



University of
Southampton

Vocabularies and Applications

COMP6215 Semantic Web Technologies

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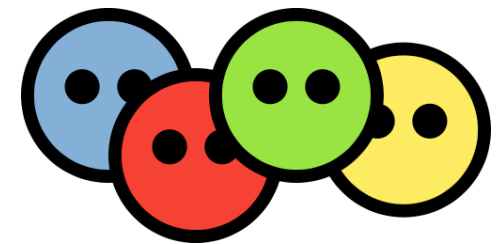


Social Networking

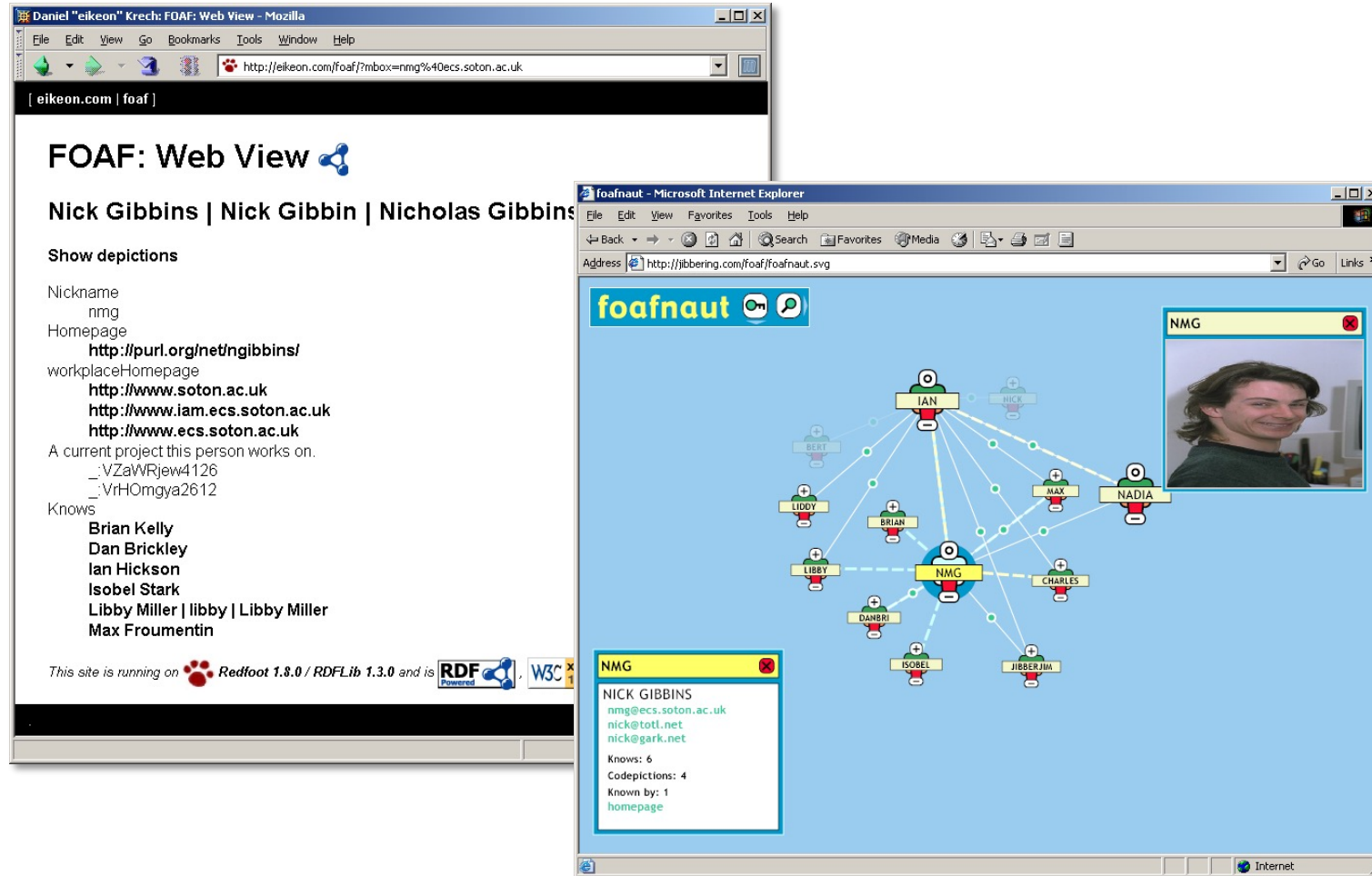
<http://www.flickr.com/photos/bigblackbox/4269397346/>

Friend of a Friend (FOAF)

- Semantic Web realisation of “six degrees of separation”
- Fully distributed system
 - Each user writes an RDF file describing themselves and who they know (using the FOAF schema)
 - Files are harvested and aggregated
 - Data is presented in a variety of interfaces
- Avoids siloing of existing social networking systems
- Data from many providers



Multiple Interfaces



FOAF: Web View

Nick Gibbins | Nick Gibbin | Nicholas Gibbins

Show depictions




Nickname
nmg

Homepage
<http://purl.org/net/ngibbins/>

workplaceHomepage
<http://www.soton.ac.uk>
<http://www.iam.ecs.soton.ac.uk>
<http://www.ecs.soton.ac.uk>

A current project this person works on.
_:VZaVRjew4126
_:VrHOMgya2612

Knows
Brian Kelly
Dan Brickley
Ian Hickson
Isobel Stark
Libby Miller | libby | Libby Miller
Max Froumentin

This site is running on  Redfoot 1.3.0 / RDFLib 1.3.0 and is  

foafnaut

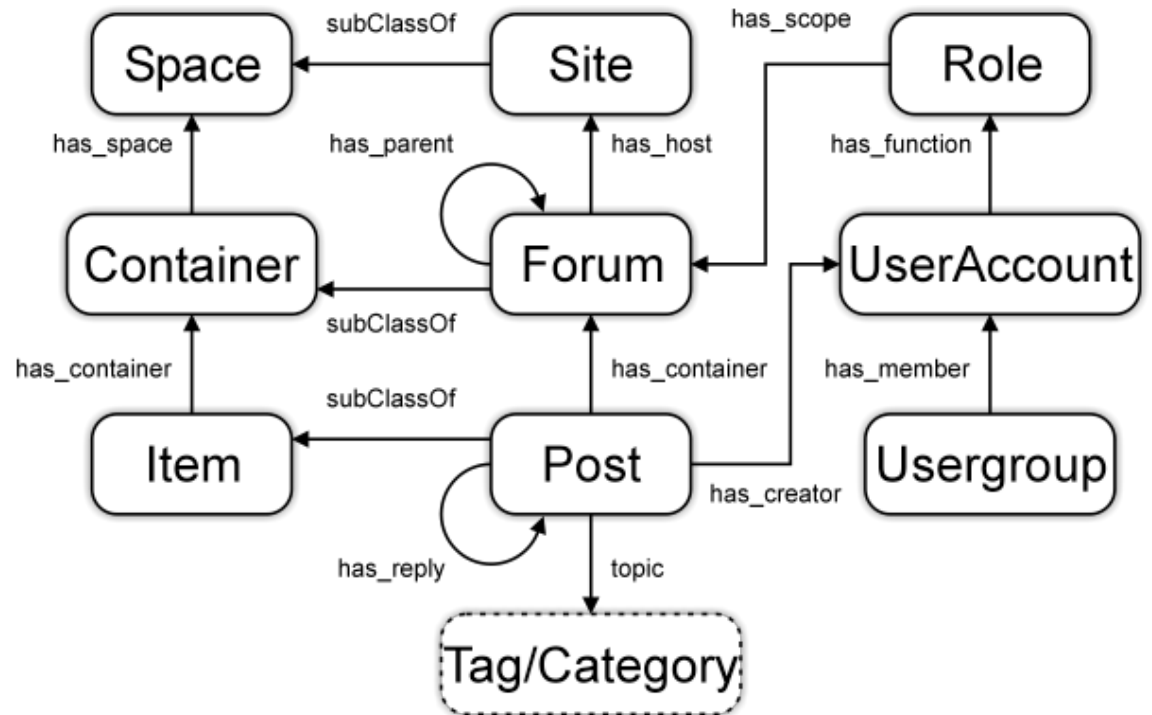
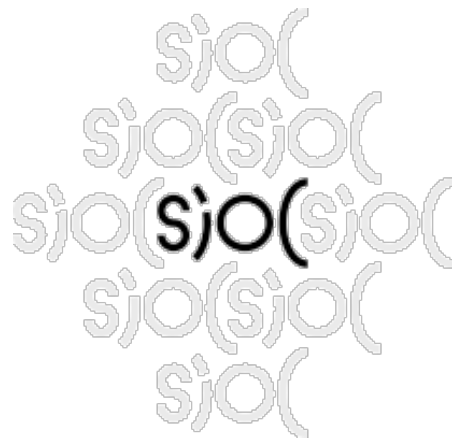
NMG

