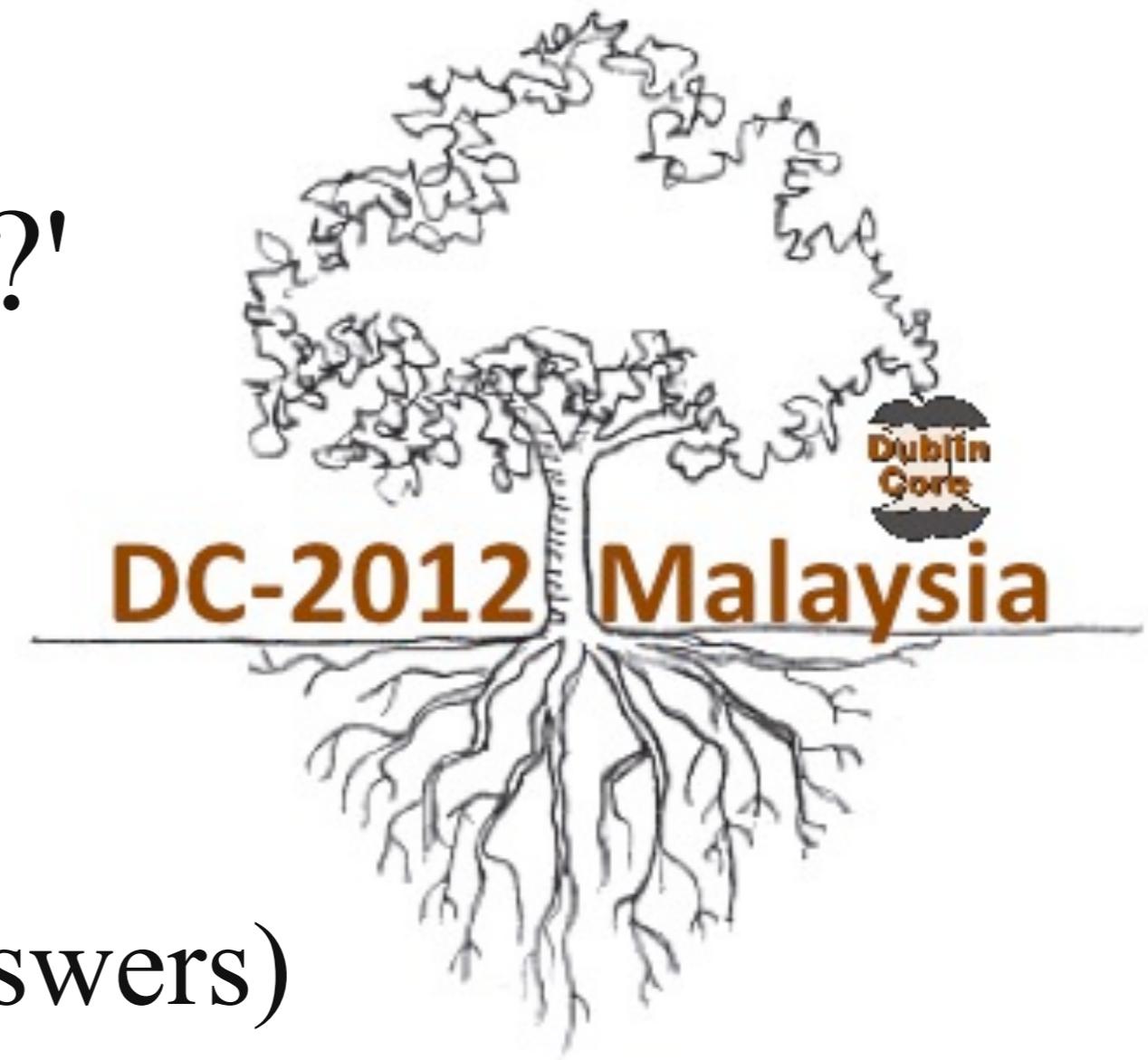


# 'Dublin Core: What is left to do?'



(old questions / new answers)

Dan Brickley <[danbri@danbri.org](mailto:danbri@danbri.org)>

# Preview

- Dublin Core 'Ancient History'
  - DC's two personalities: 'Framework' & 'Element Set'
  - Myth: DC was almost completed in the 1st Workshop in '95
  - Myth: Dublin Core 'vs' the commercial/industry Web
- Schema.org and the 'commercial Web'
- Linked Data, the Semantic Web and Libraries
- Putting it all together: new challenges for DCMI

Enhanced with 100%



Metadata

# Oct. 1997, DC-5: (myth of the) 'Finnish Finish'

D-Lib Magazine  
February 1998

ISSN 1082-9873

## DC-5: The Helsinki Metadata Workshop

### A Report on the Workshop and Subsequent Developments

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Juha Hakala  
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Helsinki, Finland  
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### Introduction

The Dublin Core initiative is an international and interdisciplinary effort to define a core set of elements for resource discovery. The fifth in the series of Dublin Core Metadata Workshops convened in Helsinki, Finland in October of 1997. Some 70 attendees came from sixteen countries on four continents, representing many stakeholders in various resource description communities.

Effective interchange of resource discovery information requires that there be an underlying architecture that supports conventions for the semantics, structure, and syntax of generalized metadata. The Dublin Core initiative has resulted in consensus concerning a base set of elements for descriptive metadata. The syntactic foundation for Web-based metadata (the Resource Description Framework, [[RDF](#)]) is now being developed under the auspices of the World Wide Web Consortium [[W3C](#)]. The Dublin Core community is working closely with the RDF community to develop a common architecture to support generalized metadata.

#### Dublin Core Metadata Elements:

The metadata elements fall into three groups which roughly indicate the class or scope of information stored in them: (1) elements related mainly to the Content of the resource, (2) elements related mainly to the resource when viewed as Intellectual Property, and (3) elements related mainly to the Instantiation of the resource.

[Content](#) [Intellectual](#) [Instantiation](#)

# Dublin Core in the '90s

- Buzzing with the energy of the early Web community
- A community with 1000 opinions
- A community improving a 'product', **the** Dublin Core
- A community who didn't realise that the community mattered much more than their product
- *...that the Dublin Core is a journey not a destination*



# Dublin Core in 2012

- Custodian of the "Dublin Core" terms, a.k.a. elements
- Earliest, most famous & most used non-W3C RDF schema
- Early **customer** for W3C RDF, Linked Data, Semantic Web, and **contributor** to RDF, RDFa, SKOS, Linked Library Data, ...
- Less a product, and more a '**community crossroads**'
- *A critical link from digital libraries, cultural heritage and professional metadata world to more global industry initiatives around structured Web data.*



# DC, RDF & the Warwick Framework

- From 1996, two important strands of thought in DC:
  - 1) Defining simple, widely useful semantics for terms
  - 2) Packaging mechanisms for mixing metadata
- The first gave us the 'Famous Fifteen' - the element set.
- The second fed requirements and contributors into W3C's early RDF work.

# 'The Warwick Framework: A Container Architecture for Aggregating Sets of Metadata' (1996)

"...a container architecture for aggregating logically, and perhaps physically, distinct packages of metadata. This architecture allows separate administration and access to metadata packages, provides for varying syntax in each package"

(one of the several inputs to W3C's Metadata Activity and RDF)

# 2 Kinds of Pragmatism

- *'Simple vocabulary semantics' pragmatism*
  - "We don't want to spend lots of time building complex, un-tested, universal frameworks that allow all kinds of data to be mixed. Instead, let's make some useful and easily understood, technology-neutral metadata definitions and simple ways to publish it in HTML".
- *'One vocabulary can't cover it all' pragmatism*
  - "Whatever we do, it will be hard to meet all needs for multimedia, education, geo, rights, classification etc. Therefore let's find ways of mixing simple Dublin Core with vocabularies created by others."
- I think of these as "*Stu-pragmatism*" and "*Eric-pragmatism*", in honour of Stu Weibel and Eric Miller's early DC leadership, and their shared concern for keeping Dublin Core simple, mainstream and useful to many communities. Much of DC history comes from the interplay between these forms of DC pragmatism.

## **Oct 1997: World Wide Web Consortium Publishes Public Draft of Resource Description Framework (RDF)**

**Key Industry Players Collaborate to Develop Interoperable Metadata for the Web**

**CAMBRIDGE, MASS., USA** -- October 3, 1997 -- The [World Wide Web Consortium \(W3C\)](#) today announced the first public draft of a work-in-progress of the **Resource Description Framework (RDF)**, providing interoperability between applications that exchange machine-understandable information on the Web. "The development of RDF illustrates the power of the collaborative process within W3C Working Groups" said Ralph Swick, W3C Metadata Project Manager. "Beginning with a functional requirement from an end-user Member, the RDF Working Group brought together additional Members to work to achieve a solution of which everyone can be proud." The W3C RDF Working Group has key industry players including DVL, Grif, IBM, KnowledgeCite, LANL, Microsoft, Netscape, Nokia, OCLC, Reuters, SoftQuad and University of Michigan.

The RDF Working Group is one of the earliest phases of a major effort by the Consortium to build a vendor-neutral and operating system- independent system of metadata. The collaborative design effort on RDF originated as an extension on the PICS content description technology, and draws upon the XML design as well as recent W3C Submissions by Microsoft [XML Web Collections] and Netscape [XML/MCF]. In addition, documents such as Microsoft's XML-Data and Site Map proposals, and the Dublin Core/Warwick Framework have also influenced the RDF design.



## MCF: Will Dublin Form the Apple Core

19 January 1997 - 1:00am

[Printer-friendly version](#)

For many years librarians and computer scientists have been researching and developing metadata standards and technology. Although library OPACs are obviously commercially viable systems for maintaining metadata about hard copy resources, they are something of a niche market still. With the explosion in information provision on the Internet, this niche metadata market is set to explode itself, as an increasing number of companies develop a commercial interest in the provision and support for indexing, cataloging and navigating Internet resources.

One major computer vendor that has started to make a concerted push into metadata standards for online resources is Apple Computer. As part of the 'Project X' research programme Apple has produced a metadata file format called the Metadata Content Format (MCF) [1] MCF is a text based file format that provides an extensible structure for encoding and transporting metadata. If it were just a closed metadata file format MCF would be a relatively weak foray into the metadata arena as the associated metadata content that Apple has devised so far are relatively simplistic. However MCF has a number of major points in its favour which may well make it a technology worth watching.

### A growing toolbox

The first plus point for MCF is that it has a growing number of tools available to aid the generation of the metadata and that make use of this metadata in novel ways. The most notable of these tools is probably Apple's HotSauce [2]. HotSauce is available as both a standalone application and a web browser plugin for Apple Macintoshes and Wintel boxes running Windows95/NT. HotSauce provides the end user with a way of visualizing MCF files in such a way as to give a "hotswiped" site a three dimensional graphical site map. This map can be navigated around by "flying through" the

[Send to friend](#)

Jon Knight looks at how Dublin Core and Apple's new MCF metadata file format might make useful and interesting bed fellows.

### Table of Contents [hide]

1. [A growing toolbox](#)
2. [Dublin Core in MCF](#)
3. [Conclusions](#)
4. [References](#)
5. [Author Details](#)

### TAGS FOR MCF: WILL FORM THE APP

#### Issue number

- issue7

#### Article type

- toolshed up

#### Authors

- jon knight

#### Organisations

- apple
- ietf

#### Projects

- eevl
- elib
- jisc information environment
- sosig

#### Buzz

# That was then...

# This is now.

# And where are we now?

- 15, 16, ... 17 years later...?
- Is Dublin Core still a bridge between **mainstream** Web structured data standards and the world of **professional bibliographic metadata**, digital libraries and MARC cataloguing?
- What else has changed?
- *Are we done yet?*

# Myth of the 'Finnish Finish'

- The Myth that we were almost finished in October 1997
- *The real work was just beginning -*
  - learning from deployment experience
  - talking with nearby communities - education, multimedia, rights, classification, thesauri, ...
  - supporting W3C's RDF, RDFa, SKOS work
  - joining a growing 'open data' movement, of which Linked Data is a part, working alongside Open Access / Open Archives, E-Govt transparency, Open Source, Creative Commons, etc.

## Metadata: The Right Approach

An Integrated Model for Descriptive and Rights Metadata in E-commerce

Godfrey Rust  
Data Definitions  
London, England  
[godfreyrust@dds.netkonekt.co.uk](mailto:godfreyrust@dds.netkonekt.co.uk)

### INTERNATIONAL ORGANISATION FOR STANDARDISATION ORGANISATION INTERNATIONALE DE NORMALISATION ISO/IEC JTC1/SC29/WG11 CODING OF MOVING PICTURES AND AUDIO

ISO/IEC JTC1/SC29/WG11  
MPEG00/M6160  
July 2000, Beijing

Title: MPEG-7 harmonisation with Dublin Core: current status and concerns.  
Authors: Jane Hunter (DSTC, AU), José M. Martinez (UPM-GTI, ES),  
Erik Oltmans (Telematica Instituut, NL)  
Status: proposal

1	Introduction.....	1
2	Dublin Core .....	1
3	Mapping of Unqualified Dublin Core to MPEG-7 .....	2
4	Mapping of Qualified Dublin Core to MPEG-7 .....	3
5	Concerns with the MDS .....	3

 **Dublin Core® Metadata Initiative**  
Making it easier to find information.

Home      **Metadata Basics**      DCMI Specifications      Community and Events      About Us

Enter keyword  Search

**Memorandum of Understanding between the Dublin Core Metadata Initiative and the IEEE Learning Technology Standards Committee**

**Introduction**

The Dublin Core Metadata Initiative (DCMI) and the IEEE Learning Technology Standards Committee P1484 (IEEE LTSC) express their joint commitment to collaboration on the development of interoperable metadata for learning, education and training. In particular, both organisations see benefit in maintaining compatibility between the ongoing development of the IEEE LTSC Learning Object Metadata (LOM) and the Dublin Core Metadata Element Set (DCMES).

It is the view of both parties that it is vital that the learning, education and training communities continue to be able to take advantage of tools and services that emerge from both initiatives - the DCMI approach to developing metadata standards for resource discovery across domains and flexible detailed descriptions for 'learning objects' as supported by the IEEE LOM.

Both DCMI and IEEE LTSC have long held certain fundamental assumptions regarding the development of metadata specifications. It is the view of both parties that these assumptions are best served by a single architecture that presents a common set of primitives for describing resources.

**Philosophy**

D-Lib Magazine  
January 1999

Volume 5 Number 1  
ISSN 1082-9873

## A Common Model to Support Interoperable Metadata

Progress report on reconciling metadata requirements from the Dublin Core and INDECS/DOI Communities

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Jennifer Trant  
Art Museum Image Consortium  
[jtrant@amico.net](mailto:jtrant@amico.net)

# Today's Landscape

- I want to talk about two things (chosen from many...)
  - Schema.org from Google, Bing, Yahoo, Yandex
    - (this is my day job...)
  - Linked Data



# Schema.org

A quick look.

# Schema.org

- Search engine collaboration:
  - Google, Bing, Yahoo! & Yandex
- *Simple factual data for better search*
- Launched June 2011, schema.org schema
  - 300 classes, 261 properties & growing
  - discussions: W3C WebSchemas group

Insights from Googlers into our products, technology and the Google culture

Search

## Introducing schema.org: Search engines come together for a richer web

June 2, 2011 at 7:00 PM

 132

(Cross-posted on the [Inside Search Blog](#))

Today we're announcing [schema.org](#), a new initiative from Google, Bing and Yahoo! to create and support a common vocabulary for structured data markup on web pages. With [schema.org](#), site owners and developers can learn about structured data and improve how their sites appear in major search engines. The site aims to be a one stop resource for webmasters looking to add markup to their pages.

