- 7 Report of the 8th Worksh... 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2386>
- 8 Processing Reference 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2314>
- 9 Expert Systems in the Fi... 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2401>
- 10 Intelligent Interfaces 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2402>
- 11 Preliminary Report of th... 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2403>
- 12 A Framework for Research... 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2405>
- 13 Living Documents 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2407>
- 14 Tempus Fugit I: Representing Time and Change 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2410>
- 15 Hypermedia for knowledge... 3 facts | 2009-09-17 <http://southampton.rkbexplorer.com/id/eprints-2417>

The right window is for the URL http://dbpedia.org/resource/Nigel_Shadbolt. It shows a similar list of facts:

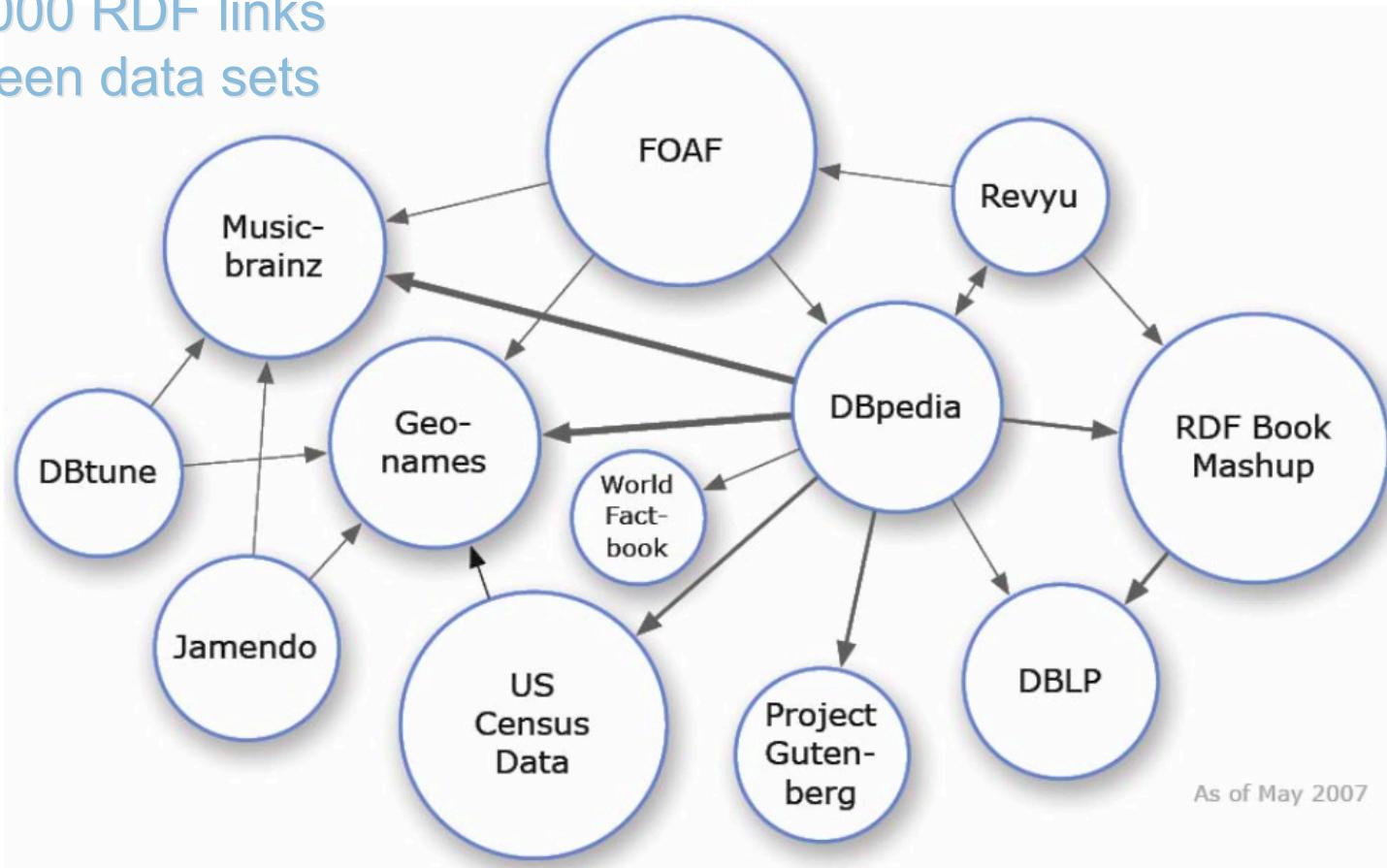
- 1 Nigel Shadbolt 10 facts | 2009-09-20 http://dbpedia.org/resource/Nigel_Shadbolt
- 2 Untitled document 1 facts | 2009-08-25 http://dbpedia.org/resource/Professor_Nigel_Shadbolt...
- 3 Untitled document 1 facts | 2009-08-24 http://dbpedia.org/resource/Web_Science_Research_In...
- 4 Untitled document 1 facts | 2009-08-27 http://dbpedia.org/resource/Daniel_Weitzner
- 5 Untitled document 1 facts | 2009-08-27 http://dbpedia.org/resource/Web_Science
- 6 English computer scienti... 2 facts | 2009-09-22 http://dbpedia.org/resource/Category:English_comput...
- 7 Academics of the Univers... 2 facts | 2009-09-19 http://dbpedia.org/resource/Category:Academics_of_...
- 8 Semantic Web 8 facts | 2009-11-11 http://dbpedia.org/resource/Semantic_Web
- 9 Fellows of the British C... 2 facts | 2009-09-19 http://dbpedia.org/resource/Category:Fellows_of_the...
- 10 Fellows of the Royal Aca... 2 facts | 2009-09-19 http://dbpedia.org/resource/Category:Fellows_of_the...
- 11 Untitled document 1 facts | 2009-09-23 http://dbpedia.org/resource/Template:dbp_name
- 12 Untitled document 1 facts | 2009-08-25 http://dbpedia.org/resource/Nottingham_University
- 13 British computer scienti... 2 facts | 2009-09-19 http://dbpedia.org/resource/Category:British_comput...
- 14 Wendy Hall | Faviki.Ta... 2 facts | 2009-09-06 http://www.faviki.com/tag/Wendy_Hall
- 15 Nigel Shadbolt | Faviki.Ta... 2 facts | 2009-09-07 http://www.faviki.com/tag/Nigel_Shadbolt

Both windows have a bottom bar with buttons for 'reject all', 'approve all', and 'add source url'.