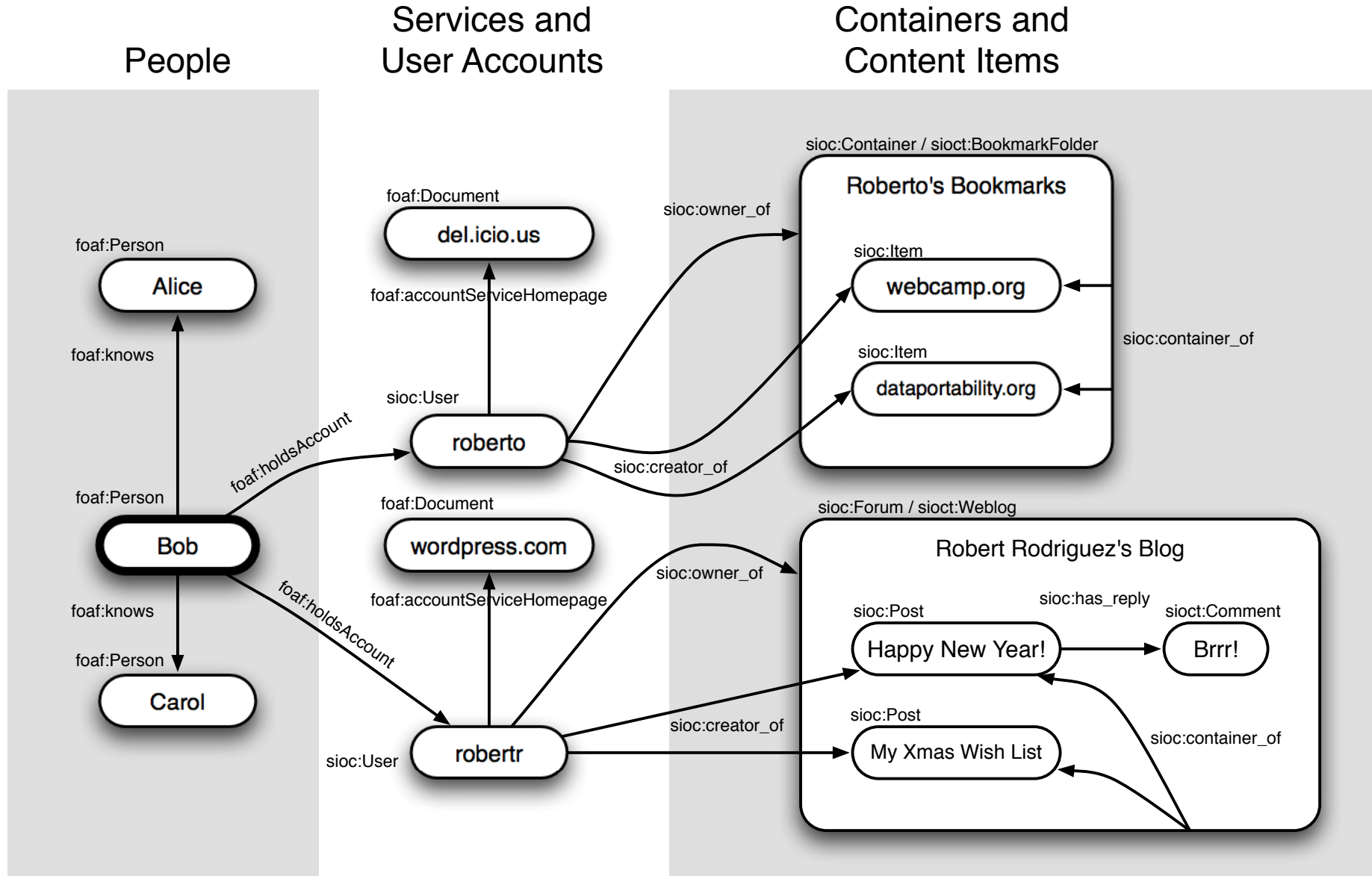
NICK GIBBINS
nmg@ecs.soton.ac.uk
nick@totl.net
nick@gark.net

Knows: 6
Codepictions: 4
Known by: 1
homepage

Semantically-Interlinked Online Communities

- Ontology for describing wikis, bulletin boards, blogs, etc
- Designed to interoperate with FOAF





Dublin Core

- A standard set of 15 metadata elements for cross-domain information resource description
- Formally endorsed by ISO, NISO and CEN
- Representation language-neutral
 - Plain XML serialisations in addition to RDF/XML
 - Predates RDF (started in 1995)
- Possibly the most widely used Semantic Web vocabulary
 - Libraries (electronic and physical)
 - Museums
 - Web archives
 - Open Directory Project
 - UK Mirror Service
 - MusicBrainz
 - ...



Dublin Core Element Set

- Title
- Creator
- Subject
- Description
- Publisher
- Contributor
- Date
- Type
- Format
- Identifier
- Source
- Language
- Relation
- Coverage
- Rights