Search engines have been working independently to support structured markup for a few years now. We [introduced rich snippets](#) to Google search in 2009 to help people find better summaries of [reviews](#) and [people](#), and since that time we've expanded to new kinds of rich snippets, including [recipes](#) and [events](#). We've been thrilled to see content creators across the web—from [stubhub.com](#) to [allrecipes.com](#)—add markup to their pages, and today we're able to show rich snippets in search results more than 10 times as often as when we started two years ago.

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[Site Blogs](#) » [Search Blog](#) » [Introducing Schema.org: Bing, Google and Yahoo Unite to Build the Web of Objects](#)

## Search Blog

# Introducing Schema.org: Bing, Google and Yahoo Unite to Build the Web of Objects

The Bing Team 6/2/2011 10:01 AM Comments (5)



We've been talking for a while about the need to rethink the search experience to better reflect both the changing web and advancing user habits.

One of the biggest challenges and opportunities we see is to literally create a high-definition proxy of the physical world inside of Bing. In other words, we want to be able to model the world in which we all live to the level that search can actually help you make decisions and get things done in real life by understanding all the options the world presents.

We've made great progress on the technical front to begin to model the real world from the messy bits of data scattered across the web. Things like movies have benefitted from this work. We're now able to understand "Casablanca" is a movie and literally mine the web to re-assemble information about that movie from millions of sites.

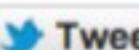
But we think we can do better. We want to enable publishers to give us hints about what things they are describing on their sites. Rather than rely solely on machine learning and other AI techniques, we asked "what if we could enable publishers to have a single schema they could use to describe their sites that all search engines could understand?"

Well today, we're pleased to announce Bing is joining forces with Google and Yahoo! to deliver [schema.org](#), a new initiative, to create and support a common set of schemas for structured data markup on web pages. With [schema.org](#), site owners and developers can learn about structured data and improve how their sites appear in

### FACEBOOK



One person first of your



175

### TAGS

#FTF [bing](#) [bing](#)

[Bing for Mo](#)

[maps](#) [Bing Reward](#)

[Shopping](#) [bing](#)

[BingIt](#) [events](#) [Face](#)

[instant answers](#) [K](#)

[live search](#)

## Introducing schema.org: A Collaboration on Structured Data

Posted June 2nd, 2011 at 11:50 am by Yahoo! Search

Categories: Search

Today we're announcing [schema.org](#), a new initiative from Yahoo!, Bing, and Google, to create and support a common set of schemas for structured data markup on web pages. With schema.org, webmasters and developers can learn about structured data and improve how their sites appear in search results on Bing, Google, and Yahoo!. Information and tips are available on [schema.org](#), a one-stop resource for webmasters looking to add markup to make their pages better understood by search engines.

wea

weather

weather channel

weather underground

sigourney weaver

yahoo weather

national weather service

weather radar

men's wearhouse

bbc weather

kk wealth... llc, los..ca

WEATHER SUNNYVALE, CA

TODAY Rain 57°F | 49°F

MONDAY Rain/Wind 55°F | 47°F

TUESDAY Rain/Wind 54°F | 46°F

MORE WEATHER

Yahoo! Extended Forecast

National Weather Service

YAHOO! WEATHER

2008, Yahoo! showed its support of structured data through the launch of the SearchMonkey program. We won plaudits and awards for our work but most importantly Yahoo! helped boost an increase in markup on the web which in turn helped improve the search experience by resolving questions quickly through enhanced result displays. SearchMonkey also helped Yahoo! kick start various initiatives to

[back to yahoo! search](#)

### Subscription Options



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**Yahoo Search** on Facebook



Like

144,549 people like Yahoo Search.



Dennis



Bambang



Rudy



Ni



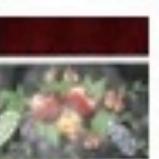
Rizzalyn



Annaliza



Youngwha



Johnson

### Latest Posts

# How does it work?

- Normal HTML page content, with additional markup.
- Extra attributes are from W3C HTML5 Microdata: `itemscope`, `itemtype`,  `itemprop`, `content`.
- The HTML5 Microdata syntax was based originally on W3C RDFa, a similar design.
- Both address the principle known on microformats.org as "Don't Repeat Yourself" (DRY), <http://microformats.org/wiki/dry> .
- Re-use of page markup to also serve as *structured data*.
- *Increasing support for W3C RDFa Lite as a schema.org syntax.*

For example?

## Google search preview

### Cut the Rope - Android Apps on Google Play



[market.android.com/details?id=com.zeptolab.ctr.paid&hl=en](http://market.android.com/details?id=com.zeptolab.ctr.paid&hl=en) - [Cached](#)

★★★★★ 39,072 votes - \$0.99 - Android

The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.

## Google search preview

### Samsung Galaxy Nexus SCH-I515 | eBay

[www.ebay.com/ctg/Samsung-Galaxy-Nexus-SCH-I515](http://www.ebay.com/ctg/Samsung-Galaxy-Nexus-SCH-I515)

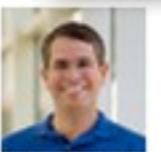
★★★★★ 41 votes - \$19.99 to \$320.00

The excerpt from the page will show up here. The webpage is because the text depends on the quer

## Thoughts on Google Instant

[www.mattcutts.com/blog/thoughts-on-google-instant/](http://www.mattcutts.com/blog/thoughts-on-google-instant/) - [Cached](#)

The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.



Matt Cutts

## Google search preview

### San Francisco metro area, CA Events, Concerts, Festivals,

[eventful.com/sanfrancisco/events](http://eventful.com/sanfrancisco/events) - [Cached](#)

The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.

<a href="#">Mary J. Blige with D'angelo</a>	Sat, Sep 8	Sleep Train Pavilion, Concord, CA(San ...
<a href="#">Willie Nelson</a>	Sun, Sep 9	Marin Center Showcase Theater/San Rafael, Rafael, CA ...
<a href="#">Hot Chip</a>	Tue, Sep 11	Fox Theater - Oakland, Oakland, CA(San Francisco metro area), CA

## Google search preview

### Alma Pan-Latin Kitchen - Regent Square - Pittsburgh | Urbans...

[www.urbanspoon.com/pittsburgh/east/regent-square](http://www.urbanspoon.com/pittsburgh/east/regent-square) - [Cached](#)

★★★★★ Rating: 91% - 522 votes - Price range: \$15-25 per entree

The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.

## Google search preview

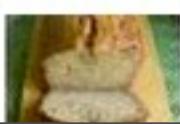
### Lady Gaga | Free Music, Tour Dates, Photos, Videos

[www.myspace.com/ladygaga](http://www.myspace.com/ladygaga) - [Cached](#)

The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.

<a href="#">Yoü And I</a>	5:07	Born This Way
<a href="#">The Edge Of Glory</a>	5:20	Born This Way
<a href="#">Born This Way</a>	4:20	Born This Way

## Banana Banana Bread Recipe - Allrecipes.com



[allrecipes.com/recipe/banana-banana-bread/](http://allrecipes.com/recipe/banana-banana-bread/) - [Cached](#)

★★★★★ 7019 reviews - 1 hr 20 mins - 229 cal

The excerpt from the page will show up here. The reason we can't show text from

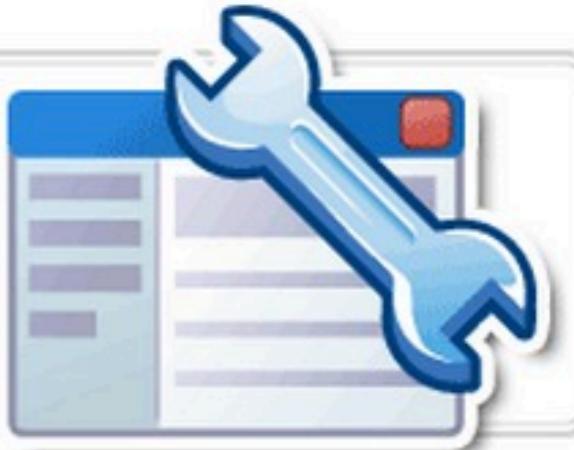
## Google search preview

### Pravir Gupta | LinkedIn

[www.linkedin.com/pub/pravir-gupta/2/180/a70](http://www.linkedin.com/pub/pravir-gupta/2/180/a70) - [Cached](#)

San Francisco Bay Area - Software Engineer

The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.



## Using schema.org markup for videos

Tuesday, February 21, 2012 at 2:00 PM

Webmaster level: All

Videos are one of the most common types of results on Google and we want to make sure that your videos get indexed. Today, we're also launching video support for schema.org. [Schema.org](#) is a joint effort between Google, Microsoft, Yahoo! and Yandex and is now the recommended way to describe videos on the web. The markup is very simple and can be easily added to most websites.

Adding [schema.org video markup](#) is just like adding any other schema.org data. Simply define an itemscope, an itemtype="http://schema.org/VideoObject", and make sure to set the name, description, and thumbnailUrl properties. You'll also need either the embedURL — the location of the video player — or the contentURL — the location of the video file. A typical video player with markup might look like this:

```
<div itemscope itemtype="http://schema.org/VideoObject">
  <h2>Video: <span itemprop="name">Title</span></h2>
  <meta itemprop="duration" content="T1M33S" />
  <meta itemprop="thumbnailUrl" content="thumbnail.jpg" />
  <meta itemprop="embedURL"
    content="http://www.example.com/videoplayer.swf?video=123" />
  <object ...>
    <embed type="application/x-shockwave-flash" ...>
  </object>
  <span itemprop="description">Video description</span>
</div>
```

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[Webmaster Help Center](#)

[Google Webmaster Tools](#)

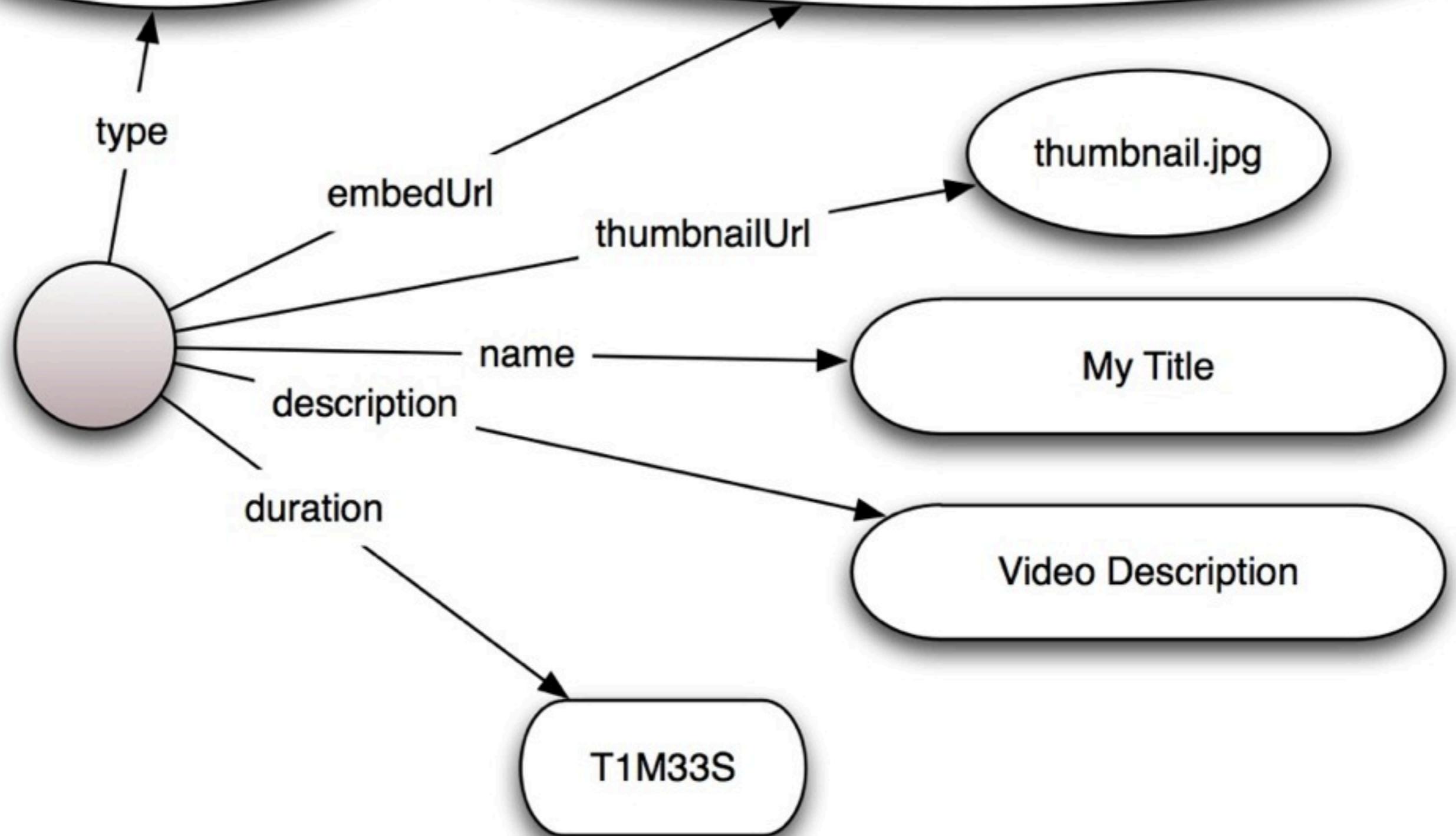
[Webmaster Central on  
YouTube](#)

```
<div itemscope itemtype="http://schema.org/VideoObject">
  <h2>Video: <span itemprop="name">My Title</span></h2>
  <meta itemprop="duration" content="T1M33S" />
  <meta itemprop="thumbnailUrl" content="thumbnail.jpg" />
  <meta itemprop="embedUrl"
        content="http://example.com/videoplayer.swf?video=123" />
  <object ...>
    <embed type="application/x-shockwave-flash" ...>
  </object>
  <span itemprop="description">Video description</span>
</div>
```

Type: http://schema.org/VideoObject  
name = My Title  
duration = T1M33S  
thumbnailurl = thumbnail.jpg  
embedurl = http://www.example.com/videoplayer.swf?  
video=123  
description = Video description

`http://schema.org/  
VideoObject`

`http://example.com/  
videoplayer.swf?video=123`



(this is almost all you need to know about RDF, incidentally)

# Example: Google Rich Snippets

Google webmaster tools

**Rich Snippets Testing Tool Beta**

Use the Rich Snippets Testing Tool to check that Google can correctly parse your structured data markup and display it in search results.

**Help with:**

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[Troubleshooting Help](#)

**Test your website**

Enter a web page URL to see how it may appear in search results:

[Preview](#)

Examples: [Applications](#), [Authors](#), [Events](#), [Movie](#), [Music](#), [People](#), [Products](#), [Products with many offers](#), [Recipes](#), [Reviews](#), [TV Series](#)

**Google search preview**

[Hyperland \(TV 1990\) - IMDb](#)  
[www.imdb.com/title/tt0188677/](http://www.imdb.com/title/tt0188677/) - [Cached](#)  
★★★☆ Rating: 8/10 - 48 votes  
The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.

