



# Forging New Links: Libraries in the Semantic Web

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Memorial University Libraries

Computers in Libraries, Washington D.C.

March 23<sup>rd</sup>, 2011



#### The Gist

#### **General Semantic Web**

- How it works.
- A few tools.
- •Who's involved?



Lisa

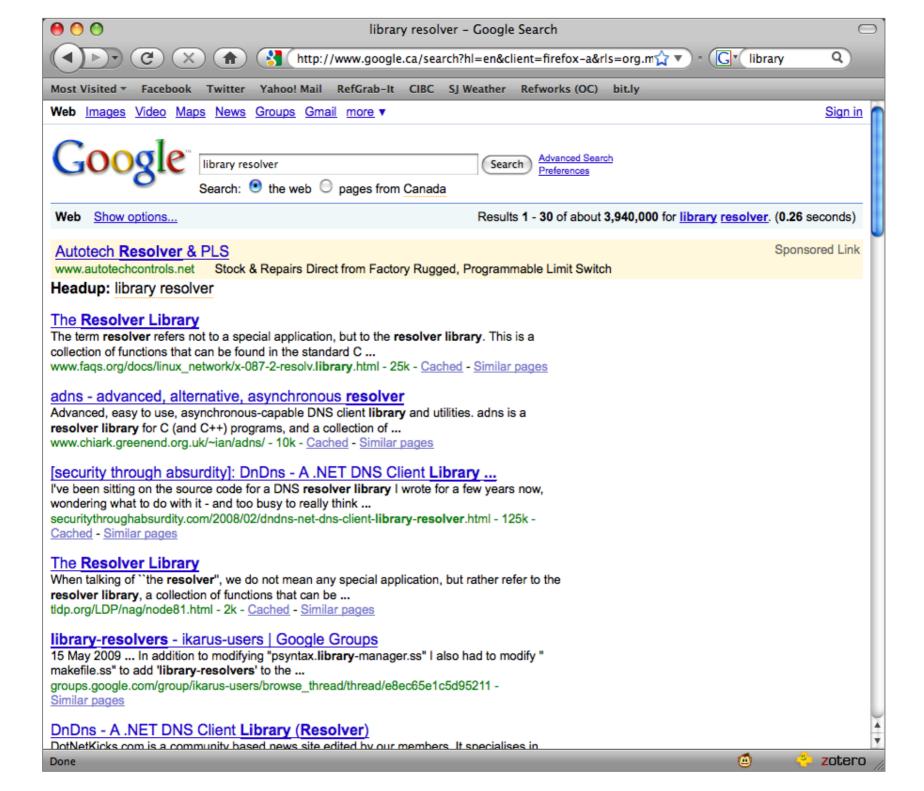
#### **Libraries & Linked Data**

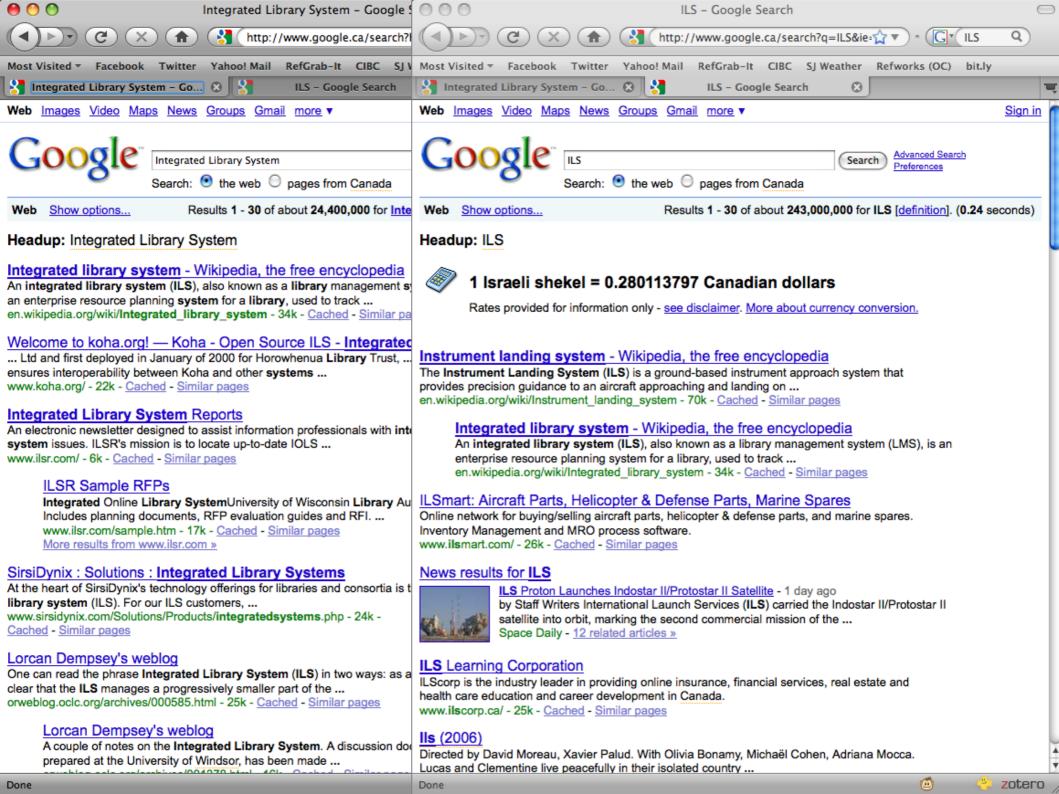
- What it solves.
- Issues & obstacles.
- •Where we are now.



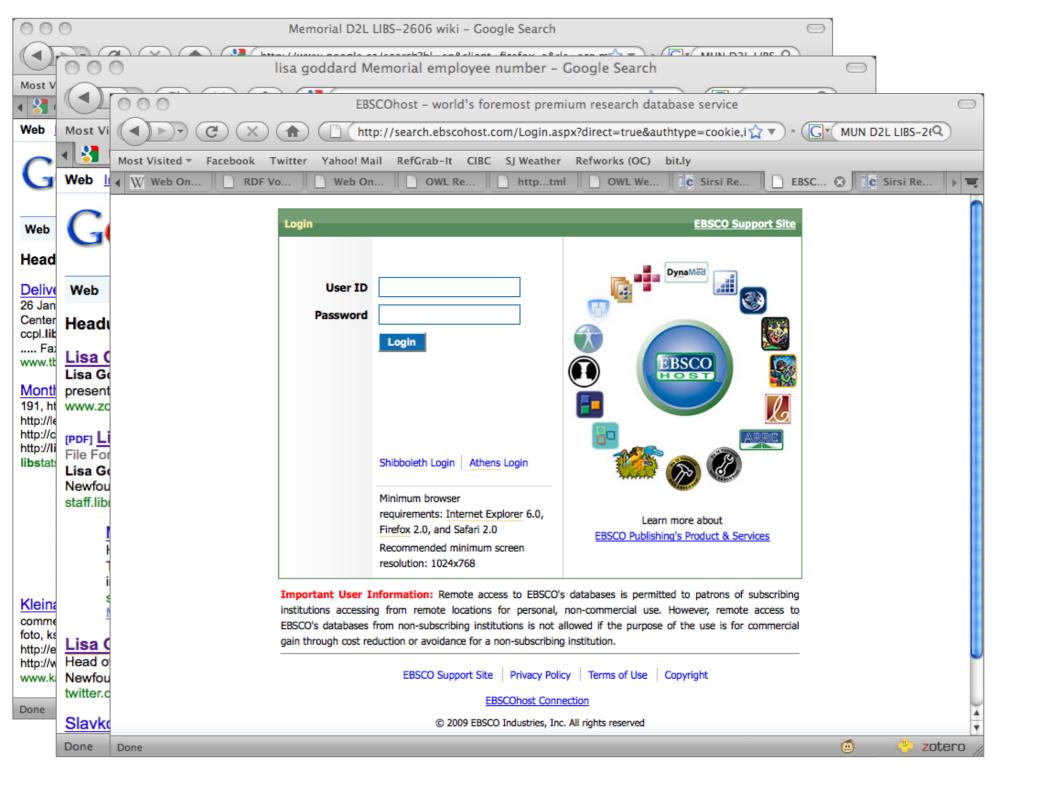
Gillian

## Web Search Problems

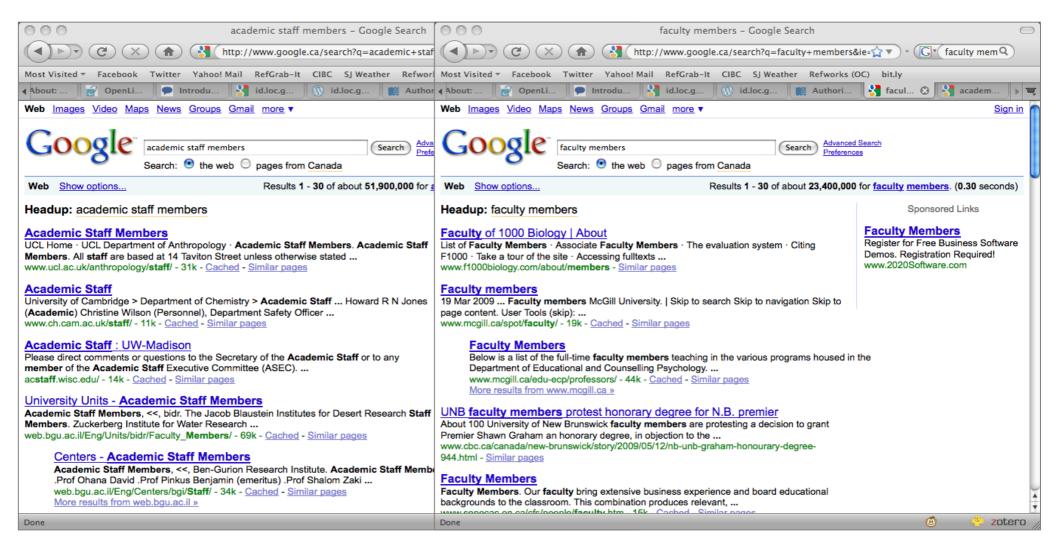












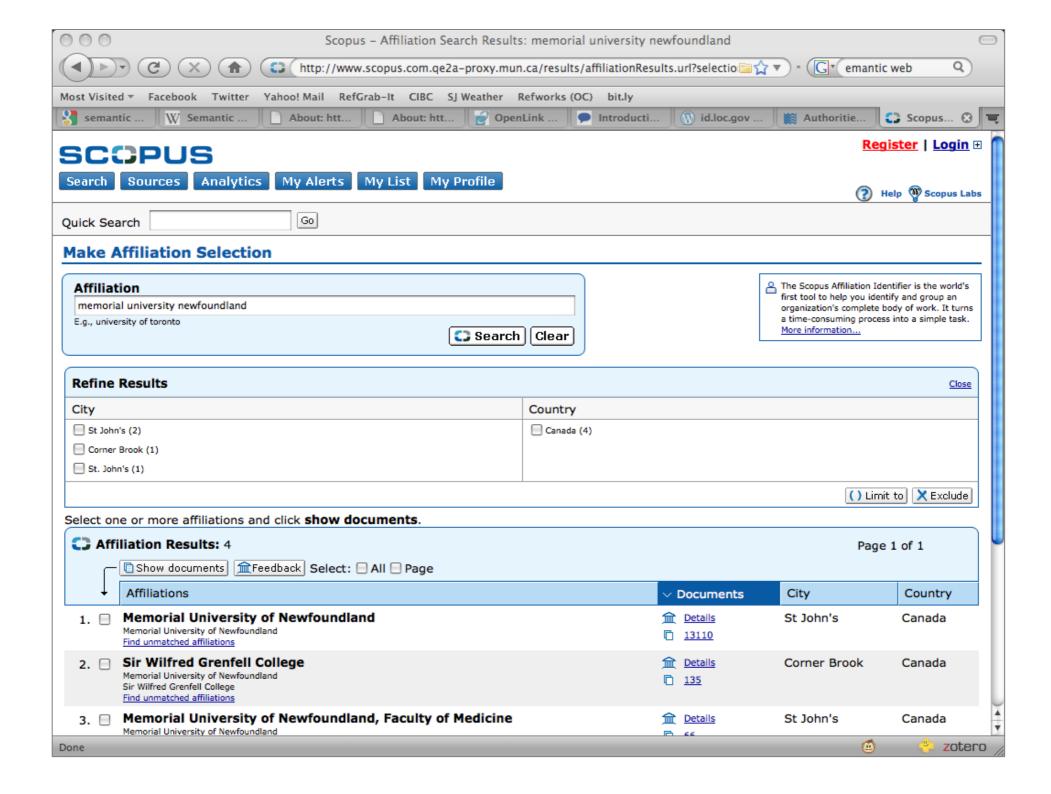
Academic Staff Member (University College London)

Equivalent to?