Linked Data on the Web: May 2007^{an}

500 Million RDF Triples

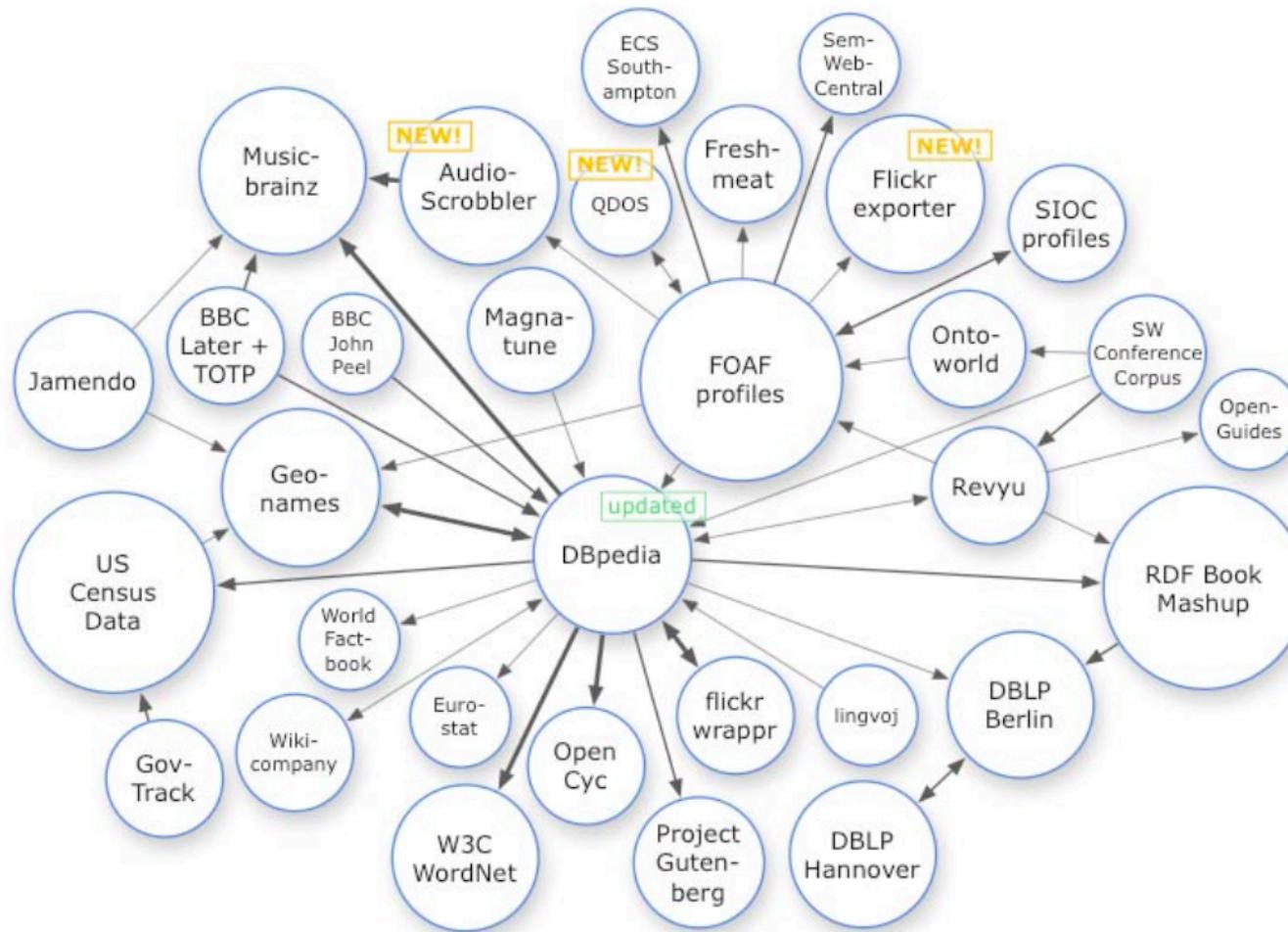
120,000 RDF links
between data sets



As of May 2007

Richard Cyganiak

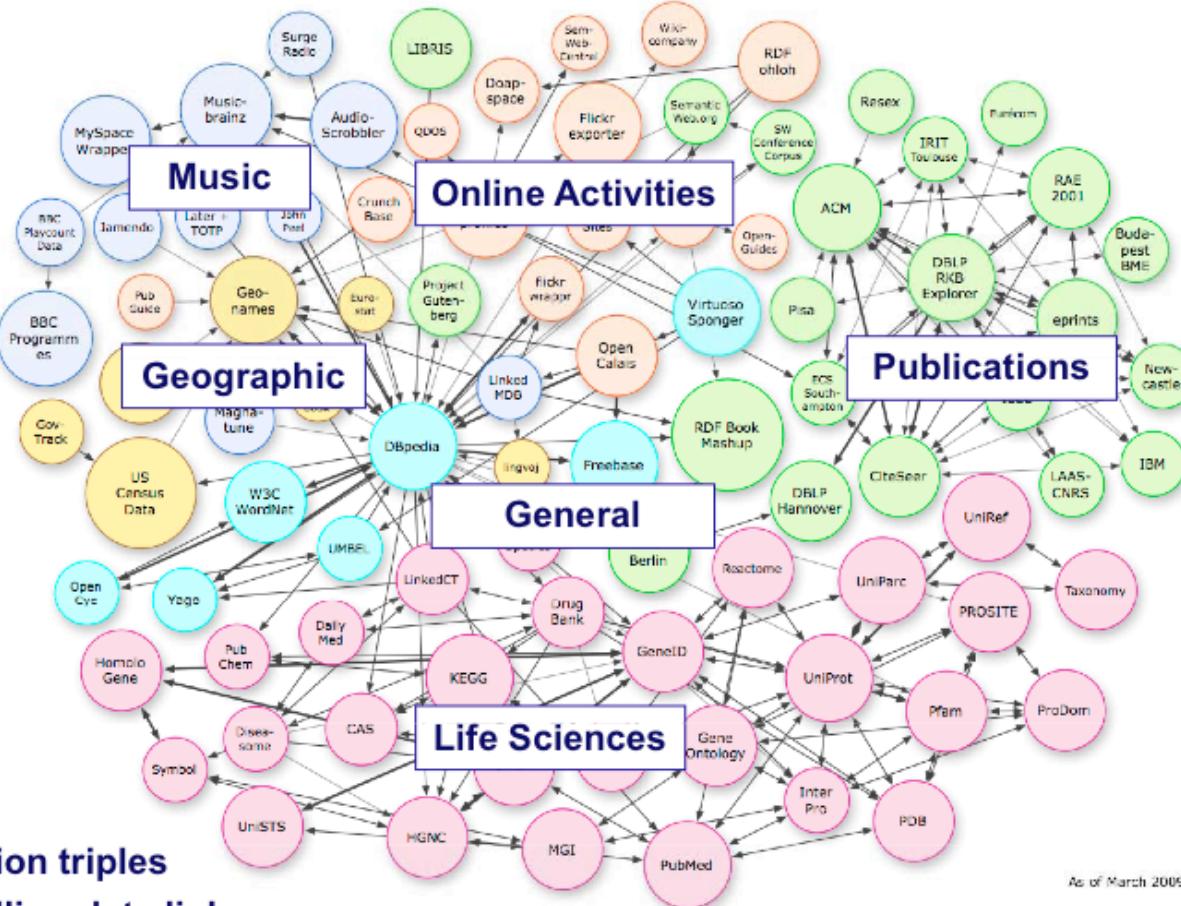
Linked Data on the Web: February 2008



Richard Cyganiak

Linked Data on the Web: March 2009

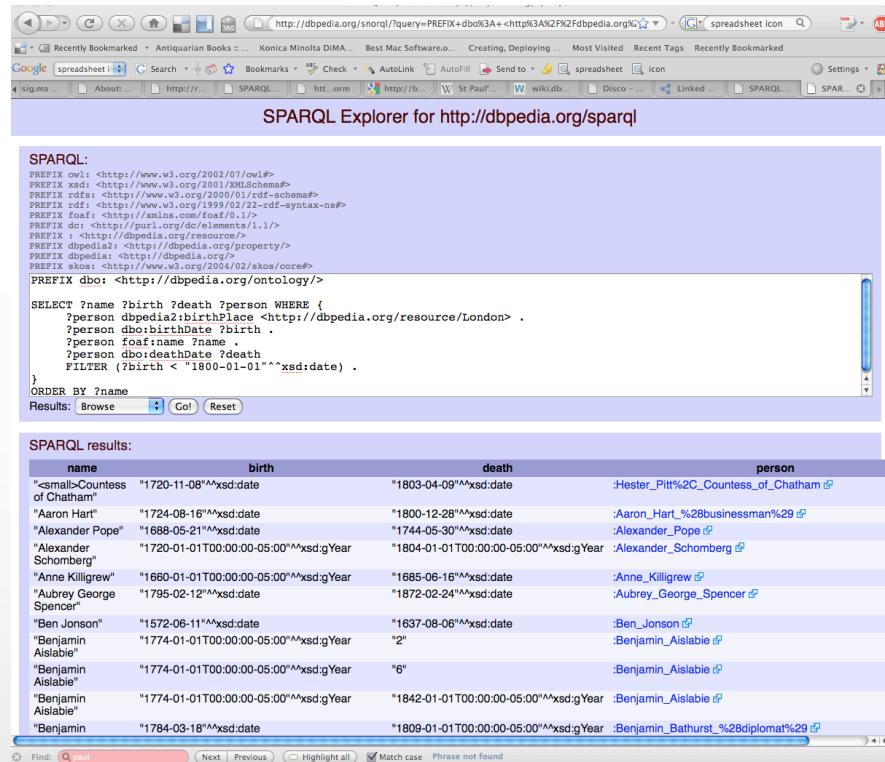
LOD Datasets on the Web: March 2009



Richard Cyganiak

SPARQL

- A data access language for RDF triples on the Web
- Queries across diverse data sources, whether the data is stored natively as RDF or viewed as RDF via middleware
- SPARQL contains capabilities for querying required and optional graph patterns along with their conjunctions and disjunctions



```

PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX doi: <http://purl.org/dc/elements/1.1/>
PREFIX dbpedia: <http://dbpedia.org/resource/>
PREFIX dbpedia2: <http://dbpedia.org/resource/>
PREFIX dbpedia2i: <http://dbpedia.org/resource/>
PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
PREFIX dbo: <http://dbpedia.org/ontology/>

SELECT ?name ?birth ?death ?person WHERE {
  ?person dbpedia2:birthPlace <http://dbpedia.org/resource/London> .
  ?person dbo:birthDate ?birth .
  ?person foaf:name ?name .
  ?person dbo:deathDate ?death
  FILTER (?birth < "1800-01-01"^^xsd:date) .
}
ORDER BY ?name

```

Results: Browse (Go) (Reset)

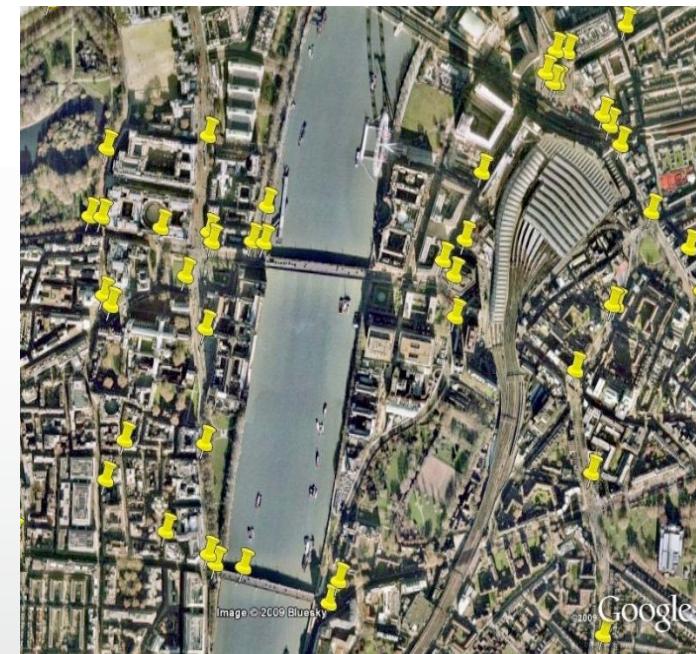
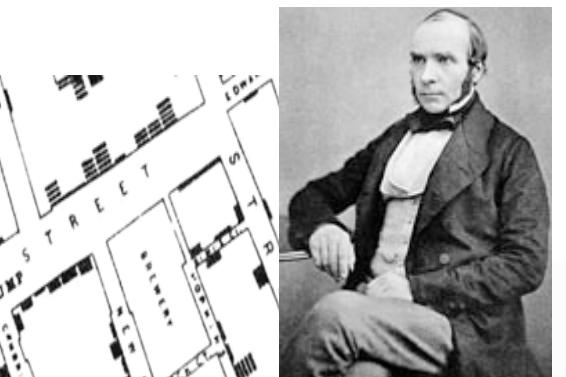
SPARQL results:

name	birth	death	person
"small-Countess of Chatham"	"1720-11-08"^^xsd:date	"1803-04-09"^^xsd:date	:Hester_Pitt%2C_Countess_of_Chatham