Note that there is no guarantee that a Rich Snippet will be shown for this page on actual search results. For more details, see the [FAQ](#).

**Extracted Author/Publisher for this page**

Page does not contain authorship markup. [Learn more](#).

**Extracted rich snippet data from the page**

```
video.tv_show
url = http://www.imdb.com/title/tt0188677/
title = Hyperland (TV 1990)
type = video.tv_show
image = http://i.media-imdb.com/images/SFc0774313bf9ccbfe22050c8bb4029e41/imdb-share-logo.gif
site_name = IMDb
app_id = 115109575169727

Item
Type: http://schema.org/creativework
name = Hyperland (1990)
aggregaterating = /item( 1 )
description =
actors
text = Douglas Adams
href = http://www.imdb.com/name/nm0010930/
actors
text = Tom Baker
href = http://www.imdb.com/name/nm0048982/
actors
text = Hans Peter Brondum
href = http://www.imdb.com/name/nm3035100/
actors
```

From: <http://www.google.com/webmasters/tools/richsnippets>  
See also Yandex's <http://webmaster.yandex.ru/microtest.xml>

# On IMDB:

```
<div id="content-2-wide" itemscope itemtype="http://schema.org/CreativeWork">

<div class="txt-block">
  <h4 class="inline">Stars:</h4>
  <a onclick="(new Image()).src='/rg/title-overview/star-1/images/b.gif?link=%2Fname%2Fnm0010930%2F';" href="/name/nm0010930/" itemprop="actors">Douglas Adams</a>,
  <a onclick="(new Image()).src='/rg/title-overview/star-2/images/b.gif?link=%2Fname%2Fnm0048982%2F';" href="/name/nm0048982/" itemprop="actors">Tom Baker</a> and <a
  onclick="(new Image()).src='/rg/title-overview/star-3/images/b.gif?link=%2Fname%2Fnm3035100%2F';" href="/name/nm3035100/" itemprop="actors">Hans Peter Brondmo</a>
</div>

<div class="star-box" itemprop="aggregateRating" itemscope itemtype="http://schema.org/AggregateRating">
```

Linked Data: see <http://www.imdb.com/name/nm0010930/> for schema.org markup describing Douglas Adams as a **http://schema.org/Person** (**jobTitle**, **birthDate**, **description**, **performerIn**, ...).

# What's in the schema?

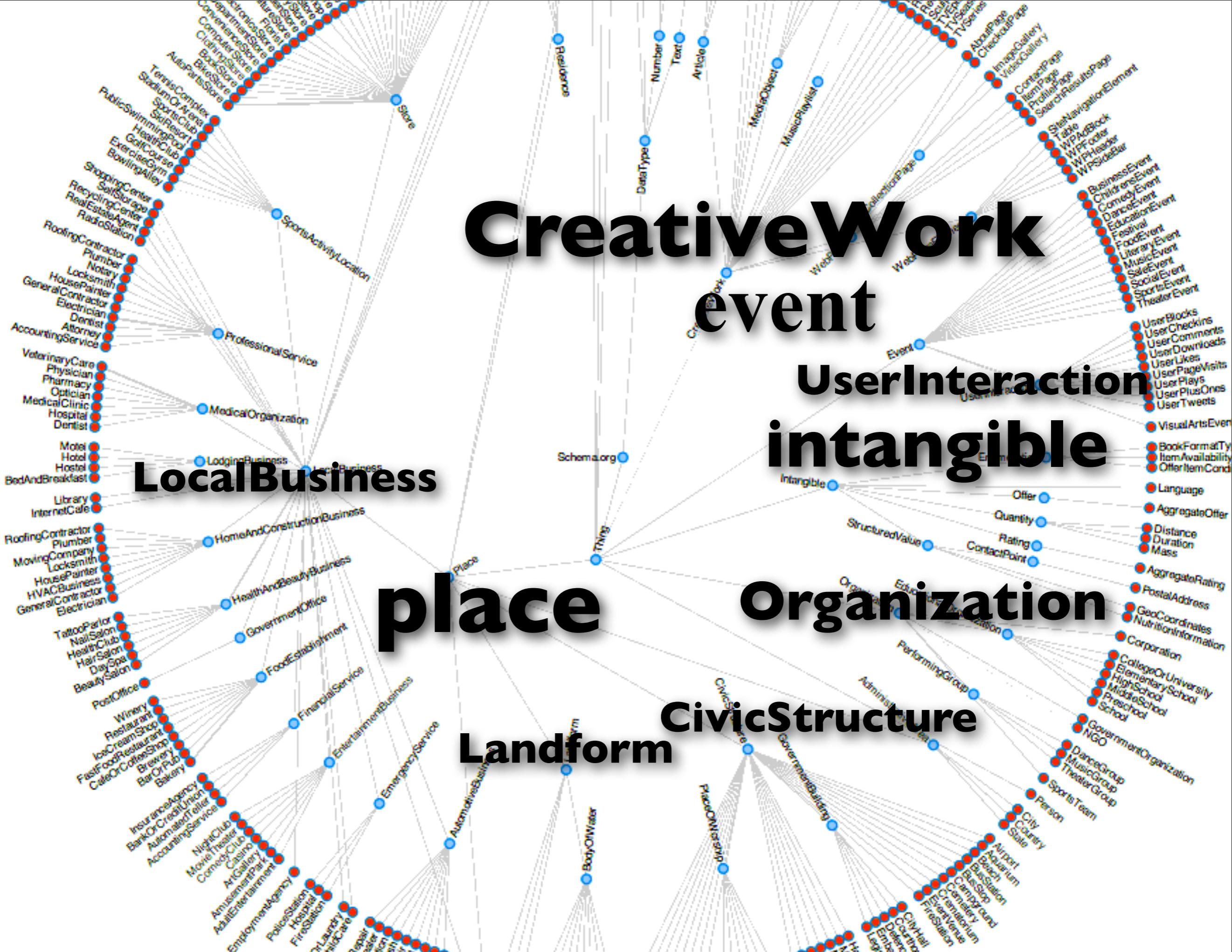
- **Classes** (types) e.g. LocalBusiness, Person, Organization, VideoObject, TVSeries...
- **Properties** (attributes) e.g. openingHours, transcript, productionCompany, streetAddress
- That's all - a dictionary of terms, used for annotating data within normal Web pages

# CreativeWork event

## UserInteraction intangible

# place

# CivicStructure Landform



# Another example:

```
<div itemscope itemtype="http://schema.org/Restaurant">

<span itemprop="name">GreatFood</span>

<div itemprop="address" itemscope itemtype="http://schema.org/PostalAddress">
  <span itemprop="streetAddress">1901 Lemur Ave</span>
  <span itemprop="addressLocality">Sunnyvale</span>,
  <span itemprop="addressRegion">CA</span>
  <span itemprop="postalCode">94086</span>
</div>

<span itemprop="telephone">(408) 714-1489</span>
<a itemprop="url" href="http://www.dishdash.com">www.greatfood.com</a>

Hours:
<meta itemprop="openingHours" content="Mo-Sa 11:00-14:30">Mon-Sat 11am-2:30pm
<meta itemprop="openingHours" content="Mo-Th 17:00-21:30">Mon-Thu 5pm-9:30pm
<meta itemprop="openingHours" content="Fr-Sa 17:00-22:00">Fri-Sat 5pm-10:00pm

Categories:
<span itemprop="servesCuisine">Middle Eastern</span>,
<span itemprop="servesCuisine">Mediterranean</span>

</div>
```

# Schema.org scope

- In-page structured data for search
- Not asking an unconstrained “so, how do we describe *cars*?", but “how can we improve markup on *existing pages that describe cars*?” (or Comics, SoftwareApps, Sports, ...)
- Simplify publisher/webmaster experience
- Record agreements between search engines
- Central use case: augmented search results

# <http://www.w3.org/wiki/WebSchemas/SchemaDotOrgProposals>

Topic	Status	Summary	Vocab	Comments
<a href="#">JobPosting</a>	<a href="#">Published</a>	A type for job adverts.	Adds <a href="#">JobPosting</a> class and supporting properties.	Related discussion on <a href="#">CVs and resumes</a> . The <a href="#">occupationalCategory</a> property takes controlled values; more detail and options here would be useful.
<a href="#">IFTCTrNews integration</a>	<a href="#">Published</a>	Integration of the <a href="#">rNews</a> vocabulary produced by the <a href="#">IFTCTr</a> .	See original <a href="#">rNews 1.0</a> ; most of these terms are now in schema.org directly.	See New York Times' <a href="#">implementation announcement</a> for details and examples.
...				
<a href="#">TV and Radio proposal</a>	<a href="#">Addition Candidate - please review!</a>	Proposes modest changes and additions to support TV and radio (from <a href="#">BBC</a> and <a href="#">ITV</a> ).	Adds Series, Season, Episode under CreativeWork, Existing TVSeries, TVSeason, TVEpisode under Series/Season/Episode. Adds RadioSeries/RadioSeason/RadioEpisode alongside.	See also <a href="#">background notes</a> . Draft initially from EBLIB/BBC/YouTube discussions. Nearly vocab see <a href="#">VideoObject</a> , <a href="#">AudioObject</a> , <a href="#">Movie</a> , <a href="#">Event</a> re scheduling. See also <a href="#">UserPage</a> , a kind of <a href="#">UserInteraction</a> . Comics and TV/Radio also share a concern for describing fictional characters and <a href="#">narratives</a> .
<a href="#">Comics and Serials</a>	<a href="#">Addition Candidate - please review!</a>	Proposal from Marvel (see <a href="#">examples</a> ).	Adds PeriodicalSeries (under <a href="#">Intangible</a> ?), PeriodicalIssue (under CreativeWork), ComicIssue (under PeriodicalIssue), GraphicNovel (under Book). Approx 6-9 properties for each of these classes.	Generally well received and specified, but some detailed <a href="#">discussions</a> re fine-grain detail of comics (imprint, page count etc.). Can those properties be shared with <a href="#">Book</a> / <a href="#">numberOfPages</a> , or <a href="#">ScholarlyArticle</a> ? Should PeriodicalSeries be intangible?
<a href="#">Learning Resources</a>	<a href="#">LRM 0.2 submitted here - please review!</a>	The Learning Resources Metadata Initiative has drafted a set of terms to improve schema.org's use with educational materials.	Mainly adds new properties (typically but not nec. on <a href="#">CreativeWork</a> ) <a href="#">improvesEndUserSkills</a> , <a href="#">competency</a> with values in a new class, <a href="#">CompetenceObject</a> ; <a href="#">educationalUse</a> (Text values), <a href="#">scoreRequired</a> (a <a href="#">Question</a> ); <a href="#">recognitionType</a> (Text values); <a href="#">learningResourceType</a> , ...	Comments: see <a href="#">draft</a> and <a href="#">discussion list</a> .
<a href="#">ScholarlyArticle</a>	Early proposal from HighWire Press needs review.	Various ideas around improving <a href="#">ScholarlyArticle</a> .	Suggestion that scholarly articles could be described in more detail.	There is a lot of related work in this area. For example <a href="#">Google Scholar publisher guidelines</a> , <a href="#">Microsoft Academic Search</a> , The Open Archives Initiative - Protocol for <a href="#">Metadata Harvesting</a> also addresses this problem area and has broad adoption. See also earlier comments from <a href="#">HighWire Press</a> ( <a href="#">[pdf]</a> ) and following discussion (on the old mailing list).
<a href="#">Software Application</a>	<a href="#">Proposal - please review</a>	A class for Software Applications ('webapp', both installable and Web-based).	Re-uses some properties of CreativeWork; defines a subclass SoftwareApplication with 20 properties, plus two small subclasses.	Scope: note that this doesn't attempt to address all aspects of software description (e.g. library dependencies). Do any of the CreativeWork-based property descriptions suggest updates? How should we best document class-specific info about such properties? In the Wiki for now at least. An earlier version was seen as a Rich Snippet extension; see <a href="#">Google's documentation</a> . This version incorporates feedback from schema.org partners; see doc for details. The SoftwareApplicationType enumeration may remain a Snippet-only vocabulary.
<a href="#">Event schema update</a>	<a href="#">Proposal - please review</a>	Proposes some modifications to <a href="#">Event</a> based on deployment experience.	Adds eventStatus, previousStartDate, previousEndDate; eventCategory; makes startData/endData repeatable. Encourages use of url from <a href="#">Thing</a> .	Fairly modest proposal based on implementor feedback. Some examples needed, especially around startData/endData; it is obvious how they work with multiple values!
<a href="#">Historical Data proposal</a>	<a href="#">Proposal</a>	The <a href="#">historical-data.org</a> site proposes some extensions to schema.org to address historical and genealogical (family history) scenarios.	Adds HistoricalRecord, HistoricalEvent (subclass of Event), overrides startDate, endDate, superEvent to point to HistoricalEvent.	There is an associated implementation, <a href="#">github repository</a> and <a href="#">blog</a> .
<a href="#">Real Estate</a>	Discussions but no proposal yet.	Enthusiastic discussion in favour of adding RealEstate support. Tracked as <a href="#">Issue 17</a> .	N/A	Related to <a href="#">Place</a> vocabulary, and schema.org's numerous subclasses, and <a href="#">Offer</a> class.
<a href="#">Good Relations integration</a>	Awaiting proposal details.	Suggestion that schema.org would benefit from agreeing the inclusion of much of the Good Relations vocabulary.	See <a href="#">Good Relations</a> site for background, e.g. <a href="#">quickstart</a> page.	Schema.org already has <a href="#">Offer</a> and related terms, but might benefit from adding detail from Good Relations.
<a href="#">Medical/Health</a>	Proposal anticipated.	A proposal is being prepared that covers various topics in the medical/health domain.	No details available yet.	See <a href="#">mail from Agape Brown</a> on public-vocab list.
<a href="#">External Enumerations</a>	Work-in-progress	The Schema.org site will include guidance on how to use external enumerations, including constrained values for properties, and large collections of useful types.		For example, it should be possible to use lists of countries from e.g. ISO, UN, Or units and measures from systems such as <a href="#">CGU</a> . Or community or professionally-maintained lists from Wikipedia, Library or GS standards, etc.
<a href="#">Sports</a>	Discussion and active drafting.	Several parties are working towards a Sports Vocabulary proposal. See <a href="#">SWEET</a> , <a href="#">from Paul Kelly (SportsML)</a> , <a href="#">Microdata + Sports Data</a> post describing earlier ESPN+Google collaboration, and the <a href="#">Sports Ontology</a> used by BBC, Press Association and others.	Several sources including a full draft from the ESPN+Google work. Needs summary here.	March 2nd - posted writeup of the ESPN+Google Microdata vocabulary; next is discussion on finding common basic sports vocab for schema.org.
<a href="#">Transport Data</a>	Discussion	Initial discussion or description of transport data.	N/A.	<a href="#">Discussions</a> on whether this scenario can be covered with existing vocabulary.
<a href="#">Vehicles</a>	Anticipated	A proposal extending schema.org for describing vehicles is being prepared.		No public draft yet.
<a href="#">WebSchema/Comments</a>	Accepted	A fix to confusion around UserComments and lack of a Comment entity.	Adds a class Comment under CreativeWork, for comments. UserComments remains a UserInteraction event, and exists further clarification.	This proposal addresses a need to have a representation of comments as documents, rather than merely as a user activity.
<a href="#">Person biography</a>	Proposal	A proposal for supporting people's biography	Adds a bibliography property to the Person type.	
<a href="#">Singularize</a>	Accepted	Proposes we move to singular property names, based on implementor feedback.	Adds new properties without a plural 'Y', aliases old ones.	We would need a mechanism to indicate alias/deprecation. Also are there classes with this issue?
...				
<a href="#">Datasets</a>	Proposal	A proposal extending schema.org for describing datasets and data catalogs.	Adds the <a href="#">Dataset</a> , <a href="#">DataCatalog</a> , and <a href="#">DataDownload</a> types and supporting properties.	An example page with dataset microdata is available <a href="#">here</a> . For related efforts, see the <a href="#">W3C Government Linked Data Working Group</a> .
<a href="#">Biological Databases</a>	Proposal	A schema extension for describing biological databases. <a href="#">Source</a> .	Adds a class 'BiologicalDatasetEntry' as a kind of CreativeWork, introducing 'entryID', 'isEntryOf', 'taxonID'. Adds 'BiologicalDataset' also subclass of CreativeWork, with no special properties. Both also use 'breadcrumbs' from WebPage.	Others have also mentioned interest in adding some notion of species.
...				
Proposal name	How far along	Summary of contribution.	Overview of new terms	Comments on status, particularly regarding integration, overlaps and open issues.

