HM Government

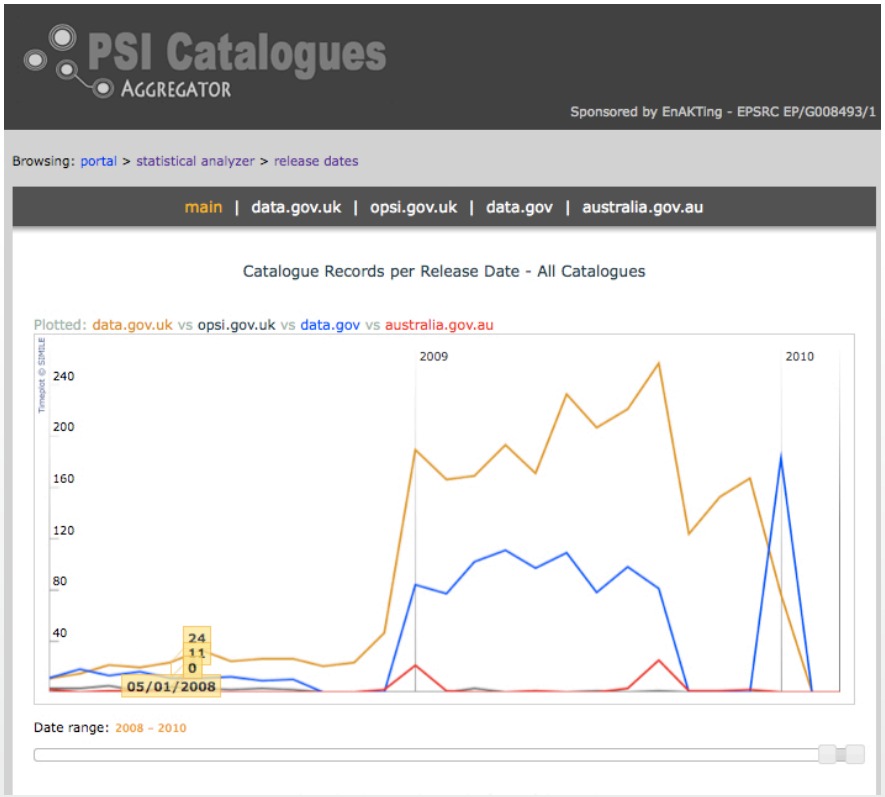
UNIVERSITY OF Southampton
School of Electronics and Computer Science

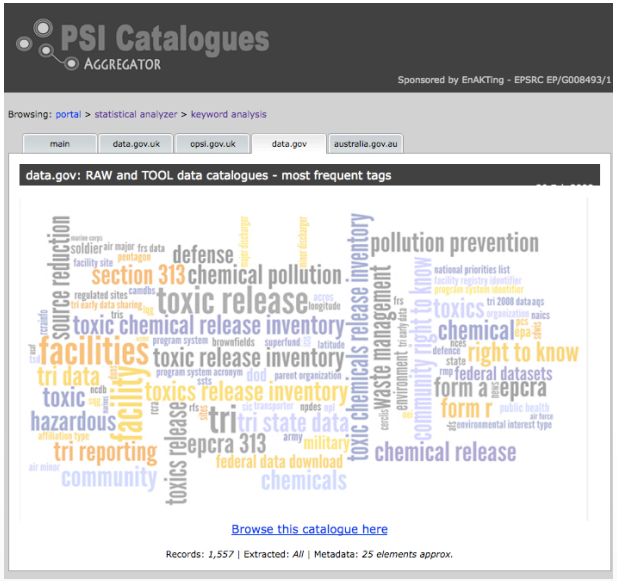
data.gov.uk - the linked data revolution

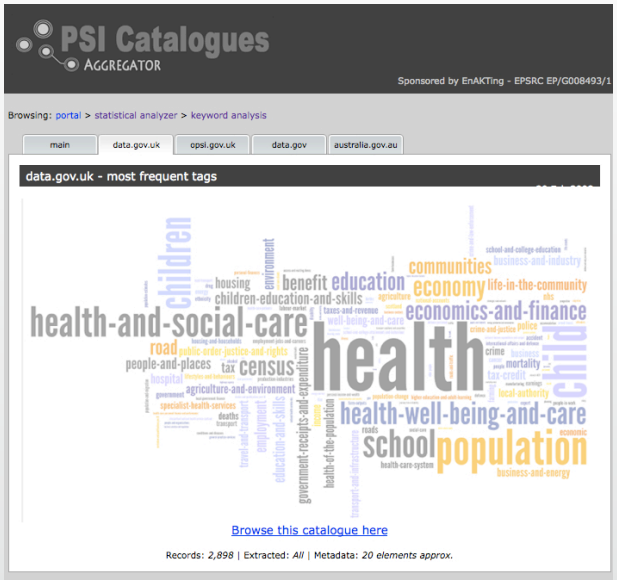
Nigel Shadbolt
UK Government Information Advisor

SAP
24 March 2010

data.gov....
is taking hold







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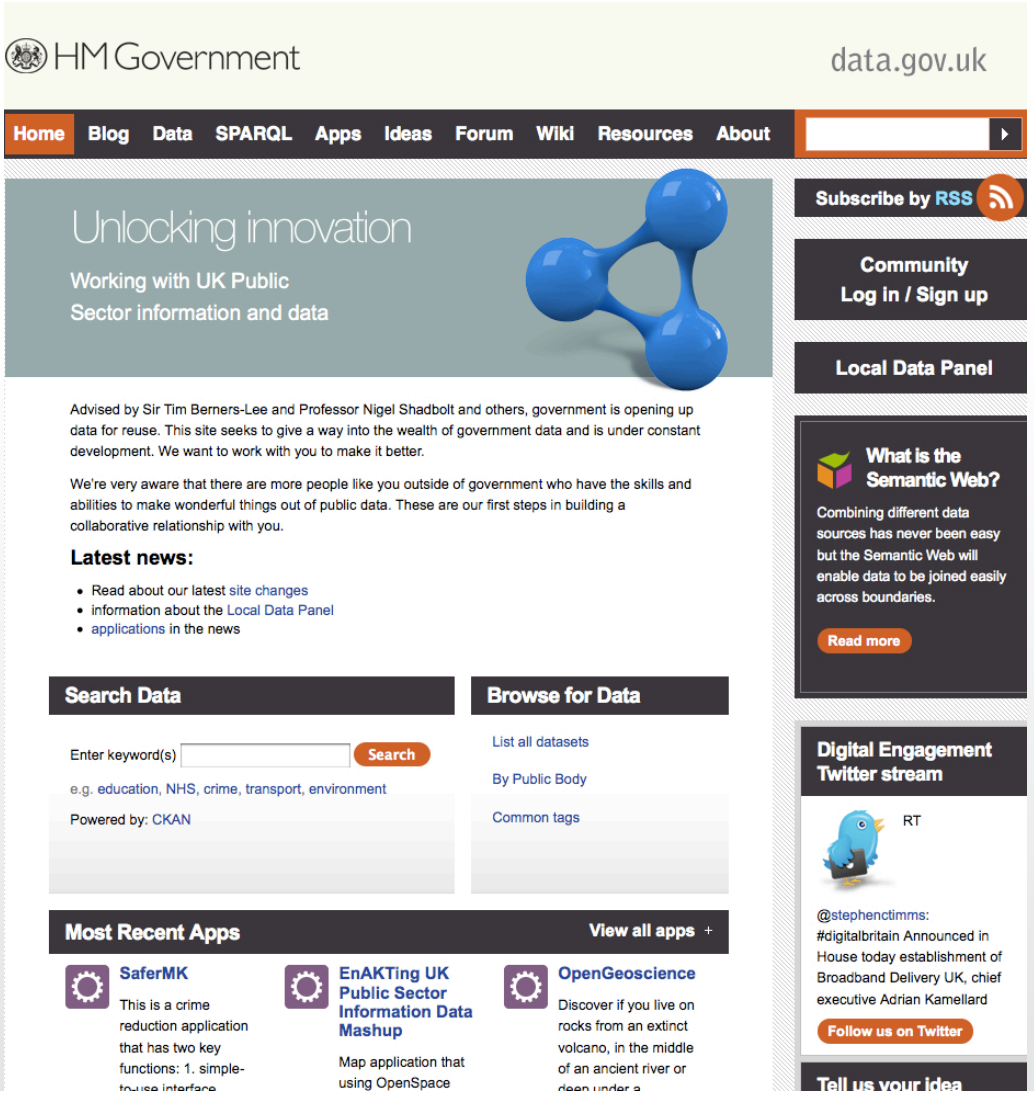
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What is the Semantic Web?
Combining different data sources has never been easy but the Semantic Web will enable data to be joined easily across boundaries.
Read more
Advised by Sir Tim Berners-Lee and Professor Nigel Shadbolt and others, government is opening up data for reuse. This site seeks to give a way into the wealth of government data and is under constant development. We want to work with you to make it better.
We're very aware that there are more people like you outside of government who have the skills and abilities to make wonderful things out of public data. These are our first steps in building a collaborative relationship with you.
Latest news:
Read about our latest site changes
information about the Local Data Panel
applications in the news
Search Data
Enter keyword(s)
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e.g. education, NHS, crime, transport, environment
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@stephenctimms: #digitalbritain Announced in House today establishment of Broadband Delivery UK, chief executive Adrian Kamellard
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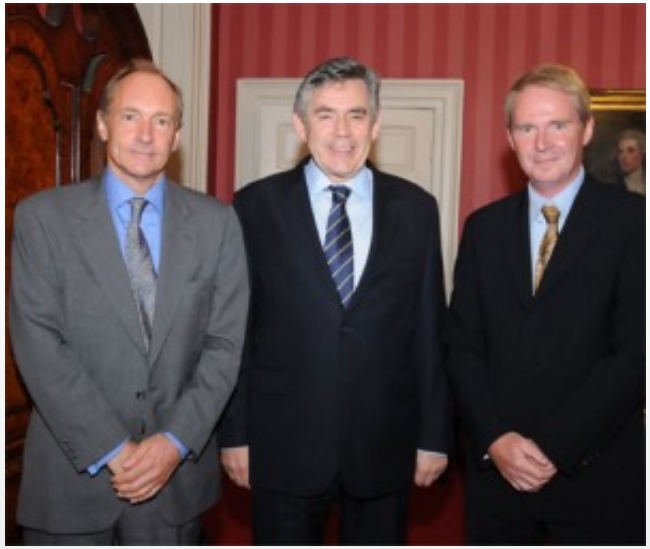
SaferMK
This is a crime reduction application that has two key functions: 1. simple-
EnAKTing UK Public Sector Information Data Mashup
Map application that using OpenSpace
OpenGeoscience
Discover if you live on rocks from an extinct volcano, in the middle of an ancient river or
Tell us your idea

