

Linking data

using Semantic Web technology

John Sheridan

March 2009

The Wealth of Networks

Benkler (2006) writes:

- *Information, knowledge and culture are core inputs into human welfare...*
- *... Literacy and education are central to individual growth, to democratic self governance, and to economic capabilities. Economic growth itself is crucially dependent upon innovation and information. **For all these reasons information policy has become a critical element of development policy and the question of how societies attain and distribute human welfare and well being.** Access to knowledge has become central to human development.*

“Everything is deeply intertwined”

- Economic growth & knowledge
- Knowledge & codification
- Codification & information
- Information & sharing
- Sharing & innovation
- Innovation & the web
- The web & networks
- Networks & public policy
- Public policy & society
- Society & economic growth
- ...

“Everything is deeply intertwined”

- Economic growth & knowledge
- Knowledge & codification
- Codification & information
- Information & sharing
- Sharing & innovation
- Innovation & the web
- The web & networks
- Networks & public policy
- Public policy & society
- Society & economic growth
- ...

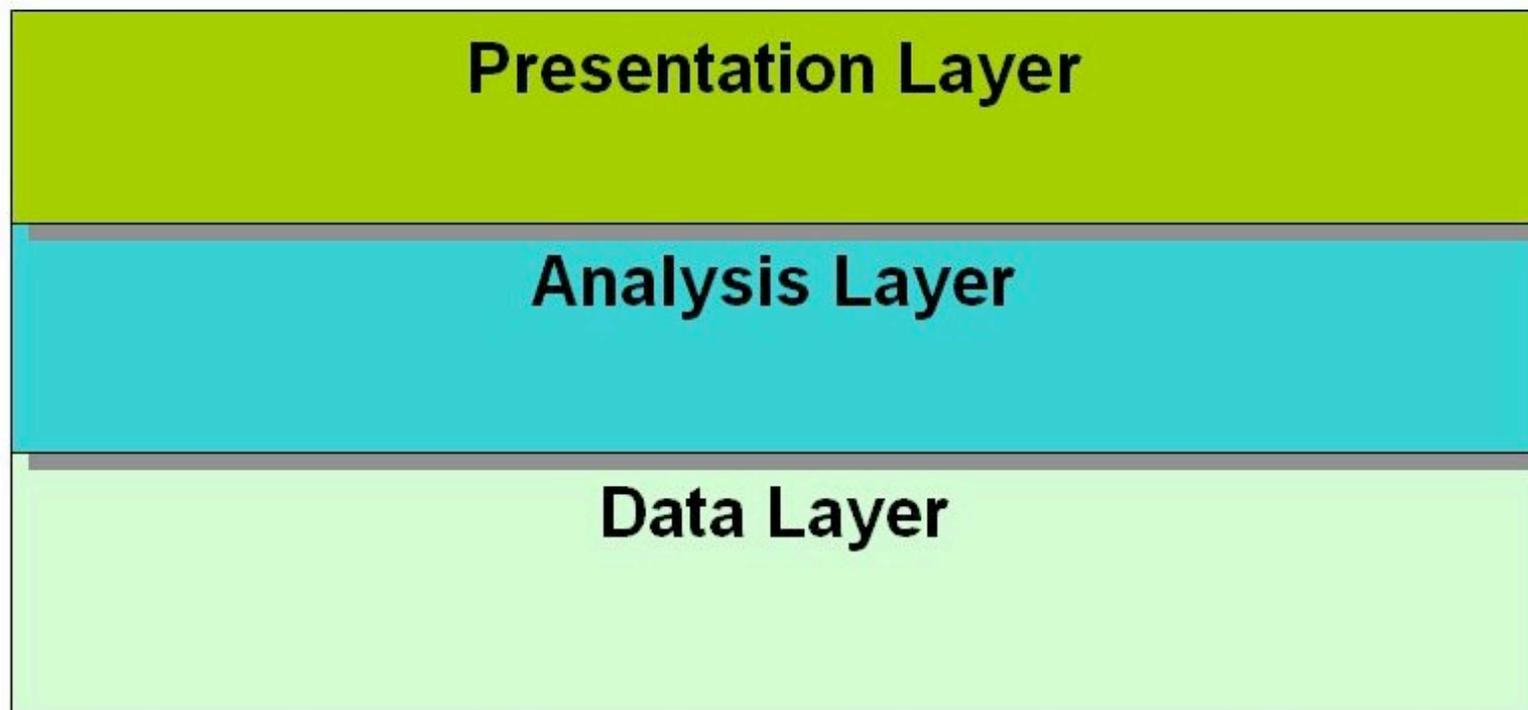


Information
policy and
the web

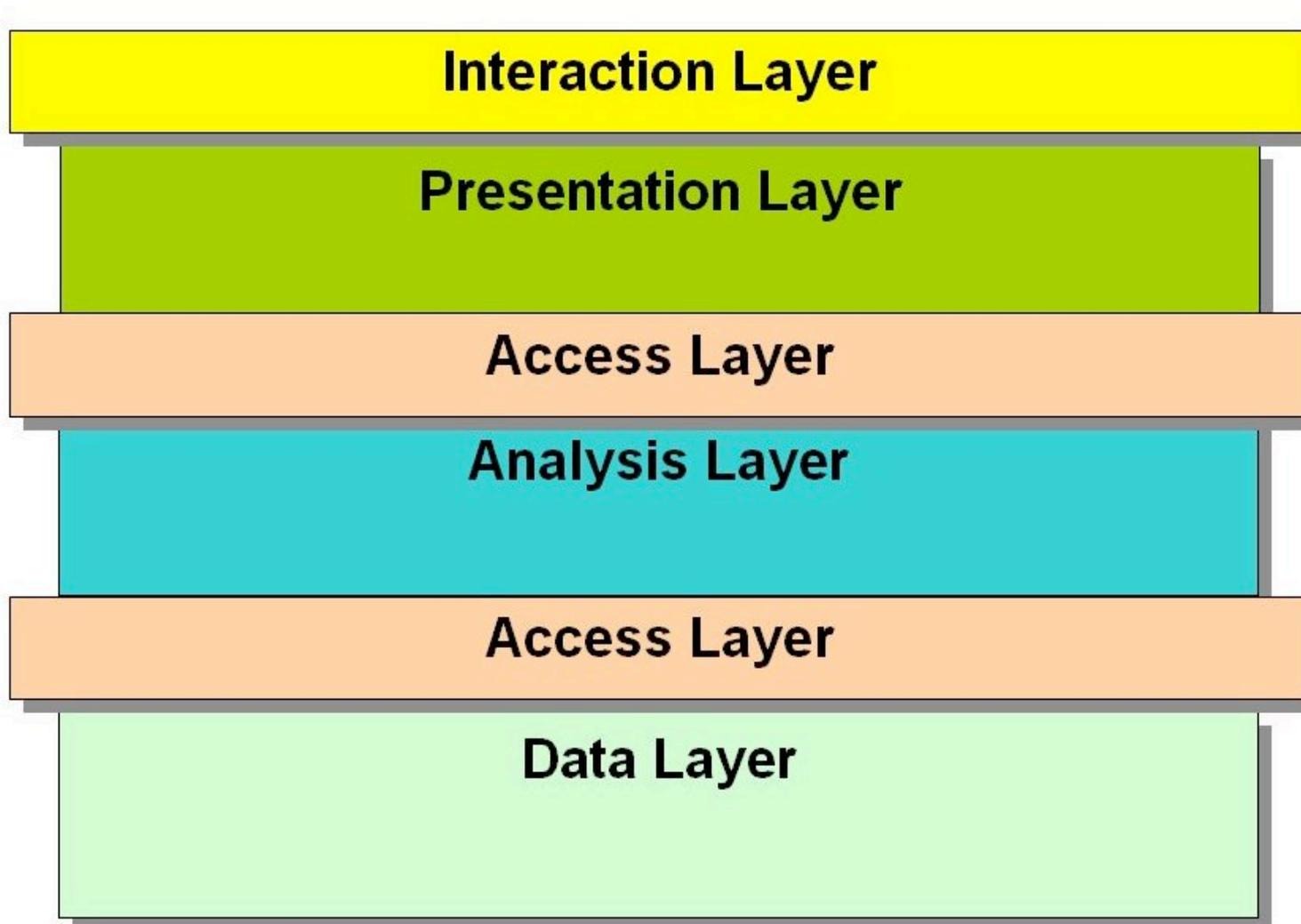
Key challenges identified by the POI Taskforce