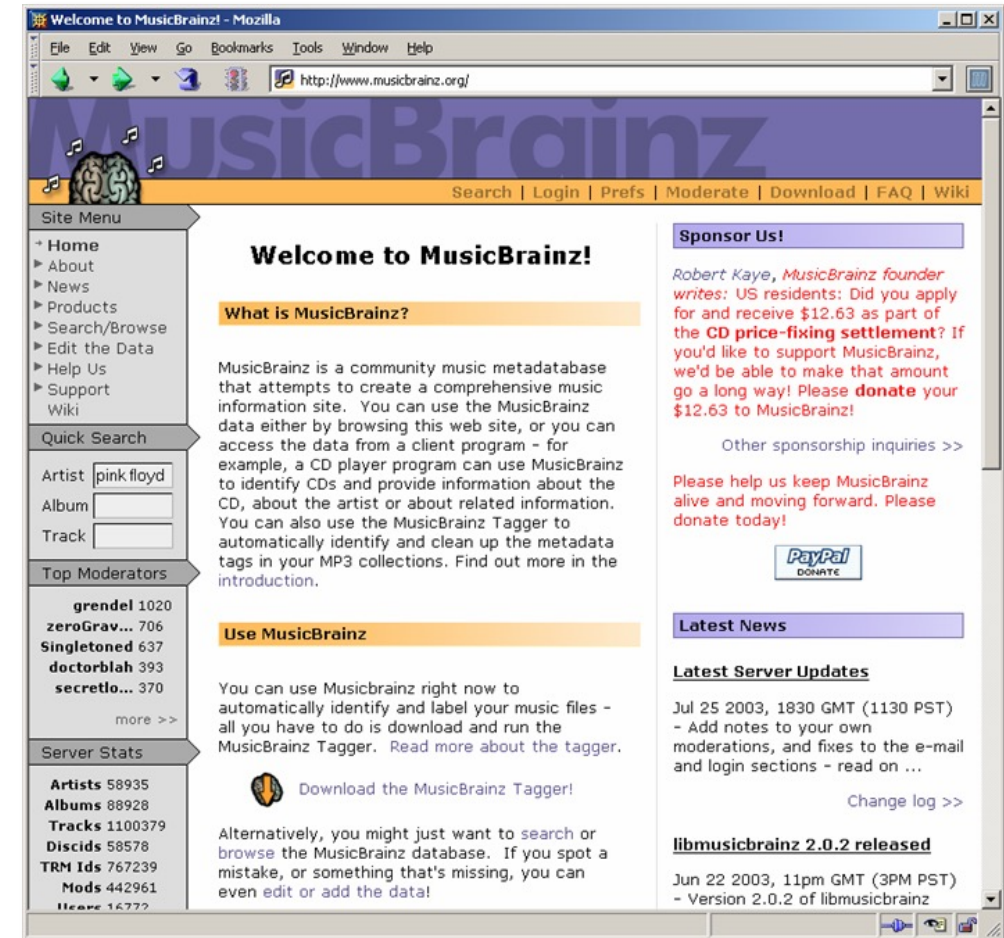
Bibliographic Ontology

- More detailed bibliographic ontology
- Describes types of publication
 - Conference paper
 - Journal article
 - ...
- Builds on Dublin Core



MusicBrainz

- An open replacement for the Gracenote CD database
- Community-maintained service
 - Submissions and moderations
- Vocabularies used:
 - Dublin Core
 - Custom ontology for metadata specifically relating to audio recordings



Publishing Standards for Industry Standard Metadata

- Set of metadata vocabularies for automating publishing production processes and content exchange
- Simplified profile of RDF/XML
 - Lower hurdle to adoption
- Commercial users include Time, Inc., Lexis-Nexis and McGraw-Hill
- Vocabularies used:
 - Dublin Core
 - Custom ontologies for
 - Controlled vocabularies
 - Relational information
 - Resource types
 - Rights management

BBC Programmes

- Simple ontology for describing programmes
 - Brands
 - Series (seasons)
 - Episodes
 - Broadcast events
 - Broadcast services
- Data describing all BBC programmes