"Aaron Hart"	"1724-08-16"^^xsd:date	"1800-12-28"^^xsd:date	:Aaron_Hart_%28businessman%29
"Alexander Pope"	"1688-05-21"^^xsd:date	"1744-05-30"^^xsd:date	:Alexander_Pope
"Alexander Schomberg"	"1720-01-01T00:00:00-05:00"^^xsd:gYear	"1804-01-01T00:00:00-05:00"^^xsd:gYear	:Alexander_Schomberg
"Anne Killigrew"	"1660-01-01T00:00:00-05:00"^^xsd:gYear	"1685-06-16"^^xsd:date	:Anne_Killigrew
"Aubrey George Spencer"	"1795-02-12"^^xsd:date	"1872-02-24"^^xsd:date	:Aubrey_George_Spencer
"Ben Jonson"	"1572-06-11"^^xsd:date	"1637-08-06"^^xsd:date	:Ben_Jonson
"Benjamin Aislabie"	"1774-01-01T00:00:00-05:00"^^xsd:gYear	"2"	:Benjamin_Aislabie
"Benjamin Aislabie"	"1774-01-01T00:00:00-05:00"^^xsd:gYear	"6"	:Benjamin_Aislabie
"Benjamin Aislabie"	"1774-01-01T00:00:00-05:00"^^xsd:gYear	"1842-01-01T00:00:00-05:00"^^xsd:gYear	:Benjamin_Aislabie
"Benjamin"	"1784-03-18"^^xsd:date	"1809-01-01T00:00:00-05:00"^^xsd:gYear	:Benjamin_Bathurst_%28diplomat%29

The Power of Linked Public Data



Cholera
cases



Bicycling traffic
accidents

Improving Public Services



FillThatHole
.ORG.UK



Contents

- ▼ Hazards
 - Report a hazard
 - Map
 - List
 - Monthly Totals
- ▼ Authorities
 - List
 - League Table
- Information
- Pothole News
- Search
- Help
- Contact

User login

Username:

Password:

- Create new account
- Request new password

CTC Websites

- Main CTC Site
- Accident Line
- Cycle insurance
- Forum
- Holidays
- Maps
- Shop
- Travel Insurance

Map

Click on the map to zoom in, click a hazard marker flag for more information.