- **Discovery** – can I find the data that I want?
- **Legal** – am I allowed to use the data?
- **Technical** – is the data in the right format?
- **Commercial** – can I afford the data that I need?
- **Intelligibility** - can I easily interpret the data that I am accessing?
- **Dependencies** - does this data depend on anything else that could affect my use of it?

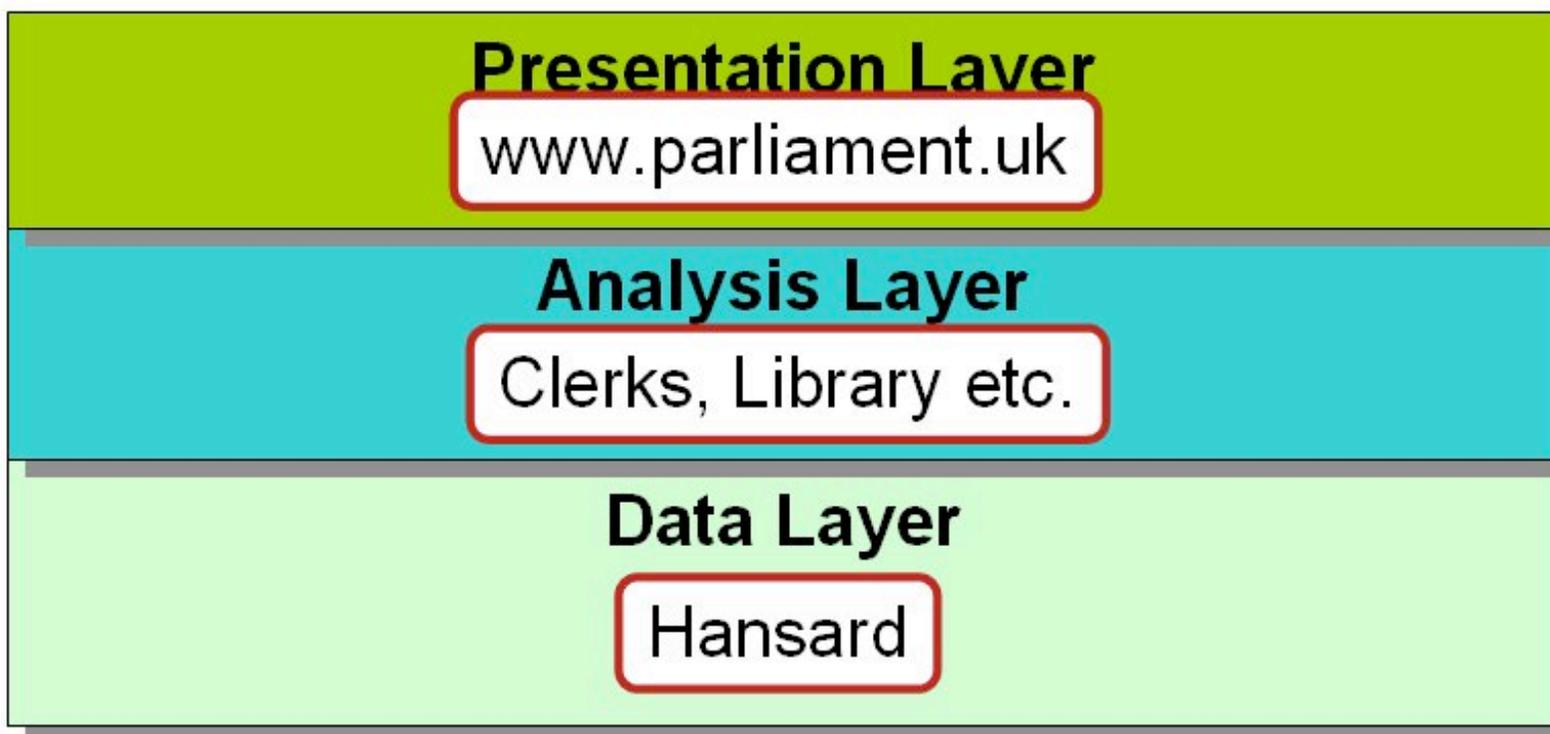
The traditional approach to websites



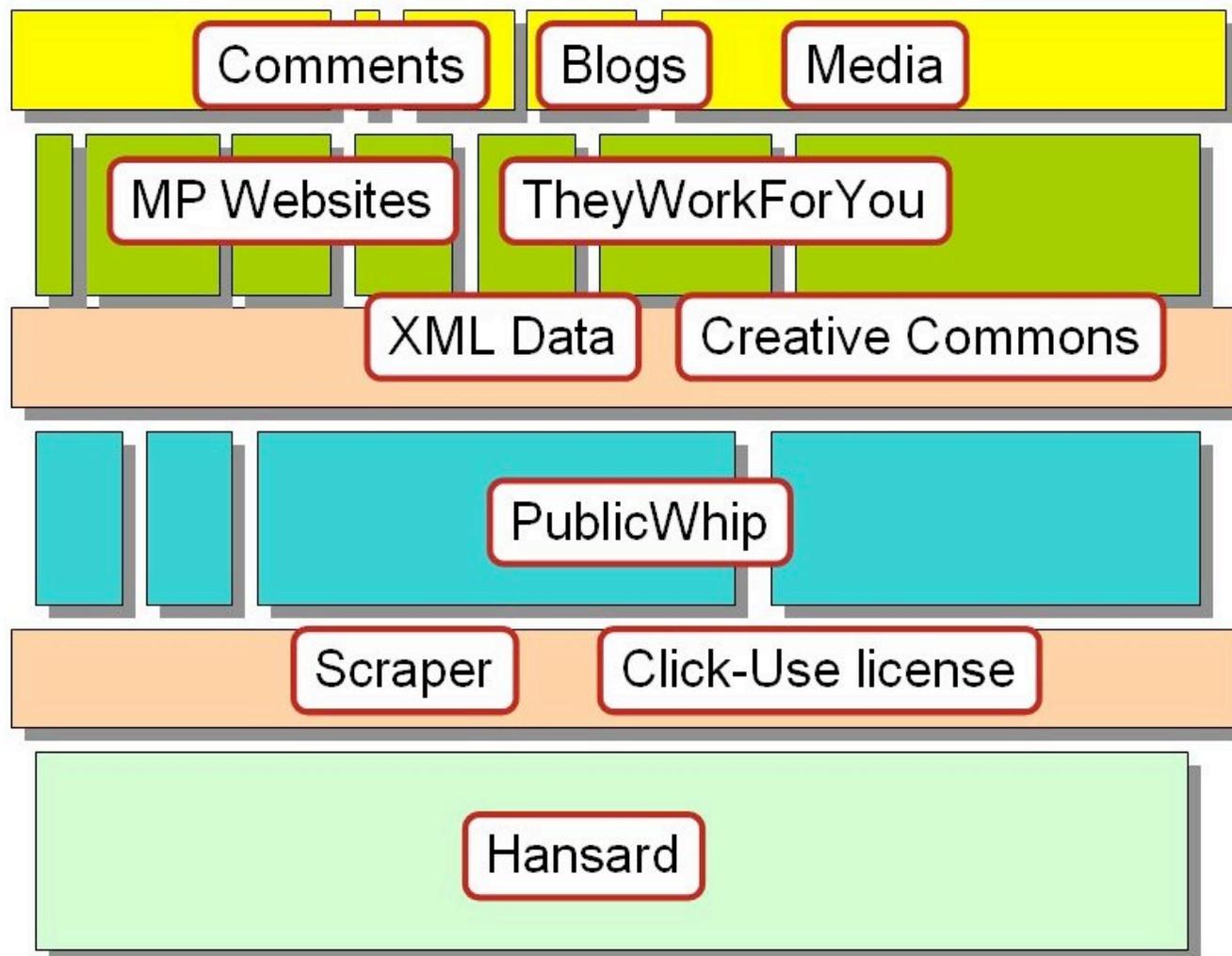