MPDP: Making Public Data Public

- Berners-Lee and Shadbolt - June Appointed HMG Information Advisors
- Context - PoI Taskforce
- Previous work with OPSI
- Strategic Drivers
  - Transparency and accountability
  - Economic and Social Value
  - Public Service Improvement
  - New Industries New Jobs



Key Elements of our ToR

1. Establish single point of access for all public UK datasets - data.gov.uk
2. Specific proposals to implement and extend to wider public sector PSI principle
   - Select and implement common standards for release of public data
   - Select, develop and implement common terms for data where necessary
   - Develop licenses - CC variants
   - Support exploitation and publication of distributed and decentralised information assets
   - Potential for reform of information regulatory framework

Progess to date

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

Accomplishments

- Embodied Public Data Principles in Government
- Beta service launched data.gov.uk - Jan 2010
  - Currently >3000 datasets including linked data
  - 2500 developer community
  - Open source and open standards
  - Self describing Catalogue
- Key data sets under consultation for release
- Applications emerging
- New Crown Commons data licence
- Local Data Panel launched
- Cross party interest and endorsement

UK Public Data Principles

http://www.hmg.gov.uk/media/52788/smarter-government-final.pdf

Our public data principles state that:

1. Public data will be published in reusable, machine readable form
2. Public data will be available and easy to find through a single easy to use online access point data.gov.uk
3. Public data will be published using open standards and following the recommendations of the World Wide Web Consortium
4. Any 'raw' dataset will be represented in linked data form
5. More public data will be released under an open licence which enables free reuse, including commercial reuse
6. Data underlying the Government's own websites will be published in reusable form for others to use
7. Personal, classified, commercially sensitive and third-party data will continue to be protected.

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.

