



Semantic Web Adoption and Applications

Ivan Herman, W3C

(Last update: 5 December 2008)

Significant buzz...

- There is quite a buzz around “Semantics”, “Semantic Technologies”, “Semantic Web”, “Web 3.0”, “Data Web”, etc, these days
- New applications, companies, tools, etc, come to the fore frequently

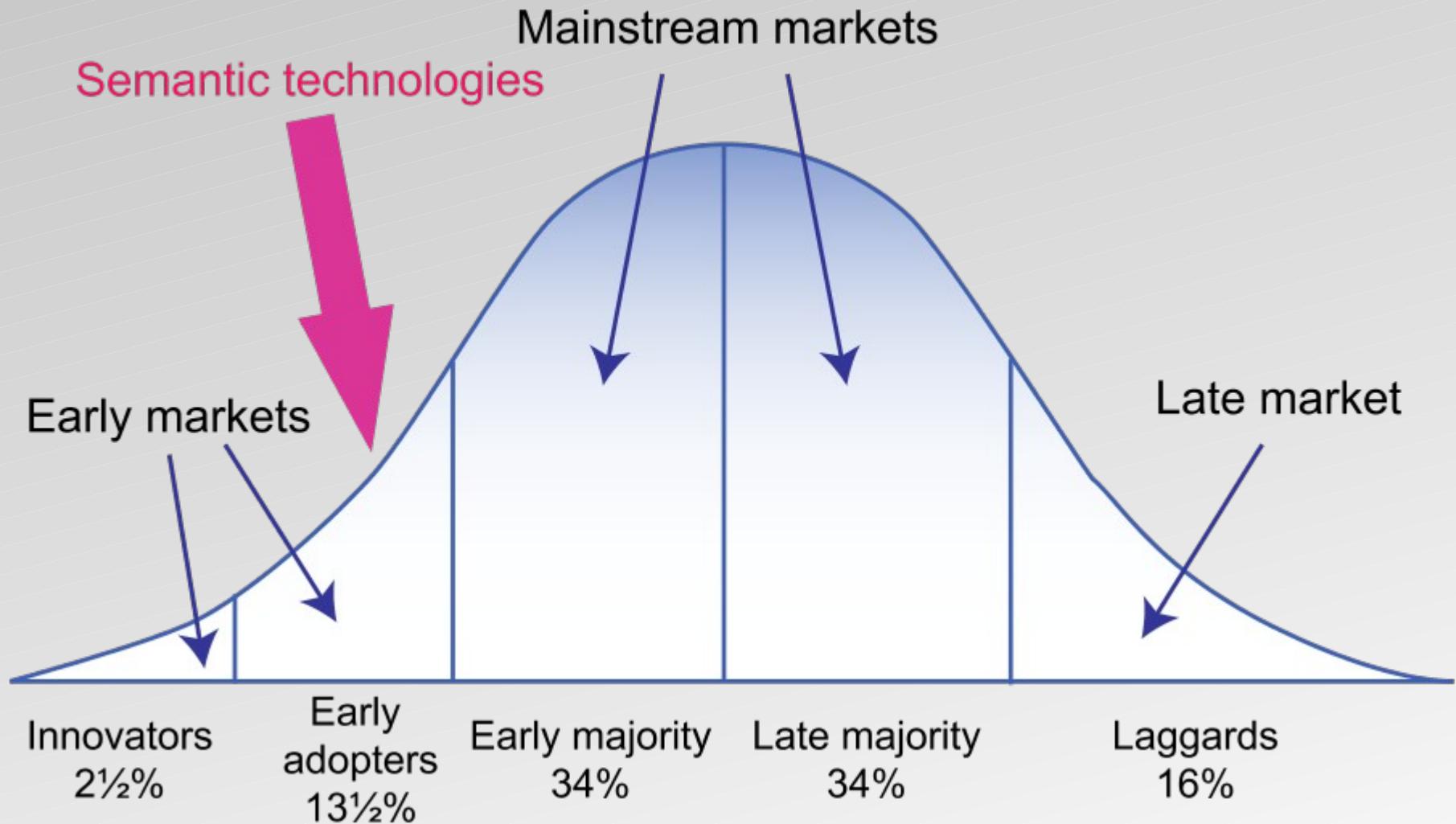
Significant buzz...

- It is, of course, not always clear what these terms all mean:
 - “Semantic Web” is a way to specify data and data relationships; it is also a collection of specific technologies (RDF, OWL, GRDDL, SPARQL, ...)
 - “Semantic Technologies”, “Web 3.0” often mean more, including intelligent agents, usage of complex logical procedures, etc

Significant buzz... (cont.)