A Power of Information architecture



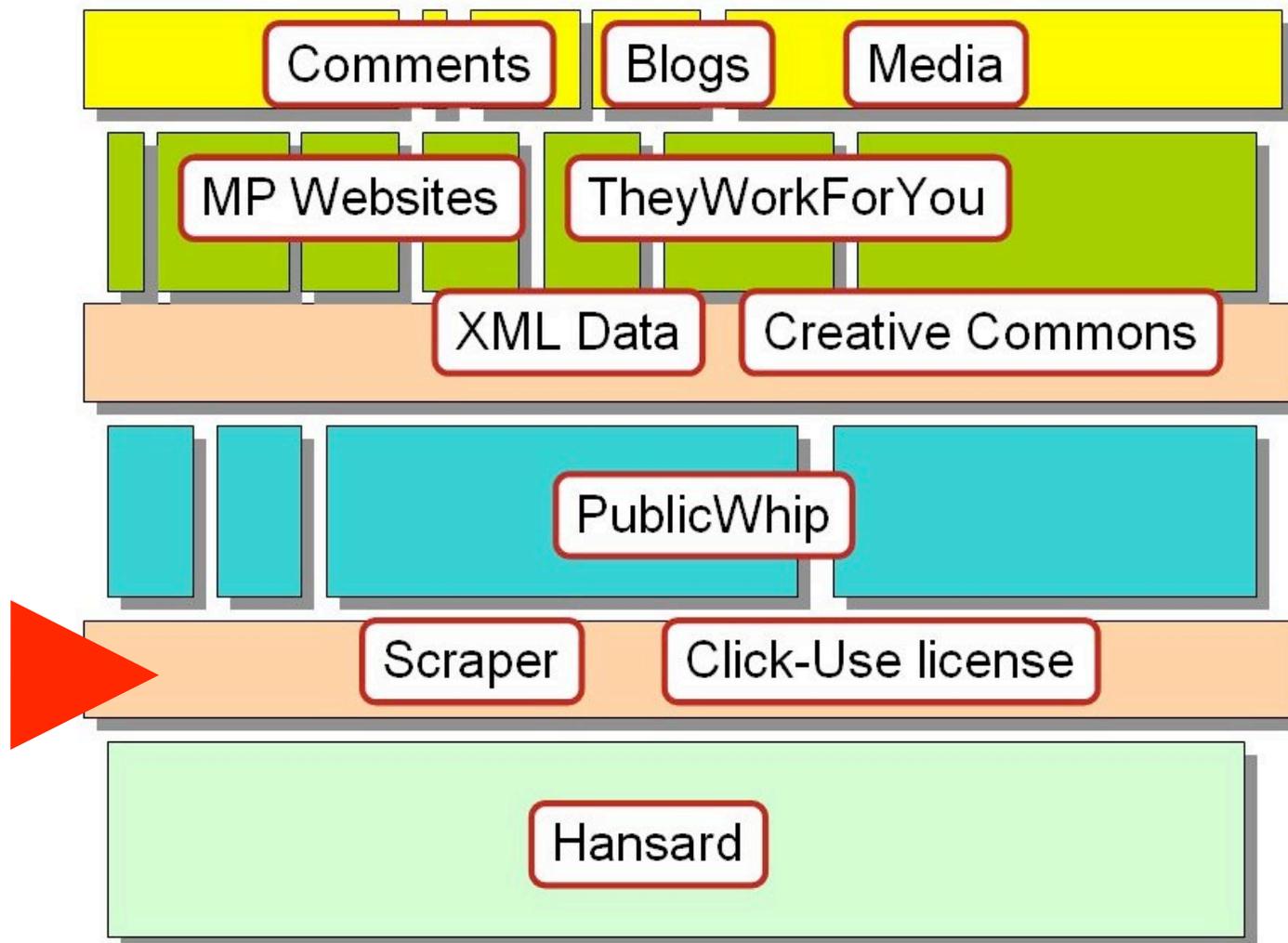
Example: Hansard in the old world



Example: Hansard in the new world



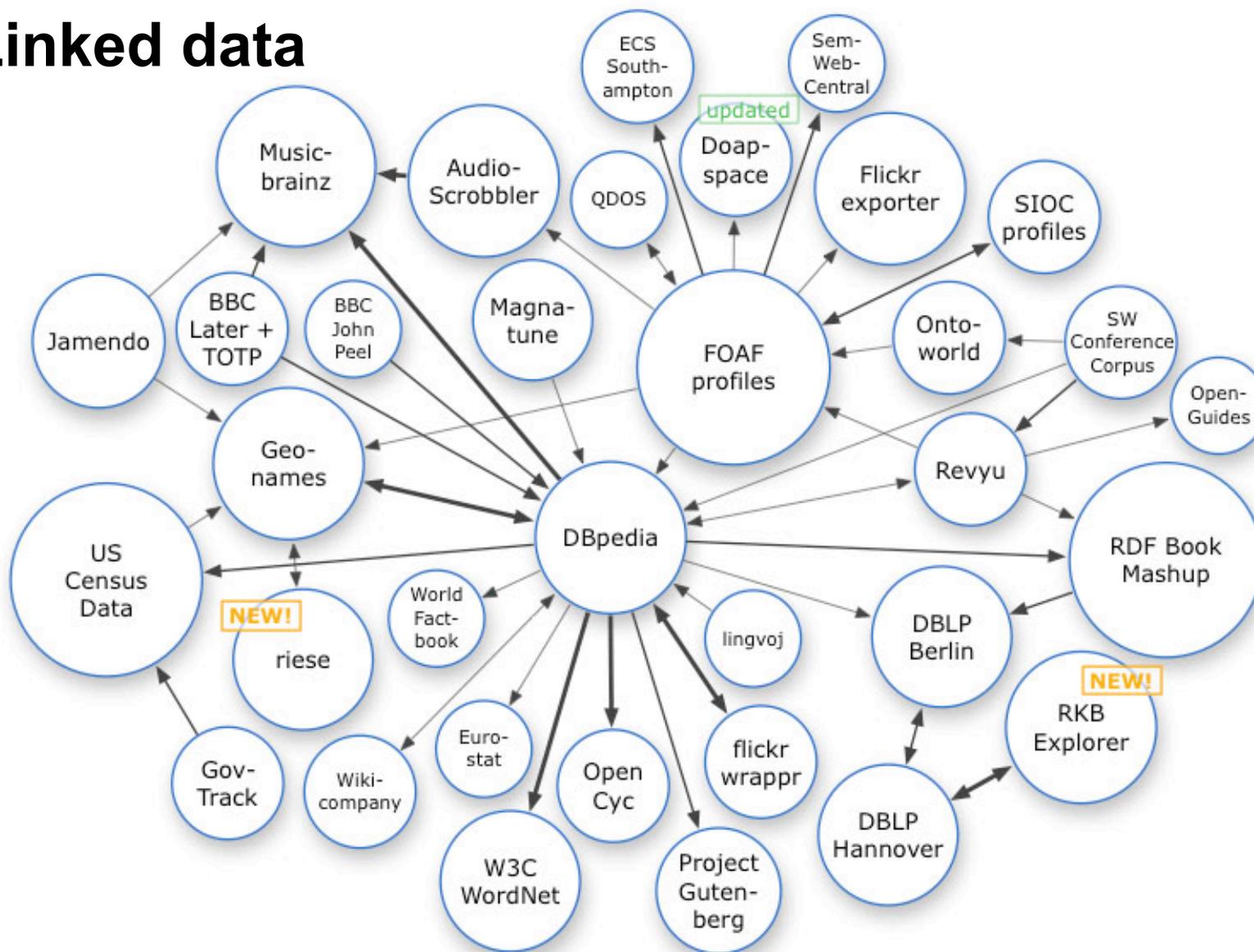
But why scrape when you can parse?



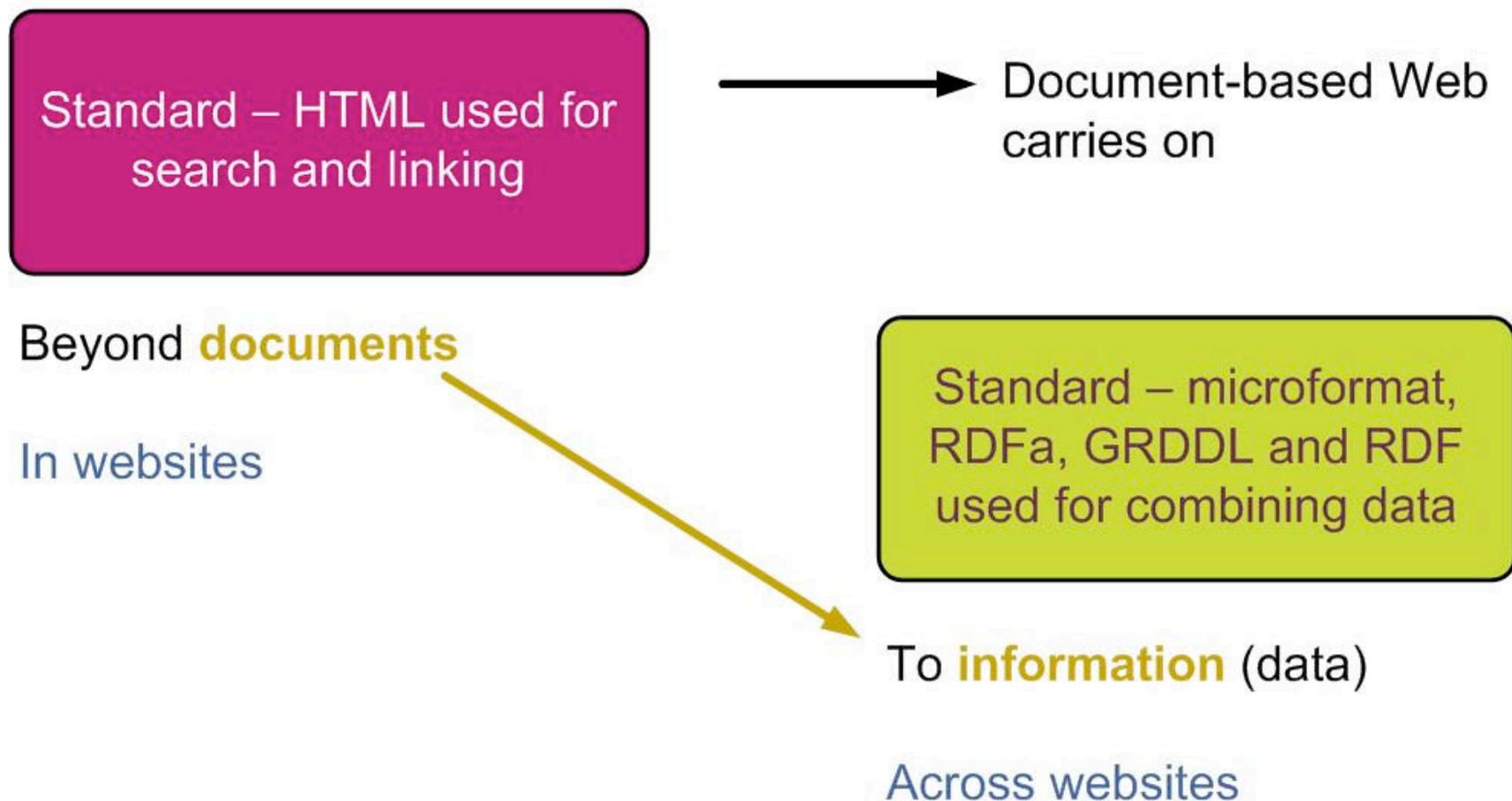
The Semantic Web

- A collective endeavour, by academics, standards bodies and, latterly, by companies and governments, to create a richer and more useful web.
- Not an artificial intelligence dream, rather an evolution of the Web we have today, achievable using current technology.

Linked data



The web of documents and the web of data



The chasm



Diagram of a web page layout. It features a header bar with three small squares and a long rectangle. The main content area contains a large 'Headline', a 'Subheadline', and a line of 'Italics'. Below this is a block of ten lines of placeholder text, each starting with 'Text Text Text Text Text Text Text Text Text Text'. At the bottom are four blue underlined links: 'Link1', 'Link2', 'Link3', and 'Link4'.