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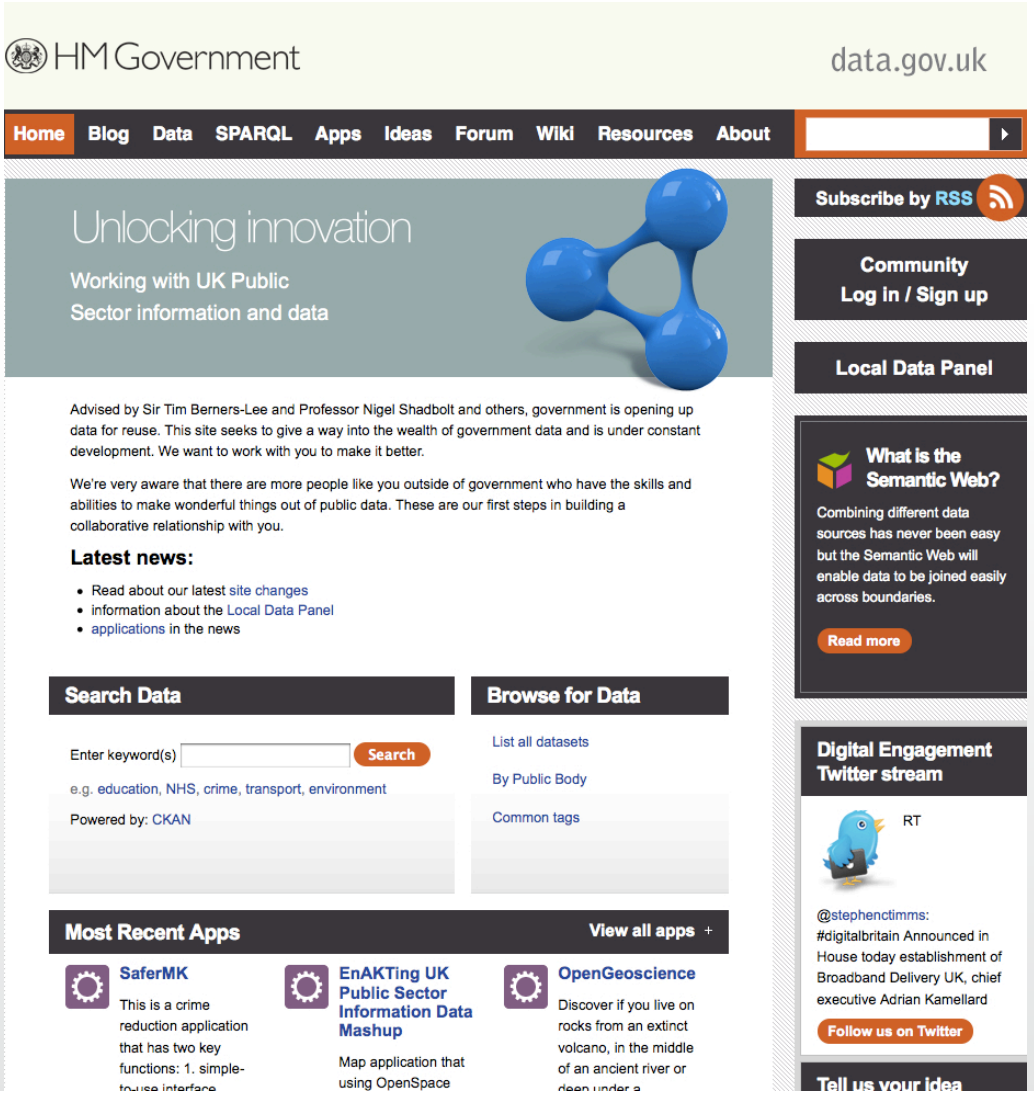
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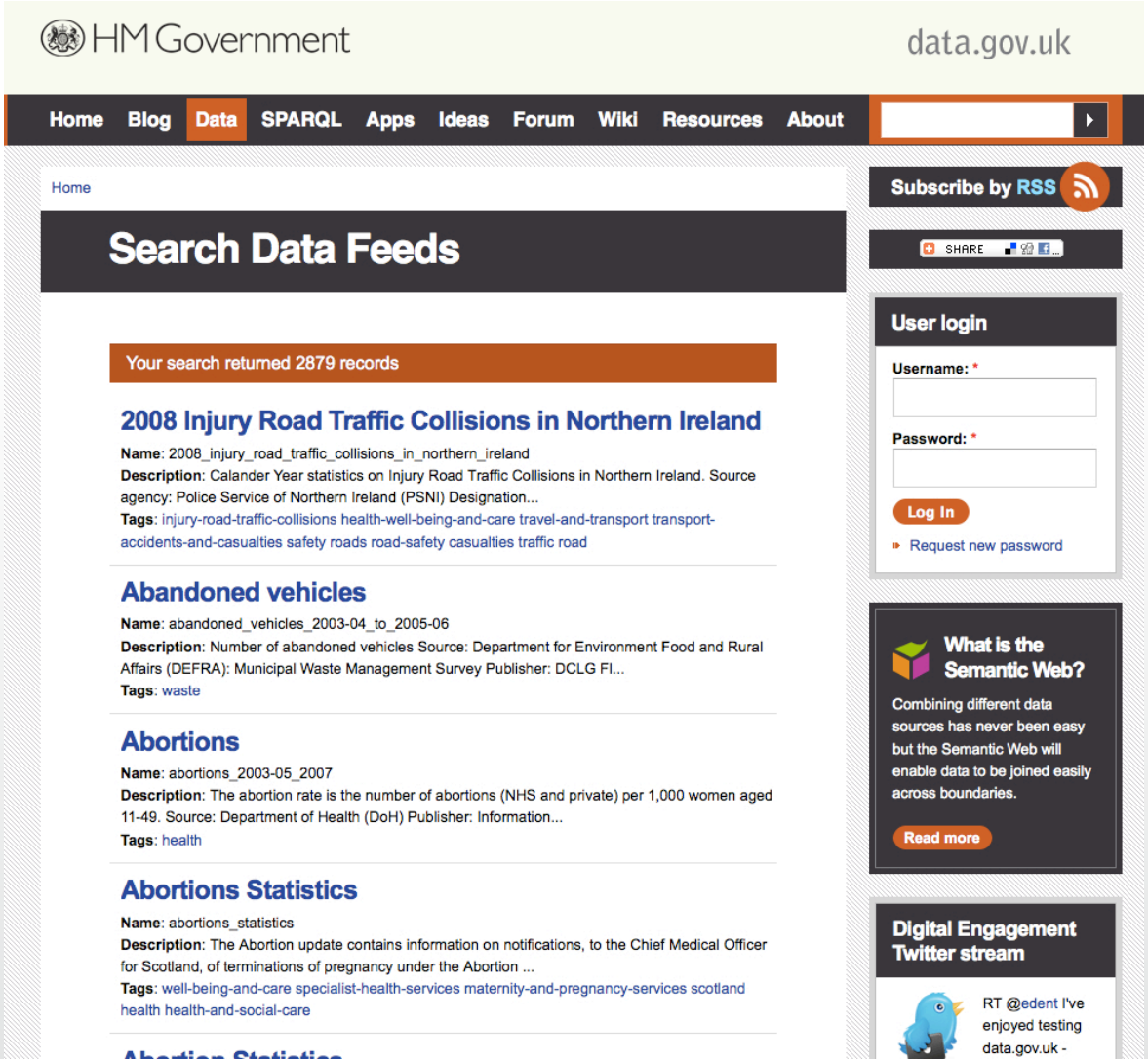
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2008 Injury Road Traffic Collisions in Northern Ireland
Name: 2008_injury_road_traffic_collisions_in_northern_ireland
Description: Calander Year statistics on Injury Road Traffic Collisions in Northern Ireland. Source agency: Police Service of Northern 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
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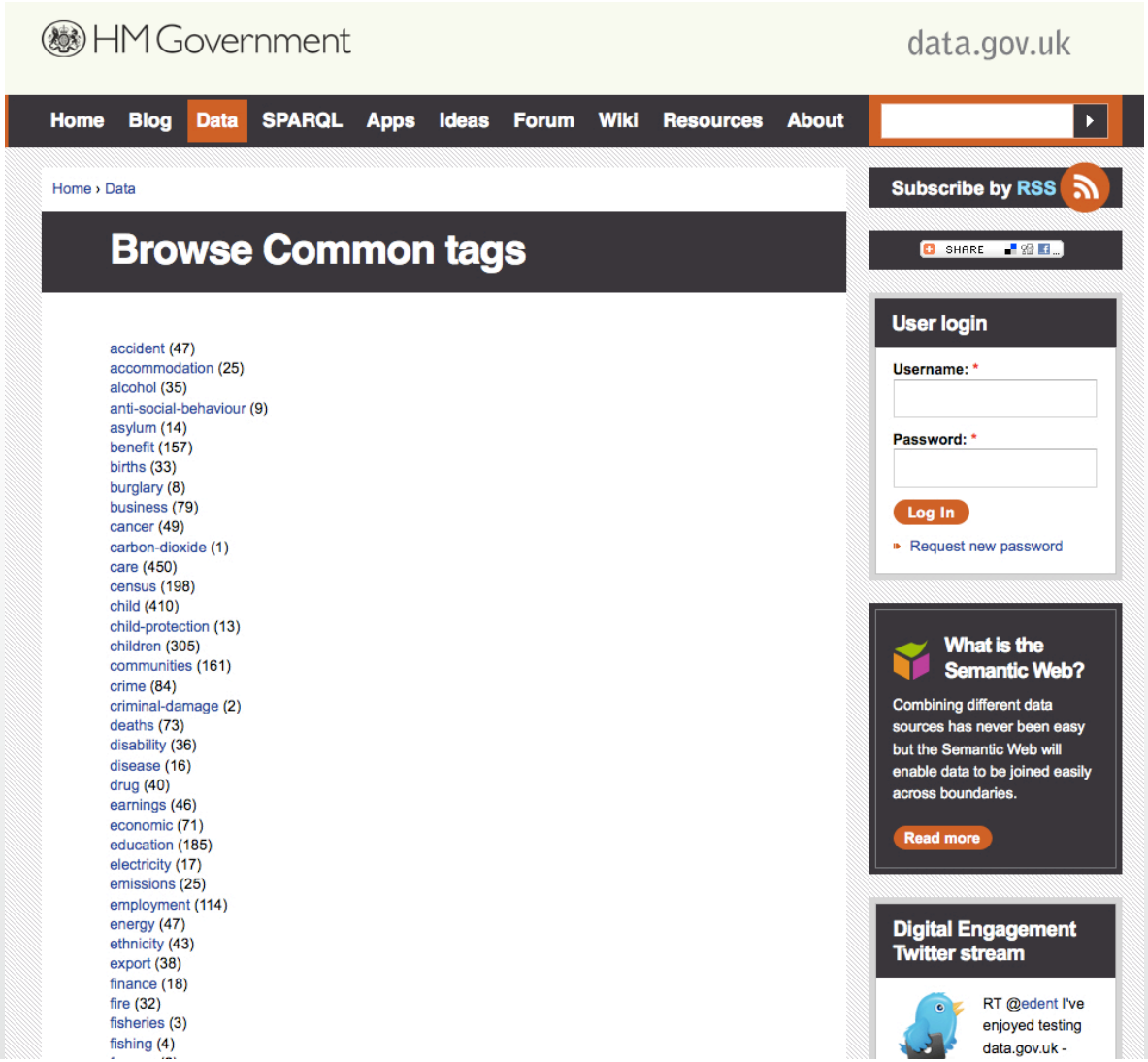
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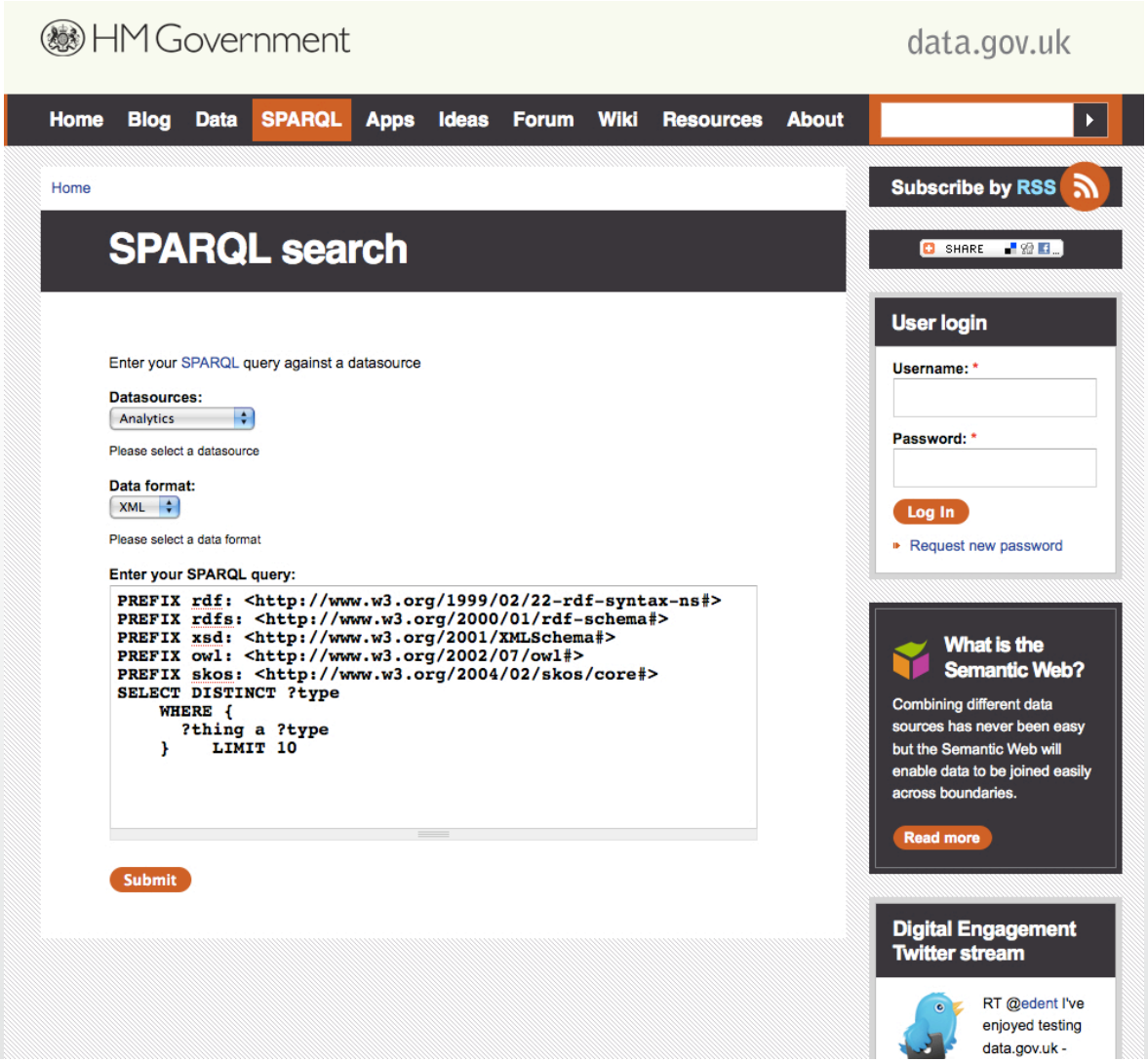
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Please select a data format
Enter your SPARQL query:
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
SELECT DISTINCT ?type
WHERE {
?thing a ?type
} LIMIT 10