Faculty Member (McGill)

### Semantic Queries

Find all soccer players, who played as goalkeeper for a club that has a stadium with more than 40,000 seats and who are born in a country with more than 10 million inhabitants.



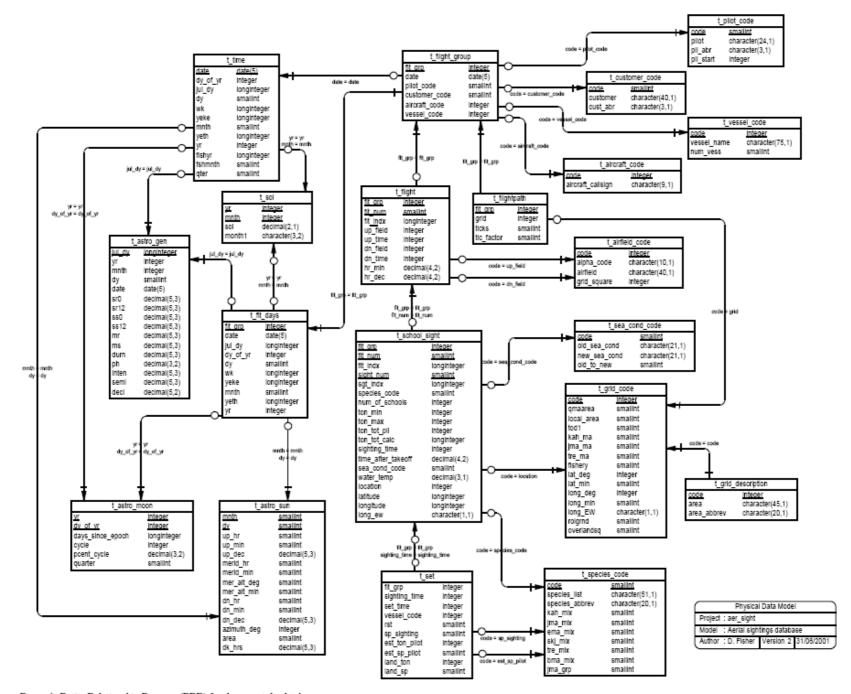


Figure 1: Entity Relationship Diagram (ERD) for the aer\_sight database

#### The Semantic Solution



- 1. Structured data
- 2. Vocabularies & Reasoning
- 3. Linking

#### Machine-Actionable Data



mpedson Michael Peter Edson

"Our top two users are computers." Says @udcmrk about the importance of API's and machine readable data.

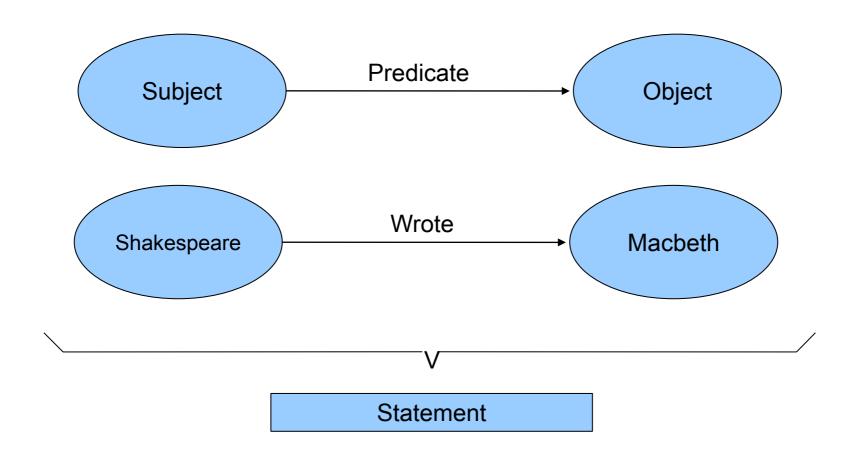
24 Jan

## Structured Data: RDF

#### Semantic Web Metadata: RDF

Data model for writing simple statements about web objects.

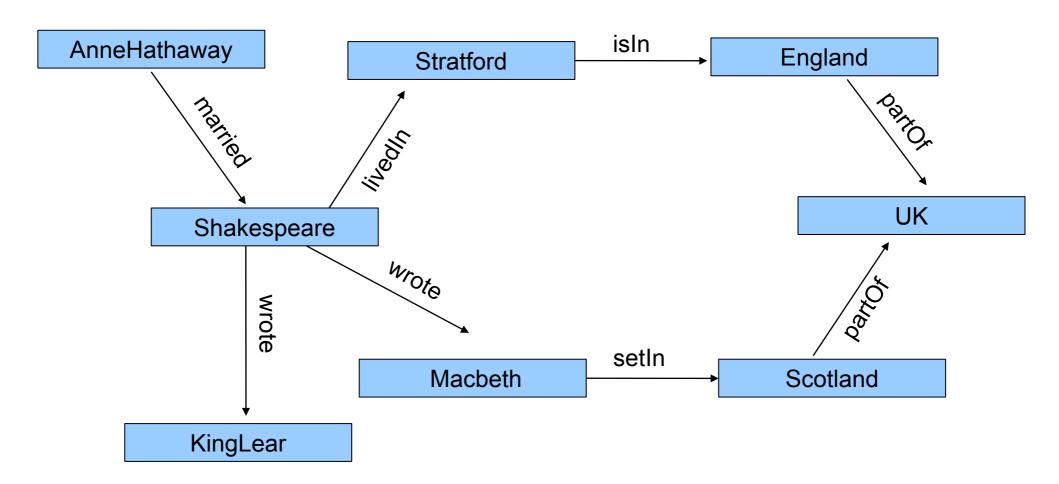
RDF statements are written as "triples".

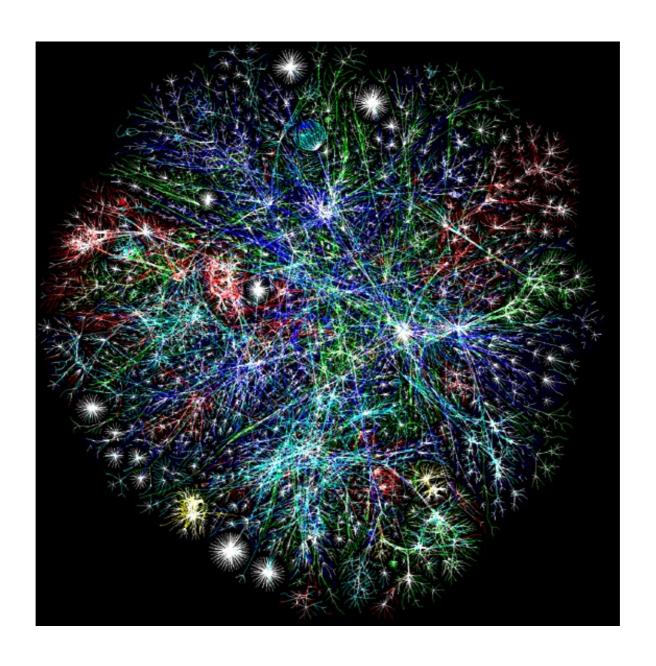


# **RDF Triples**

Subject	Predicate	Object
Shakespeare Shakespeare Anne Hathaway Shakespeare Stratford Macbeth England Scotland	Wrote Wrote Married Lived in Is in Set in Part of Part of	King Lear Macbeth Shakespeare Stratford England Scotland UK UK

## RDF Graph: A Semantic Net

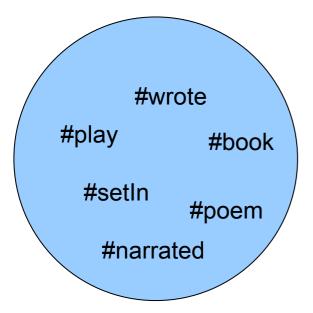




# Vocabularies: Ontologies

#### Controlled Vocabulary

Terms and definitions are posted online, so they can be shared by many different organizations.



http://www.mun.ca/lit.owl

xmlns:lit=http://www.mun.ca/lit.owl

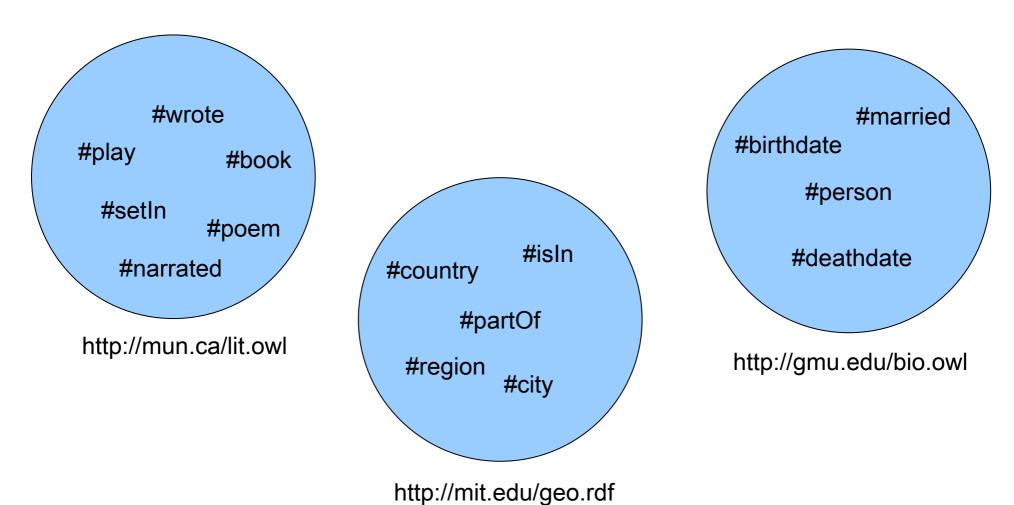
lit:book

lit:poem

lit:wrote

#### **Shared Vocabularies**

Namespaces allow us to combine several vocabularies while maintaining distinct meaning of each element.