Headline
Subheadline
Italics

Text
Text Text Text Text Text Text Text Text Text Text
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[Link1](#) [Link2](#) [Link3](#)
[Link4](#)

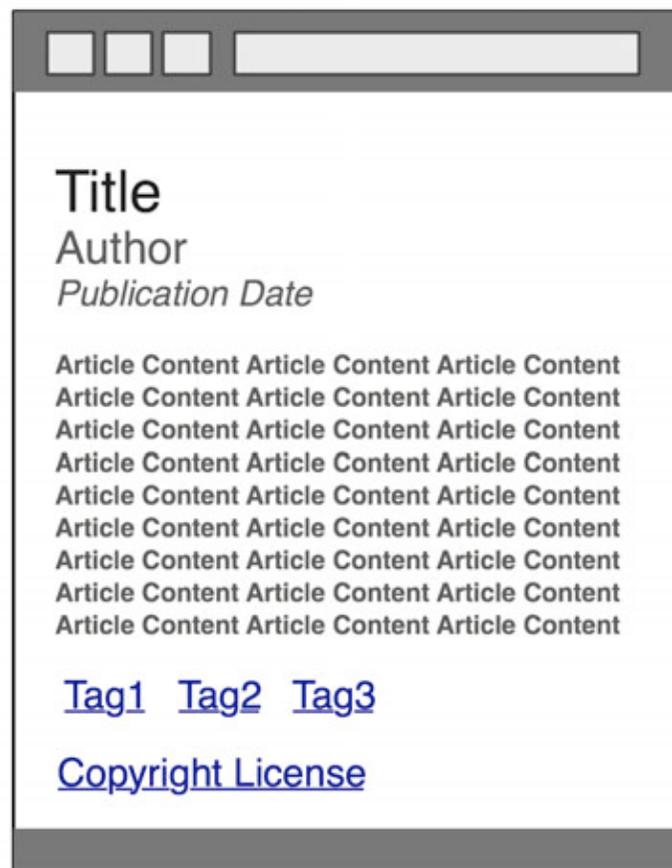


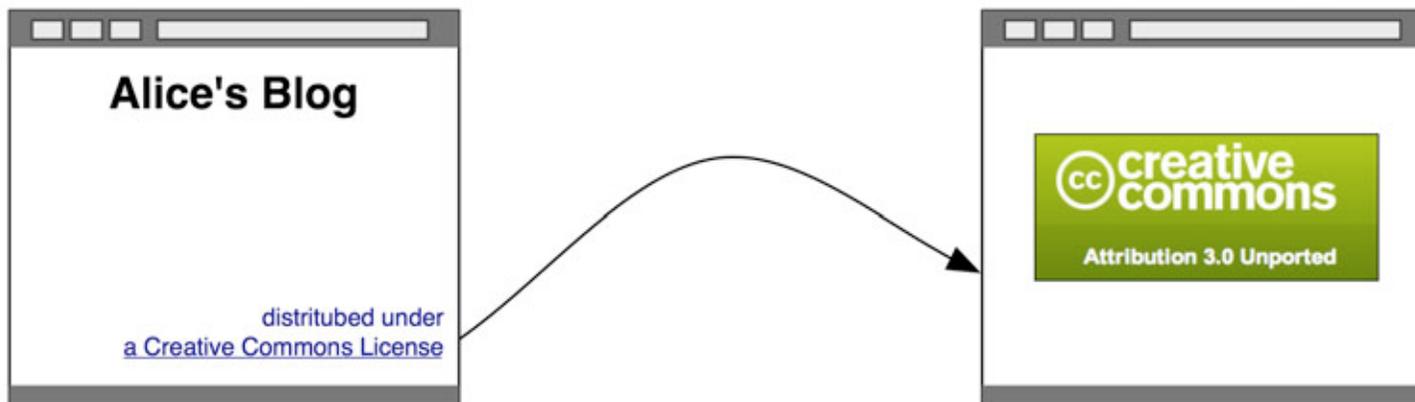
Diagram of a web page layout. It features a header bar with three small squares and a long rectangle. The main content area contains a large 'Title', 'Author', and 'Publication Date'. Below this is a block of ten lines of placeholder text, each starting with 'Article Content Article Content Article Content'. At the bottom are three blue underlined tags: 'Tag1', 'Tag2', and 'Tag3', followed by a blue underlined link: 'Copyright License'.

Title
Author
Publication Date

Article Content Article Content Article Content
Article Content Article Content Article Content

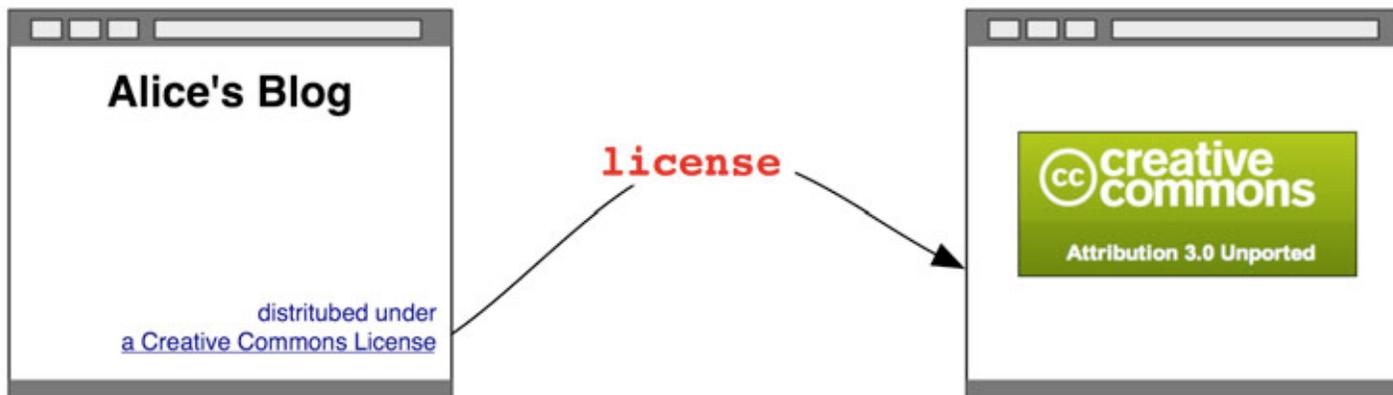
[Tag1](#) [Tag2](#) [Tag3](#)
[Copyright License](#)

Links with flavour



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distributed under a  
<a href="http://creativecommons.org/licenses/by/3.0/">  
    Creative Commons License  
</a>
```

Links with flavour



distributed under a