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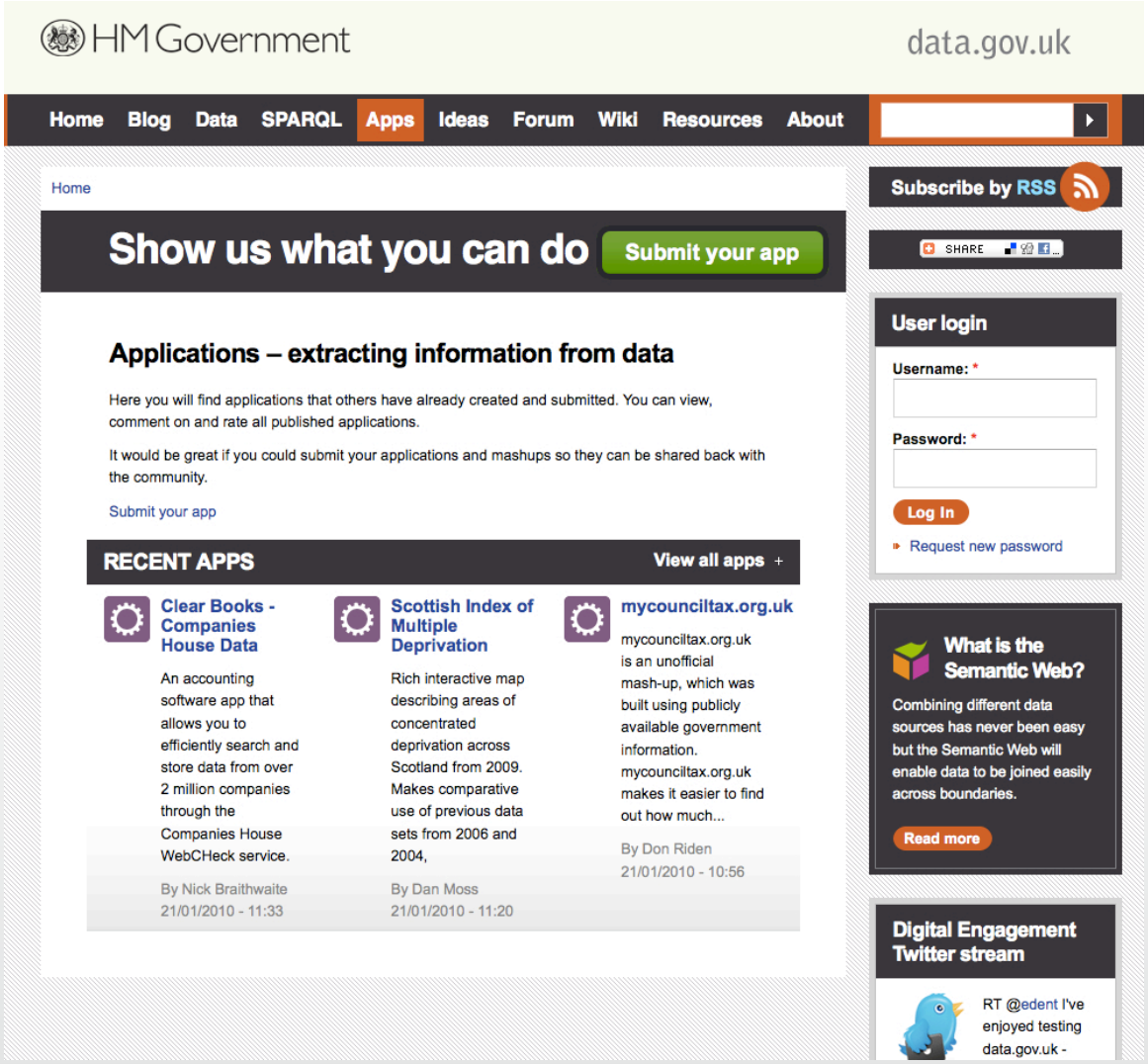
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Applications – extracting information from data
Here you will find applications that others have already created and submitted. You can view, comment on and rate all published applications.
It would be great if you could submit your applications and mashups so they can be shared back with the community.
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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
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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
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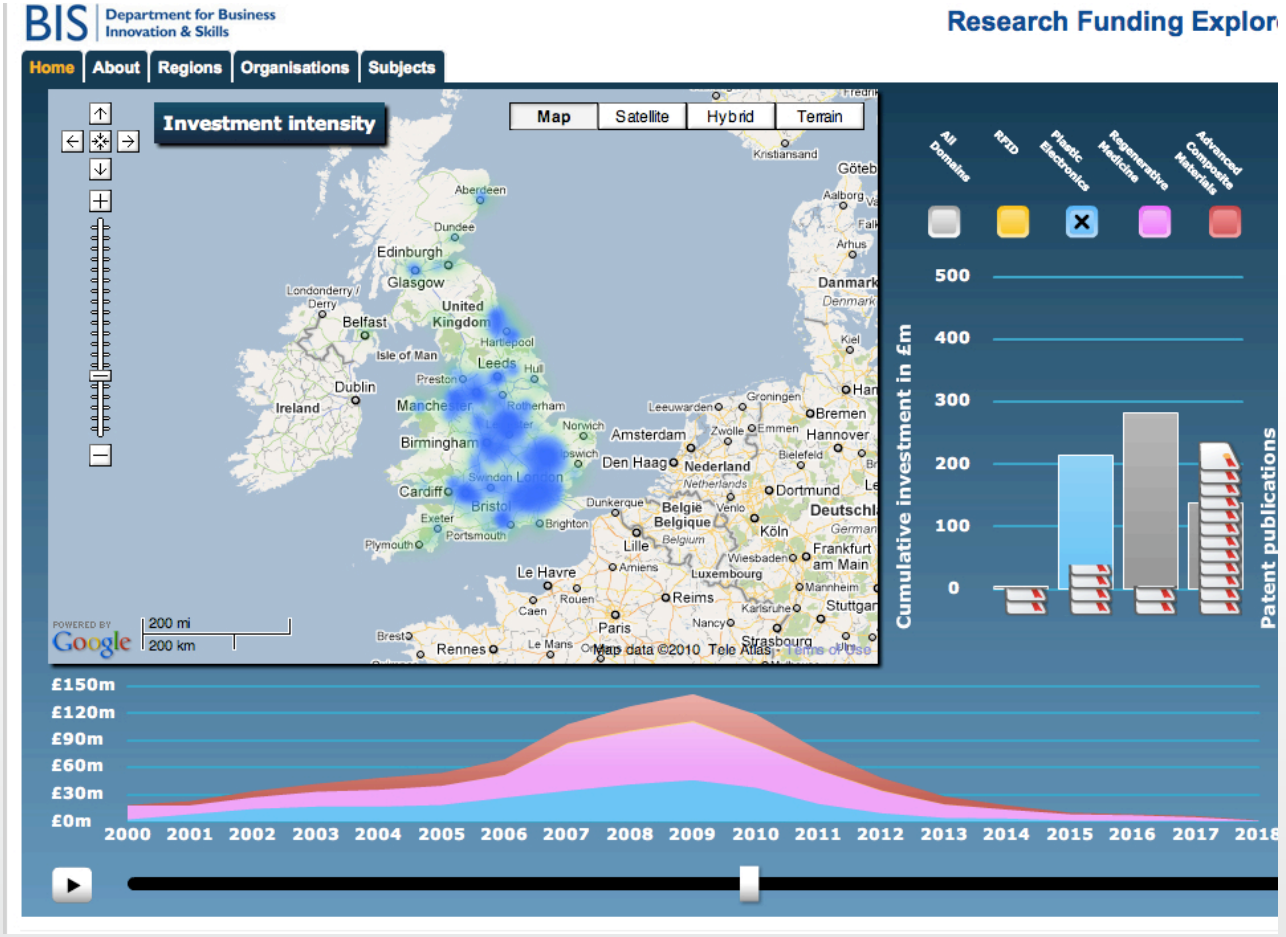
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Patent publications
500
400
300
200
100
0
£150m
£120m
£90m
£60m
£30m
£0m
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017
Map data ©2010 Tele Atlas
200 mi
200 km