[Link to this view](#)

[Google Earth KML](#)

Go To Hazard

#

Site Statistics

Total reports: 23,657
Fixed reports: 8,627
Percent fixed: 36%
Reports per day: 22.1

Contents © 2000-2007 CTC, the UK's national cyclists' organisation, All Rights Reserved.
[CTC Main Site](#) | [Contact](#)

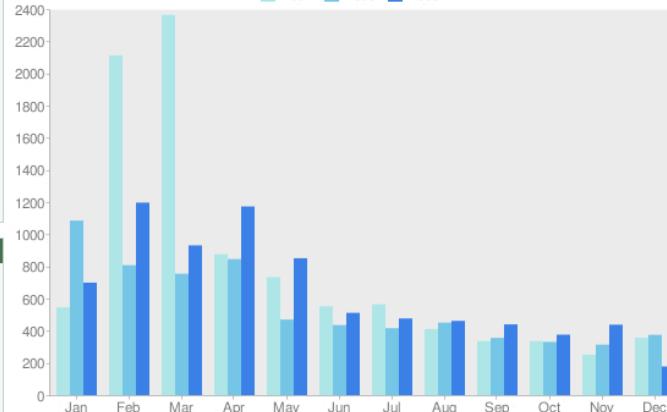
Improving Public Services



FillThatHole
.ORG.UK
working for cycling

Monthly Totals

Hazards Reported by Month



Month	2007	2008	2009
Jan	600	1100	700
Feb	800	900	1200
Mar	2200	700	950
Apr	900	850	1200
May	750	500	900
Jun	550	450	550
Jul	550	450	500
Aug	450	450	500
Sep	350	400	450
Oct	300	350	350
Nov	250	350	400
Dec	350	350	200

Hazards Reported by Month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	546	2112	2364	876	734	553	565	411	336	336	251	357
2008	1085	808	755	846	470	436	416	451	356	331	314	375
2009	699	1197	931	1173	851	512	477	462	440	376	438	178

CTC Websites

- Main CTC Site
- Accident Line
- Cycle insurance
- Forum
- Holidays
- Maps
- Shop
- Travel Insurance

Contents © 2000-2007 CTC, the UK's national cyclists' organisation, All Rights Reserved.
[CTC Main Site](#) | [Contact](#)



Go To Hazard

#

Site Statistics

Total reports: 23,657
 Fixed reports: 8,627
 Percent fixed: 36%
 Reports per day: 22.1



Improving Public Services



FillThatHole
.ORG.UK

League Table

Rank (Fixed %)	Authority	Total Reports	Open Reports	Fixed Reports	Fixed %
1	Torfaen	3	0	3	100%
2	Cumbria	225	32	188	85%
3	East Ayrshire	11	2	9	82%
4	Gateshead	17	3	13	81%
5	Clackmannanshire	16	3	13	81%
6	Newcastle	75	14	59	81%
7	Northumberland	202	39	140	78%
8	Durham	54	12	41	77%
9	Sefton	16	4	12	75%
10	Bolton	59	12	33	73%
11	Bracknell Forest	18	5	12	71%
12	North Tyneside	86	23	49	68%
13	Luton	8	3	5	63%
14	Kirklees	108	42	63	60%
15	Scottish Borders	21	8	12	60%
16	Rutland	6	2	3	60%
17	Aberdeenshire	32	13	19	59%
18	Waltham Forest	36	15	21	58%
19	Slough	14	5	7	58%
20	Hounslow	325	129	173	57%
21	Blackpool	8	3	4	57%
22	Halton	7	3	4	57%
23	Blackburn	38	16	21	57%
24	Suffolk	254	106	139	57%
25	Northern Ireland Roads Service	64	27	35	56%
26	Sunderland	19	7	9	56%
27	Powys	20	8	10	56%
28	Plymouth	60	26	31	54%



Go To Hazard

Go

Site Statistics

Total reports: 23,657
Fixed reports: 8,627
Percent fixed: 36%
Reports per day: 22.1



Progress to date

- Top down
 - Ministerial
 - CIO/CTOs
 - Engaged key data holders
- Middle Out
 - Civil Servants
 - Inventory of Information Assets
- Bottom up
 - Engaging with and pushed by developer community
 - Cross Gov URI workshops
 - data.gov.uk



Progress to date

- Top down
 - Ministerial
 - CIO/CTOs
 - Engaged key data holders
- Middle Out
 - Civil Servants
 - Inventory of Information Assets
- Bottom up
 - Engaging with and pushed by developer community
 - Cross Gov URI workshops
 - data.gov.uk

Number10.gov.uk
The official site of the Prime Minister's Office

Home News Communicate Meet the PM History and Tour Number 10 TV Enter search terms Go

Home > Ordnance Survey to open up data - PM

News

Latest News
Speeches and Transcripts
Statements and Articles
Prime Minister's Questions
Press Briefings
Press Notices
Webchats

Tuesday 17 November 2009
Ordnance Survey to open up data - PM

The Prime Minister has announced that the public will have more access to Ordnance Survey maps from next year, as part of a government drive to open up data to improve transparency.

- Communities and Local Government website
- Read more about the Make Public Data Public project

Gordon Brown said the government and Ordnance Survey, Great Britain's national mapping agency, will open up the data relating to electoral and local authority boundaries, postcode areas and mapping information.

Mr Brown made the announcement at a Smarter Government seminar at Downing Street this afternoon.

He said:

"I think we're on the verge of a revolution that can transform public services and the public sector. I'm speaking very specifically about how government can change to meet the needs of the times. I think we are determined to be the first government in the world to open up public information in a way that is far more accessible to the general public."

Gordon Brown said Smarter Government will help secure necessary efficiencies while building on the public services already available.

During the Smarter Government seminar, Sir Tim Berners-Lee and Professor Nigel Shadbolt spoke about the work they have been doing on the 'Make Public Data Public' project. As part of the project, the Government has already released 1,100 datasets to the public.