```
<a rel="license" href="http://creativecommons.org/licenses/by/3.0/">  
    Creative Commons License  
</a>
```

Microformats and your mobile phone

- <http://www.youtube.com/watch?v=azoNnLoJi-4>
Export a contact from a webpage to your phone
- <http://www.youtube.com/watch?v=Kjp4BaJOd0M>
Export restaurants from Google Maps
- http://uk.youtube.com/watch?v=Z9X-vHJ_Z-I
Bill Gates (!!) on why we need Microformats

RDFa: “Microformats for Government?”

- A **standard for data**, not just for Web pages
- **Producer led**, so that whenever content is available it is usable
- **Machine processable**, so that it can be extracted easily
- **Human viewable** and not impacting on W3C accessibility etc.
- Able to **tweak existing systems** to deliver

Examples - jobs and consultations (COI)

- Need central places for public sector jobs and consultations.
- Want to allow each department to publish their own information.
- Also want to enable third parties to 'consume' government information

Jobs

- Many job openings across diverse departments, such as army, health, schools, etc.
- No single place for specific jobs, such as electricians.
- Many third-party sites exist, but they have to 'scrape' the government sites.

Consultations

- Requests for comments from public or interested parties.
- No single place to find all consultations.
- Also have third-party sites that use 'scraping' to get the data.

Centralised and decentralised

- Can see that it's a mix of seemingly competing requirements ...
- ... we want all data in one place, but we also want it to be decentralised.

facilities management london fco - Yahoo! Search Results

http://search.yahoo.com/search;_ylt=A0geu9kvQnVlyj0AV1RXNyoA?p=fac RSS fco logo

webBa... Mail - ... ArgotV... Confir... RDFa E... HM Re... faciliti... Calendar Appear... XML Pa... Faciliti...

Yahoo! My Yahoo! Mail Welcome, mark_birbeck [Sign Out] Help

Web | Images | Video | Local | Shopping | more

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1 - 10 of 352,000 for facilities management london fco (About) - 0.02 s | SearchScan^{BETA} On

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Fsi are developers of Computer Aided **Facilities Management** software.
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Facility Management Solutions
Outsourced **facility management** and Energy **Management** Solutions from...
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FCO vacancy: Facilities Management Senior Commercial Manager

 ... individual to lead, develop and motivate the Commercial **Management** Team responsible...
Location: **London**
Salary: £63000

fco.gov.uk/en/.../working-for-us/careers/vacancies/fmcommanager - [Cached](#)

FCO vacancy: Facilities Management Director

 This is a new role to build, develop and maintain the **FCO's Facilities Management (FM)**...
Location: **London**
Salary: £80000

fco.gov.uk/en/.../working-for-us/careers/vacancies/fmdirector - [Cached](#)

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Vacancy search

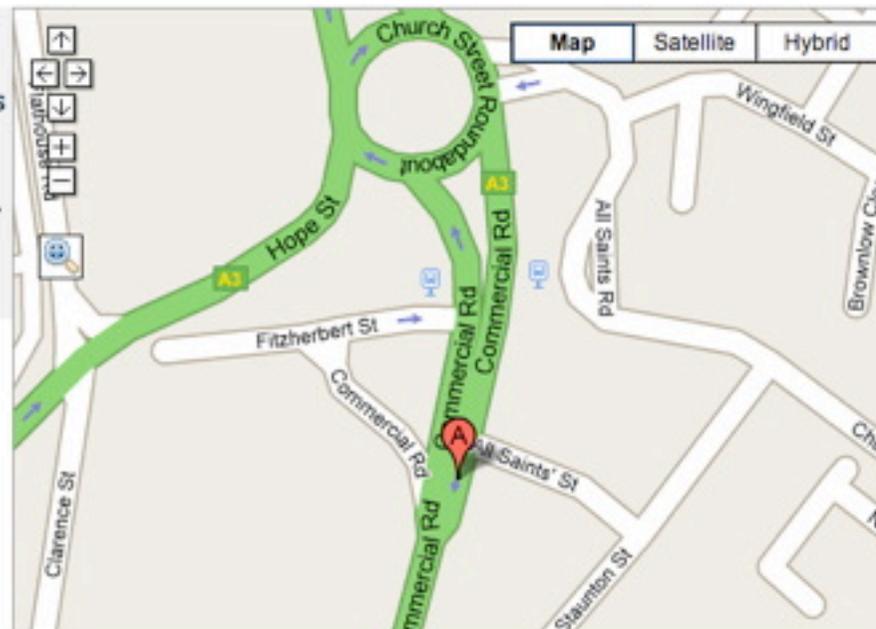
Search for near Order by



Save my search as an RSS feed

Assistant Officer

To analyse data and process applications in given timescales, liaising with customers and their representatives, working with colleagues to achieve tea...



Vacancy search

Search for near Order by Show on map

 Save my search as an RSS feed

Assistant Officer

To analyse data and process applications in given timescales, liaising with customers and their representatives, working with colleagues to achieve tea...



Administrative Assistant

To provide a range of processing and support functions to the business - maintaining databases, dealing with departmental and business queries, genera...



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Add datasource

View Edit

New datasource url:

Add

Available datasources

- <http://psv.webbackplane.com/node/14>
- <http://psv.webbackplane.com/node/23>
- <http://psv.webbackplane.com/node/22>
- <http://psv.webbackplane.com/node/21>
- <http://psv.webbackplane.com/node/12>
- <http://psv.webbackplane.com/node/13>
- <http://psv.webbackplane.com/node/15>
- <http://psv.webbackplane.com/node/16>
- <http://psv.webbackplane.com/node/17>
- <http://psv.webbackplane.com/node/18>
- <http://psv.webbackplane.com/node/19>
- <http://psv.webbackplane.com/node/20>
- <http://psv.webbackplane.com/node/25>
- <http://psv.webbackplane.com/node/24>
- <http://psv.webbackplane.com/node/26>
- <http://psv.webbackplane.com/node/30>
- <http://psv.webbackplane.com/node/35>



Remove datasource

View

Edit

- <http://psv.webbackplane.com/node/14>
- <http://psv.webbackplane.com/node/23>
- <http://psv.webbackplane.com/node/22>
- <http://psv.webbackplane.com/node/21>
- <http://psv.webbackplane.com/node/12>
- <http://psv.webbackplane.com/node/13>
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- <http://psv.webbackplane.com/node/27>