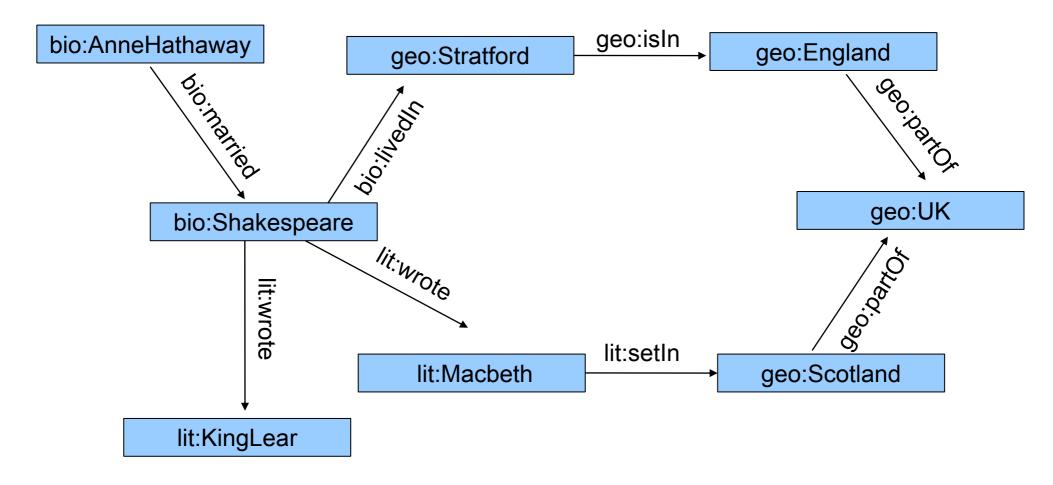


#### RDF: Semantic Net & Namespaces

xmlns:geo=http://mit.edu/geo.rdf

xmlns:bio=http://gmu.edu/bio.owl

xmlns:lit=http://mun.ca/lit.owl



<sup>\*</sup>In RDF namespace URIs always resolve.

## FOAF: People



```
<rdf:RDF
   xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
   xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
   xmlns:foaf="http://xmlns.com/foaf/0.1/"
<foaf:Person rdf:ID="me">
<foaf:name>Lisa Goddard</foaf:name>
<foaf:title>Ms.</foaf:title>
<foaf:givenname>Lisa</foaf:givenname>
<foaf:family name>Goddard</foaf:family name>
<foaf:homepage rdf:resource="http://twitter.com/lisagoddard"/>
<foaf:workplaceHomepage rdf:resource="http://www.library.mun.ca"/>
<foaf:schoolHomepage rdf:resource="http://www.queensu.ca"/>
<foaf:knows>
      <foaf:Person>
      <foaf:name>Gillian Byrne</foaf:name>
      <foaf:mbox rdf:resource="mailto:gbyrne@mun.ca"/></foaf:Person></foaf:knows>
<foaf:knows>
      <foaf:Person>
      <foaf:name>Dianne Keeping</foaf:name>
      <foaf:mbox rdf:resource="mailto:dckeep@mun.ca"/>
      </foaf:Person></foaf:knows>
</foaf:Person>
</rdf:RDF>
```

#### Resolvable URIs

```
xmlns:foaf="http://xmlns.com/foaf/0.1/"
```

```
<foaf:Person rdf:ID="me">
  <foaf:name>Lisa Goddard</foaf:name>
  <foaf:workplaceHomepage
  rdf:resource="http://www.library.mun.ca"/>
  </foaf:Person>
```

http://xmlns.com/foaf/0.1/#term\_workplaceHomepage

#### Resolvable URIs

Property: foaf:workplaceHomepage

workplace homepage - A workplace homepage of some person; the homepage of an organization they work for.

Status: testing

**Domain:** having this property implies being a <u>Person</u> **Range:** every value of this property is a <u>Document</u>

The workplaceHomepage of a Person is a Document that is the homepage of a Organization that they work for.

By directly relating people to the homepages of their workplace, we have a simple convention that takes advantage of a set of widely known identifiers, while taking care not to confuse the things those identifiers identify (ie. organizational homepages) with the actual organizations those homepages describe.

For example, Dan Brickley works at W3C. Dan is a <u>Person</u> with a <u>homepage</u> of http://danbri.org/; W3C is a <u>Organization</u> with a <u>homepage</u> of http://www.w3.org/. This allows us to say that Dan has a <u>workplaceHomepage</u> of http://www.w3.org/.

```
<foaf:Person>
  <foaf:name>Dan Brickley</foaf:name>
  <foaf:workplaceHomepage rdf:resource="http://www.w3.org/"/>
  </foaf:Person>
```

Note that several other FOAF properties work this way; <a href="schoolHomepage">schoolHomepage</a> is the most similar. In general, FOAF often indirectly identifies things via Web page identifiers where possible, since these identifiers are widely used and known. FOAF does not currently have a term for the name of the relation (eg. "workplace") that holds between a <a href="person">Person</a> and an <a href="Organization">Organization</a> that they work for.

#### Web Ontology Language: OWL



An ontology describes a particular domain of knowledge (e.g. bikes, whiskey).

- Establishes controlled vocabulary.
- Models relationships between entities & concepts.
- Built-in rules and datatypes that support reasoning.

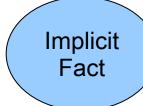
# Reasoning: Ontologies

### **OWL Reasoning: Inverse**

Axiom

lit:wrote owl:inverseOf lit:writtenBy lit:settingFor owl:inverseOf lit:setIn

Explicit Fact bio:Shakespeare lit:wrote lit:Macbeth lit:Macbeth lit:setIn geo:Scotland



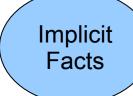
lit:Macbeth lit:writtenBy bio:Shakespeare geo:Scotland lit:settingFor lit: Macbeth

#### **OWL** Reasoning: Transitive

Axiom

hasParent rdfs:subpropertyOf hasAncestor hasAncestor rdf:type owl:TransitiveProperty

Explicit Facts Lisa hasParent Geoffrey
Geoffrey hasParent Elizabeth
Elizabeth hasParent Beatrix

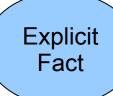


Lisa hasAncestor Geoffrey
Geoffrey hasAncestor Elizabeth
Lisa hasAncestor Elizabeth
Geoffrey hasAncestor Beatrix
Lisa hasAncestor Beatrix

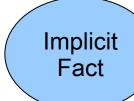
## **OWL Reasoning: Symmetrical**



bio:married rdf:type owl:SymmetricProperty

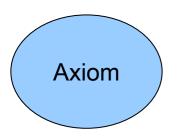


bio:AnneHathaway bio:married bio:Shakespeare

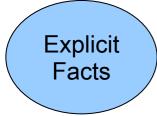


bio:Shakespeare bio:married bio:AnneHathaway

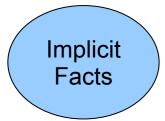
### OWL Reasoning: Equivalent



act:borrows owl:equivalentProperty lib:checkedout lit:WilliamShakespeare owl:sameAs bio:Shakespeare



bio:Lisa act:borrows lib:book bio:Shakespeare lit:wrote lit:Macbeth



bio:Lisa lib:checkedout lib:book lit:WilliamShakespeare lit:wrote lit:Macbeth

## Finding Ontologies

#### Welcome to the Protege Ontology Library!

This page is organized into the following groupings:

- OWL ontologies
- Frame-based ontologies
- Ontologies in other formats (e.g., DAML+OIL, RDF Schema, etc.)

If your ontology is available in multiple formats, please feel free to link to it from multiple sections.

Please make insertions in alphabetical order. Thank you !!!

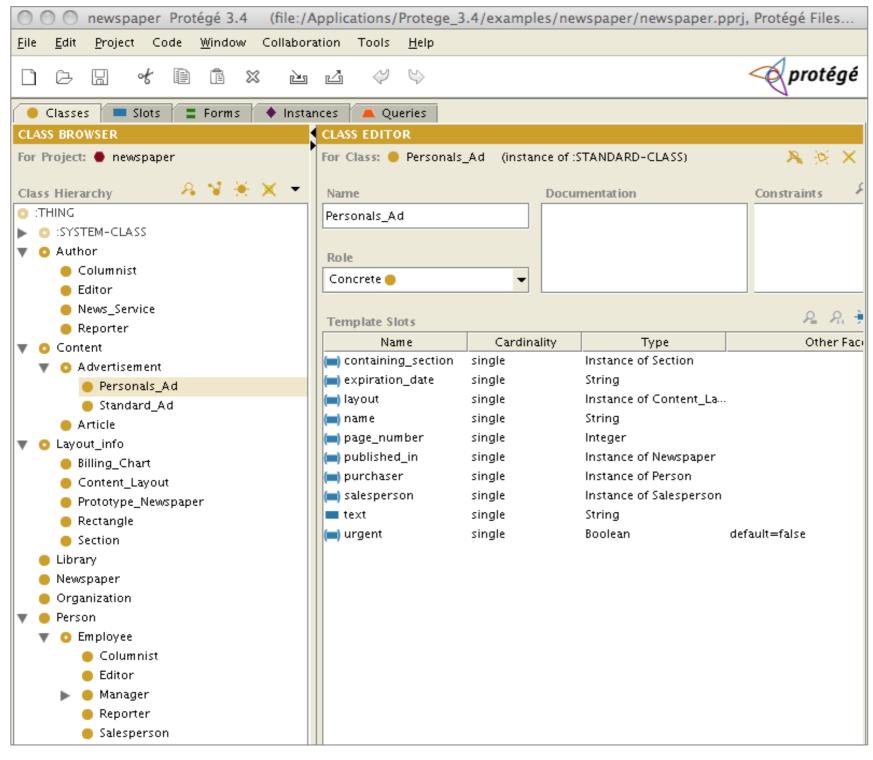
#### OWL ontologies

Information on how to open OWL files from the Protege-OWL editor is available on the main Protege Web site. See the Creating and Loading Projects is section of the Getting Started with Protege-OWL web page. Other ways to search for OWL ontologies include using Google: http://www.google.com/search?q=filetype:owl+owl is, or the new Semantic Web search engine called Swoogle is.

- AIM@SHAPE Ontologies ②: Ontologies pertaining to digital shapes. Source: AIM@SHAPE NoE ② Advanced and Innovative Models And Tools for the development of Semantic-based systems for Handling, Acquiring, and Processing knowledge Embedded in multidimensional digital objects.
- amino-acid.owl @: A small OWL ontology of amino acids and their properties. Source: Amino Acid Ontology Web site @.
- Basic Formal Ontology (BFO)
- bhakti.owl ☑: An OWL ontology for the transcendental states of consciousness experienced by practitioners of bhakti-yoga, a form of Vedic consciousness engineering.

## **Tabulator RDF Browser**

http://pro	tege.cim3.net/file/	/pub/ontologies/family	.swrl.owl/family.swrl.o	wi 🔍	£	A	RDF	
http://a.com /ontology	type imports	http://swrl.stanford.edu http://swrl.stanford.edu http://swrl.stanford.edu http://swrl.stanford.edu	u/ontologies/3.3/swrla.owl u/ontologies/built-ins/3.3/abo u/ontologies/built-ins/3.3/que u/ontologies/built-ins/3.3/swr u/ontologies/built-ins/3.3/tem u/ontologies/built-ins/3.3/tem	ery.owl rlx.owl x.owl				
	type	Class						
	disjointWith	Son						
	equivalentClass	type intersectionOf	Class Child Woman					
Child	type	Class Class Class Class						
	equivalentClass	type intersectionOf	Class type minCardinality onProperty Person	Res 1 Par	ent			
Woman	type	Class Class Class Class Class Class Class Class						
	equivalentClass	type intersectionOf	Class type hasValue onProperty Person		striction nale			



Protege editor to develop Ontologies.