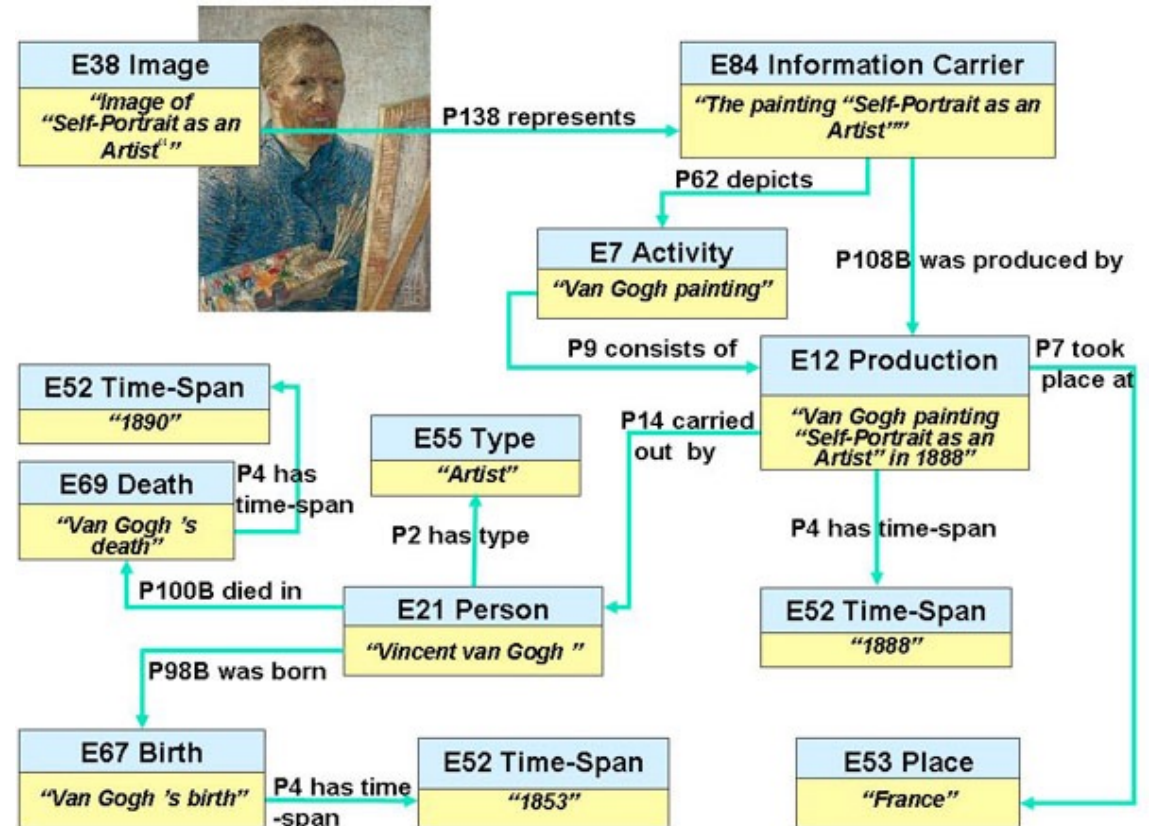


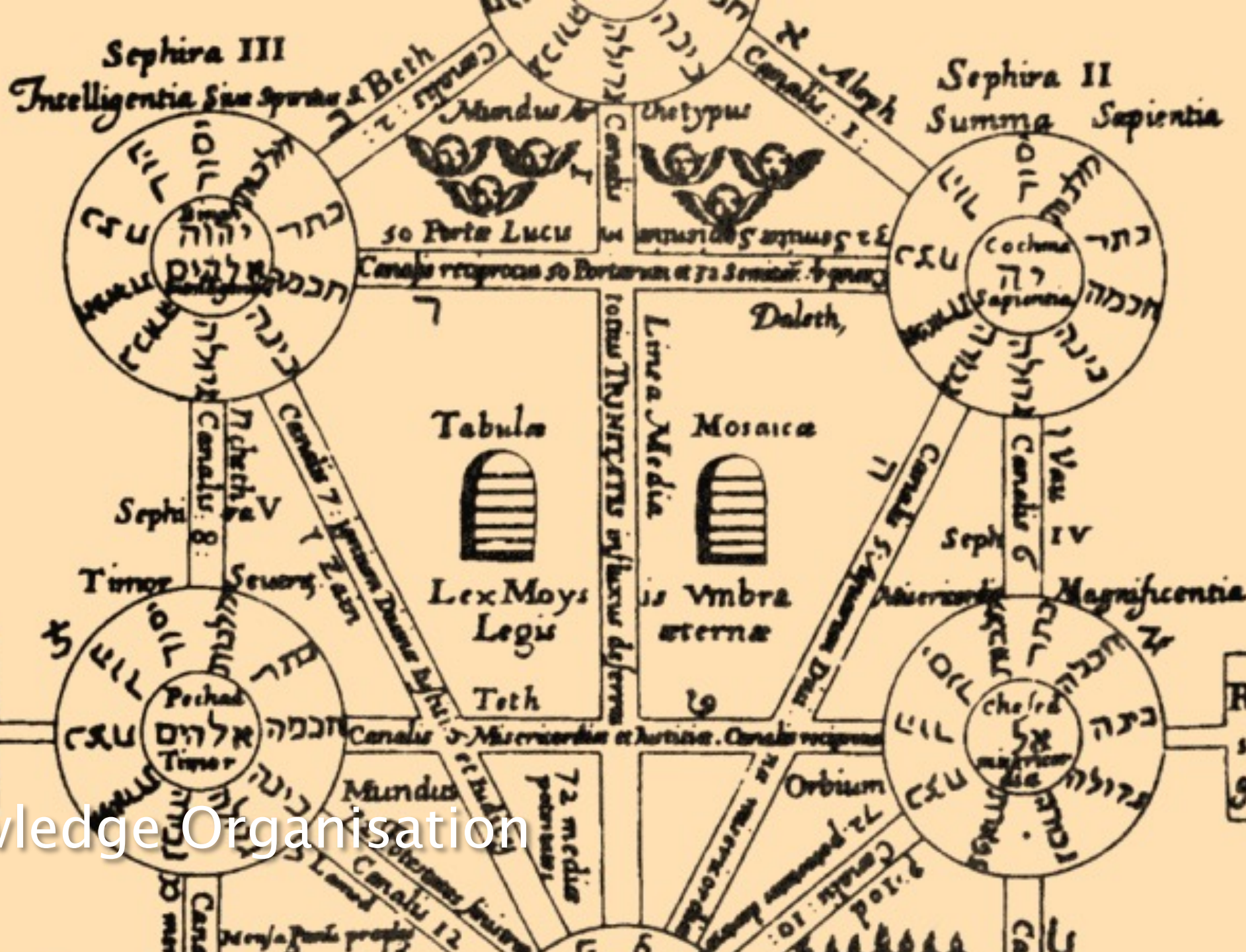
Cultural Heritage

<http://www.flickr.com/photos/juanillooo/476627356/>

CIDOC CRM

- Ontology for heterogeneous cultural heritage information
- Represents more than just bibliographic information
- Event-based model (compare with Dublin Core's attribute-based approach)



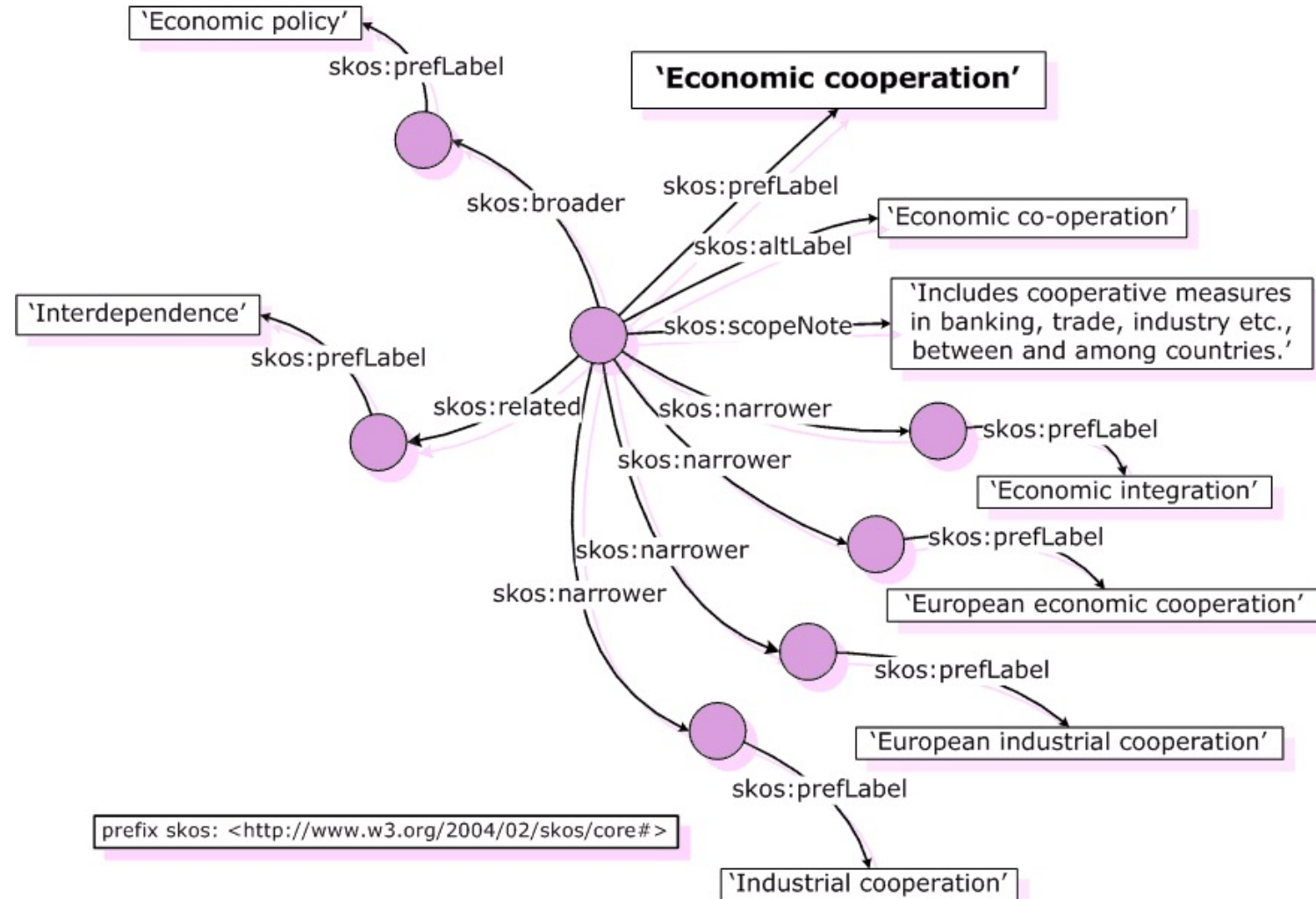


Knowledge Organisation

Simple Knowledge Organisation System

- Standard vocabulary to support thesauri, classification schemes, subject heading lists, taxonomies, and other types of controlled vocabulary
- Semantic relationships: broader, narrower, related terms
- Labels, preferred labels, alternative labels
- Notes, documentation, scope notes
- Mappings between vocabularies

SKOS Example



181 The Fox Hunt oil 38x68

1893

OEDDE met

4

Rec. W. Homer. June 15, 1893.

K836114

Sold B3105 Nov. 21, 1893

Penn. Acad of the Fine Arts.

met. Mus. Feb-Mar 1911. Cent P.A. of the F.A.

Provenance

W. 85

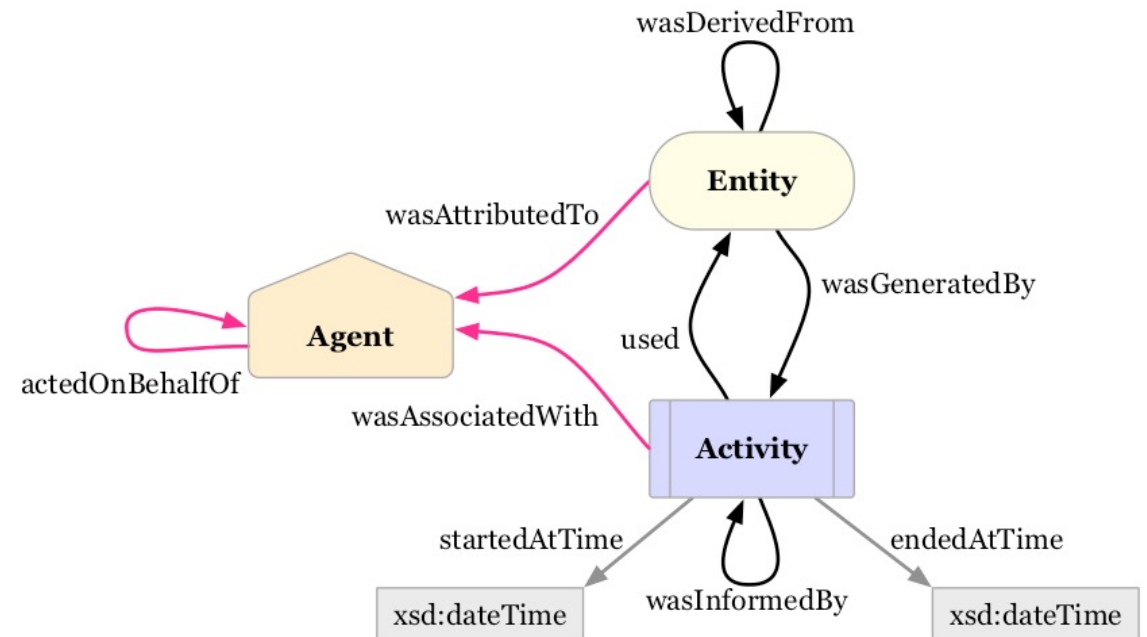
W. 168

Provenance

- The *provenance* of a digital object represents its origin
- Provenance facilitates:
 - understanding how data was collected so it can be meaningfully used
 - determining ownership and rights over an object
 - making judgements about information to determine whether to trust it
 - verifying that the process and steps used to obtain a result complies with given requirements
 - reproducing how something was generated.