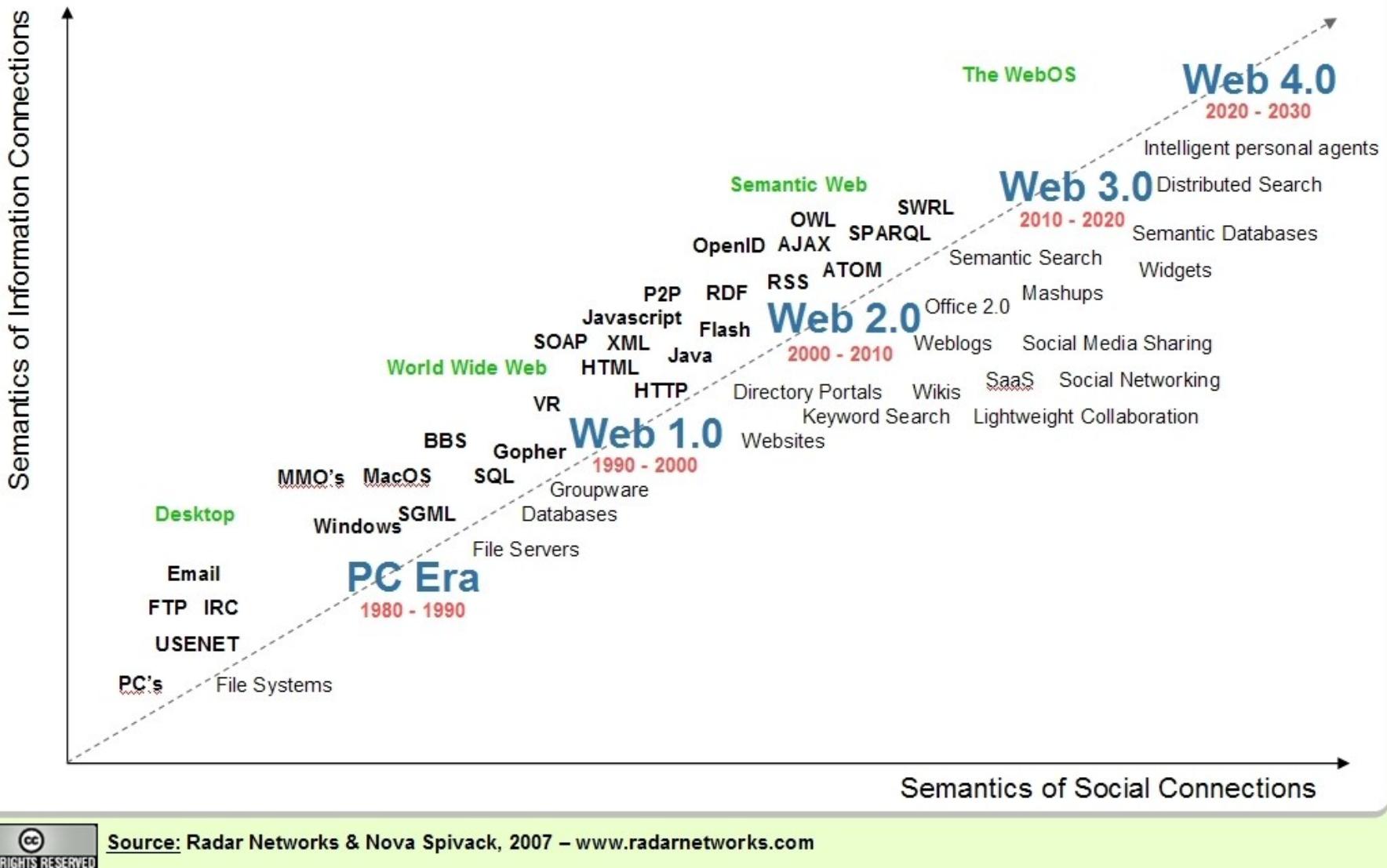
- Predicting the exact evolution in terms of Web 3.0, Web 4.0, etc, is a bit as looking into a crystal ball
- But the *Semantic Web technologies are already here, are used and deployed*
- They are at the basis of further evolution

Technology adoption life cycle



© Chasm Group (adapted)

A vision on the evolution...



(this Web 3.0 is not identical to the “journalistic” Web3.0; merely timing)

The 2007 Gartner predictions

During the next 10 years, Web-based technologies will improve the ability to embed semantic structures [... it] will occur in multiple evolutionary steps...