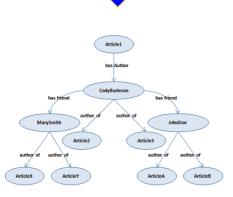
Free download.

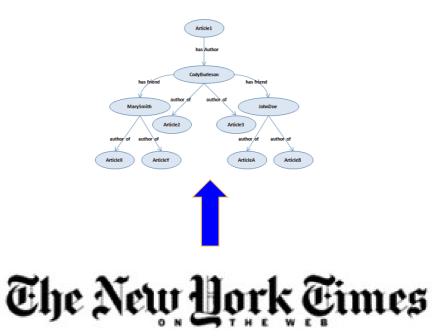
Developed by Stanford

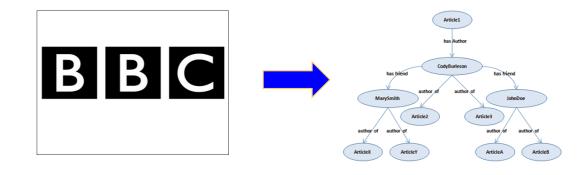
# Linking Distributed Data

# **Linking Data**



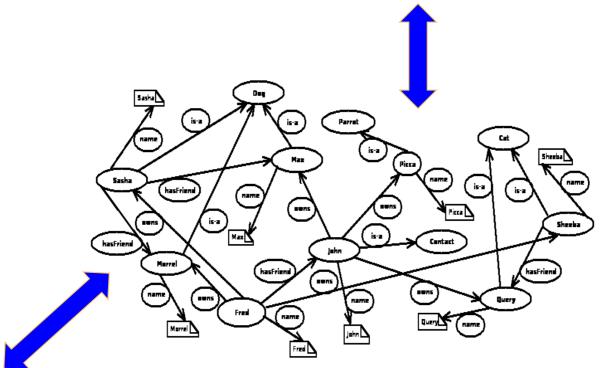






# **Linking Data**



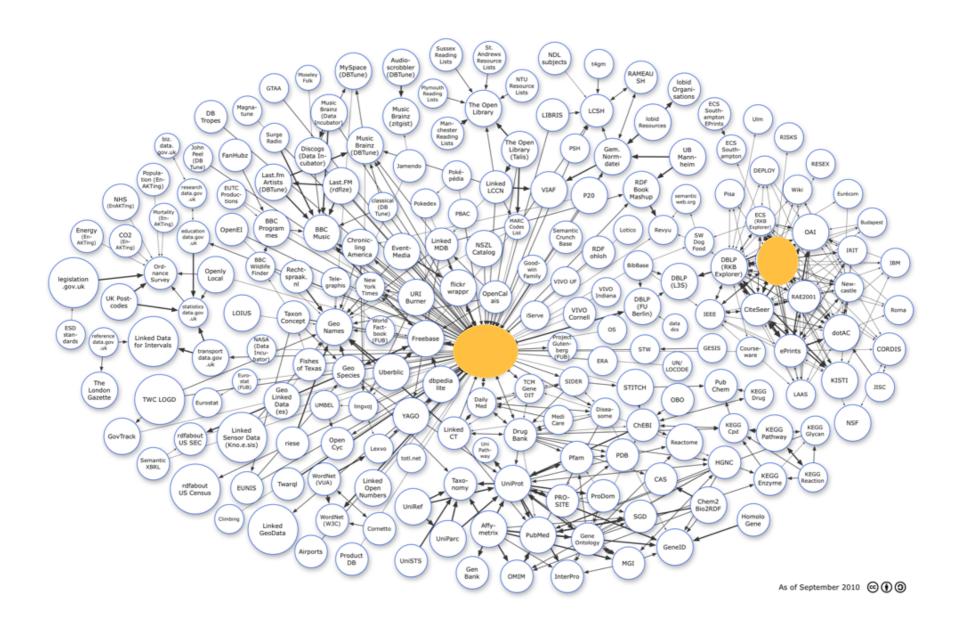








# Linking Hubs



# Semantic Linking Hubs

















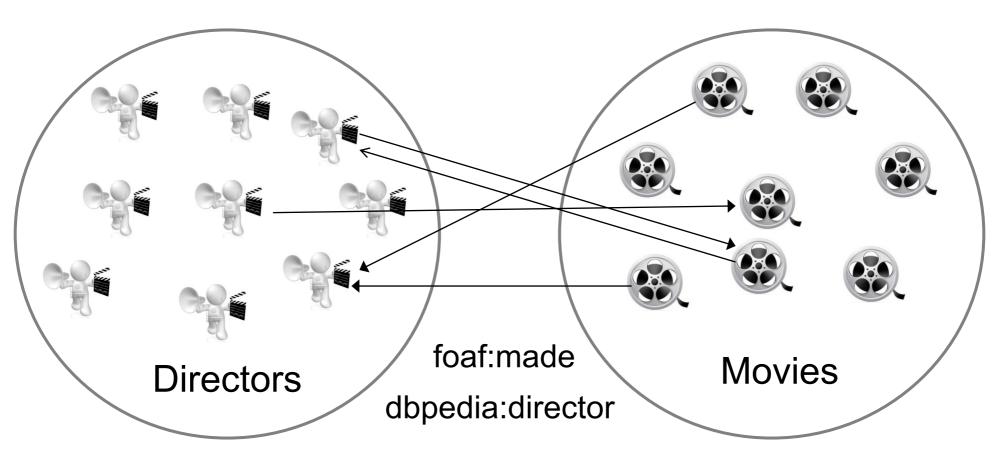
# Link Discovery

Discover other representations of an object. (tw:lisagoddard owl:sameas fb:lgoddard)

Discover related resources.

(e.g. Person <-> Publication)

# Link Discovery: Silk Server







# Natural Language Processing

Identify people, places, things, concepts in unstructured text files.

Disambiguate terms.



Suggest links to existing entities.



**Shedding Light on the Web of Documents** 

#### Demo

To win government approval to take over [[NBC Universal]] last month, cable giant [[Comcast]] Corp. agreed to let online rivals license NBC programming, including hit shows such as "[[30 Rock]]" and "[[The Office]]." Comcast also agreed not to block its 17 million broadband subscribers from watching video online through [[Netflix]], [[Apple]]'s iTunes and other rivals yet to come.

Confidence 0.5 Support 30 Annotate Disambiguate Clear

Types: □ ✓ ⇒ owl#Thing Colour Disease ChemicalCompound Painting ✓ ⇒ PersonFunction ✓ ⇒ Website ✓ ⇒ OlympicResult ✓ ⇒ SupremeCourtOfTheUnitedStates Award ✓ ⇒ GovernmentType ⊞ ✓ Place ✓ ⇒ Planet ✓ ⇒ Currency 



### Shedding Light on the Web of Documents

### Demo

To <u>win</u> government approval to take over <u>NBC Universal</u> last month, cable giant <u>Comcast Corp.</u> agreed to let <u>online</u> rivals <u>license NBC</u> programming, including hit shows such as "<u>30 Rock</u>" and "The Office." <u>Comcast</u> also agreed not to block its 17 million <u>broadband</u> <u>subscribers</u> from watching video online through <u>Netflix</u>, <u>Apple's iTunes</u> and other rivals yet to come.

Back

Confidence: 0.5 Support: 30

Types: Place, Person, Work, Organisation, Species, all other types, untyped

version 0.1

### About: Apple Inc.

An Entity of Type: Public company, from Named Graph: http://dbpedia.org, within Data Space: dbpedia.org



Apple Inc. is an American multinational corporation that designs and markets consumer electronics, computer software, and personal computers. The company's best-known hardware products include the Macintosh line of computers, the iPod, the iPhone and the iPad.

#### Property

dbpedia-owl:abstract

#### Value

- Apple Inc. ['æpəl,ɪŋk] (früher Apple Computer Inc.) ist ein Unternehmen mit Hauptsitz in Cupertino, Kalifornien, das Computer und Unterhaltungselektronik sowie Betriebssysteme und Anwendungssoftware herstellt. Apple gehörte in den 1970er-Jahren zu den ersten Herstellern von Personal Computern und trug zu ihrer Verbreitung bei. Bei der kommerziellen Einführung der grafischen Benutzeroberfläche und der Maus in den 1980er-Jahren nahm Apple eine Vorreiterrolle ein. Mit dem Erscheinen des iPods 2001, des iPhones 2007 und des iPads 2010 weitete Apple sein Geschäft nach und nach auf andere Produktbereiche aus. Laut der Marktforschungsgruppe Millward Brown liegt Apple mit einem Wert von rund 83,15 Milliarden US-Dollar auf Platz drei der wertvollsten Marken der Welt.
- Apple Inc. is an American multinational corporation that designs and markets consumer electronics, computer software, and personal computers. The company's best-known hardware products include the Macintosh line of computers, the iPod, the iPhone and the iPad. Apple software includes the Mac OS X operating system; the iTunes media browser; the iLife suite of multimedia and creativity software; the iWork suite of productivity software; Aperture, a professional photography package; Final Cut Studio, a suite of professional audio and film-industry software products; Logic Studio, a suite of music production tools and its iOS Mobile Operating System. As of August 2010, the company operates 301 retail stores in ten countries, and an online store where hardware and software products are sold. Established on April 1, 1976 in Cupertino, California, and incorporated January 3, 1977, the company was previously named Apple Computer, Inc., for its first 30 years, but removed the word "Computer" on January 9, 2007, to reflect the company's ongoing expansion into the consumer electronics market in addition to its traditional focus on personal computers. As of September 26, 2009, Apple had 34,300 full time employees and 2,500 temporary full time employees worldwide and had worldwide annual sales of \$42.91 billion in its fiscal year ending September 26, 2009. For reasons as various as its philosophy of comprehensive aesthetic design to its distinctive advertising campaigns, Apple has established a unique reputation in the consumer electronics industry. This includes a customer base that is devoted to the company and its brand, particularly in the United States. Fortune magazine named Apple the most admired company in the United States in 2008, and in the world in 2008, 2009, and 2010. The company has also received widespread criticism for its contractors' labor, environmental, and business practices.

dbpedia-owl:keyPerson	<ul> <li>dbpedia:Steve_Jobs</li> <li>dbpedia:Peter_Oppenheimer</li> <li>dbpedia:Chief_executive_officer</li> <li>dbpedia:Chairman</li> <li>dbpedia:Timothy_DCook</li> <li>dbpedia:Bob_Mansfield</li> <li>dbpedia:Jonathan_Ive</li> <li>dbpedia:IPhone</li> </ul>
dbpedia-owl:locationCity	<ul><li>dbpedia:Infinite_Loop_(street)</li><li>dbpedia:Cupertino,_California</li></ul>
dbpedia-owl:netIncome	■ 8.24E9
dbpedia-owl:numberOfStaff	■ 34300 (xsd:integer)
dbpedia-owl:operatingIncome	■ 1.174E10
dbpedia-owl:product	<ul><li>dbpedia:Macintosh</li><li>dbpedia:IPod_Touch</li><li>dbpedia:IPod_Nano</li></ul>

# RDF Publishing Tools

## Structured Data Crosswalks

[eart]

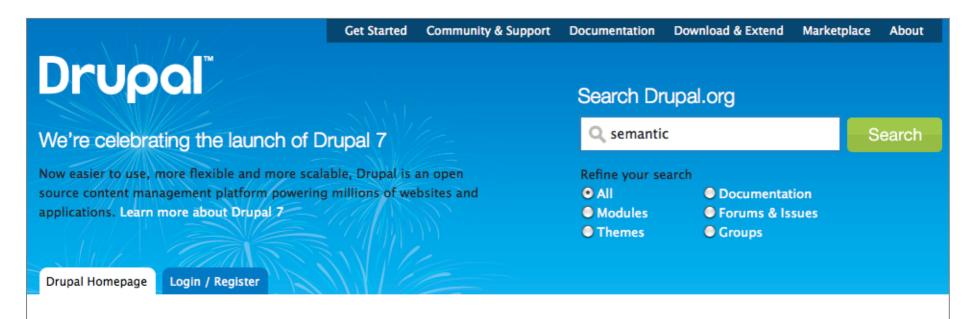
### Ok, I'm interested, what RDFizers are there?