PROV-O

- A specification and ontology for expressing provenance records
- Records contain descriptions of the entities and activities involved in producing and delivering or otherwise influencing a given object
- Became a W3C Recommendation in April 2013



has a gift of seek on site, ancasuany
dreamydeary. Heed! Heed! It may half been a missfired brick, as
some say, or it mought have been due to a collupsus of his back
promises, as others looked at it. (There extand by now one thou-
sand and one stories, all told, of the same). But so sore did abe
ite ivvy's holired abbles, (what with the wallhall's horrors of rolls-
rights, carhacks, stonengens, kisstvanes, tramtrees, fargobawlers,
autokinotons, hippohobbilies, streetfleets, tournintaxes, mega-
phoggs, circuses and wardsmoats and basilikerks and aeropagods
and the hoyse and the jollybrool and the peeler in the coat and
the mecklenburk bitch bite at his ear and the merlinburrow bur-
rocks and his fore old porecourts, the bore the more, and his

refer here
unsure

Falling up

have things?

offense

howid?

fraternal names made nuts?

nam
outside
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destruction
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wings
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any action
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moving
mayh all
the set
to
America
compared
the oscar
over who
worse
wanderer

Web Annotation

could also
be circle

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5
(playmate?)

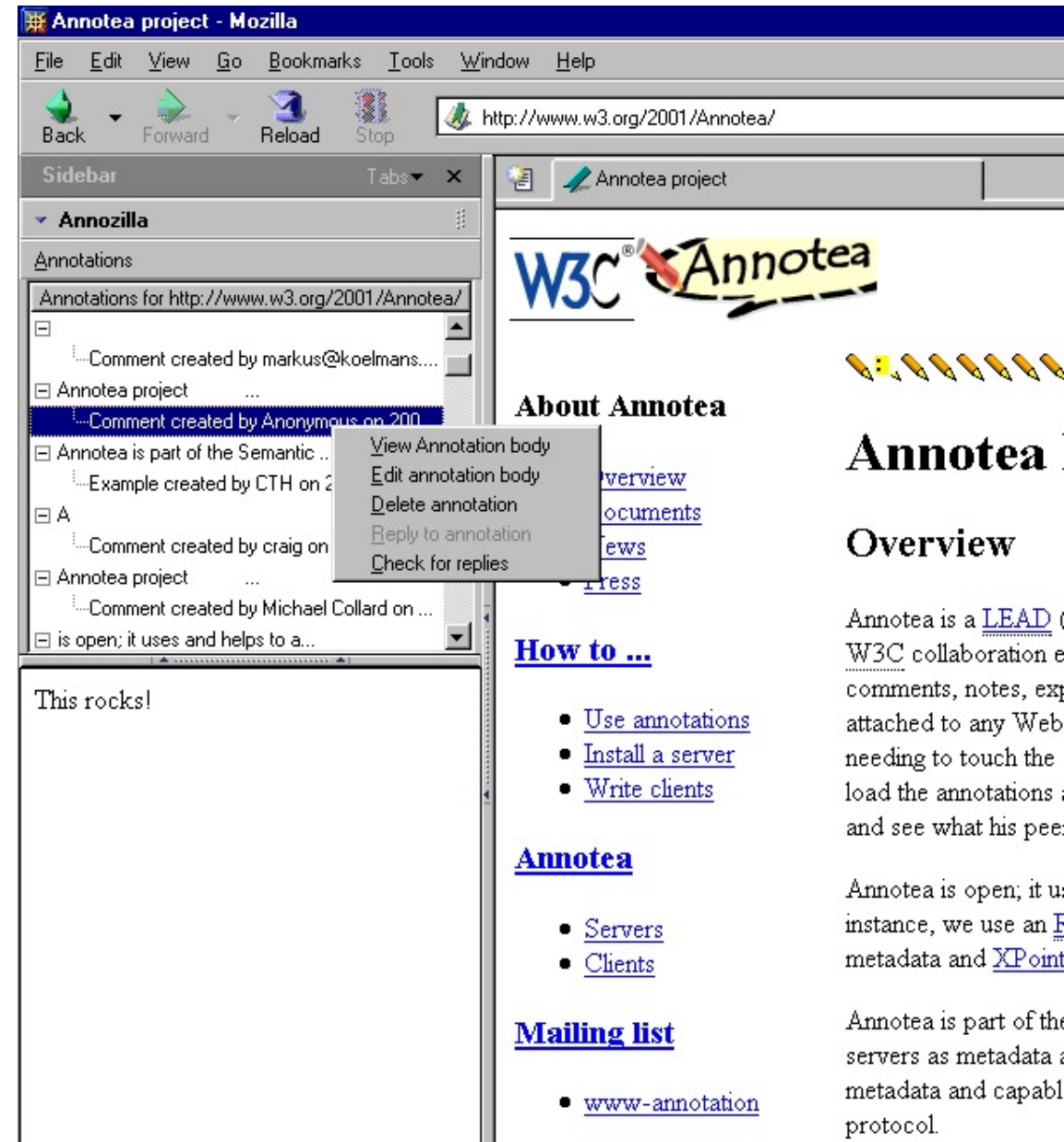
buried
cece
Anfanon
legends

and travel
through set:
Othello's
"zerophyi"

Annotea

- Shared annotations for the Web
- Vocabularies used:
 - Dublin Core for bibliographic metadata about the annotation
 - Custom schema for relating annotation to annotated document
 - XPath and XPointer used to identify region of document to be annotated