- <http://psv.webbackplane.com/node/46>
- <http://psv.webbackplane.com/node/65>
- <http://psv.webbackplane.com/node/68>
- <http://psv.webbackplane.com/node/70>
- <http://psv.webbackplane.com/node/69>

Delete



Registered as a newspaper

Published by Authority

Established 1665

The
**London
Gazette**

18486

Tr
Road
Borough

NOTICE IS HEREBY GIVEN that the Council of the London Borough of Barnet propose to make the above-mentioned Order under Sections 45, 46, 124 and Part IV of Schedule 9 of the Road Traffic Regulation Act 1984 and all other enabling powers.

In order to help enable access to off-street parking facilities via existing vehicle crossovers the general effect of the above Order would be to modify the existing parking layout at the following locations, with a resultant loss of parking spaces as follows:

Location	Parking bay type	No. of spaces removed
1. Outside No. 26 The Vale	Resident permit bay	One
2. Outside No. 30 The Vale	Resident permit bay	One

under sections 6 and 124 and part IV of Schedule 9 of the Road Traffic Regulation Act 1984, as amended by section 8 and Schedule 5 of the Local Government Act 1985 and the Traffic Management Act 2004.
2. The general effect of the Disabled Persons Parking Places Order would be to further amend the Hounslow (Free Parking Places) (Disabled Persons) (No.1) Order 2008 to—

- (i) designate parking places in the streets detailed in Schedule 1 to this Notice;
- (ii) provide that the parking places will operate “at any time” throughout the week;
- (iii) specify, in respect of the parking places, that a disabled persons’ vehicle displaying in the relevant position a disabled person’s badge (commonly referred to as “the Blue Badge”) issued by any local authority under the provisions of the Disabled Persons (Badges for Motor Vehicles) Regulations 1982 may be left therein;
- (iv) provide that certain vehicles may wait in the parking places in certain circumstances e.g., to allow persons to board or alight (maximum 20 minutes), to load or unload (maximum 20 minutes) etc; and

Location	Parking bay type	No. of spaces removed
Outside No. 26 The Vale NW11	Resident permit bay	One
Outside No. 30 The Vale NW11	Resident permit bay	One

Copies of the proposed Order, plans of the relevant areas and the Council’s Statements of Reasons for proposing to make the Order can be inspected between 9am and 5pm on Mondays to Fridays (Bank Holidays and Public Holidays excepted) inclusive for a period of 21 days from the date on which this notice is published by contacting:

- (a) the Design Team, 2nd Floor, Building 4, North London Business Park, Oakleigh Road South, London N11 1NP;
- (b) Hendon Library (Information Desk 1st Floor), The Burroughs, London NW4 4BQ.

Further information may be obtained by telephoning the Design Team on 020 8359 7548.

Any person wishing to object to the proposed Order should send a

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Notice: 699826 (Issue: 58942) - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.london-gazette.co.uk/issues/58942/notices/699826

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Friday, January 09, 2009

Search archive

Notice: 699826 (Issue: 58942)

Date: 6 January 2009 **Issue Number:** 58942 **Page number:** 133

Publication Date: *Tuesday, 6 January 2009*

Notice Code: *2433*

Notices to Creditors

AERFUNDING LEASING UK LIMITED

(Company Number 05994728)

I, Jeremy Willmont of Moore Stephens LLP, 1-3 Snow Hill, London, EC1A 2DH give notice that on 22nd December 2008 I was appointed joint liquidator of Aerfunding Leasing UK Limited by resolution of the members. Please note that this is a solvent liquidation. Notice is further given pursuant to Rule 4.182A of the Insolvency Rules 1986 that I intend to make distribution to creditors. Creditors of the Company are required, on or before 30th January 2009 to send their full forenames and surnames, their addresses and descriptions, full particulars of their claims, and the names and addresses of their solicitors (if any), to the undersigned at the address above. The undersigned is the joint liquidator of the Company and is acting in that capacity. Creditors should send their notices to the undersigned in writing from the said joint liquidator, and prove their debts or claims at such time and place as may be specified in the notice. The distribution will be made in respect of a debt not already proved.

Registered Users

Username

Password



Done

Validation Results

Your RDF document validated successfully.

Jump To:

[Source](#)

[Triples](#)

[Messages](#)

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[Feedback](#)

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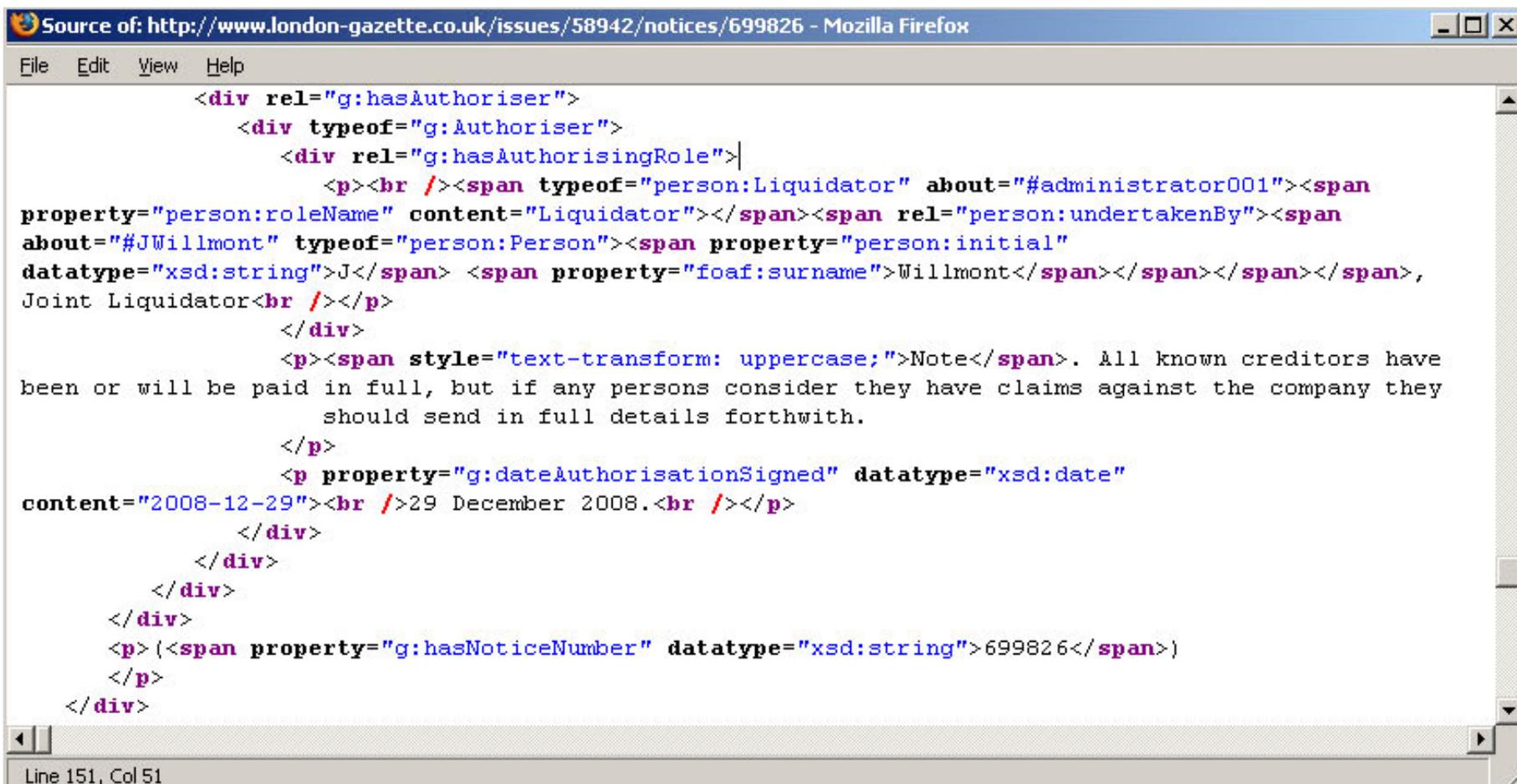
[Validator Input](#)

Triples of the Data Model

Number	Subject	Predicate	Object