**Job postings (done), rNews(done), Comics, Learning, ScholaryArticle, Software, Events, Genealogy, Real Estate, eCommerce, Health, Sports, Transport, Vehicles, Comments, Datasets, Bio, ... (+bugfixes, integration, ...)**

# Everything overlaps<sup>\*</sup>

- We added JobPosting; what if the job was sports-related?
- We're adding educational markup; does it help describe sports education, training?
- Is there a sports perspective on the health/medical vocabulary we're working on?
- Can't coordinate everything! Pragmatism...

\* 'intertwingularity'

# Practicalities

- Delegation to external sources for enumerations and detail
  - e.g. country codes from UN FAO or Wikipedia/DBpedia/Wikidata
- We don't want to create big enumerations
  - *all the countries? sports? things that go on maps?*
- Decentralised subclassing & property values

# Process

- Search partners retain ultimate oversight
- W3C hosts community group, discussion, wiki and proposal tracking
- Web Schemas group - planning monthly telecons at W3C, based around proposals
- Evolving, pragmatic, collaborative



# What should DCMI think?

- When schema.org was launched, ... what should the DC think about it?
  - Is this a *failing* of DC, since schema.org uses its own metadata terms instead of DC's?
  - Is it a *success*, ... finally the original vision goes mainstream?
  - *Is it something in the middle? An opportunity to collaborate?*
- Different strands of DC thought give different answers.

# DC Terms / DCMI Community

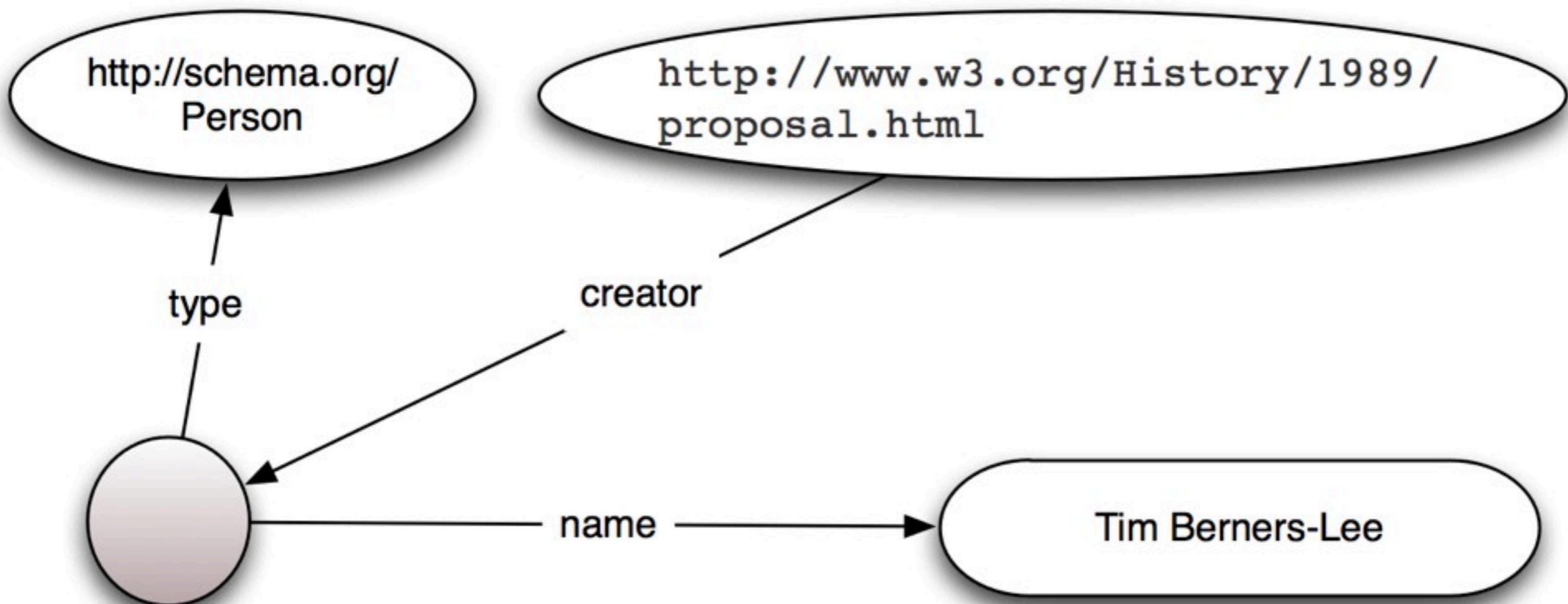
- If Dublin Core is a **PRODUCT**
  - ...just a static set of metadata terms
  - then schema.org not using them may be *disappointing*.
- If Dublin Core is a **COMMUNITY**
  - ...a forum that people, groups, projects turn to for collaboration
  - *then schema.org is a huge opportunity*

# 1. Schema.org is RDF

- Schema.org chose to launch using Microdata, a simplified subset of RDFa
  - since launch, we've been busy helping RDFa Lite
  - RDFa Lite is the 'best of both worlds'
    - a simple microdata-like profile for mainstream use
    - but fully RDF, with built in support for Dublin Core:

```
<span property="name dc:title">  
We can mix schema.org and DC terms  
</span>
```

# Pretty simple RDF.



# 2. Collaborations begin

- There is already a DC/schema.org task force on mappings between the two schemas
- Schema.org's vocabulary around bibliographic metadata (<http://schema.org/Book>, <http://schema.org/ScholarlyArticle>) is far from complete
- Schema.org team have a 'library' proposal from OCLC that defines 'Carrier', 'BlurayDisk', 'CassetteTape'
  - ...and a request from LMRI.net (upcoming schema.org educational extensions) for similar 'carrier' vocabulary
  - *...which DCMI's Stuart Sutton is already helping with*

***Why? Because we're a community, not a product.***

# 3. One Big Namespace?

- Schema.org is a collaboration amongst busy teams from companies that are in heavy competition with each other.
  - It was important to have a clear 'object' of collaboration;
  - Something engineers can adopt, implement, understand;
  - And that publishers/webmasters can easily adopt.
- Don't expect short-term *collective* adoption of multiple RDF namespaces; but each company also consumes various non-schema formats. And schema.org uses external lists too.
- The 1995-7 conversations are back in the mainstream again.
  - Even if schema.org doesn't "adopt" DC terms, it can adopt DC as a place to go to explore hard bibliographic metadata issues.

</schema>



# Linked Data

- The Linked Data scene has several aspects
  - A practical 'hypertext RDF' community in the DC, RSS, FOAF tradition (often but not always skeptical of heavier knowledge representation approaches like OWL).
  - An expression in the RDF world of enthusiasm for wider trend towards open data, transparency, 'creative commons' and 'data science'.
  - An expression via shared datasets of our community's passion for sharing and linking information in the Web; a "back to basics" attitude to the potential for improving the Web itself through structured data.

# Linked Data and DCMI

- Since TimBL's influential note, <<http://www.w3.org/DesignIssues/LinkedData>> in 2006, Linked Data has been growing very impressively.
  - Much Linked (Open) Data, 'LOD' uses DC terms heavily
  - How does this fit into DCMI's workplans?
  - How does DC get combined with other RDF vocabularies?
    - *we don't know yet, but we're starting to find out*
    - *patterns found in LOD data can feed into DC (and schema.org), and guide their management and evolution.*
    - *This is closely related to long-term DC work around Application Profiles, Patterns and the Abstract Model.*

# Linked Data

1. Use URIs as **names** for things.
2. Use **HTTP** URIs so that people can look up those names.
3. When someone looks up a URI, **provide** useful information, using the standards (RDF, SPARQL, ...).
4. Include **links** to other URIs so they can discover more things.

Tim Berners-Lee (2006)

<http://www.w3.org/DesignIssues/LinkedData>

# Serious Linked Data!

**UK**

**USA**

The DATA.GOV website (top right) displays a world map with green lines connecting various locations, representing the interconnected nature of government datasets. The data.gov.uk website (bottom left) features a large blue hexagonal logo and a "Semantic Web" section with a blue hexagon icon.

**DATA.GOV**  
HOME DATA TOOLS COMMUNITY METRICS DIALOGUE

LINKING OPEN GOVERNMENT DATA

VIEW MORE >

Most Popular Datasets

1. Worldwide M1+ Earthquakes, Past 7 Days
2. U.S. Overseas Loans and Grants (Greenbook)
3. Latest Volumes of Foreign Relations of the...
4. OSHA Data Initiative - Establishment...
5. IT Dashboard - Federal IT Spending (major...)

SEARCH OUR CATALOGS

Search our catalogs... SEARCH >

**HM Government**

Home Blog Data SPARQL Apps Ideas Forum Wiki Resources About

Unlocking innovation  
Working with UK Public Sector information and data

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
- Find out how the data.gov.uk team has been getting involved with the community
- Listen to a Podcast on setting up data.gov.uk

Search Data

Enter keyword(s)  Search

Browse for Data

List all datasets  
By Public Body  
Crosswalks

Community

data.gov.uk

Subscribe by RSS

Community Log in / Sign up

Local Data Panel

What is the Semantic Web?

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

Read more

Digital Engagement Twitter stream

COMMUNITY

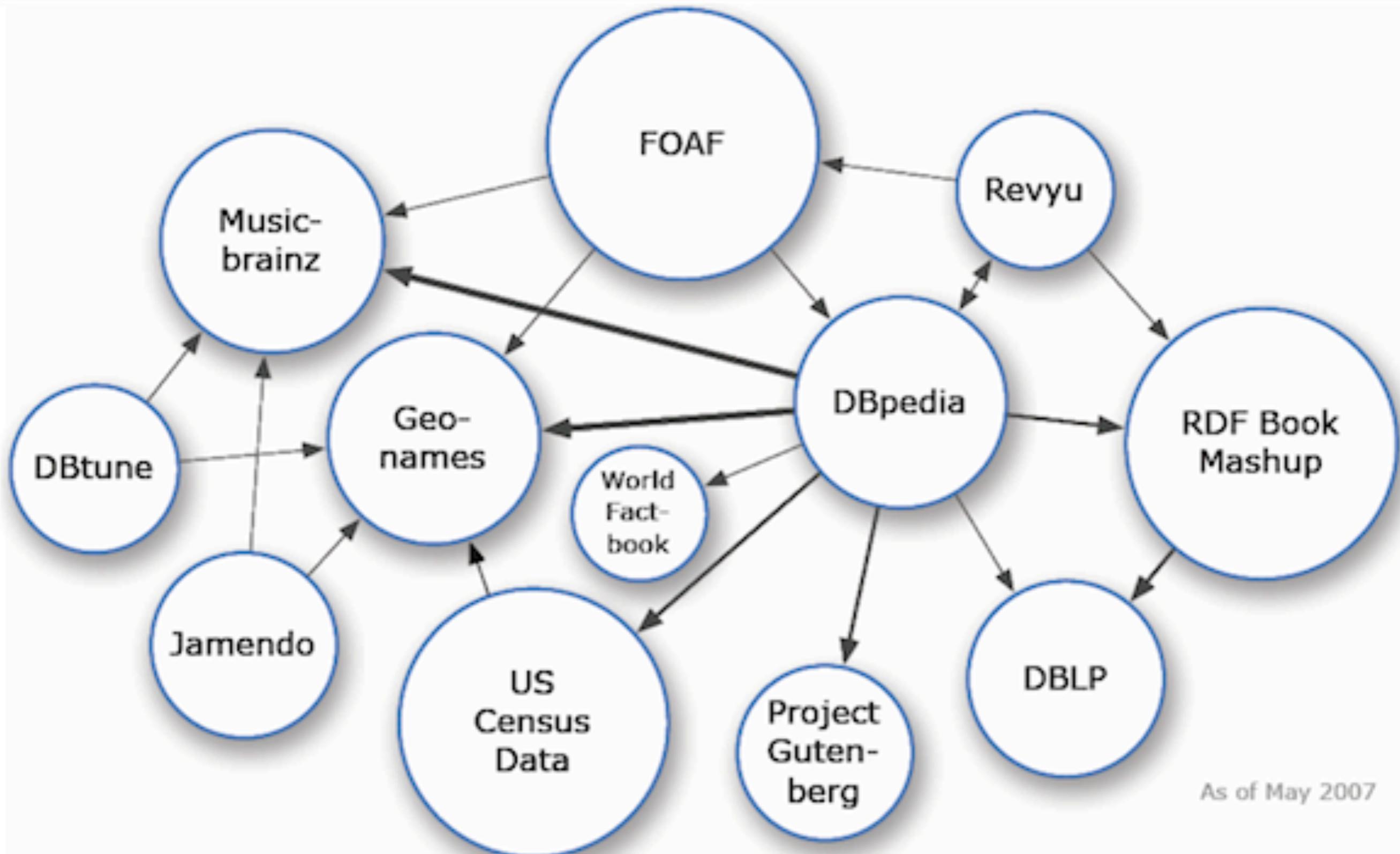
data.gov.uk

As the Web of linked documents evolves to include the Web of linked data, we're working to maximize the potential of Semantic Web technologies to realize the promise of Linked Open Government Data.