Newsletter
Sign up to our newsletter to keep updated with the latest information from Number 10
[Click here to subscribe](#)

Around the Web

flickr 
Latest Photos

[View all Images](#)
[Share this:](#) 

YouTube 
Latest Videos

The Cabinet in the East Midlands Thu Nov 26 2009

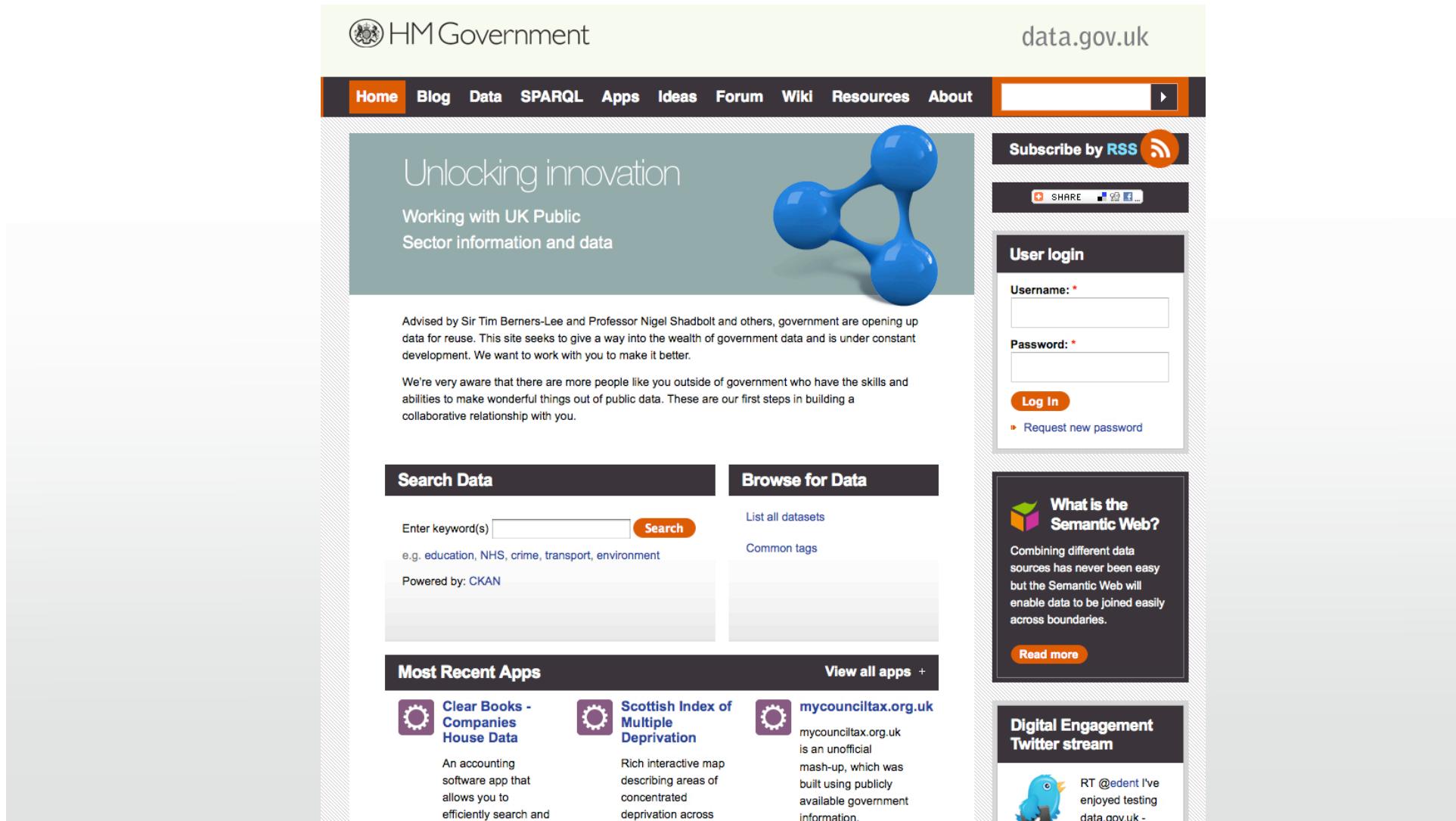
Progress to date

- Top down
 - Ministerial
 - CIO/CTOs
 - Engaged key data holders
- Middle Out
 - Civil Servants
 - Inventory of Information Assets
- Bottom up
 - Engaging with and pushed by developer community
 - Cross Gov URI workshops
 - data.gov.uk



The screenshot shows the homepage of **TIMES ONLINE**. At the top, there is a quote from David Aaronovitch: "I don't think Lord Lawson accepts the science of climate change at all". Below the quote, the navigation bar includes links for NEWS, COMMENT, BUSINESS, MONEY, SPORT, LIFE & STYLE, TRAVEL, DRIVING, ARTS & ENTS, ARCHIVE, OUR PAPERS, and SUBSCRIPTIONS. The main article, "Put in your postcode, out comes the data", is by Tim Berners-Lee and Nigel Shadbolt, published on November 18, 2009. The article discusses how government data is being collected and used. To the right of the article, there are sections for **TIMES RECOMMENDS** (including links to "The ghost of Robin Cook haunts Chilcot's feast", "The truth shouldn't need oaths", and "Violence: let's separate the men from the boys"), **OUR COLUMNISTS** (listing David Aaronovitch and Alpha Mummy), and various news and features boxes for Business Travel, Births, deaths, marriages, Business Directory, Crossword Club, and Free CV Review.

data.gov.uk



The image is a screenshot of the data.gov.uk homepage. At the top left is the HM Government logo. The top right features the text "data.gov.uk". The main header includes a navigation bar with links: Home, Blog, Data, SPARQL, Apps, Ideas, Forum, Wiki, Resources, and About. The "Home" link is highlighted with an orange box. Below the header is a large banner with the text "Unlocking innovation" and "Working with UK Public Sector information and data". To the right of the text is a 3D blue molecular model. To the left of the text is a paragraph about Sir Tim Berners-Lee and Professor Nigel Shadbolt opening up government data for reuse. Below the banner are two search and browse sections: "Search Data" and "Browse for Data". The "Search Data" section includes a search bar with the placeholder "Enter keyword(s)" and a "Search" button. The "Browse for Data" section includes links for "List all datasets" and "Common tags". Below these sections is a "Most Recent Apps" section featuring three items: "Clear Books - Companies House Data", "Scottish Index of Multiple Deprivation", and "mycounciltax.org.uk". To the right of these sections are two sidebar boxes: "What is the Semantic Web?" and "Digital Engagement Twitter stream". The "What is the Semantic Web?" box contains text about combining data sources and a "Read more" button. The "Digital Engagement Twitter stream" box features a small blue bird icon and a tweet from "@edent".

data.gov.uk

The screenshot shows the data.gov.uk homepage. At the top, there is a navigation bar with links for Home, Blog, Data (which is highlighted in orange), SPARQL, Apps, Ideas, Forum, Wiki, Resources, and About. The main content area features a search bar and a 'Subscribe by RSS' button. On the left, there is a sidebar with a 'User login' form and a 'Digital Engagement Twitter stream' section. The main content area displays search results for 'Search Data Feeds', including a result for '2008 Injury Road Traffic Collisions in Northern Ireland' and other datasets like 'Abandoned vehicles' and 'Abortions'.