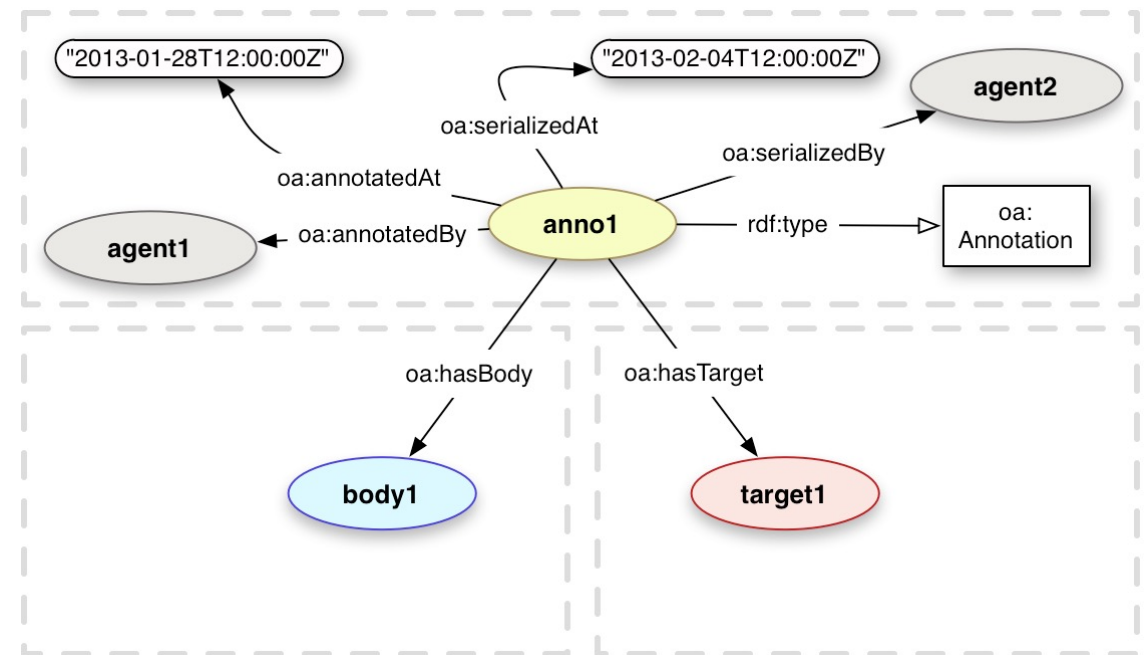
<http://www.w3.org/2001/Annotea/>

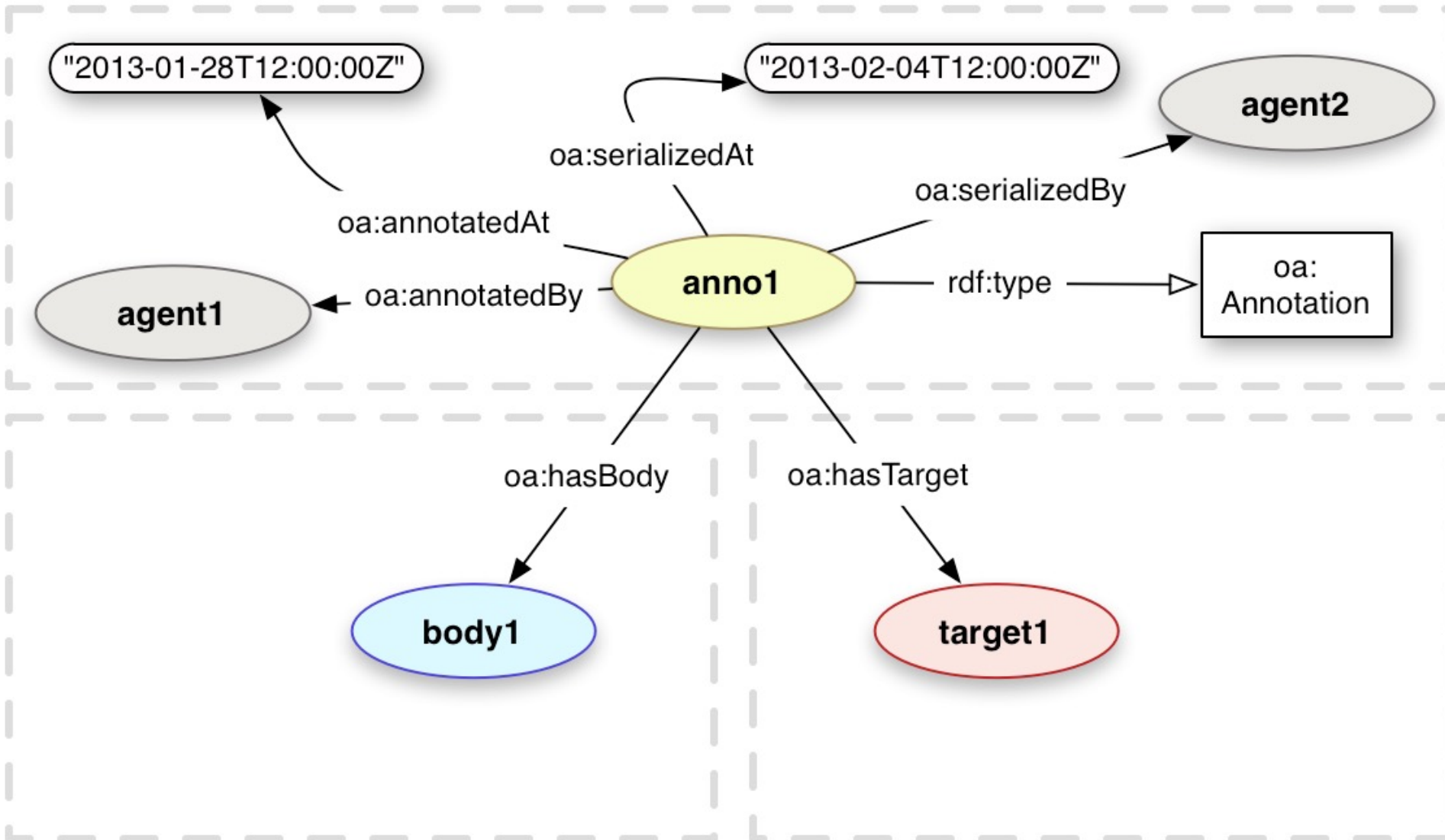


The screenshot shows a Mozilla browser window displaying the Annotea project website. The browser's title bar reads "Annotea project - Mozilla". The address bar contains the URL "http://www.w3.org/2001/Annotea/". The page layout includes a sidebar on the left with a list of annotations for the current page, and a main content area on the right. The sidebar shows a list of annotations, with a context menu open over one of them. The context menu options are: View Annotation body, Edit annotation body, Delete annotation, Reply to annotation, and Check for replies. The main content area shows the text "This rocks!" with an annotation box around it. The page also features the W3C and Annotea logos, a navigation menu with links like "About Annotea", "Overview", "How to ...", and "Mailing list".

Open Annotation Data Model

- W3C Proposed Recommendation (17 Jan 2017)
 - Ongoing work on annotation within W3C (Web Annotation Working Group)
- Vocabularies used:
 - FOAF
 - Dublin Core
 - Provenance
 - SKOS







Commerce

<https://www.flickr.com/photos/polycart/5786374464>

Good Relations

- Standardised vocabulary for product, price, and company data
- Represents:
 - Prices
 - Accepted payment methods
 - Opening times
 - Delivery methods and charges
 - Warranty promises and scope
- Integrates with:
 - UNSPSC vocabulary for offerings
 - SIC codes for company type





Public Sector Information

<http://www.flickr.com/photos/emsef/1398072554/>

AKTive PSI (2005)

- Use advanced knowledge management technology to improve the delivery of policy and public services across Government
- Build up a detailed picture of life in two London Boroughs, using as broad a collection of Public Sector Information as possible



Office of
PUBLIC SECTOR INFORMATION

 **Lewisham**

Land Registry
Cymraeg



 **Camden**

 **Department of Health**

national STATISTICS

LONDON

CabinetOffice



 **The London Gazette**

defra
Department for Environment
Food and Rural Affairs



Visualisations and Mashups

AKTive PSI - Mozilla Firefox

http://sasoki.aktivepsi.com/scraper/ch/?companyname=Abington+Autos

AKTive PSI
Companies House Web Scraper

Company Name:
Abington Autos

Get Company Information

Suggested Searches:
Abington Autos
Abington Autocentre

Company Information

The closest company that matched your search was called 'ABINGTON AUTO'S LIMITED'.