Thanks to our collaboration with the **Tetherless World Constellation** at the **Rensselaer Polytechnic Institute**. Data from its three facilities

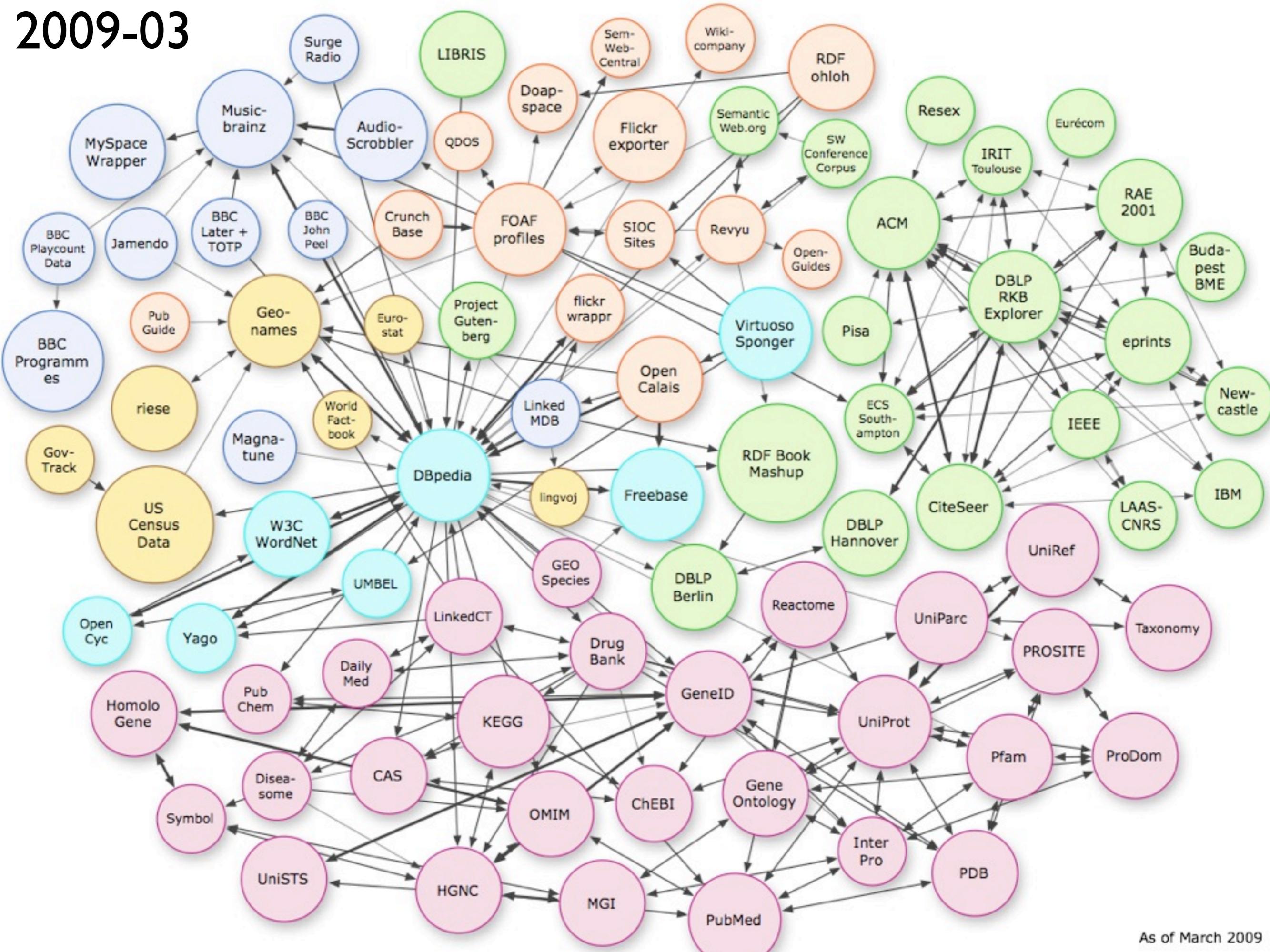
SEMANTIC WEB

2007-05



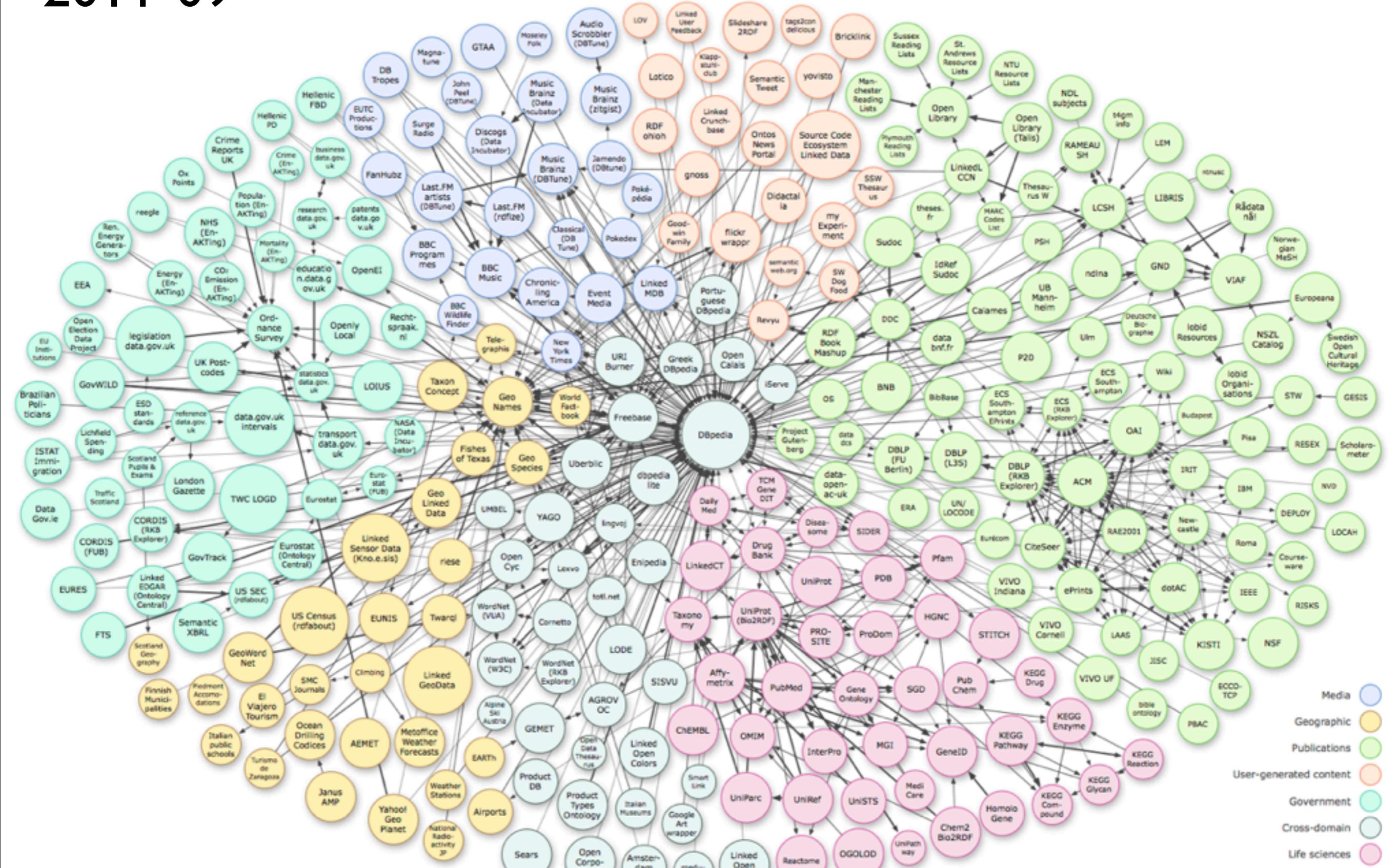
(each blob here is a **dataset**, not an entity described!)