HM Government

data.gov.uk

Home Blog Data SPARQL Apps Ideas Forum Wiki Resources About

Home

Search Data Feeds

Your search returned 2879 records

2008 Injury Road Traffic Collisions in Northern Ireland

Name: 2008_injury_road_traffic_collisions_in_northern_irland

Description: Calander Year statistics on Injury Road Traffic Collisions in Northern Ireland. Source agency: Police Service of Northern Ireland (PSNI) Designation...

Tags: injury-road-traffic-collisions health-well-being-and-care travel-and-transport transport-accidents-and-casualties safety roads road-safety casualties traffic road

Abandoned vehicles

Name: abandoned_vehicles_2003-04_to_2005-06

Description: Number of abandoned vehicles Source: Department for Environment Food and Rural Affairs (DEFRA); Municipal Waste Management Survey Publisher: DCLG FI...

Tags: waste

Abortions

Name: abortions_2003-05_2007

Description: The abortion rate is the number of abortions (NHS and private) per 1,000 women aged 11-49. Source: Department of Health (DoH) Publisher: Information...

Tags: health

Abortions Statistics

Name: abortions_statistics

Description: The Abortion update contains information on notifications, to the Chief Medical Officer for Scotland, of terminations of pregnancy under the Abortion ...

Tags: well-being-and-care specialist-health-services maternity-and-pregnancy-services scotland health health-and-social-care

Subscribe by RSS

SHARE

User login

Username: *

Password: *

Log In

Request new password

What is the Semantic Web?

Combining different data sources has never been easy but the Semantic Web will enable data to be joined easily across boundaries.

Read more

Digital Engagement Twitter stream

RT @edent I've enjoyed testing data.gov.uk -

data.gov.uk

The screenshot shows the data.gov.uk website interface. At the top, there is a navigation bar with links: Home, Blog, Data (highlighted in orange), SPARQL, Apps, Ideas, Forum, Wiki, Resources, and About. To the right of the navigation bar is a search bar and a 'data.gov.uk' logo. Below the navigation bar, the page title 'Browse Common tags' is displayed. The main content area lists various tags and their counts, such as 'accident (47)', 'accommodation (25)', 'alcohol (35)', etc. To the right of the main content, there are several sidebar modules: 'Subscribe by RSS' with an orange RSS icon, a 'User login' form with fields for 'Username' and 'Password', a 'Log In' button, and a 'Request new password' link. Below these is a module titled 'What is the Semantic Web?' with a description and a 'Read more' button. At the bottom, there is a 'Digital Engagement Twitter stream' module featuring a blue bird icon and a tweet from '@edent'.

HM Government

data.gov.uk

Home Blog Data SPARQL Apps Ideas Forum Wiki Resources About

data.gov.uk

Home > Data

Browse Common tags

- accident (47)
- accommodation (25)
- alcohol (35)
- anti-social-behaviour (9)
- asylum (14)
- benefit (157)
- births (33)
- burglary (8)
- business (79)
- cancer (49)
- carbon-dioxide (1)
- care (450)
- census (198)
- child (410)
- child-protection (13)
- children (305)
- communities (161)
- crime (84)
- criminal-damage (2)
- deaths (73)
- disability (36)
- disease (16)
- drug (40)
- earnings (46)
- economic (71)
- education (185)
- electricity (17)
- emissions (25)
- employment (114)
- energy (47)
- ethnicity (43)
- export (38)
- finance (18)
- fire (32)
- fisheries (3)
- fishing (4)
- ...

Subscribe by RSS

SHARE

User login

Username: *

Password: *

Log In

Request new password

What is the Semantic Web?

Combining different data sources has never been easy but the Semantic Web will enable data to be joined easily across boundaries.