Here is the list of the RDFizers that we have built so far:

- JPEG -> RDF scans a folder for JPEG files, parses the EXIF and IPCT metadata found in those files and dumps an RDF/N3 representation of it into a file.
- MARC/MODS -> RDF transforms MARC records from Z39.2 format into MODS and then from MODS to an RDF representation of MODS.
- OAI-PMH -> RDF harvests an OAI-PMH repository and transforms the captured metadata in an RDF representation thru pluggable XSLT stylesheets.
- OCW -> RDF harvests metadata from the MIT OpenCourseWare web site and transforms it into an RDF representation of IEEE LOM.
- EMail -> RDF transforms email mbox files into RDF/XML.
- BibTEX -> RDF transforms BibTEX files into RDF/XML.
- POM -> RDF transforms Maven POM (Project Object Model) files into RDF/N3.
- DEB -> RDF extracts the metadata from a Debian software package and generates an RDF representation.
- CRW -> RDF extracts the metadata from a Canon RAW image file and generates an RDF representation.
- Flat -> RDF converts classic unix text database files, like /etc/passwd, into RDF/N3.



# Drupal 7 CMS



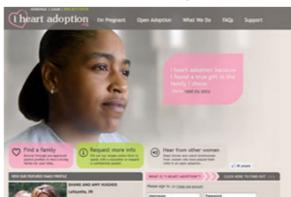
### Why Choose Drupal?

Use Drupal to build everything from personal blogs to enterprise applications. Thousands of add-on modules and designs let you build any site you can imagine.

Drupal is free, flexible, robust and constantly being improved by hundreds of thousands of passionate people from all over the world. Join us!

Get Started with Drupal

### Sites Made with Drupal



IHeartAdoption.org - Educational and social networking site on Drupal 6

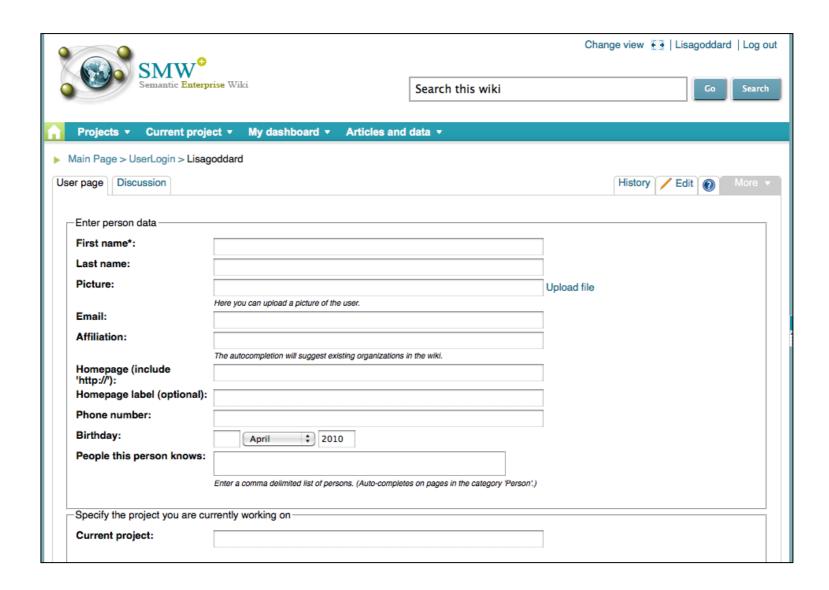
### **Develop with Drupal**

7,984 Modules This week
954 Themes 23,095 Code commits
4,475 Developers 7,139 Issue comments

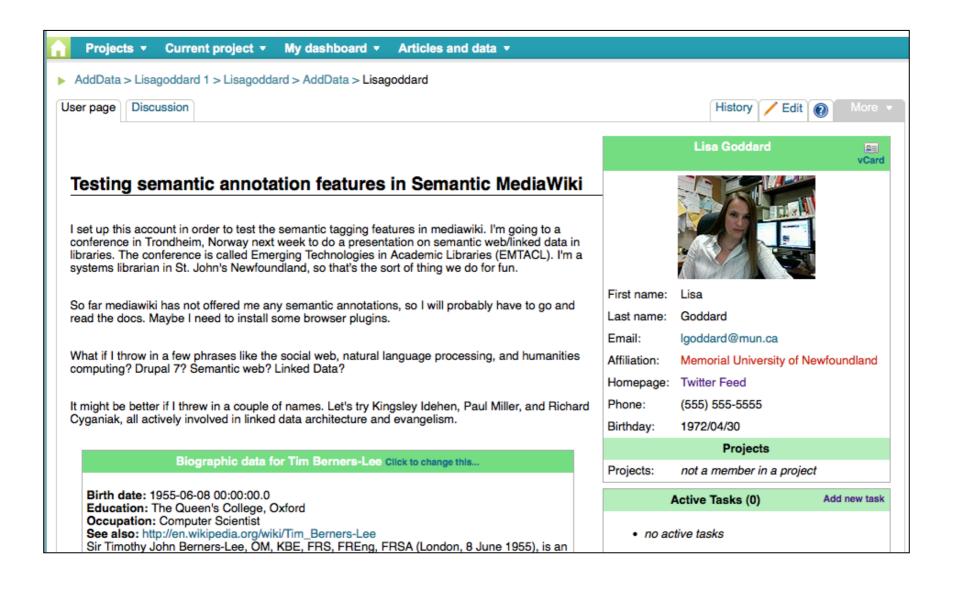
Drupal Core Security Info Developer Docs API Docs



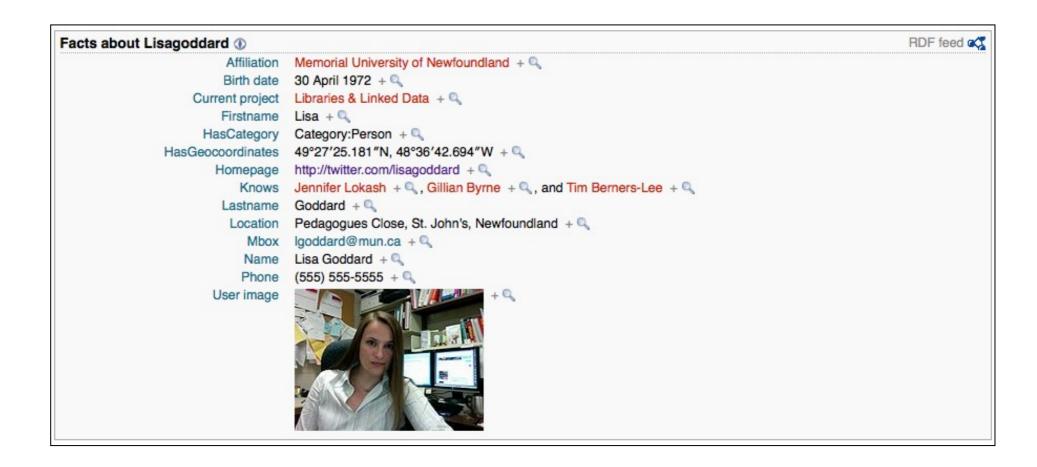
## Semantic MediaWiki



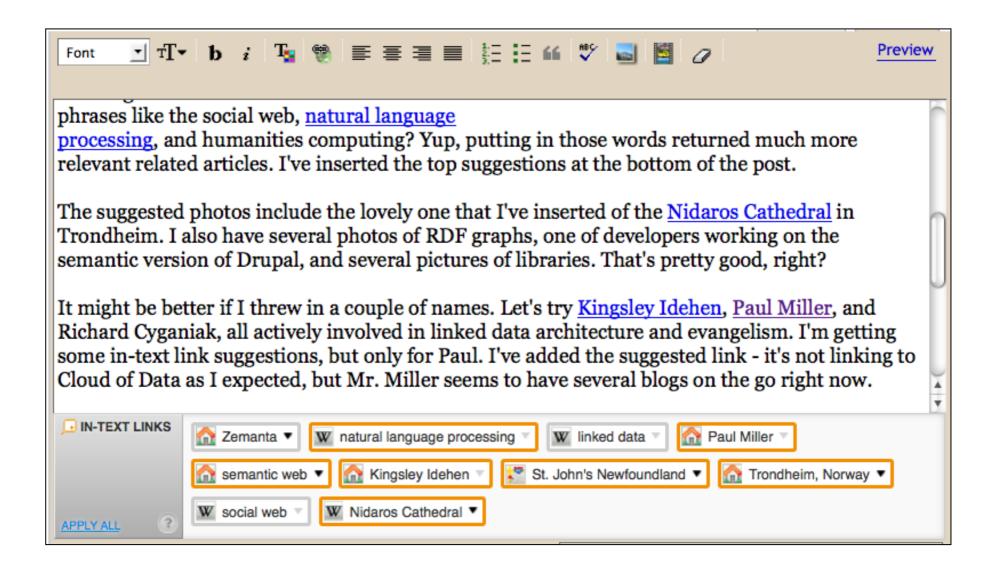
## Semantic MediaWiki



## Semantic MediaWiki



# Semantic Blogging: Zemanta



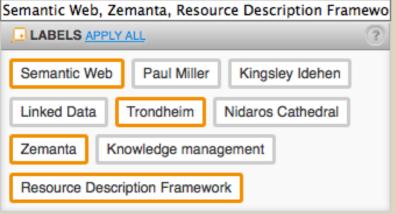


Related Media

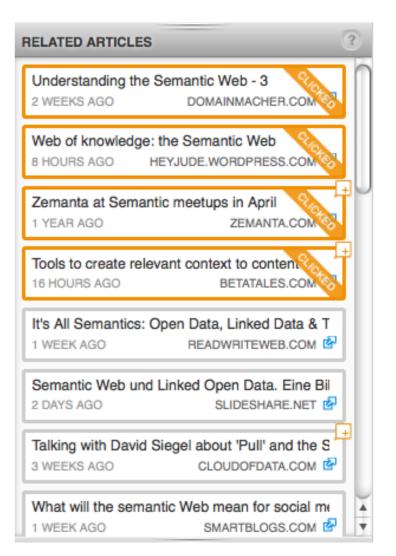


Related Articles

Articles

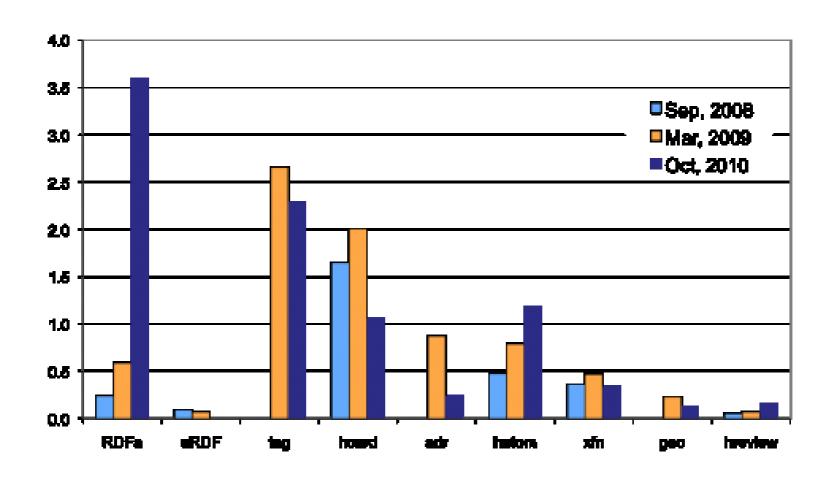


Related Tags



## Mainstream Linked Data

## Growth of RDFa



Usage of RDFa increased 510% between Mar 2009 and Oct 2010

# Websites with RDF(a)

















### fish tacos



Search

About 47,500 results (0.38 seconds)