**2009-03**



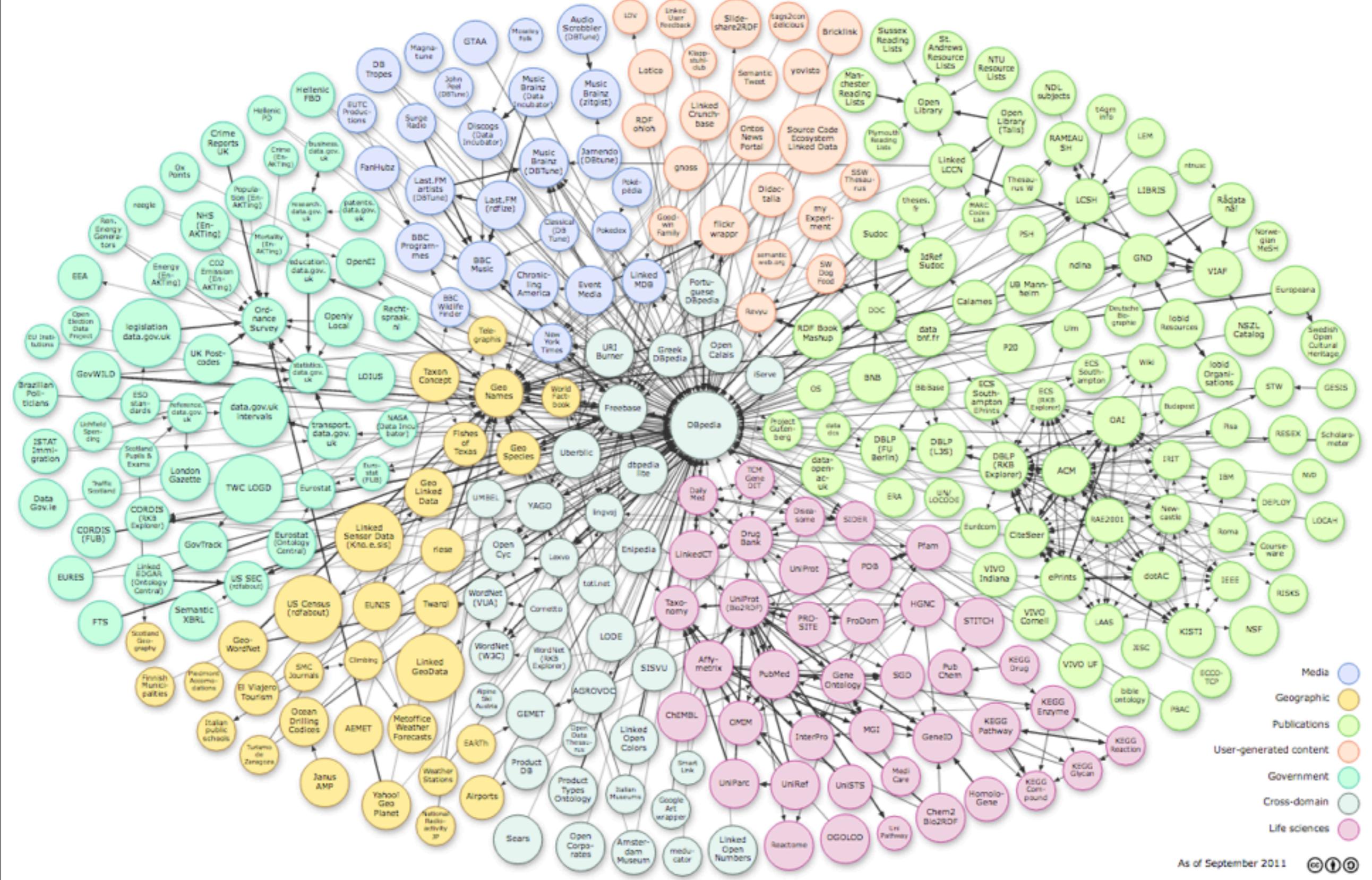
As of March 2009

2011-09



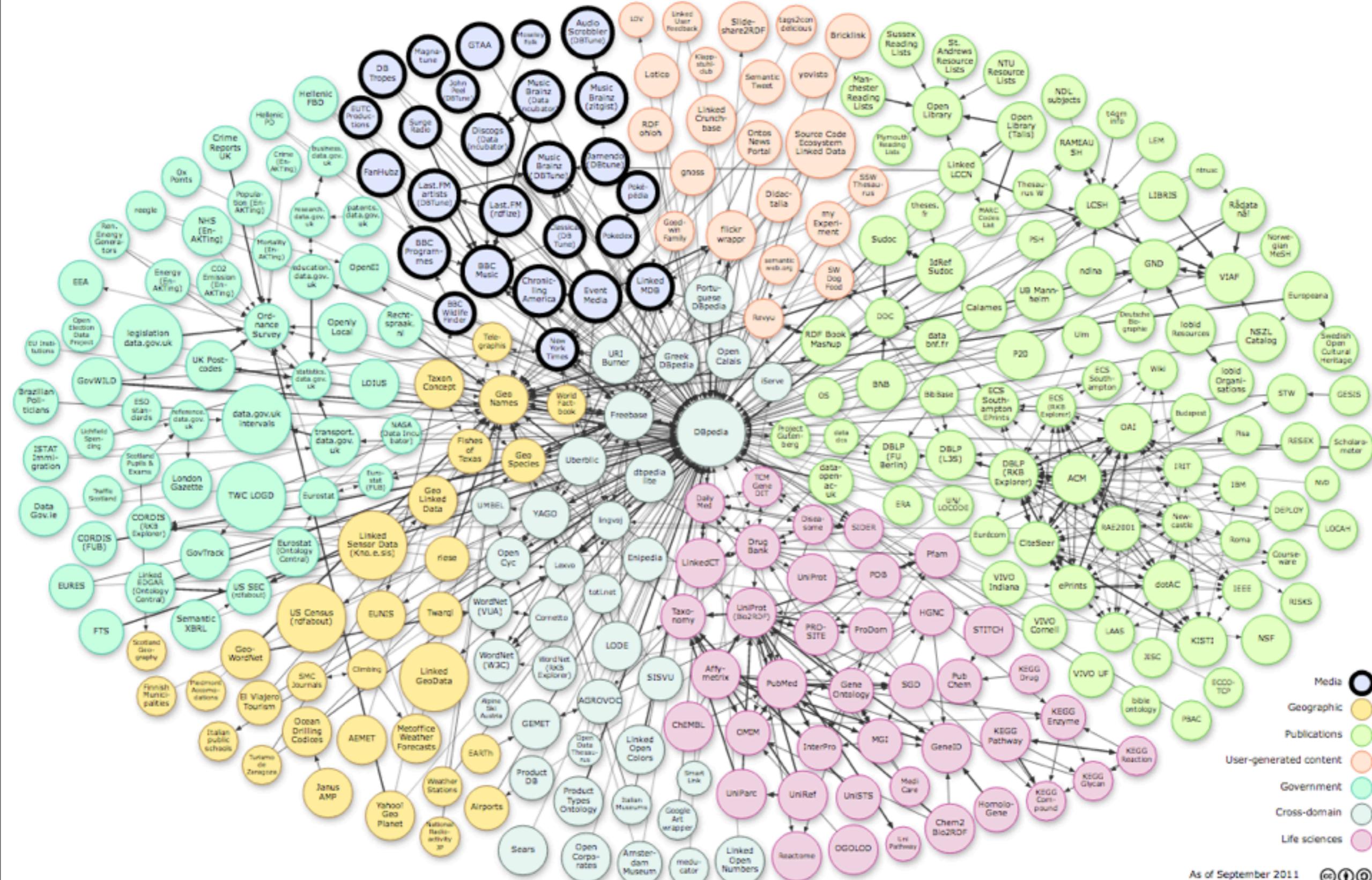
As of September 2011





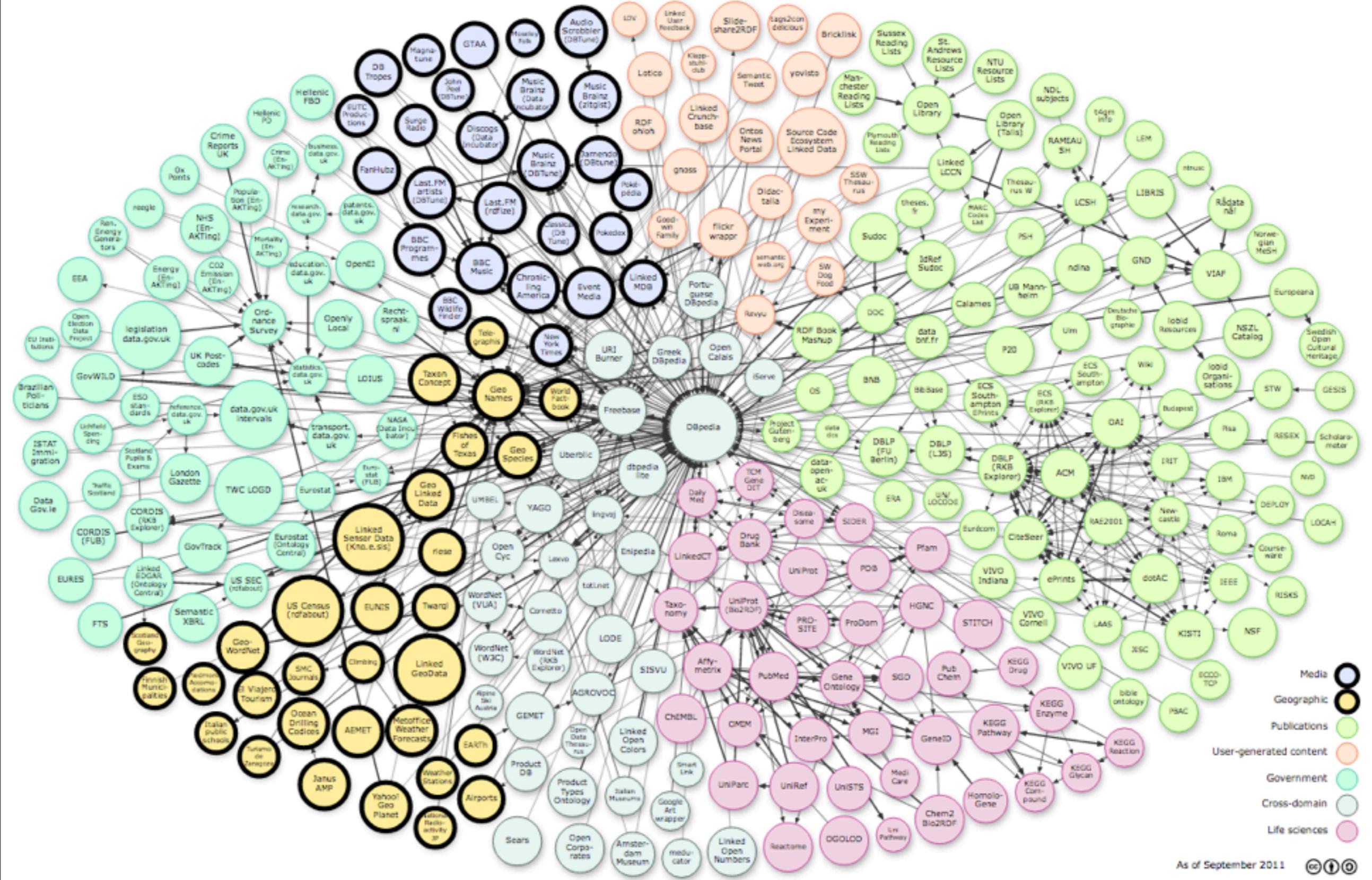
As of September 2011





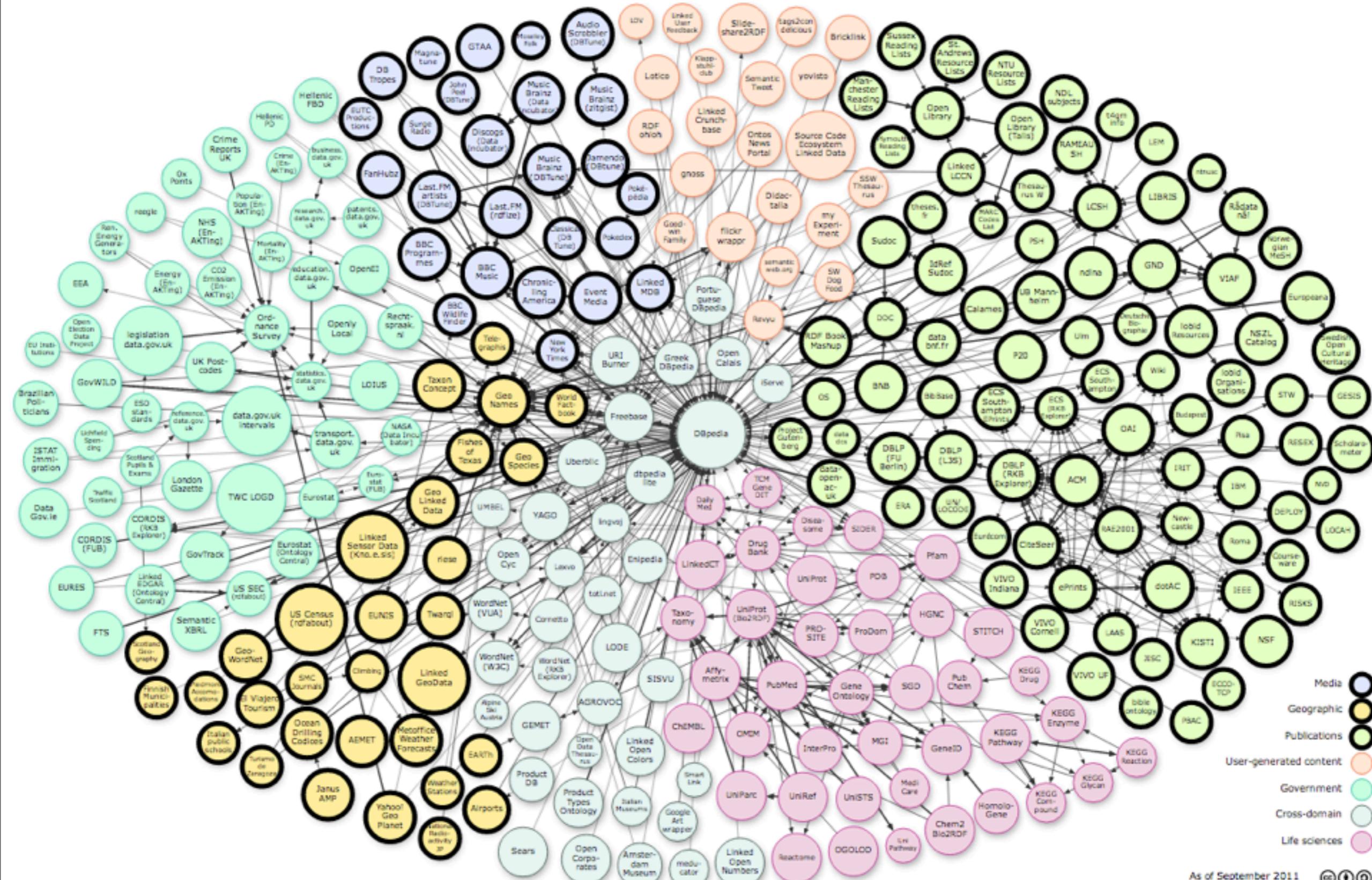
As of September 2011





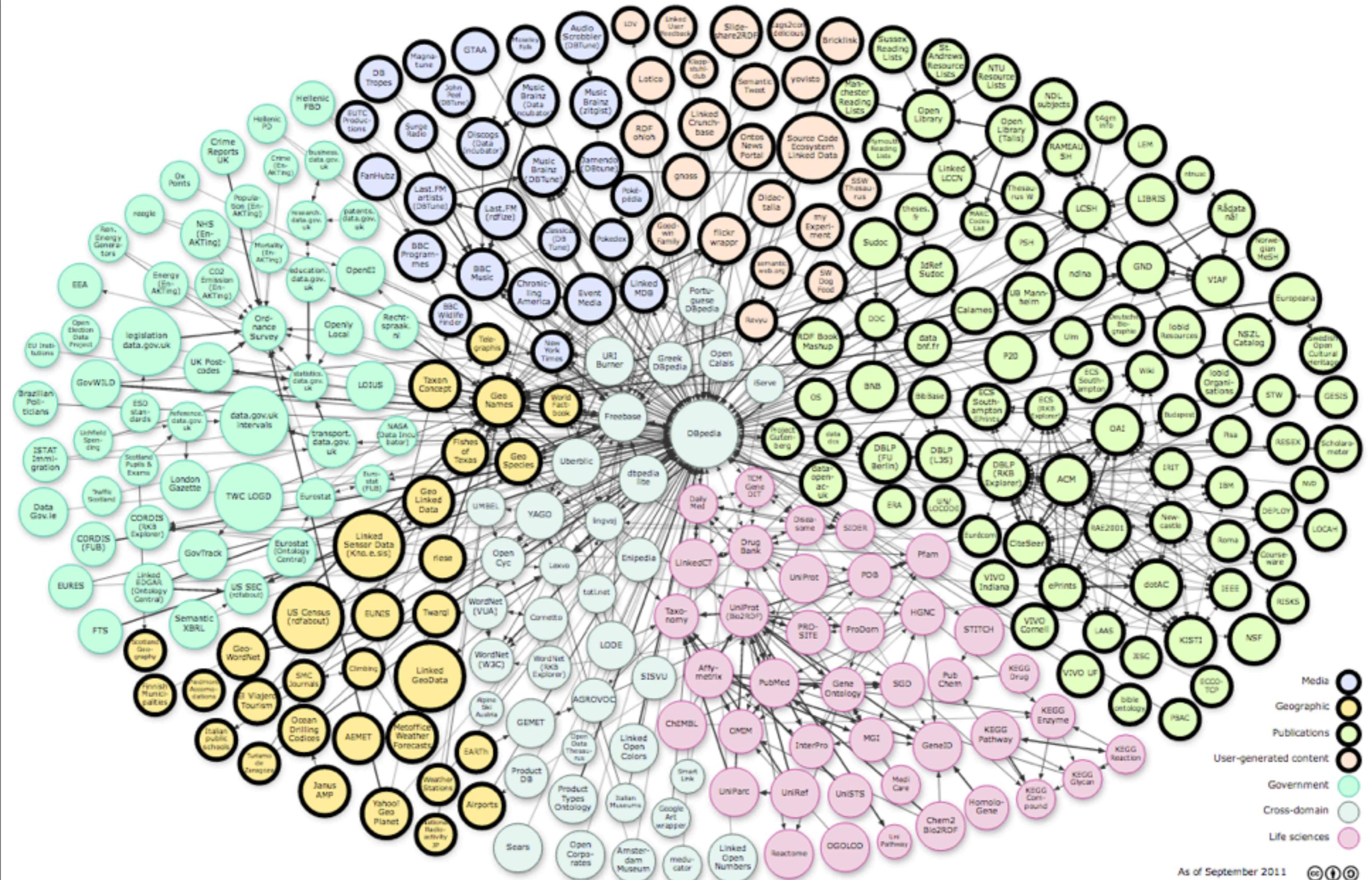
As of September 2011





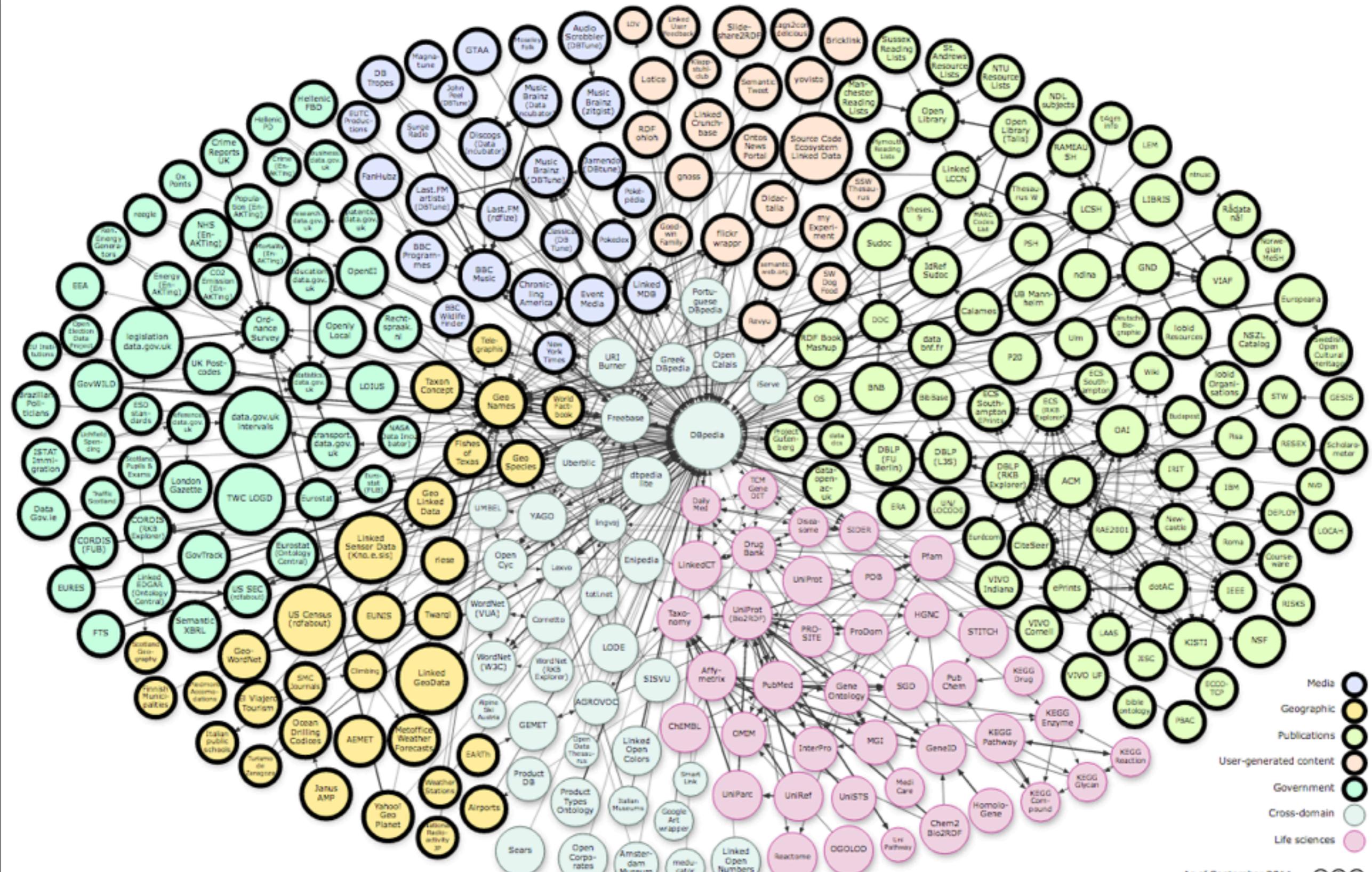
As of September 2011





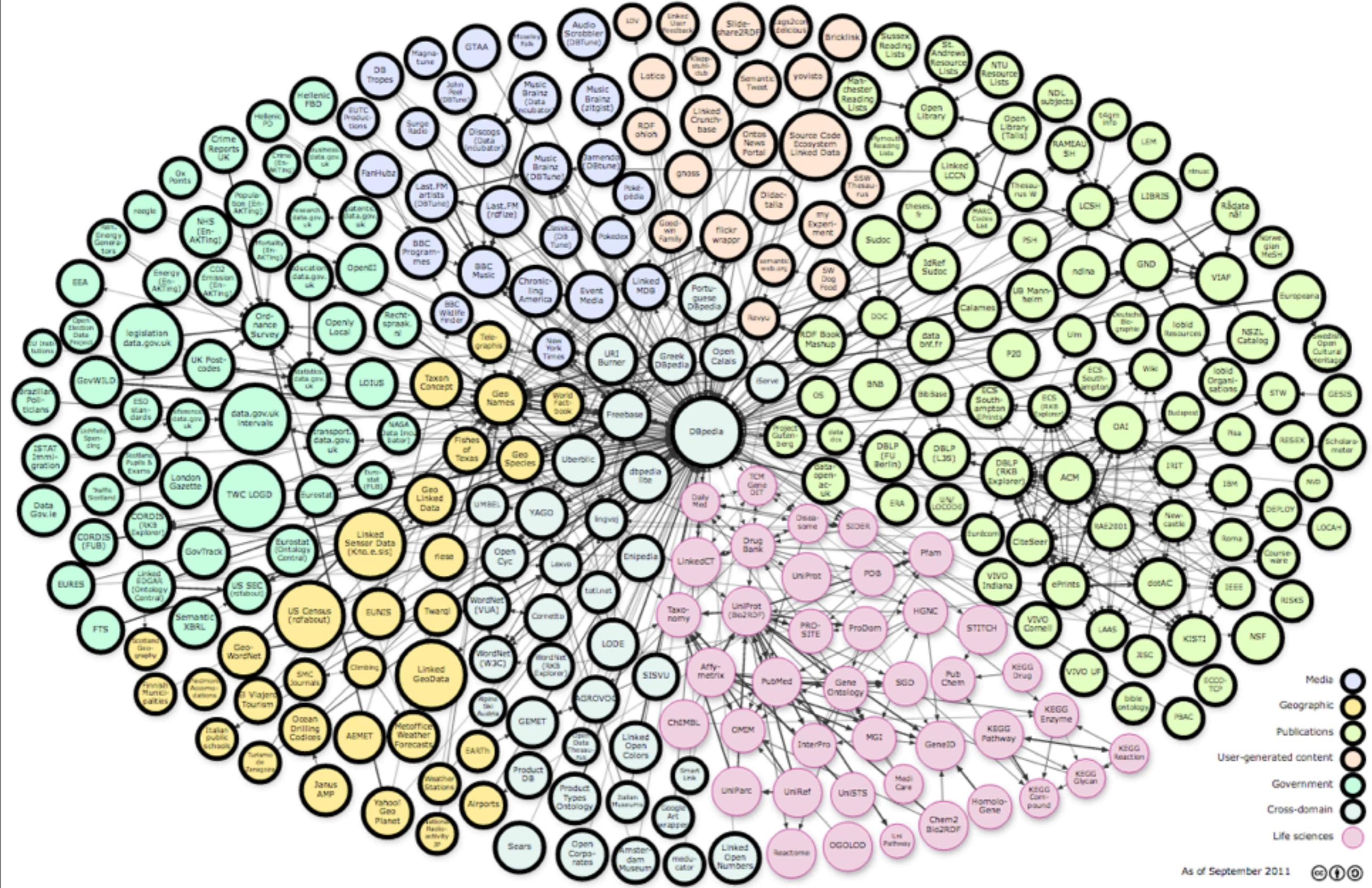
As of September 2011





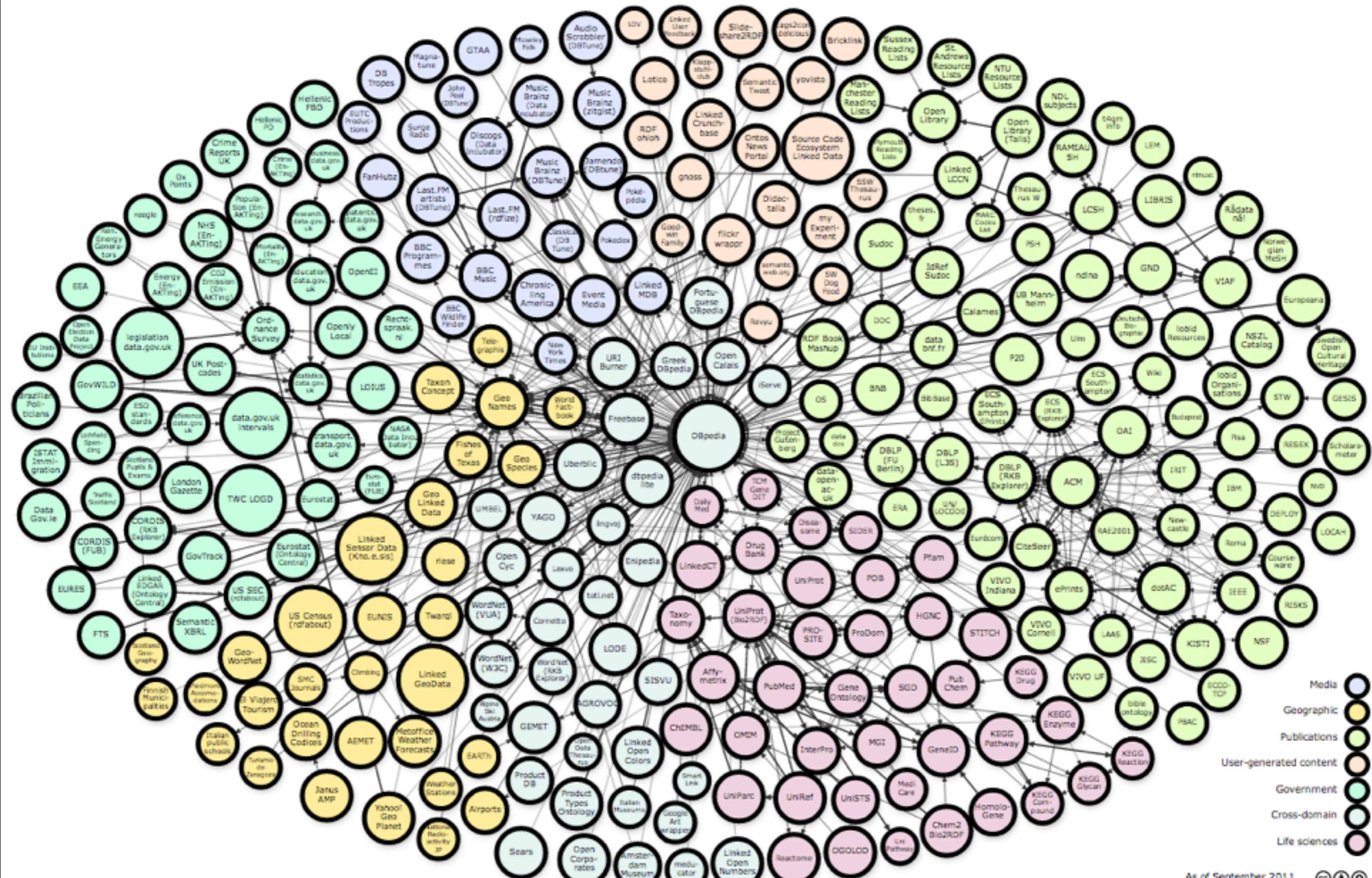
As of September 2011





As of September 2011





As of September 2011



# Deeper into LOD?

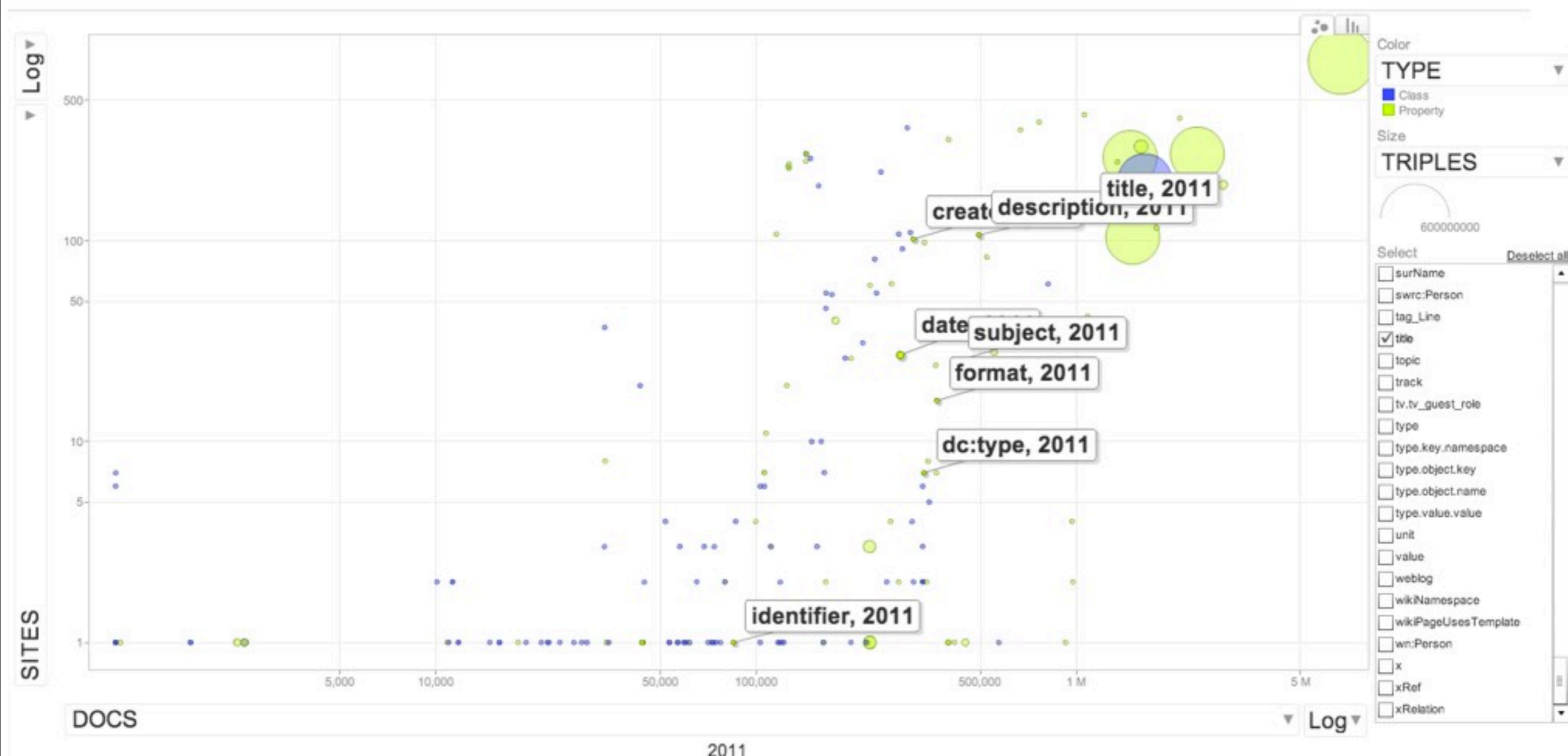
- Basic stats from Billion Triples Challenge  
(thanks to Aidan Hogan & others)
- What's out there? Which vocabularies?
- What should we count? Triples?  
Documents? Sites? *Which dataset?*
- *A billion triples was a lot in 2006; it is considered small now...*

## btc-classes-top100

File Edit View Insert Format Data Tools Help Last edit was made 104 days ago by danbri

Share

	A	B	C	D	E	F	G	H	I
24	<a href="http://xmlns.com/foaf/0.1/Person">http://xmlns.com/foaf/0.1/Person</a>	foaf:Person	2011	Class	365582231	362507081	1633433	199	3075150
25	<a href="http://purl.org/linked-data/cube#Observation">http://purl.org/linked-data/cube#Observation</a>	Observation	2011	Class	6757497	6757497	2522	1	0
26	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement">http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement</a>	Statement	2011	Class	3982203	887363	106026	6	3094840
27	<a href="http://purl.org/ontology/mo/MusicArtist">http://purl.org/ontology/mo/MusicArtist</a>	MusicArtist	2011	Class	3852011	309875	346728	5	3542136
28	<a href="http://creativecommons.org/ns#Work">http://creativecommons.org/ns#Work</a>	Work	2011	Class	2988051	262196	44651	2	2725855
29	<a href="http://xmlns.com/foaf/0.1/OnlineAccount">http://xmlns.com/foaf/0.1/OnlineAccount</a>	OnlineAccount	2011	Class	2774263	627155	143020	270	2147108
30	<a href="http://xmlns.com/foaf/0.1/PersonalProfileDocument">http://xmlns.com/foaf/0.1/PersonalProfileDocument</a>	PersonalProfileDocument	2011	Class	2439273	347750	296153	365	2091523
31	<a href="http://xmlns.com/foaf/0.1/Agent">http://xmlns.com/foaf/0.1/Agent</a>	Agent	2011	Class	2376072	204436	147592	257	2171636
32	<a href="http://www.w3.org/2002/07/owl#Class">http://www.w3.org/2002/07/owl#Class</a>	Class	2011	Class	1729265	255002	302701	110	1474263
33	<a href="http://xmlns.com/foaf/0.1/Image">http://xmlns.com/foaf/0.1/Image</a>	Image	2011	Class	1691676	876864	245131	220	814812
34	<a href="http://purl.org/dc/terms/IMT">http://purl.org/dc/terms/IMT</a>	IMT	2011	Class	1689347	1689347	330971	6	0
35	<a href="http://purl.org/vocab/frbr/core#Manifestation">http://purl.org/vocab/frbr/core#Manifestation</a>	Manifestation	2011	Class	1641925	1096149	330946	3	545776
36	<a href="http://www.metalex.eu/metalex/2008-05-02#BibliographicManifestation">http://www.metalex.eu/metalex/2008-05-02#BibliographicManifestation</a>	BibliographicManifestation	2011	Class	1641922	1096147	330943	2	545775
37	<a href="http://swrc.ontoware.org/ontology#Person">http://swrc.ontoware.org/ontology#Person</a>	swrc:Person	2011	Class	1518757	1518757	219742	1	0
38	<a href="http://scinets.org/item/cria1u1i">http://scinets.org/item/cria1u1i</a>	x	2011	Class	1370482	54067	28480	1	1316415
39	<a href="http://www.w3.org/2002/07/owl#DatatypeProperty">http://www.w3.org/2002/07/owl#DatatypeProperty</a>	DataTypeProperty	2011	Class	1349678	23888	234483	81	1325790
40	<a href="http://xmlns.com/foaf/0.1/Document">http://xmlns.com/foaf/0.1/Document</a>	Document	2011	Class	1301982	1252693	814800	61	49289