Read more

Digital Engagement Twitter stream

RT @edent I've enjoyed testing data.gov.uk -

data.gov.uk

The screenshot shows the data.gov.uk website interface. At the top, there is a navigation bar with links for Home, Blog, Data, SPARQL (highlighted in orange), Apps, Ideas, Forum, Wiki, Resources, and About. The SPARQL link is highlighted with an orange box. To the right of the navigation bar is a search bar and a 'Subscribe by RSS' button with an orange icon. Below the navigation bar, there is a 'User login' section with fields for 'Username' and 'Password' and a 'Log In' button. To the right of the login section is a box titled 'What is the Semantic Web?' with text about combining data sources and a 'Read more' button. At the bottom right is a 'Digital Engagement Twitter stream' section with a small blue bird icon and a message from a user named @edent. The main content area is titled 'SPARQL search' and contains fields for 'Datasources' (set to 'Analytics') and 'Data format' (set to 'XML'). A large text area contains a SPARQL query:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
SELECT DISTINCT ?type
WHERE {
  ?thing a ?type
} LIMIT 10
```

Below the query is a 'Submit' button.

data.gov.uk

The screenshot shows the homepage of data.gov.uk. At the top, there is a navigation bar with links for Home, Blog, Data, SPARQL, Apps (which is highlighted in orange), Ideas, Forum, Wiki, Resources, and About. To the right of the navigation bar is a search bar and a 'data.gov.uk' logo. On the left, there is an 'HM Government' logo. The main content area features a large banner with the text 'Show us what you can do' and a 'Submit your app' button. Below this, there is a section titled 'Applications – extracting information from data' with a sub-section for 'RECENT APPS'. Three recent applications are listed: 'Clear Books - Companies House Data', 'Scottish Index of Multiple Deprivation', and 'mycounciltax.org.uk'. To the right of the recent apps, there is a 'User login' form, a 'What is the Semantic Web?' section, and a 'Digital Engagement Twitter stream' section.

HM Government

data.gov.uk

Home Blog Data SPARQL Apps Ideas Forum Wiki Resources About

data.gov.uk

Show us what you can do [Submit your app](#)

Applications – extracting information from data

Here you will find applications that others have already created and submitted. You can view, comment on and rate all published applications.

It would be great if you could submit your applications and mashups so they can be shared back with the community.

[Submit your app](#)

RECENT APPS

Clear Books - Companies House Data
An accounting software app that allows you to efficiently search and store data from over 2 million companies through the Companies House WebCheck service.
By Nick Braithwaite 21/01/2010 - 11:33

Scottish Index of Multiple Deprivation
Rich interactive map describing areas of concentrated deprivation across Scotland from 2009. Makes comparative use of previous data sets from 2006 and 2004.
By Dan Moss 21/01/2010 - 11:20

mycounciltax.org.uk
mycounciltax.org.uk is an unofficial mash-up, which was built using publicly available government information. mycounciltax.org.uk makes it easier to find out how much...
By Don Riden 21/01/2010 - 10:56

[View all apps](#)

Subscribe by RSS

SHARE

User login

Username:

Password:

[Log In](#)

[Request new password](#)

What is the Semantic Web?
Combining different data sources has never been easy but the Semantic Web will enable data to be joined easily across boundaries.
[Read more](#)

Digital Engagement Twitter stream

RT @edent I've enjoyed testing data.gov.uk -

data.gov.uk

The screenshot shows the data.gov.uk website with the HM Government logo at the top left. The top navigation bar includes links for Home, Blog, Data, SPARQL, Apps, Ideas (which is highlighted in orange), Forum, Wiki, Resources, and About. A search bar is on the right. The main content area has a header 'Wouldn't it be good if...?' with a 'Submit your Idea' button. Below this is a section titled 'Ideas – the seeds of innovation'. It features a sub-section 'Most Recent Ideas' with two items: 'County Court Judgement Data' and 'Fuel prices vs public transport provision by area'. To the right, there's a sidebar with a 'Subscribe by RSS' button, social sharing options, a 'User login' form, and a 'Digital Engagement Twitter stream' section.

HM Government

data.gov.uk

Home Blog Data SPARQL Apps Ideas Forum Wiki Resources About

Wouldn't it be good if...? [Submit your Idea](#)

Ideas – the seeds of innovation

Got a great idea you'd like to see realised?

Wouldn't it be good if, for example, you could see a map that showed all the local schools, alongside their performance ratings for instant comparison? You might not be able to create such a map but you know it would be useful. Submit your ideas here and the chances are high that someone with the know-how, who shares your interest, will pick up your suggestion.