Advanced search

### Everything



Videos

News

Shopping



More

Ingredients	Yes No
lime	
sea bass	
tomatillos	
chipotle	
tortillas	
tilapia	
cod	

#### Any cook time

lard

Less than 15 min Less than 30 min Less than 60 min

#### Any calories

Less than 100 cal Less than 300 cal Less than 500 cal

#### ▶ Fish Tacos



\*\*\*\* 91 reviews - 1 hr 45 mins

Food Network invites you to try this **Fish Tacos** recipe from Bobby Flay. Ingredients: canola oil, lime, chili powder, jalapeño, coriander, tortillas ... www.foodnetwork.com > ... > Kid Friendly - Cached - Similar

### Fish Tacos



★★★★ 873 reviews - 1 hr

I'm from San Diego and these taste just like home! Chunks of cod are fried in a beer batter, and served in corn tortillas with shredded cabbage and a zesty ... allrecipes.com/recipe/fish-tacos/ - Cached

### Fish Tacos with Lime-Cilantro Crema Q



★★★★ 69 reviews - 394 cal

Cumin, coriander, and paprika lend these **fish tacos** a delightfully warm, smoky flavor. They're the perfect foundation for the zippy sour cream sauce. Ingredients: onion, coriander, mayonnaise, sour cream, lime, lime juice, garlic ...

find.myrecipes.com/recipes/recipefinder.dyn?action...

#### Fish Tacos Q

\*\*\*\* 9 reviews - 10 mins

Find the recipe for **Fish Tacos** and other tortillas recipes at Epicurious.com. Ingredients: flounder, olive oil, pepper, mayonnaise, yoghurt, chipotle ...

www.epicurious.com/.../Fish-Tacos-233251 - Cached - Similar - Add to iGoogle

### Fish Taco Q

\*\*\*\* 17 reviews - 38 mins

Food Network invites you to try this Fish Taco recipe from Alton Brown.

Ingredients: garlic, coriander, lime, cumin, pepper, tequila, tilapia, olive ...

www.foodnetwork.com > Recipes > Seafood - Cached

### Fish Tacos



Find the recipe for Fish Tacos and other fish recipes at Epicurious.com.

# Google Faceted Recipe Search

Ingredients	Yes	No
lime		
sea bass		
tomatillos		
chipotle		
tortillas		
tilapia		
cod		
lard		
Any cook time		
Less than 15 min		
Less than 30 min		
Less than 60 min		
Any calories		
Less than 100 cal		
Less than 300 cal		
Less than 500 cal		

# Google Place Pages



**Everything** 





News

Books

Places

Blogs

Realtime

Discussions

Fewer

St. John's, NL Change location

### komi restaurant washington

About 41,500 results (0.16 seconds)

### Komi » Washington DC Q

Private Events. Contact Us. Hours. Menu. 1509 17th Street **Washington** DC. Private Events. Reservations (202) 332-9200 ...

komirestaurant.com/ - Cached - Similar





### Komi 🔍

Place page

1509 17th St NW # 1 Washington D.C., DC 20036-6262, United States (202) 332-9200

Subway: Dupont Circle Station Get directions - Is this accurate?

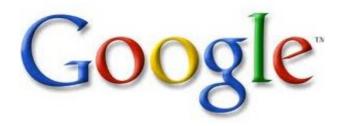
Open Tue-Sat 5:30pm-9:45pm

#### \*\*\*\*\* 504 reviews

"One of the best dining experiences I've ever had was at Komi. I had called 3 ..."

- citysearch.com

# Semantic Technologies













# Library Linked Data

## **Disconnected Data**

# Silos in the Library



Source: Provincial Archives of Newfoundland & Labrador







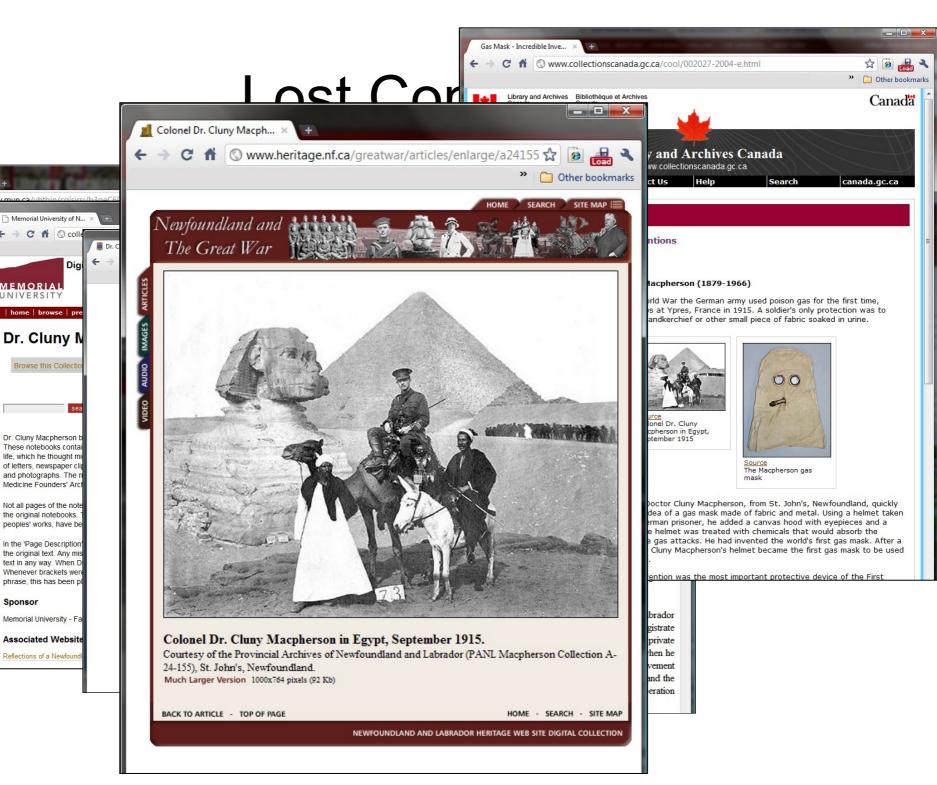




#### BIOGRAPHICAL SKETCH:

Chury Macpherson (1879 – 1966), physician and soldier, was born 18 March 1870 in St. Johr's, NewYoundland, one of two sons (one brother, Harold) born to Campbell Macpherson and Emna Duder. He completed his early schooling at Methodate College in St. John's and then continued his education at McGill University in Montrial. There, Macpherson earned his degree in Medicine (1897 – 1901), and at the same two voluntered with the Royal Mindood Mission to Deep Sea Flatherman, of which the NewYoundland Branch came to be known as the Greeffel Mission. Upon graduation from McGill, Dr. Macpherson began his medical care at the Royal Infirmacy of Edisburgh.

In the following year Dr. Macpherson returned to Newfoundand to join Dr. Wilfred Grenfif's Labusdor Mission, and was placed in charge of the hospital in Battle Harbour, Labrador, He also cerved as majority for the area Dr. Macpherson remained there until 1904, when he returned to St. John's to begin private practice. Dr. Macpherson also received government commissions during this time, such as is 1909 when he went to the southwest coast to fight a smalpox spidensic. Dr. Macpherson also continued his involvement with the International Grenfield Association (GRA), eventually serving as a director of both the IGA of Grenfield Association, Newfoundland, He also played a key role in the development, structuring and operation of the Seame's Institute (date called the King Grenge IV Institute), austher Grenfield project.



Library Catalogue - Mem... ← → C 👚 🕓 info.lib

Libraries

Go Back Help New Se

Dr. Cluny Macpherson

Item info: 1 copy ava

Personal Macphers

Personal Macphers subject:

LC Physician:

LC Newfound

LC Newfound

Electronic > http:/

access:

author:

Subject:

Subject:

Subject:

author:

Corporate Memorial

Added Dr. Cluny title:

Sponsor

Newfoundlander Macpherson, Cluny, Publisher: Memorial I Pub date: 2005.

New

MEMORIAL

## Weak Links

Title:	Deviance and crime in colleges and universities: What goes on in the halls of ivy.					
Authors:	Hickson, Mark, III Dev	viance and crime in colleges and universities : what goes on in the halls of ivy				
	Roebuck, Julian B.	Personal Author: Hickson, Mark.				
Courses	Springfield II US. Cha	Title: Deviance and crime in colleges and universities : what goes on in the halls of ivy / by Mark Hickson III and Julia	an B. Roebuck.			
Source:	Springfield, IL, US: Cha	Publication info: Springfield, Ill. : Charles C Thomas, c2009.				
ISBN:	978-0-398-07879-9 (Ha	Physical descrip: xiv, 253 p.; 26 cm.				
	978-0-398-07880-5 (Pa Subject term: Universities and collegesUnited StatesSociological aspects.					
		Subject term: Universities and collegesCorrupt practicesUnited States.				
Language:	English Subject term: College disciplineUnited States.					
	100000000000000000000000000000000000000	Subject term: Deviant behaviorUnited States.				
Keywords:	interdisciplinary typolog	Subject term: College studentsUnited StatesPsychology.				
	drinking; date rape; ass	Bibliography note: Includes bibliographical references and index.				
Abeter etc	(form the series) This &	Added author: Roebuck, Julian B.				
	(from the cover) This <b>b</b>	ISBN: 9780398078799 (hard)				
	shootings were aberrat binge drinking, date rap	ISBN: 0398078793 (hard)				
	behavior and crime in	ISBN: 9780398078805 (pbk.)				
	including coaching <b>beh</b>	ISBN: 0398078807 (pbk.)				
	behavior, sexual issue					
	commercialism at the e					
	Sumi	mary s volume aims to present a complete picture of deviant behavior and crime at universities, based on the authors' personal experienc	es from 1945-20			
		I news accounts in the Chronicle of Higher Education from 2004-2007, and other sources. From a sociological viewpoint, the authors				
		riance, including hazing, binge drinking, and date rape; gambling and cheating in sports; plagiarism, sexual issues, tenure issues, fal				
	all rights reserved) expe	ense of learning, intellectual scandal, and research conflict of interest. Other groups investigated include donors and governing boar degrees in sociology and law, has taught at Auburn U., Mississippi State U., the American U., and the U. of Alabama at Birmingham.	ras. They also lae . Roebuck, a forn			
Subjects:	*Antisocial Rehavior: *Colleges	s; *Criminal Behavior; *School Environment; *Taxonomies; Campuses; Classroom Environment; Crime; Educational Administration; Higher				
oubjects.	Education; Morality; Social Beha					
Classification:	Classroom Dynamics & Student	t Adjustment & Attitudes (3560)				
	Criminal <b>Behavior</b> & Juvenile D	Delinquency (3236)				
Population:	Human (10)					
Age Group:	Adulthood (18 yrs & older) (300)					
ended Audience:	Psychology: Professional & Research (PS)					
ormat Covered:	Print					
Publication Type:	Book; Authored Book					
	30, 200-20 Page 20 Accessory 20 Accessory					
Release Date:	20100118					

**Accession Number:** 

2009-17252-000

# Missed Opportunities

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Full Reserve View: Bezzina, Edwin for Introduction to History

### Item Information | Full Details

#### The Making of the West: Peoples and Cultures

Hunt, Lynn, et. al.