ABINGTON AUTO'S LIMITED	MAYFIELDS INSOLVENCY PRACTITIONERS CHURCH STEPS WEST MIDLANDS B63 4AB
Company No. 03869315	
Status	Dissolved 29/12/2004
Date of Incorporation	01/11/1999
Country of Origin	United Kingdom
Company Type	Private Limited Company
Nature of Business (SIC(03))	5010 - Sale of motor vehicles
Accounting Reference Date	31/03
Last Accounts Made Up To	31/03/2001 (TOTAL EXEMPTION SMALL)
Next Accounts Due	31/01/2003
Last Return Made Up To	01/11/2001
Next Return Due	29/11/2002
Last Members List	01/11/2001
Insolvency History	

AKTive PSI on Google Maps - Mozilla Firefox

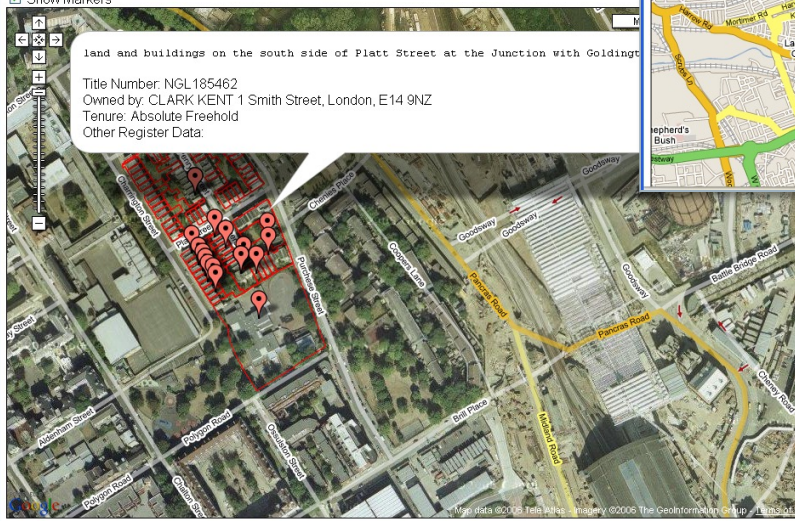
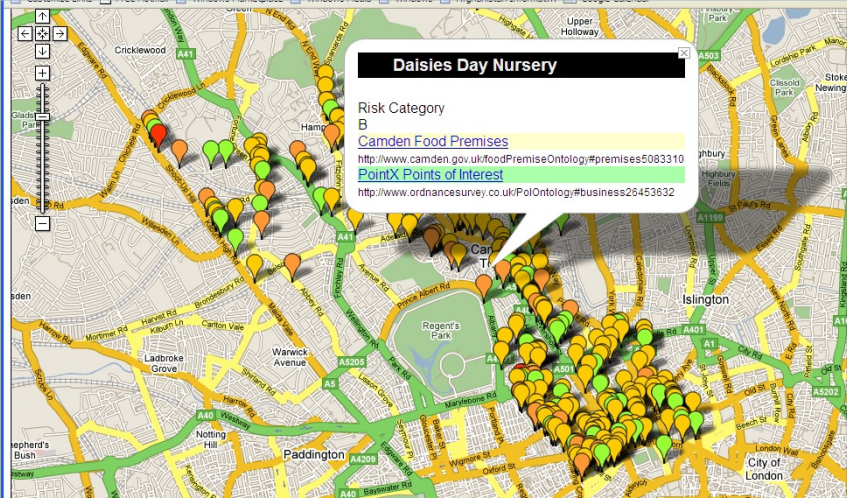
http://sasoki.ecs.soton.ac.uk/aktivepsi/!maps/

AKTive PSI
Land Registry Camden Sample Set

Show Markers

land and buildings on the south side of Platt Street at the Junction with Golding

Title Number: NGL185462
Owned by: CLARK KENT 1 Smith Street, London, E14 9NZ
Tenure: Absolute Freehold
Other Register Data:

Daisies Day Nursery

Risk Category
B

[Camden Food Premises](http://www.camden.gov.uk/food/PremiseOntology/#premises5083310)
<http://www.camden.gov.uk/food/PremiseOntology/#premises5083310>

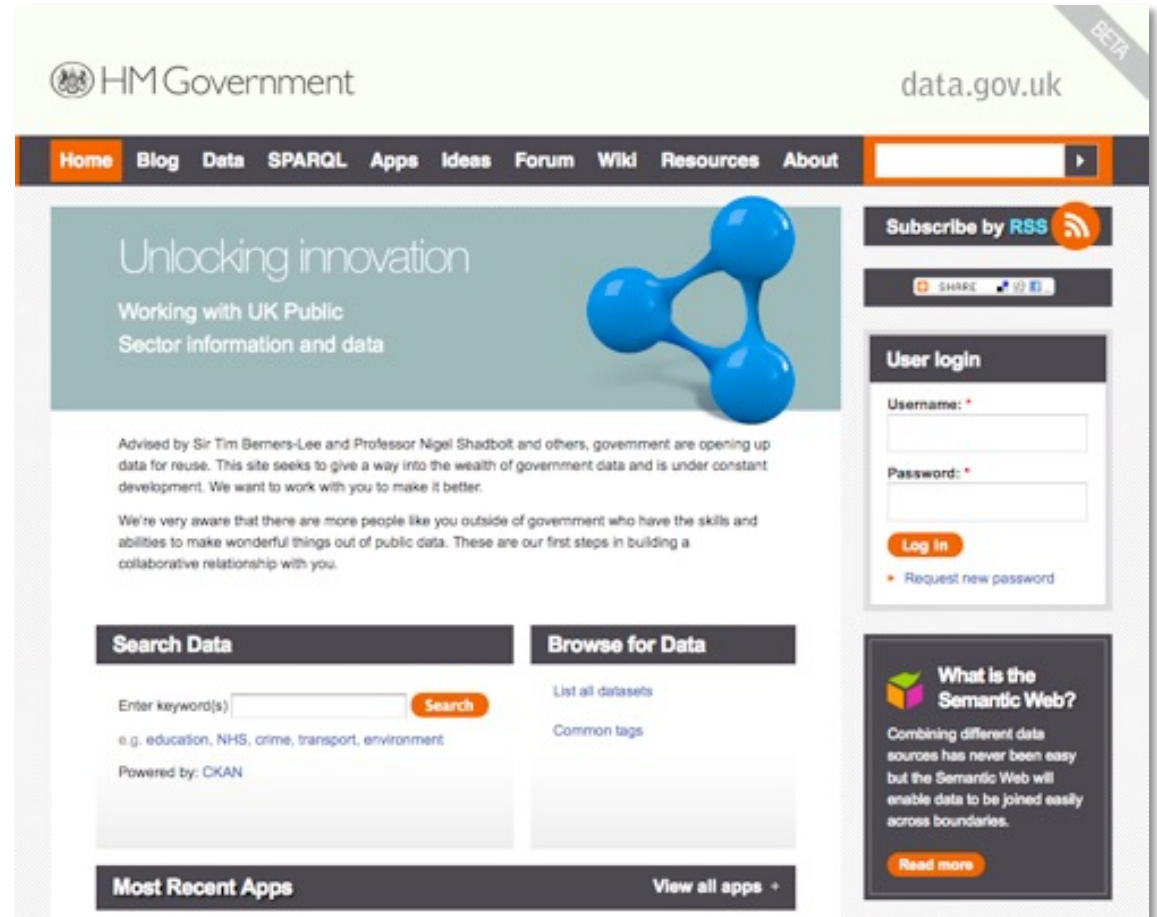
[PointX Points of Interest](http://www.ordnancesurvey.co.uk/PoiOntology/#business26453632)
<http://www.ordnancesurvey.co.uk/PoiOntology/#business26453632>