ASBOrometer is a mobile application that measures levels of anti-social behaviour at your current location (within England and Wales) and gives you access to key local ASB statistics.

ASBOrometer is available for iPhone and Android phones. Get it FREE from the iTunes App Store or Android Market now!

This app was created by Jeff Gilfelt and made possible by the data.gov.uk initiative, which is opening up UK government data for public reuse.

Available on the App Store

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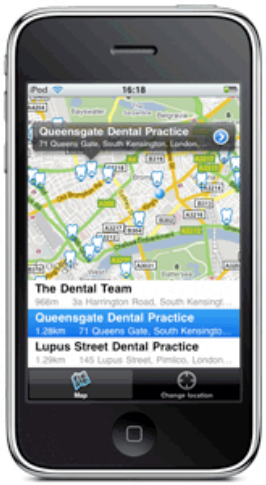
UK Dentists



Find your nearest NHS dentist quickly and easily!

The National Health Service has over 7,500 dental surgeries across England but finding one can be a difficult and time consuming task. This app is based on data provided by the UK's Health and Social Care Information Centre (HSCIC)* and covers 99.4% of all registered NHS dental surgeries in England.

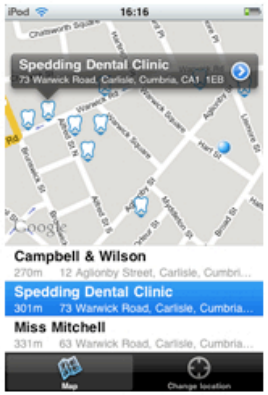
Search for an NHS dentist around your current location, or look for one in another area (where you may be moving to, or for a friend) via a simple place name or postcode search. Distances can be displayed in metric or imperial units (configured in the application preferences).

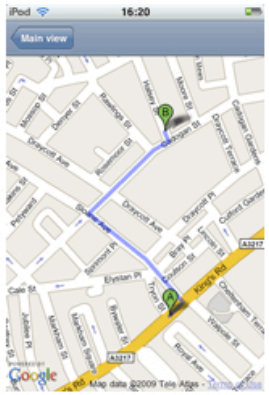
UK Dentists uses the built in GPS on the iPhone to get your current location, but can also locate an iPod Touch in built-up WiFi areas. If your location cannot be determined automatically then you can always enter your post code to get started. Please note that an internet connection is required to get location and map data.

* Data reproduced under the terms of the Office of Public Sector Information (OPSI) Click-Use Licence.

Application Screenshots

Click on any of the images to see a larger version





Buy on iTunes

£ Massive Outgoings

Cost for average British taxpayer per day

GOVERNMENTS

ESSENTIALS

NHS	Schools	Defence
£9.05	£2.56	£3.99

TRAVEL

Roads	LRT
£3.10	£0.14

BANKING CHARGES

Recapitalisations

The Royal Bank of Scotland
Lloyds TSB
northern rock
Bradford & Bingley*

£9.23

SECURITY

Police	Prisons	Afghanistan
£0.53	£0.19	£0.32

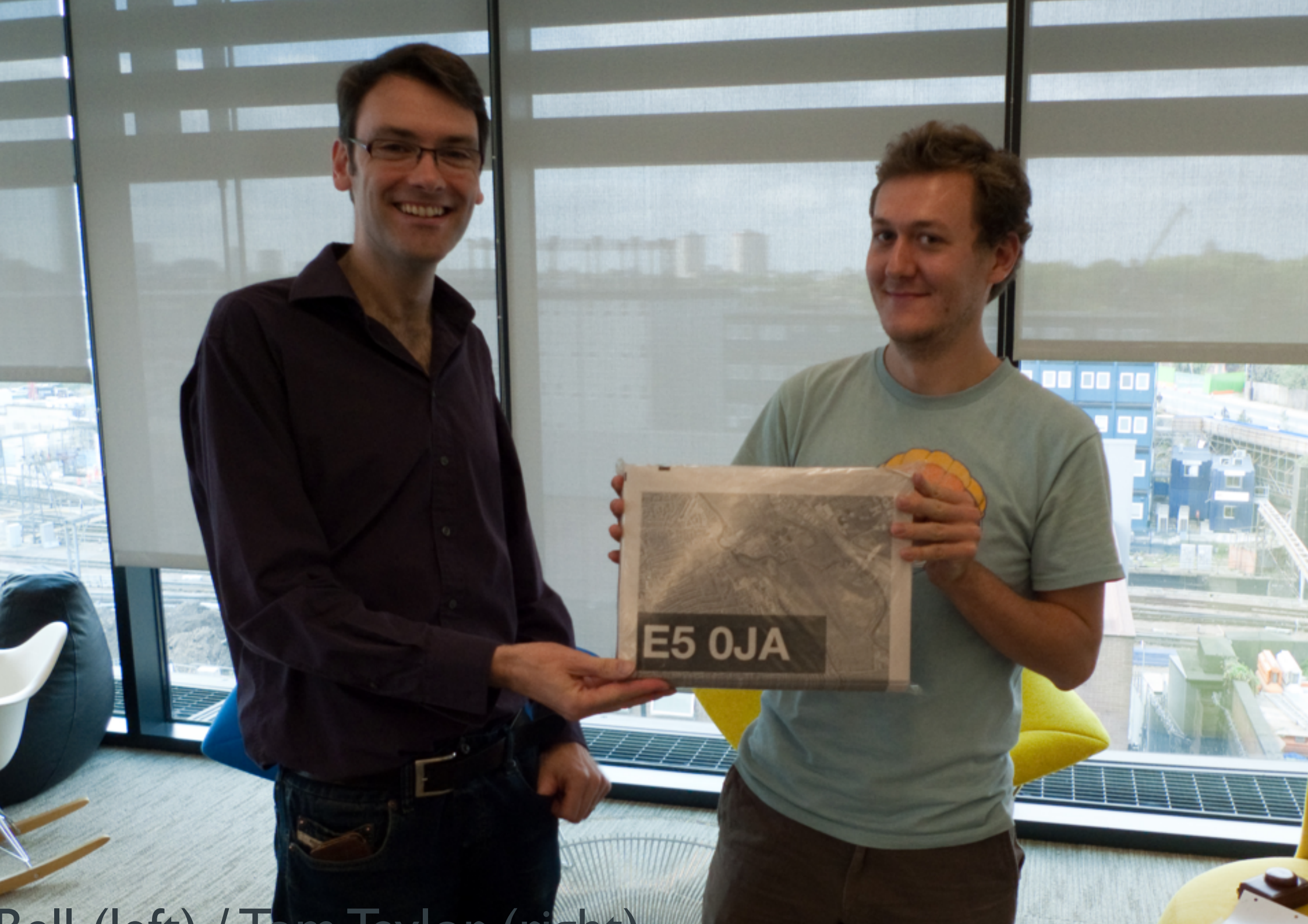
GOING OUT

Arts	Museums
£0.04	£0.03

HELPING OTHERS

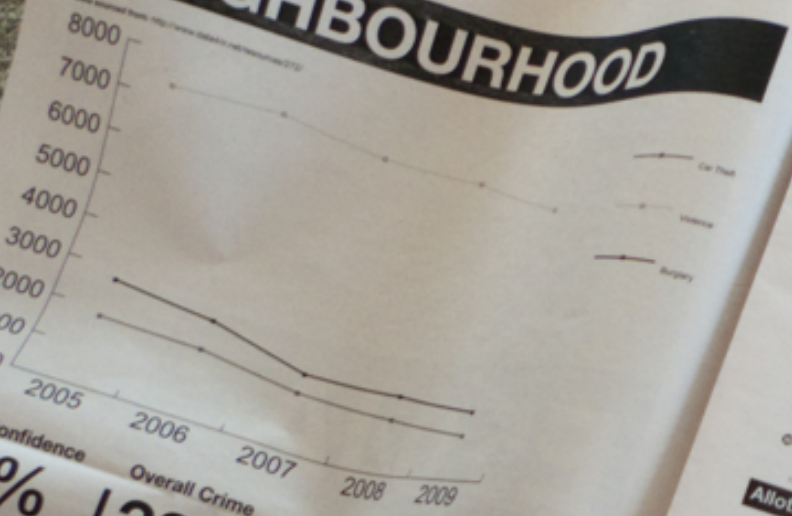
Child support	Job Seekers	Housing benefit	Disability benefit	Pensions	Overseas aid
£1.86	£0.25	£1.52	£1.44	£5.55	£0.43

David McCandless



Bell (left) / Tom Taylor (right)

NEIGHBOURHOOD



Police Confidence
77%

Overall Crime
↓39%

Gun Crime
↓37%

Knife Crime
↓17%

Robbery
↓14%

Theft
↓13%

Woundings
↑220%

10000
fewer crime victims

Summary

Hackney Police and the Council work very closely to tackle and prevent crime in the borough. Seventy seven per cent of residents now have confidence in Hackney's Police, according to the British Crime Survey, a rise of 55 per cent in less than two years.