Item info: 2 reserve copies available. 2 copies total on reserve.

2 copies total in all locations

Personal author: Hunt, Lynn, et. al.

#### **Holdings**

Grenfell	Сору	Material	Reserve desk	Circ rule	Location
RESERVE NO. P51	1	воок	SWGCRESV	2H0R0-0	RESERVE
	2	воок	SWGCRESV	2H0R0-0	RESERVE

## What's our value?

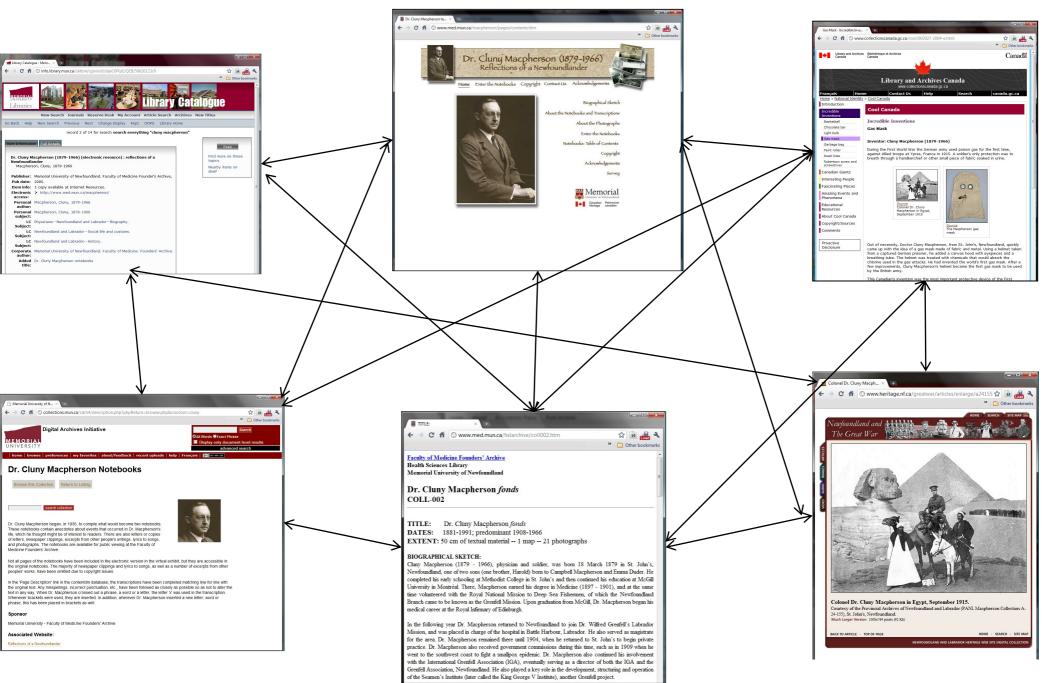
- 2.0 thinking: our value is linked to our data
- 3.0 thinking: our value is linked to our (re)useable, shareable data?

Making the Connection

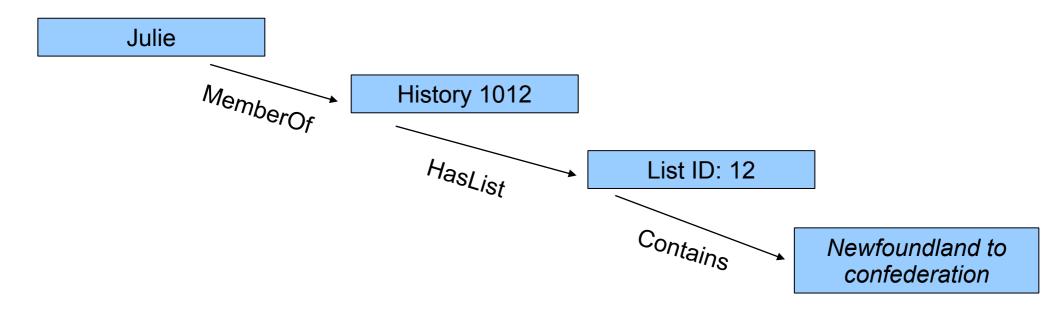
## **Enhanced Linking**

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  xmlns:rdaGr2="http://RDVocab.info/ElementsGr2/"
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  xmlns:skosxl="http://www.w3.org/2008/05/skos-x1#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
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### **Enhanced Content**



### **Enhanced personalization**



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- @prefix resource: <a href="http://purl.org/vocab/resourcelist/schema#">http://purl.org/vocab/resourcelist/schema#</a>>.
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- @prefix bibo: <a href="http://purl.org/ontology/bibo/">http://purl.org/ontology/bibo/>.
- @prefix dcterms: <http://purl.org/dc/terms/> .

#### **Obstacles**

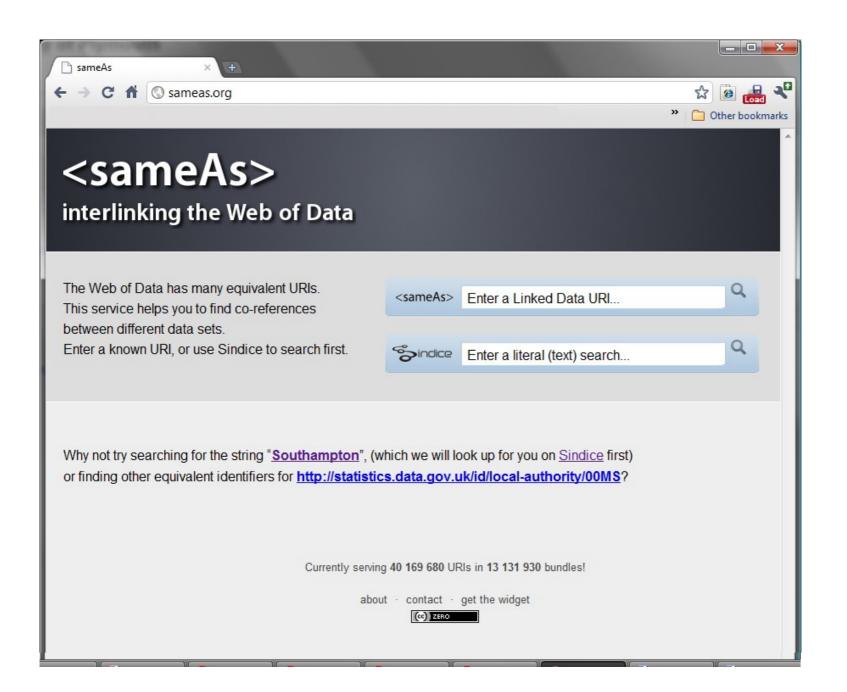
## Competing Vocabularies

# ...how many ways to describe a book, journal article or a place?

Ian Millard, Hugh Glaser, Manuel Salvadores, Nigel Shadbolt http://eprints.ecs.soton.ac.uk/21681/5/cold2010-slides.pdf

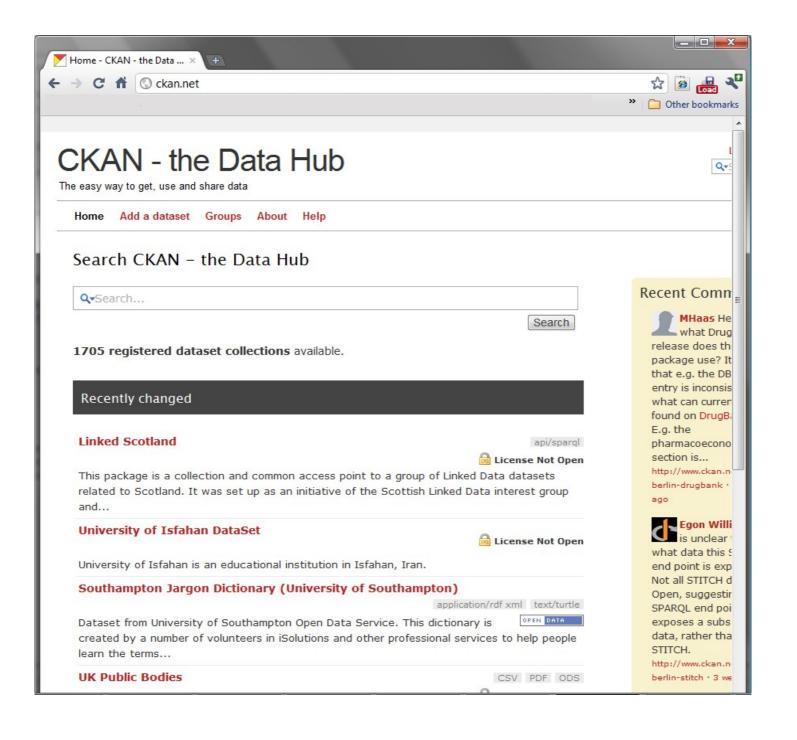
## Co-referencing

- 1. <a href="http://dbpedia.org/resource/Cluny\_MacPherson">http://dbpedia.org/resource/Cluny\_MacPherson</a>
- 2. <a href="http://dbpedia.org/resource/Dr. Cluny MacPherson">http://dbpedia.org/resource/Dr. Cluny MacPherson</a>
- 3. <a href="http://mpii.de/yago/resource/Cluny\_MacPherson">http://mpii.de/yago/resource/Cluny\_MacPherson</a>
- 4. <a href="http://rdf.freebase.com/ns/guid.9202a8c04000641f800000">http://rdf.freebase.com/ns/guid.9202a8c04000641f800000</a> 00005e34c1
- 5. <a href="http://viaf.org/viaf/76097050">http://viaf.org/viaf/76097050</a>
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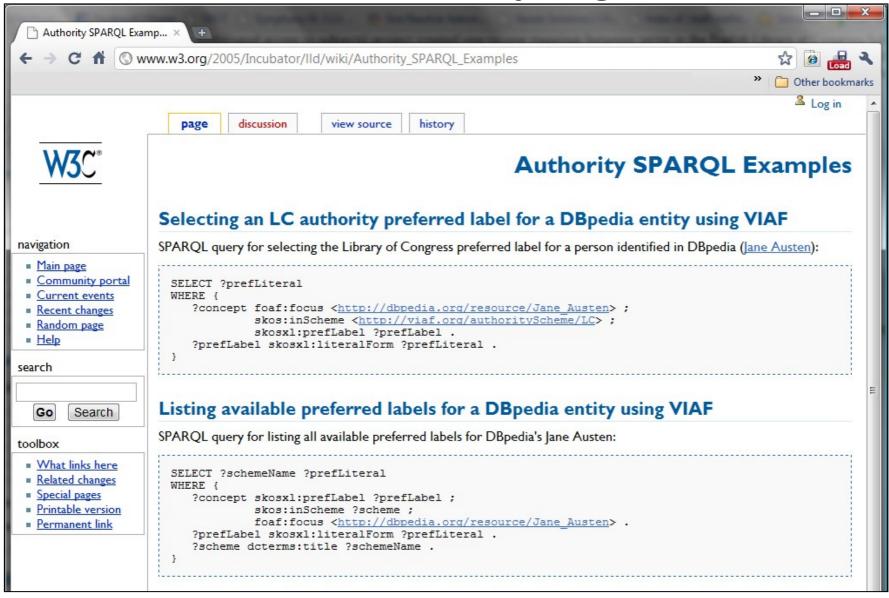