Integrated Public Sector Vocabulary

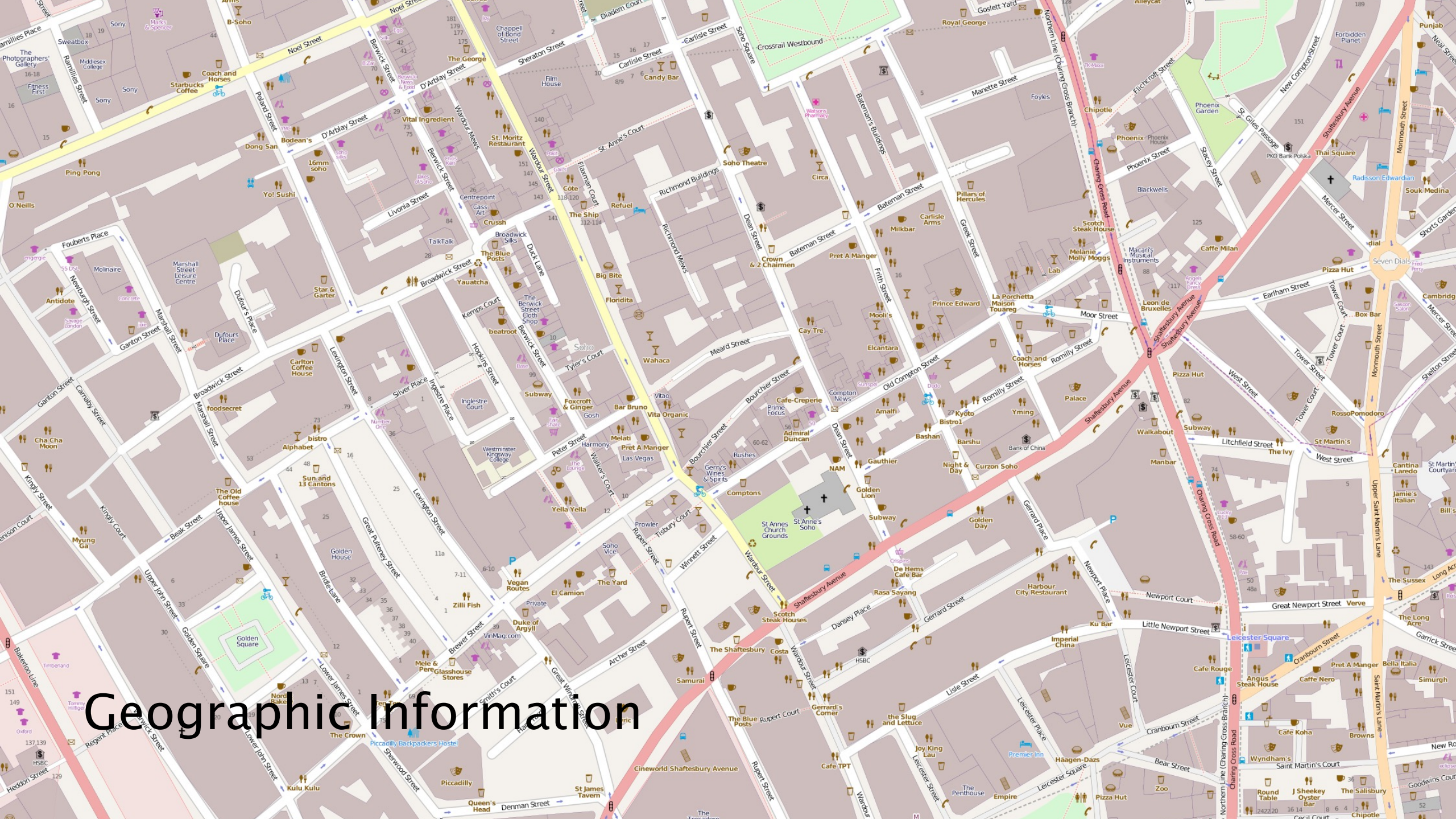
- Taxonomy for classifying public sector information resources
- Developed with the backing of the ODPM and the Cabinet Office e-Government Unit
- Available in a variety of formats, but RDF/XML is the definitive format
- Uses Dublin Core and SKOS

data.gov.uk (2010)

- In 2009, Tim Berners-Lee and Nigel Shadbolt appointed as advisors to HMG on opening up public data
- data.gov.uk website went public on 21 Jan 2010
 - 2890 datasets from central and local government
 - Uses SW technologies to represent data



The screenshot shows the data.gov.uk website interface. At the top, there is the HM Government logo and the text 'data.gov.uk' with a 'BETA' badge. A navigation bar includes links for Home, Blog, Data, SPARQL, Apps, Ideas, Forum, Wikl, Resources, and About, along with a search box. The main content area features a large blue molecular structure graphic and the text 'Unlocking innovation Working with UK Public Sector information and data'. Below this, there is a paragraph explaining the site's purpose and a 'Log in' section with fields for Username and Password, and a 'Request new password' link. On the right side, there are links for 'Subscribe by RSS' and social media icons. At the bottom, there are sections for 'Search Data' (with a search box and 'Search' button), 'Browse for Data' (with 'List all datasets' and 'Common tags' links), and 'Most Recent Apps' (with a 'View all apps' link).



Geographic Information

Ordnance Survey Linked Data

Opened up datasets as part of UK public sector data initiative:

- 1:50,000 Gazetteer
250,000 place names
- Code-Point
1,700,000 postcode units
- Boundary Line
Electoral and administrative boundaries

- Output formats:
 - JSON
 - RDF
- SPARQL query

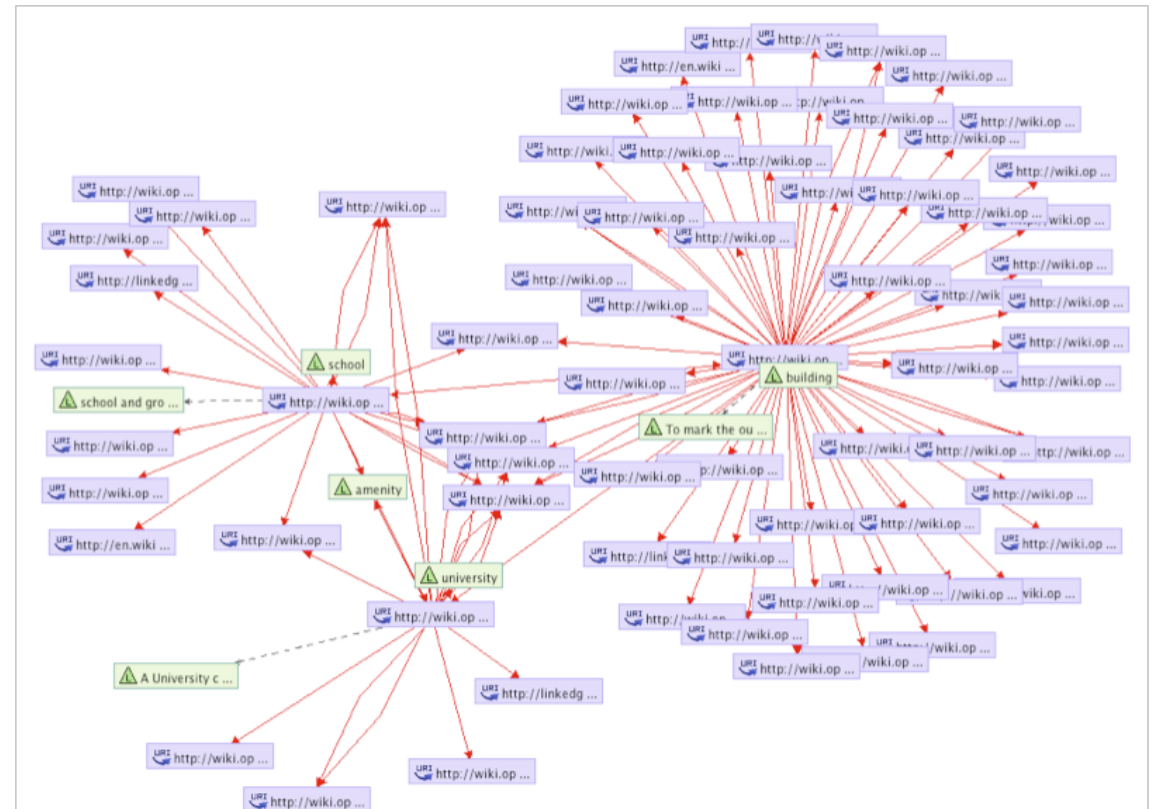
Open Streetmap Linked Data

OSM Semantic Network

- SKOS vocabulary built from map feature tags

LinkedGeoData.org

- Interlinks OSM data with other linked open data



Next Lecture: RDF