The survey also reveals that crime in Hackney has dropped 39.5 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.

-- Hackney Council

ALLOTMENTS

Allotment Plots

Tower Hamlet	282
Waltham Forest	1,382
Newham	415
Hackney	113
Haringey	1,715
Camden	195

Waiting List Time

Tower Hamlet
Waltham Forest
Newham
Hackney
Haringey
Camden

You are here

Waiting List Length

Tower Hamlet
Waltham Forest
Newham
Hackney
Haringey
Camden

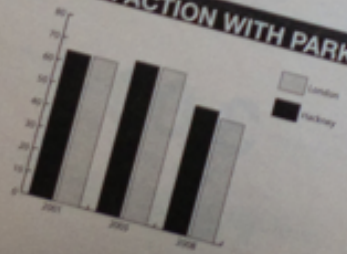
GREEN SPACE

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)

% SATISFACTION WITH PARKS



RECYCLING

Your nearest Recycling and Reuse Center is on South Access Road, Walthamstow, E17 (via Marshouse Avenue, near Low Hall Manor Business Centre).

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 recyclables. This site does not accept trade waste.

If you intend to use a van to bring your waste please call 020 8509 3064 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
- Hardcore/rubble
- Household batteries
- Long life light bulbs
- Metal
- Mobile telephones
- Paper
- Plasterboard
- Plastic bottles
- Reusable paint
- Tetra paks
- Textiles and shoes
- Tools for reuse

New data?

- The objective of the Public Data work is to make data available for re-use.
- The data on data.gov.uk includes:
  - data not previously available at all
  - data previously only available in non-reusable form (eg PDF)
  - data previously only available with licensing restrictions on its reuse (there is a new, open licence for data on data.gov.uk)
  - data previously only available to a limited or specialist set of users
  - data previously not easy to find

What else needs to happen in HMG

•each body needs a clear, published commitment on releasing data, and there needs to be consistency between similar bodies

•agencies need to release transaction data - like the bicycle accident data - and not just statistical aggregates

•this needs to extend not only through central Government but also into local government and the other public services

•agencies need always to publish for re-use the underlying data for web services that they supply like Directgov, NHS Choices and the Camden "where's my nearest" service.

•bodies should proactively release data, but there should also be the ability to challenge bodies to release more.

Nuturing the community

•Government also needs to to nuture and support activities which would add new value to data.

•support community activism and "hyperlocality" in using this information

•help integration with community networks - e.g civic society services

•assist the use of linked data technologies by investing in the development of tools and software and making these "open source".

•giving support, encouragement and targeted funding to people developing innovative software and services which use public data.

Challenges we faced

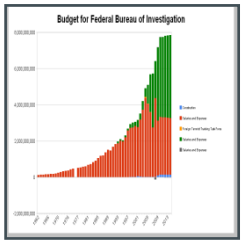
- Cultural & Organisational
  - Data hugging
  - We have released it - sort of…
  - License impediments
- Worries about
  - Confidentiality
  - How it will be Interpreted
  - QoI
  - Lost value
  - Disrupted workflow
  - New IT procurement
- Importance of local authority and other public bodies
- Capability
  - What assets have we got (no duty to hold register of public non-personal datasets)
  - Who can do this work
  - How to share best practice
  - Minting URIs
- Policy
  - Extending the principle to all public sector bodies
  - Consistency in what is published, how it is licensed and its format
  - Range of exceptions do need to be appreciated
  - Cconfidentiality, accuracy, liability and reputation

The US Linked Data Effort

View & Use Data

Sem Wiki

Tabulator



Google Viz

MIT Exhibit

RSS 1.0

tagCloud

Link & Enrich Data

XSLT Service | Diff Service | Link Annotator | RSS Generator | ...

Data Processors
(Web Services & Analyzers)

SPARQL End Point | SPARQL Web Service

Convert Data

RDF/XML

RDF/XML

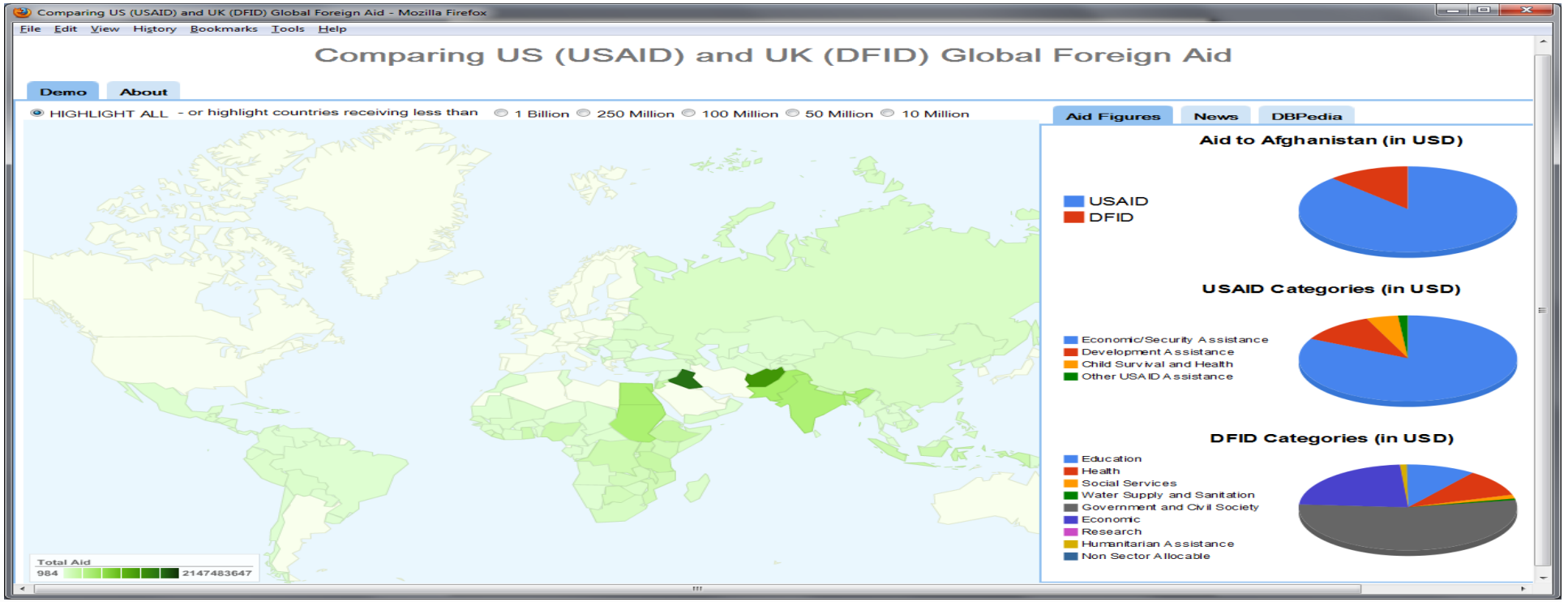
GOV data (RDF)