41	<a href="http://swrc.ontoware.org/ontology#Field">http://swrc.ontoware.org/ontology#Field</a>	Field	2011	Class	1128607	1128607	162139	1	0
42	<a href="http://www.w3.org/2002/07/owl#ObjectProperty">http://www.w3.org/2002/07/owl#ObjectProperty</a>	ObjectProperty	2011	Class	978704	35065	285412	91	943639
43	<a href="http://semantic-mediawiki.org/swivel/1.0#Subject">http://semantic-mediawiki.org/swivel/1.0#Subject</a>	Subject	2011	Class	879760	115848	189811	26	763912
44	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#Seq">http://www.w3.org/1999/02/22-rdf-syntax-ns#Seq</a>	Seq	2011	Class	766995	766770	237475	55	225
45	<a href="http://www.metalex.eu/metalex/2008-05-02#BibliographicExpression">http://www.metalex.eu/metalex/2008-05-02#BibliographicExpression</a>	BibliographicExpression	2011	Class	720555	584111	330943	2	136444
46	<a href="http://smw.ontoware.org/2005/smwf#Thing">http://smw.ontoware.org/2005/smwf#Thing</a>	Thing	2011	Class	700597	102467	79723	2	598130
47	<a href="http://purl.org/dc/dcmitype/Text">http://purl.org/dc/dcmitype/Text</a>	Text	2011	Class	603042	574210	149065	10	28832
48	<a href="http://rdf.freebase.com/ns/common.topic">http://rdf.freebase.com/ns/common.topic</a>	common.topic	2011	Class	577678	575217	572382	1	2461
49	<a href="http://www.w3.org/2002/07/owl#Thing">http://www.w3.org/2002/07/owl#Thing</a>	Thing	2011	Class	571069	557694	468386	31	13375
50	<a href="http://purl.org/rss/1.0/item">http://purl.org/rss/1.0/item</a>	item	2011	Class	554188	193829	164991	46	360359
51	<a href="http://www.w3.org/2004/02/skos/core#Concept">http://www.w3.org/2004/02/skos/core#Concept</a>	Concept	2011	Class	532754	297049	215252	31	235705
52	<a href="http://xmlns.com/wordnet/1.6/Person">http://xmlns.com/wordnet/1.6/Person</a>	wn:Person	2011	Class	515958	515958	636	7	0
53	<a href="http://xmlns.com/foaf/0.1/chatEvent">http://xmlns.com/foaf/0.1/chatEvent</a>	chatEvent	2011	Class	515958	515958	634	6	0
54	<a href="http://www.w3.org/2002/07/owl#Restriction">http://www.w3.org/2002/07/owl#Restriction</a>	Restriction	2011	Class	502193	502192	33595	37	1
55	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#Bag">http://www.w3.org/1999/02/22-rdf-syntax-ns#Bag</a>	Bag	2011	Class	499779	499774	163143	7	5
56	<a href="http://purl.org/vocab/frbr/core#Expression">http://purl.org/vocab/frbr/core#Expression</a>	Expression	2011	Class	492864	306061	330943	2	186803
57	<a href="http://www.w3.org/2002/07/owl#AnnotationProperty">http://www.w3.org/2002/07/owl#AnnotationProperty</a>	AnnotationProperty	2011	Class	376323	216	172290	54	376107
58	<a href="http://www.metalex.eu/metalex/2008-05-02#LegislativeModification">http://www.metalex.eu/metalex/2008-05-02#LegislativeModification</a>	LegislativeModification	2011	Class	310074	310074	11260	2	0
59	<a href="http://blogs.yandex.ru/schema/foaf/Posts">http://blogs.yandex.ru/schema/foaf/Posts</a>	Posts	2011	Class	309595	309595	309595	2	0
60	<a href="http://purl.org/ontology/mo/Track">http://purl.org/ontology/mo/Track</a>	Track	2011	Class	307435	306435	306436	4	1000
61	<a href="http://purl.org/ontology/mo/Performance">http://purl.org/ontology/mo/Performance</a>	Performance	2011	Class	287116	141131	110897	3	145985
62	<a href="http://www.w3.org/2002/07/owl#Ontology">http://www.w3.org/2002/07/owl#Ontology</a>	Ontology	2011	Class	278663	209181	278552	108	69482
63	<a href="http://swrc.ontoware.org/ontology#Article">http://swrc.ontoware.org/ontology#Article</a>	Article	2011	Class	267263	58019	118726	2	209244
64	<a href="http://swrc.ontoware.org/ontology#Organization">http://swrc.ontoware.org/ontology#Organization</a>	Organization	2011	Class	256035	256035	118148	1	0