[Submit your idea](#)

Most Recent Ideas

[View all ideas](#)

County Court Judgement Data
County Court Judgement data is a matter of public record, anyone willing to pay per search is welcome to the data.
By Phil
21/01/2010 - 11:32

Fuel prices vs public transport provision by area
It would be useful to see how the cost of fuel affects people in rural or remote areas where public transport may not be as prevalent or useful as in urban areas.
Showing...
By Lauro
21/01/2010 - 11:24

Do you have a great idea?
[Submit your idea](#)

What is the Semantic Web?
Combining different data sources has never been easy but the Semantic Web will enable data to be joined easily across boundaries.
[Read more](#)

Digital Engagement Twitter stream

RT @edent I've enjoyed testing data.gov.uk -



Alastair Dant (left) / David McCandless (right)

£ Massive Outgoings

Cost for average British taxpayer per day

GOVERNMENTS



ESSENTIALS

NHS



£9.05

Schools



Defence



Roads



TRAVEL

LRT



BANKING CHARGES

Recapitalisations



Bradford & Bingley*

SECURITY

Police



£0.53

Prisons



£0.19

Afghanistan



£0.32

Arts



£0.04

Museums



£0.03

GOING OUT

HELPING OTHERS

Child support



£1.86

Job Seekers



£0.25

Housing benefit



£1.52

Disability benefit



£1.44

Pensions



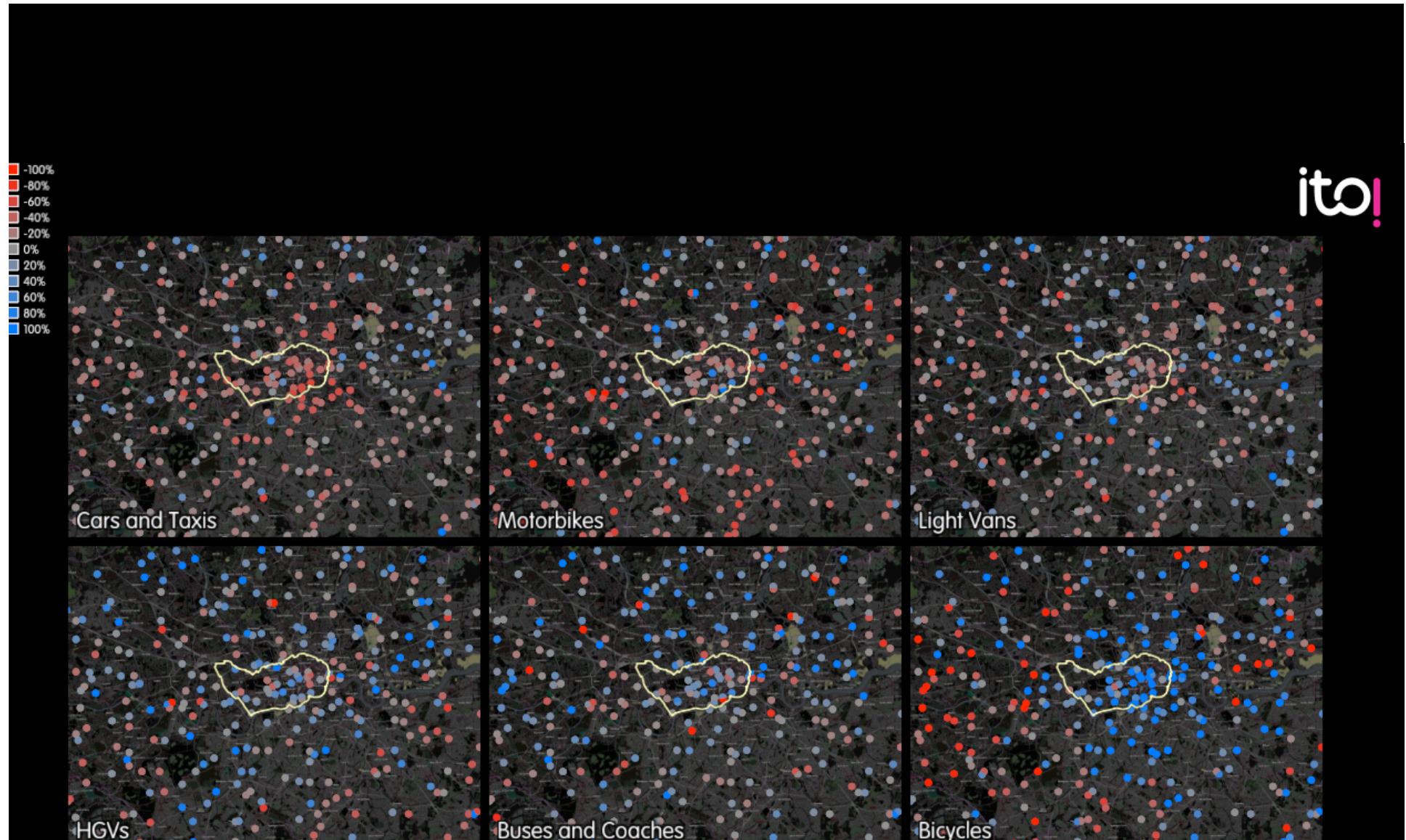
£5.55

Overseas aid



£0.43

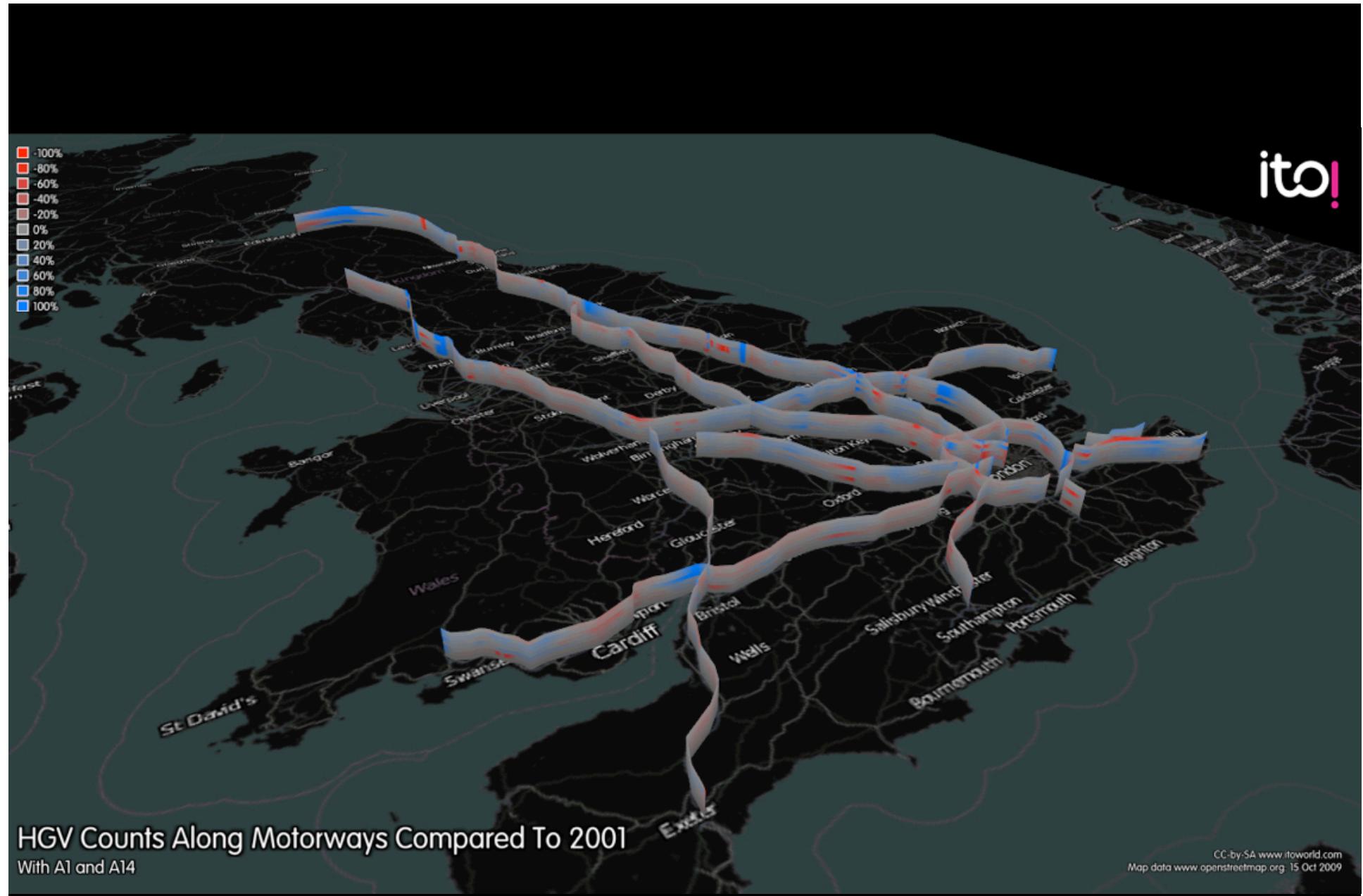
David McCandless



2008 London Counts Compared To 2001

CC-by-SA www.ito-world.com
Map data www.openstreetmap.org: 15 Oct 2009

Chris Osborne



Chris Osborne

NEIGHBOURHOOD

Year	Police Confidence (%)	Overall Crime (approx. cases)
2005	77	2000
2006	77	1800
2007	77	1500
2008	77	1200
2009	77	1000

Police Confidence 77% ↓39%

Overall Crime ↓37% ↓17%

Gun Crime ↓14% ↓13%

Knife Crime ↓11%

Robbery ↓10%

Theft ↓13%

Woundings ↓20% 10000 fewer crime victims

— Hackney Council

Summary
Hackney Police and the Council work very closely to tackle and prevent crime in the borough. Seventy-seven percent of residents now have confidence in Hackney's Police, according to the British Crime Survey, a rise of 35 per cent in less than two years.

The survey also reveals that crime in Hackney has dropped 38 per cent over five years, the second largest drop of all London boroughs. Last year, there were ten thousand fewer victims of crime in Hackney than five years ago.

In 2008/09, gun crime was reduced by over 37 per cent and knife crime by 17 per cent. Youth crime also fell by 10 per cent. Satisfaction with the Police and the Fire Brigade are six per cent above the London average.

ALLOTMENTS

Allotment Plots

Location	Number of Plots
Tower Hamlets	282
Waltham Forest	1,382
Newham	415
Hackney	113
Haringey	1,715
Camden	195

Waiting List Time

Borough	Waiting List Time (approx. weeks)
Tower Hamlets	1 week
Waltham Forest	1 week
Newham	1 week
Hackney	1 week
Haringey	1 week
Camden	1 week

Waiting List Length

Borough	Waiting List Length (approx. weeks)
Tower Hamlets	1 week
Waltham Forest	1 week
Newham	1 week
Hackney	1 week
Haringey	1 week
Camden	1 week

GREEN SPACE 23%
by land area in Hackney

Your nearest parks are:

- Hackney Marshes (10 mins east)
- Victoria Park (15 mins south)
- London Fields (20 mins south west)

RECYCLING

Open every day of the year, except on 25 December, 26 December and 1 January. Open from 8.30am to 5.15pm. South Access Road is for mixed, bulky household waste and trade waste. This site does not accept food/drink cans and foil, furniture in good condition, garden waste, gas bottles, glass bottles and jars, hardcore/rubble, household batteries, long life light bulbs, metal, mobile telephones, paper, plasterboard, plastic bottles, reusable bags.

If you intend to use a van to bring your waste please call 020 8509 3864 at least 24 hours prior to visiting the site. Vans are only allowed to the site between 8.30am and 4pm Monday to Saturday.

You can recycle the following items at this site:

- Bicycles
- Car batteries
- Cardboard
- Computers and printers
- Cooking oil
- Electrical items
- Engine oil
- Food/drink cans and foil
- Furniture in good condition
- Garden waste
- Gas bottles
- Glass bottles and jars
- Household batteries
- Long life light bulbs
- Metal
- Mobile telephones
- Paper
- Plasterboard
- Plastic bottles
- Reusable bags

Why does this matter to you

- Supports information interoperability
- The Sum is greater than the parts
- Exploitation of
 - open data
 - open standards
- Can apply to data intranets as well as extranets
- Publishing, news, media, content services, manufacturing, retail, supply chains, finance, all classic examples where there is heterogeneous information that could be shared, linked, mapped and enriched using this approach



Thank you

- Any further information

nrs@ecs.soton.ac.uk or
wh@ecs.soton.ac.uk