Linked Data

DATA.GOV

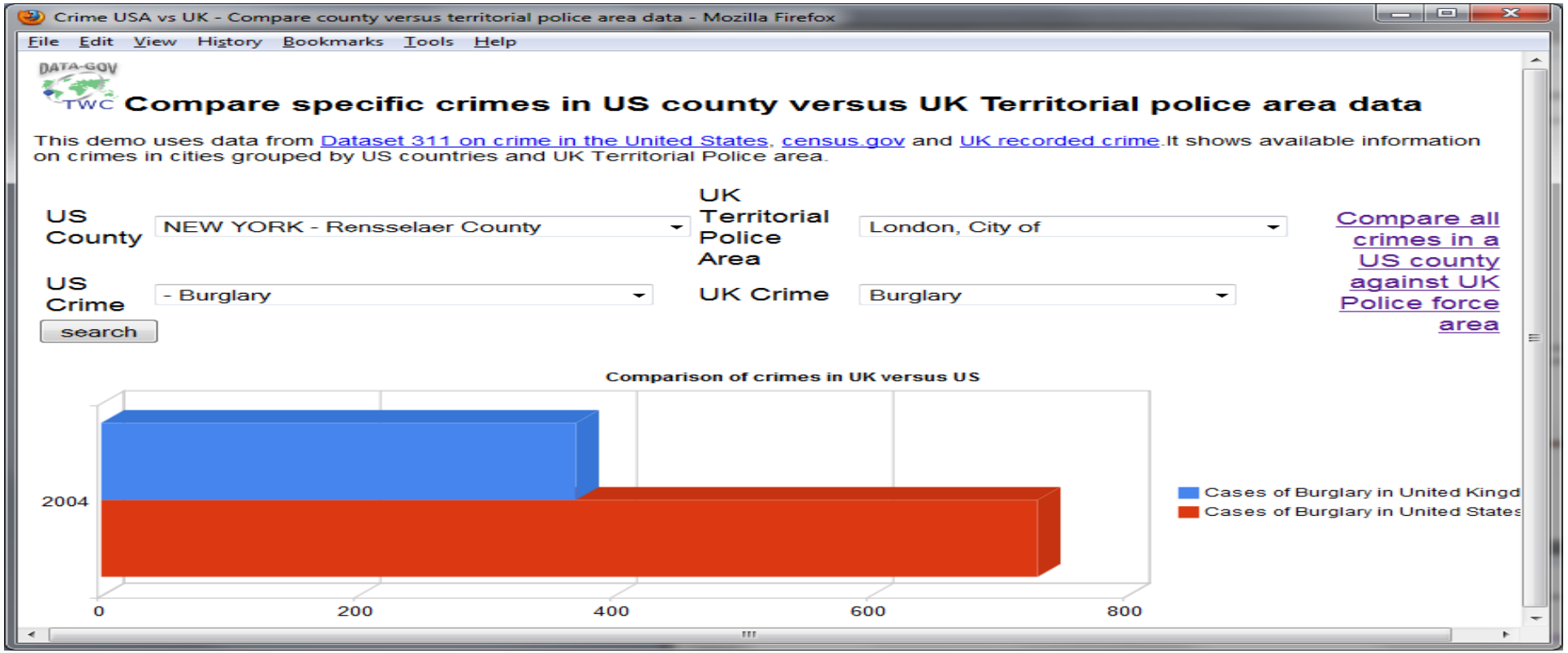
CSV
XSL
...

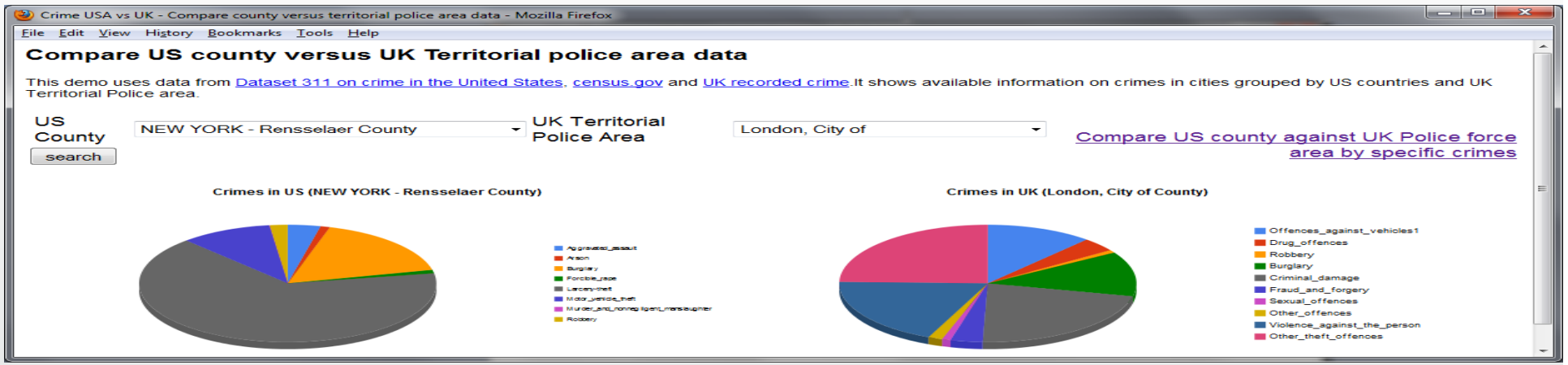
DATA-GOV Tetherless World



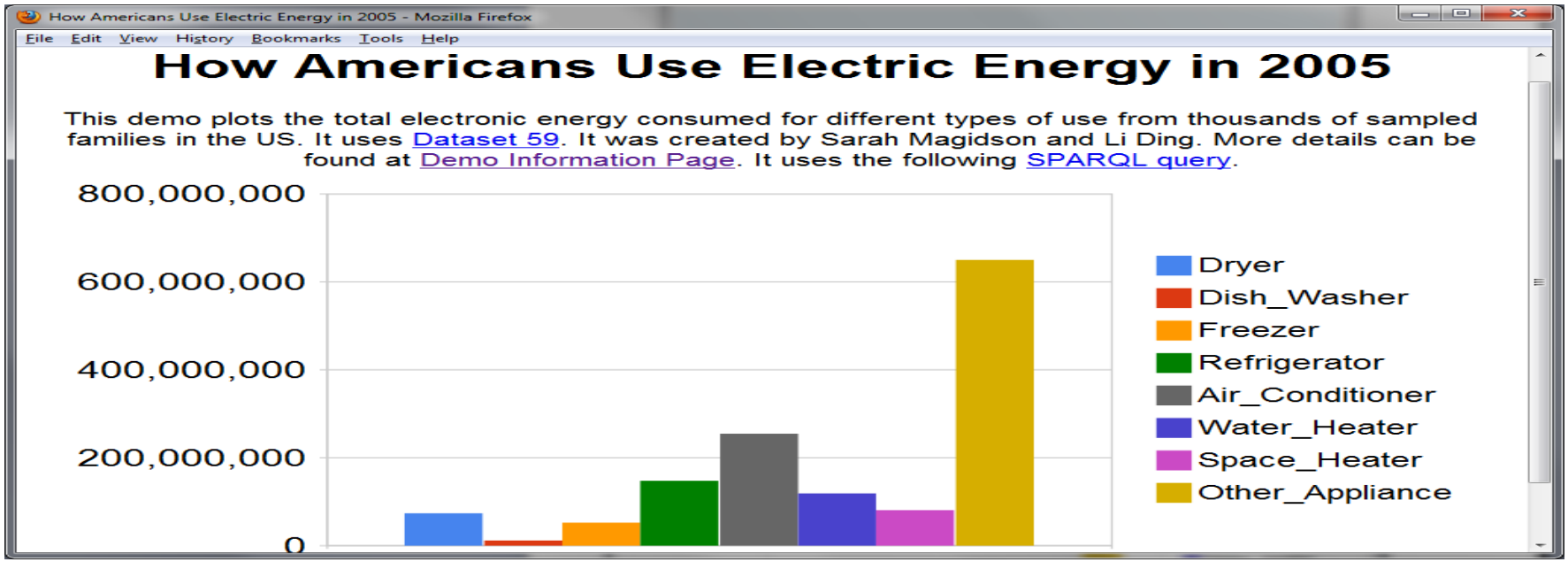
This application presents a mashup of foreign aid data (represented in US Dollars) from the United States Agency for International Development (USAID) and UK Department for International Development (DFID) for the 2007 US Fiscal Year.

Users may retrieve foreign aid data for specific countries by clicking on a provided world map (shaded based on total combined contributions for USAID and DFID). Upon clicking on a desired country, three kinds of information are presented: Aid Figures, New York Times news, and wikipedia description. http://data-gov.tw.rpi.edu/demo/linked/aidviz-1554-10030.html

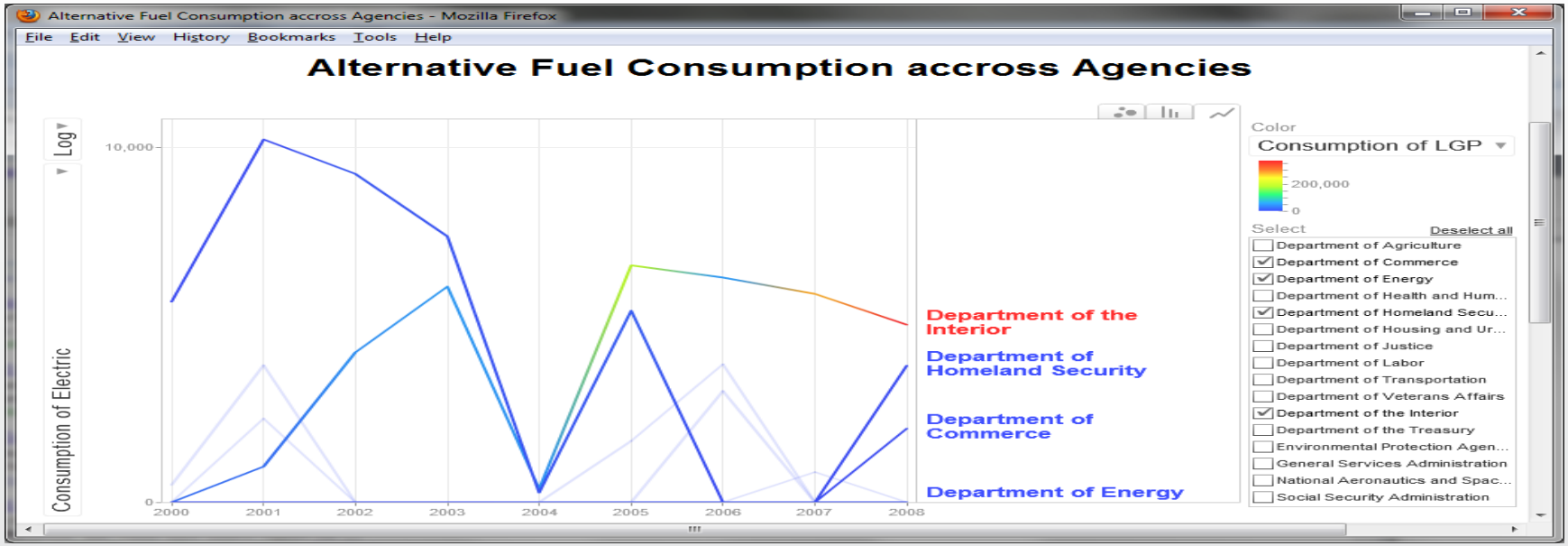




This demo uses data from Dataset 311 on crime in the United States, census.gov and UK recorded crime.It shows available information on crimes in cities grouped by US countries and UK Territorial Police area.