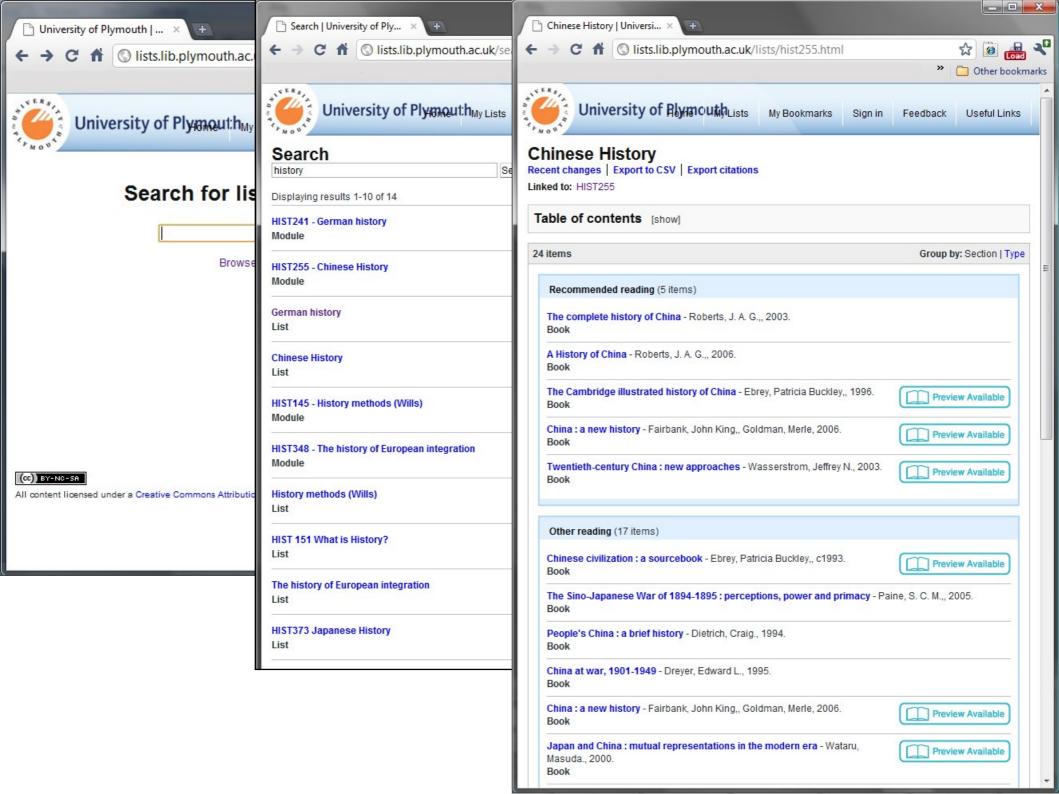
## Discovering

- Lots (and lots and lots) of linked data out there
- How to find it?



# Querying





#### Trust

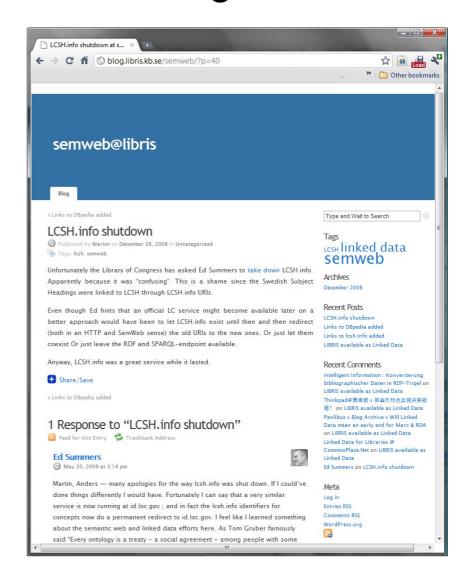
The largest hurdle to library adoption of Linked Data, though, may not be educational or technological ...The sticking point for librarians may be an issue of trust.

- Ross Singer, "Linked Data Now!"

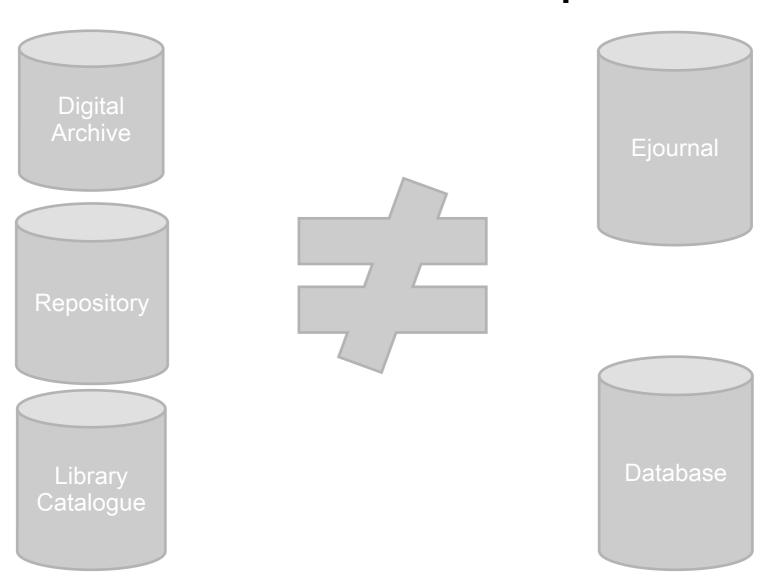
#### Preservation

What happens when a dataset or linking hub

disappears?



## Data ownership



## Licensing

"You shall not use the data made available through the GC Open Data Portal in any way which, in the opinion of Canada, may bring disrepute to or prejudice the reputation of Canada."

#### VolD

schema to describe linked datasets

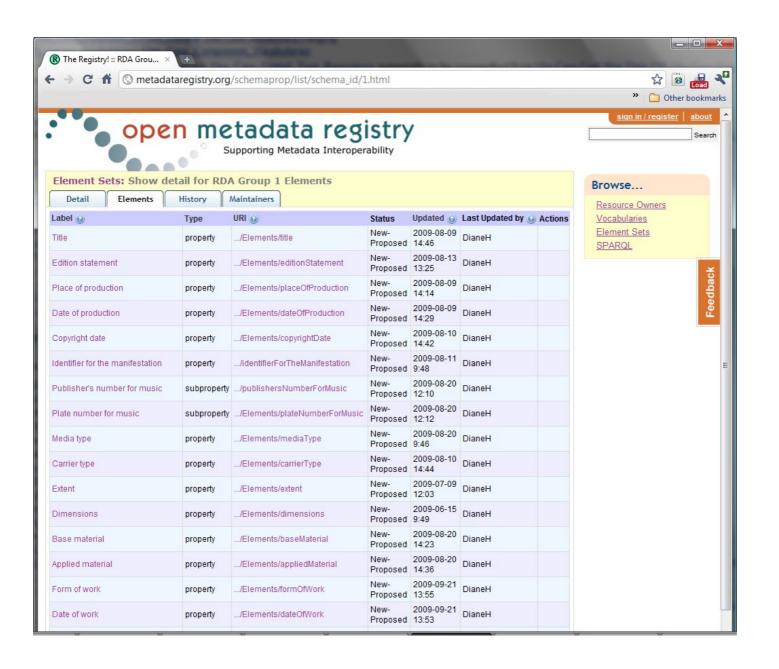
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dcterms:license
<http://www.gnu.org/copyleft/fdl.html> .
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## Oh - One more thing...

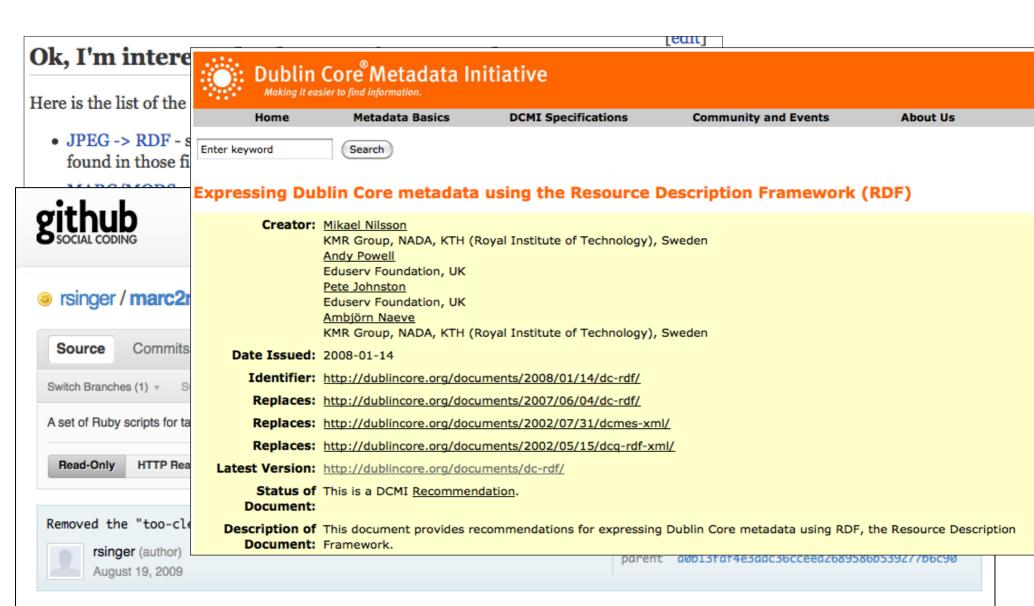
"who's minding the ranch?"

#### **RDA**

 Works with in MARC, but also works as a linked data Metadata Vocabulary



#### RDF Converters



## **Publishing Tools**









### Where we are now

## Age of Chaotic Innovation?

Virtual International Authority File

**Dewey Decimal Classification** 

BIBSYS' authority files
Thesaurus for Economics

Rameau

**Swedish Subject Headings** 

German Subject Headings

Metadata Authority Description Schema (MADS)

LIBRIS (Swedish Union Catalog)

Library of Congress (LCSH, OSI)

German National Library

**Hungarian National Library** 

**British Library** 

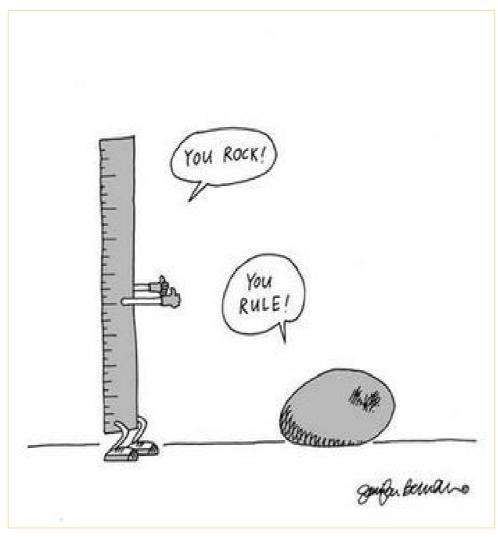
Europeana

Linked Periodicals Data

#### The Chaos Tamers

- W3C Linked Library Data Incubator Group
- IFLA Semantic Web Interest Group
- CKAN Linked Library Data Group
- LITA/ALCTS Linked Library Data Interest Group

## Questions?



Source: http://www.jenniferbetman.com