1	http://www.london-gazette.co.uk/id/issues/58942/notices/699826	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.gazettes-online.co.uk/ontology/corp-insolvency#MembersNoticeToCreditors
2	http://www.london-gazette.co.uk/id/issues/58942/notices/699826	http://purl.org/dc/elements/1.1/subject	genid:A24738
3	genid:A24738	http://www.w3.org/1999/02/22-rdf-syntax-ns#value	http://www.esd.org.uk/standards/ipsv/2.00/ipsv-schema#Insolvency
4	genid:A24738	http://purl.org/dc/dcam/memberOf	http://www.esd.org.uk/standards/egms/3.0/egms-schema#IPSV
5	http://www.london-gazette.co.uk/id/issues/58942	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.gazettes-online.co.uk/ontology#Issue
6	http://www.london-gazette.co.uk/id/issues/58942/notices/699826	http://www.gazettes-online.co.uk/ontology#isInIssue	http://www.london-gazette.co.uk/id/issues/58942
7	http://www.london-gazette.co.uk/id/issues/58942	http://www.gazettes-online.co.uk/ontology#hasPublicationDate	"2009-01-06"^^ http://www.w3.org/2001/XMLSchema#date
8	http://www.london-gazette.co.uk/id/issues/58942/notices/699826	http://www.gazettes-online.co.uk/ontology#hasPublicationDate	"58942"^^ http://www.w3.org/2001/XMLSchema#date

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37: <corp-insolvency:MembersNoticeToCreditors rdf:about="http://www.london-gazette.co.uk/id/issues/58942/notices/699826">
38:   <dc:subject>
39:     <rdf:Description>
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48:     </g:Issue>
49:   </g:isInIssue>
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64:         <g:Authoriser>
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68:               <person:undertakenBy>
69:                 <person:Person rdf:about="http://www.london-gazette.co.uk/id/issues/58942/notices/699826#JWillmor">
70:                   <person:initial rdf:datatype="http://www.w3.org/2001/XMLSchema#string">J</person:initial>
71:                   <foaf:surname>Willmont</foaf:surname>
72:                 </person:Person>
73:               </person:undertakenBy>
74:               <person:roleName>Liquidator</person:roleName>
75:             </person:Liquidator>
76:           </g:hasAuthorisingRole>
77:         </g:Authoriser>
78:       </g:hasAuthoriser>
79:     </corp-insolvency:CompanyIssuedNotice>
80:   </g:isAbout>
81:   <g:hasNoticeCode rdf:datatype="http://www.w3.org/2001/XMLSchema#string">2433</g:hasNoticeCode>
82:   <dc:identifier rdf:datatype="http://www.w3.org/2001/XMLSchema#anyURI">http://www.london-gazette.co.uk/id/issues/58942/notices/699826</dc:identifier>
83:   <dc:language>eng</dc:language>
84:   <rdf:Description>
85:     <rdf:value>eng</rdf:value>
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How its done

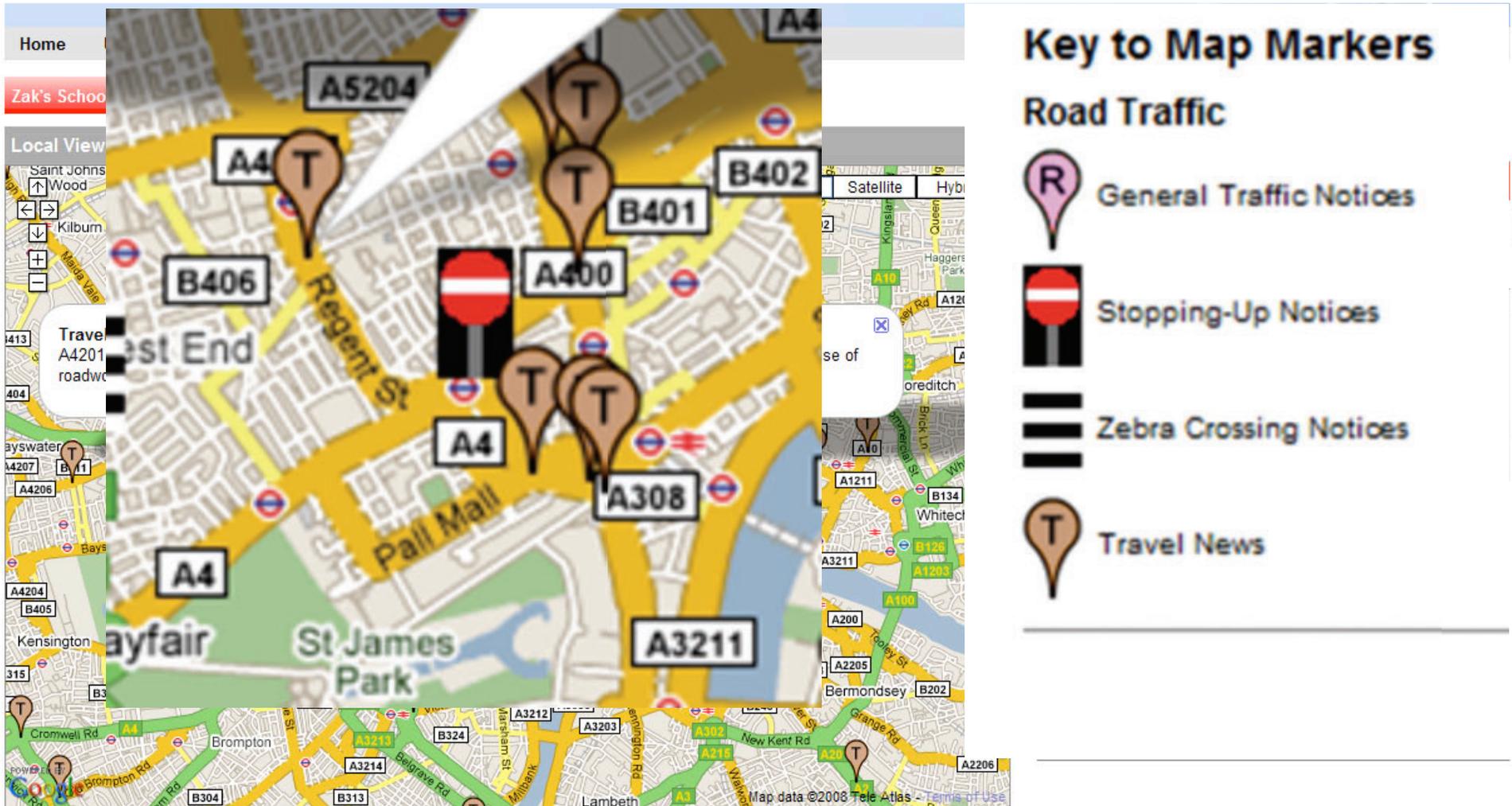


Source of: <http://www.london-gazette.co.uk/issues/58942/notices/699826> - Mozilla Firefox

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File Edit View Help
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    <div rel="g:hasAuthorisingRole">|
      <p><br /><span typeof="person:Liquidator" about="#administrator001"><span
property="person:roleName" content="Liquidator"></span><span rel="person:undertakenBy"><span
about="#JWillmont" typeof="person:Person"><span property="person:initial"
datatype="xsd:string">J</span> <span property="foaf:surname">Willmont</span></span></span></span>,
Joint Liquidator<br /></p>
    </div>
    <p><span style="text-transform: uppercase;">Note</span>. All known creditors have
been or will be paid in full, but if any persons consider they have claims against the company they
should send in full details forthwith.
    </p>
    <p property="g:dateAuthorisationSigned" datatype="xsd:date"
content="2008-12-29"><br />29 December 2008.<br /></p>
  </div>
</div>
</div>
</div>
<p>(<span property="g:hasNoticeNumber" datatype="xsd:string">699826</span>)
</p>
</div>
```

Line 151, Col 51

The leap from notice to map



Key to Map Markers

Road Traffic

-  General Traffic Notices
-  Stopping-Up Notices
-  Zebra Crossing Notices
-  Travel News

Benefits of RDFa

- **Flexibility** in how information is presented, while ensuring consistency of content
- Improving **finding** the location of relevant data
- A means of creating **comprehensive** access to data
- **Immediate** data access when published
- Allowing others to extract and **re-use easily**
- Means to **join up** previously separated information and services
- Possibility of **creating new services**, including personalised
- **Spin-off benefits** from structuring information, such as lists

RDFa solves them all (almost!)

- **Discovery** – can I find the data that I want? **Solved**
- **Legal** – am I allowed to use the data? **Solved**
- **Technical** – is the data in the right format? **Solved**
- **Commercial** – can I afford the data that I need?
- **Intelligibility** - can I easily interpret the data that I am accessing? **Solved**
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