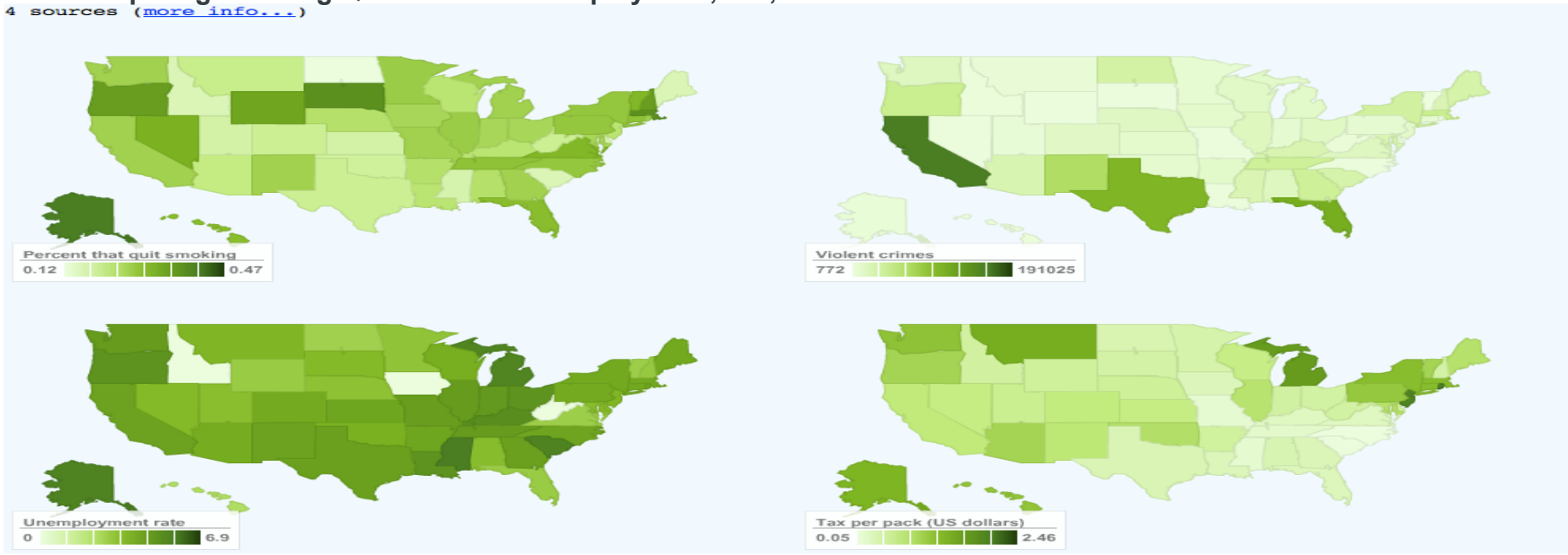


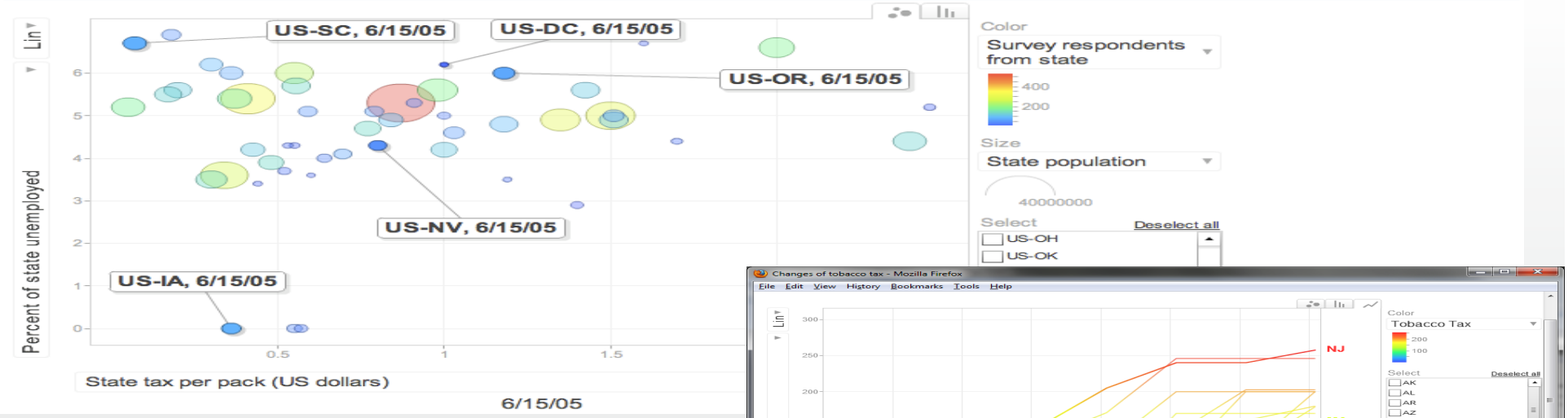
Household energy usage statistics. http://data-gov.tw.rpi.edu/demo/static/demo-59-ec2.html

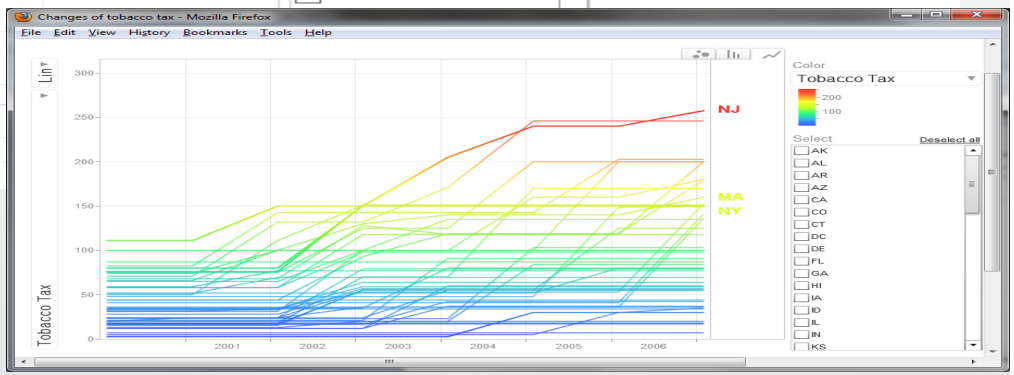


Energy usage (by energy type) of US government agencies.
http://data-gov.tw.rpi.edu/demo/interactive/demo-10029-agency.html

Comparing Smoking Quit Rates to Unemployment, Tax, and Violent Crimes







This demo aims at showing how existing tobacco survey data can be linked to other open government data in unexpected way.

http://data-gov.tw.rpi.edu/demo/linked/2010/02/04/popscigrid/nih.html

The Guardian Editorial 23-1-2010 Government information: Creative commons

….It is equally hazardous trying to envision how freer data will redraw the boundaries between different communities or recast their relationship with power. But it is reasonable to speculate that the uncovering and unlocking of so much information will drive improvements in public policy. It will level the territory on which voters meet politicians, and could prove a powerful brake on campaigning hyperbole in the coming election. Without the printed word there would have been no informed electorate, no demand for accountability from our leaders – and indeed no democracy at all. Open data will surely revive it, and in time could transform it too.

Web of Linked Data

- The Web of Linked Data is next
- Can change
  - Government
  - Business
  - Cities
  - Universities
  - :
- Exploitation of
  - open data
  - open standards
- Can apply to data intranets as well as extranets

So the question is...

If you could get the data under Freedom of Information request why shouldn't it be published as an RSS stream?

The question is not why but why not?

UNIVERSITY OF Southampton
School of Electronics and Computer Science

Thank you

- Any further information or follow up on the research questions please email

  nrs@ecs.soton.ac.uk