For each term, how many sites? documents? triples?

See also <http://www.w3.org/2011/rdfa-context/rdfa-1.1>

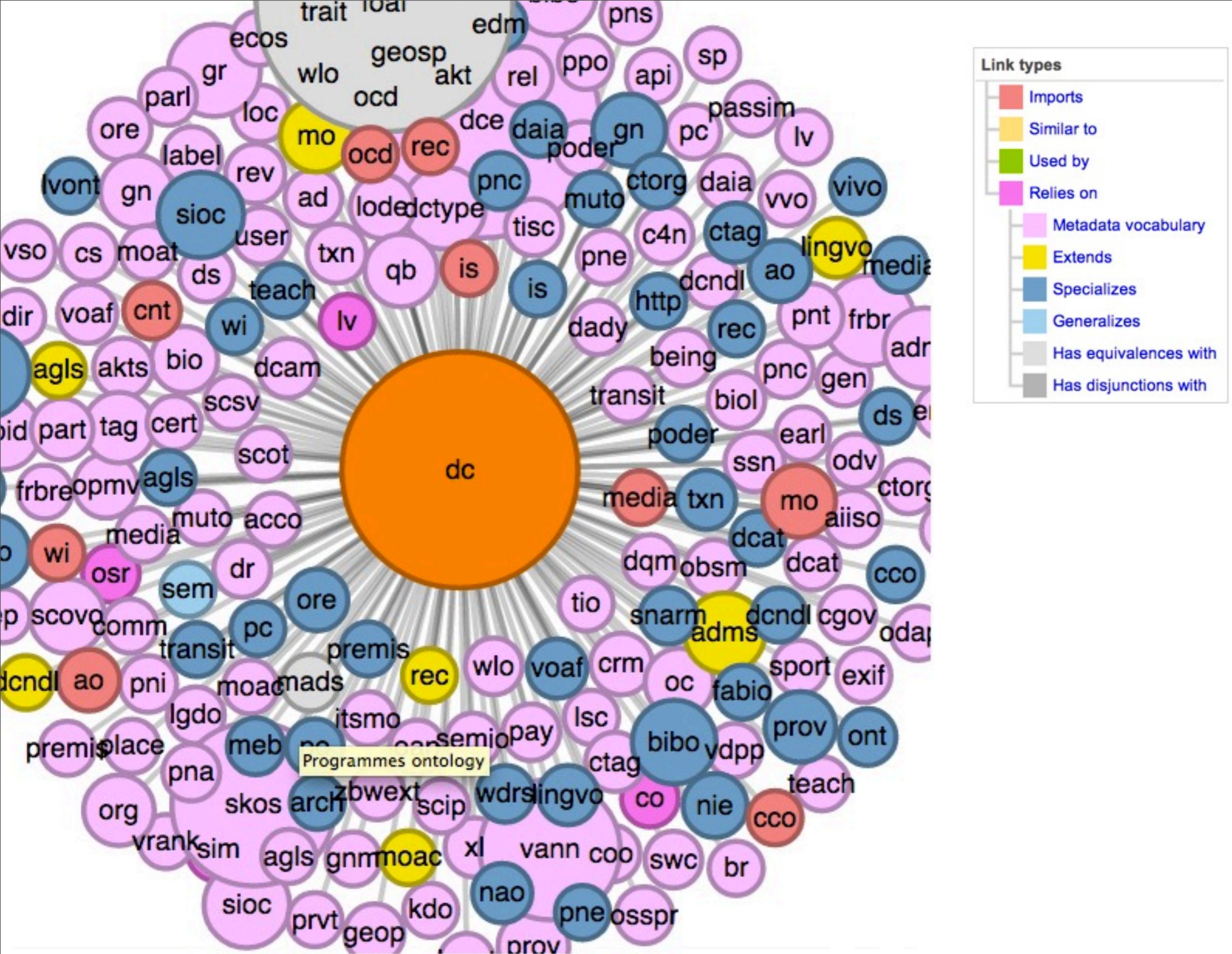


# Linked Open Vocab (LOV)

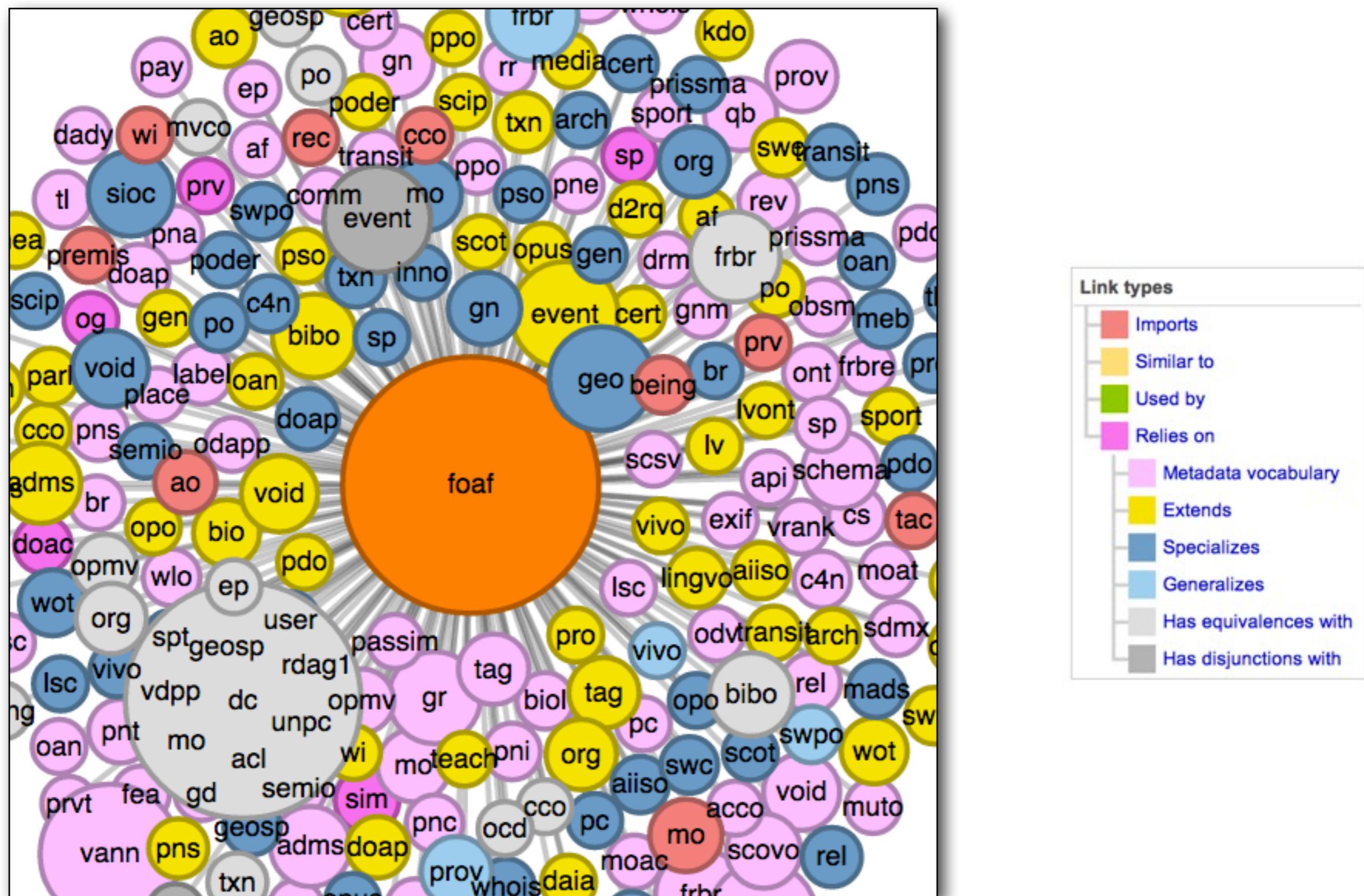
## Metadata:

Property	Value
is part of vocabulary space	All > General and Meta > Metadata
Vocabulary URI	<a href="http://purl.org/dc/terms/">http://purl.org/dc/terms/</a>
Prefix	dc
Namespace URI	<a href="http://purl.org/dc/terms/">http://purl.org/dc/terms/</a>
Description	an up-to-date specification of all metadata terms maintained by the Dublin Core Metadata Initiative, including properties, vocabulary encoding schemes, syntax encoding schemes, and classes. <a href="#">@en</a>
Last modified	2012-06-14
Language	English
Creator	Dublin Core Metadata Initiative
Publisher	Dublin Core Metadata Initiative
Class number	22
Property number	55
Homepage	<a href="http://dublincore.org/documents/dcmi-terms">http://dublincore.org/documents/dcmi-terms</a>
See also	<a href="http://stats.lod2.eu/vocabularies/9">http://stats.lod2.eu/vocabularies/9</a>
Represented by	format-dcterms
Has review	(2011-10-27) <a href="#">Pierre-Yves Vandenbussche</a> : "dc" is the new prefix for the <a href="http://purl.org/dc/terms/">http://purl.org/dc/terms/</a> namespace URI. See <a href="http://bit.ly/uPuUTT">http://bit.ly/uPuUTT</a>

[http://lov.okfn.org/dataset/lov/details/vocabulary\\_dc.html](http://lov.okfn.org/dataset/lov/details/vocabulary_dc.html)



# Or FOAF...



# What's out there?

- Growing by the day...
  - Linked Data sites; e-gov datasets, cultural heritage, public sector collections
  - Typically using several independent RDF vocabularies
- Alongside schema.org, growing very fast
- How can we track the metadata landscape?

# What's left to do?

- If this is where we are today, what could / should / might *Dublin Core* become?
- Where can we be most useful? What might we do better than anyone else?

# "The Intended Niche"

- DC '95, between Web indexes and libraries
  - This was the right territory
  - It was a long wait! But we kept busy.
  - Libraries today are looking to Linked Data and RDF
  - Mainstream search has also turned to RDF and structured data

# Our Niche?

- The DC community has a special link to digital (and 'classic') libraries; to public sector datasets; to cultural heritage, to museums, to e-govt and to controlled vocabularies.
- We should build on this!

# Vocabularies

- Mapping them; preserving them!
- Documenting what's out there, and what's being used, in several ways:
  - data-driven: stats and analysis over LOD
  - community driven: conferences, workshops, events
  - format driven: application profiles

# Education

- Many in the DC world are educators
- Close links to library and information science schools (e.g. iSchools), universities
- Professional education and outreach to webmasters and publishers - common shared core of 'structured data' skills

# Technology

- We are a great technology *customer*; we are less well placed to create new core technologies.
- Links with W3C have paid off well: RDF, RDFa, SKOS and the Linked Library work
- App Profiles tech work, perhaps also W3C?  
e.g. <<http://www.w3.org/Submission/spin-overview/>>

# Bibliographic data?

- Our core business, even if "The Dublin Core" is not the One True Answer for all applications.
- Library world is moving into the Web - various "Life after MARC" initiatives to modernise cataloguing and open up data.
- Huge opportunities around controlled vocabularies - classification, thesauri, people/places/things.

# DC 2012 Work streams

- A good fit -
  - Vocabulary preservation (FOAF/DCMI)
  - Vocabulary mapping (Schema/DC)
  - Patterns (Abstract Model)
- Possible new work: bibliographic metadata revisited?

# Closing thoughts

- DC is 'in the middle' in many ways
  - DC never forgot the value of RDF *as metadata*; the value of books, articles, videos alongside triples and raw facts.
  - DC championed simple Web metadata for discovery for 15 years, and is now perfectly placed to help libraries and search biblio vocabularies interoperate

# Core of Dublin Core?

- DCMI can, should, and will rediscover itself as a community for metadata collaboration.
- This is reflected in data (collaborating vocabularies), individually (people bridging organizations), and organizationally (joint events and projects with other initiatives).

# So - what's left to do?

- Take the original vision into the mainstream
- Get back in touch with that '90s sense of a *shared mission* to improve the Web
- Keep mapping the metadata landscape, keep learning, and keep teaching...



# Questions?