By 2017, we expect the vision of the Semantic Web [...] to coalesce [...] and the **majority of Web pages are decorated with some form of semantic hypertext.**

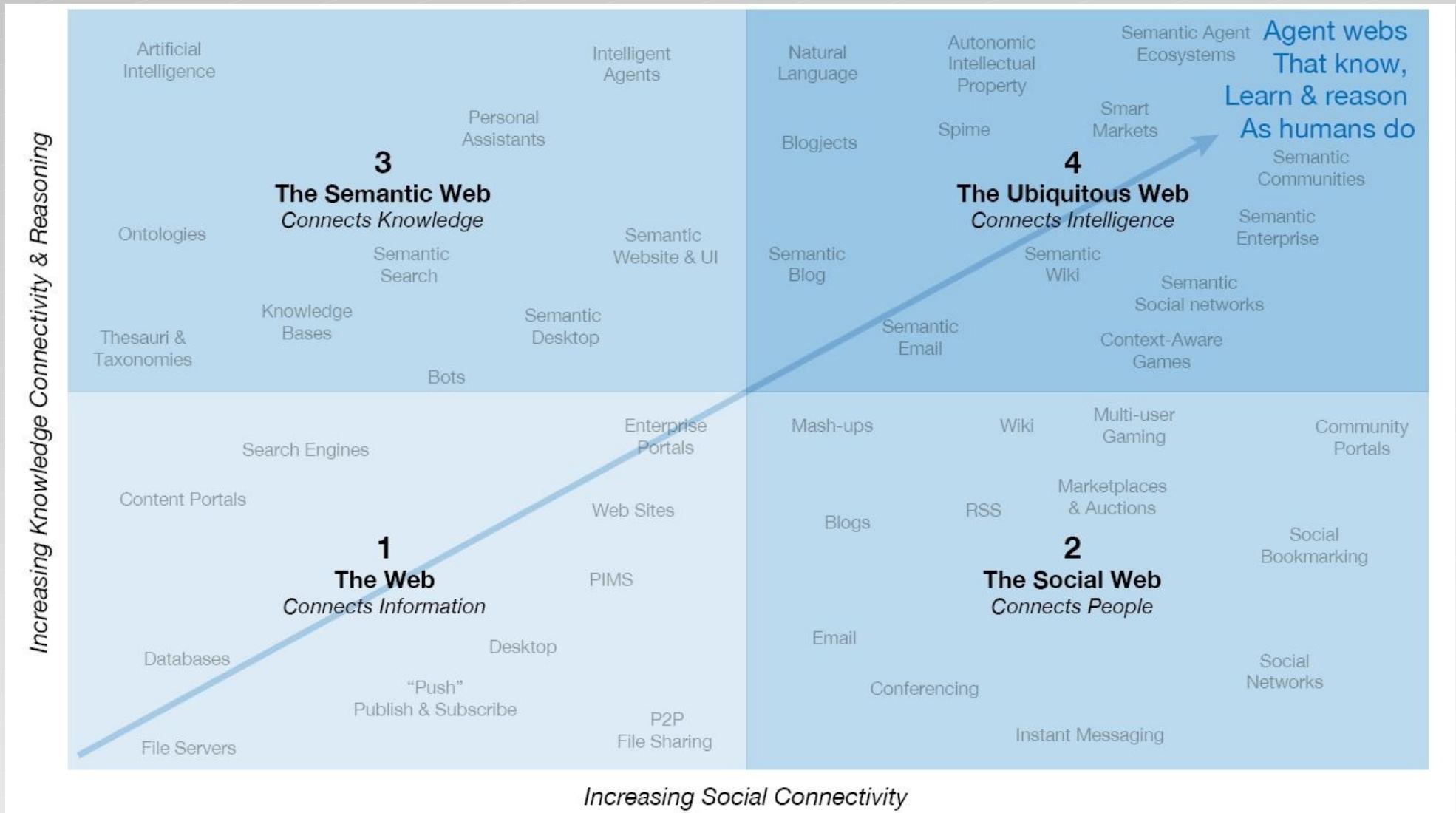
By **2012, 80% of public Web sites will use some level of semantic hypertext to create SW documents [...] 15% of public Web sites will use more extensive Semantic Web-based ontologies to create semantic databases**

(note: “semantic hypertext” refers to, eg, RDFa, microformats with possible GRDDL, etc.)

Source: “*Finding and Exploiting Value in Semantic Web Technologies on the Web*”, Gartner Research Report, May 2007

Another longer term vision...

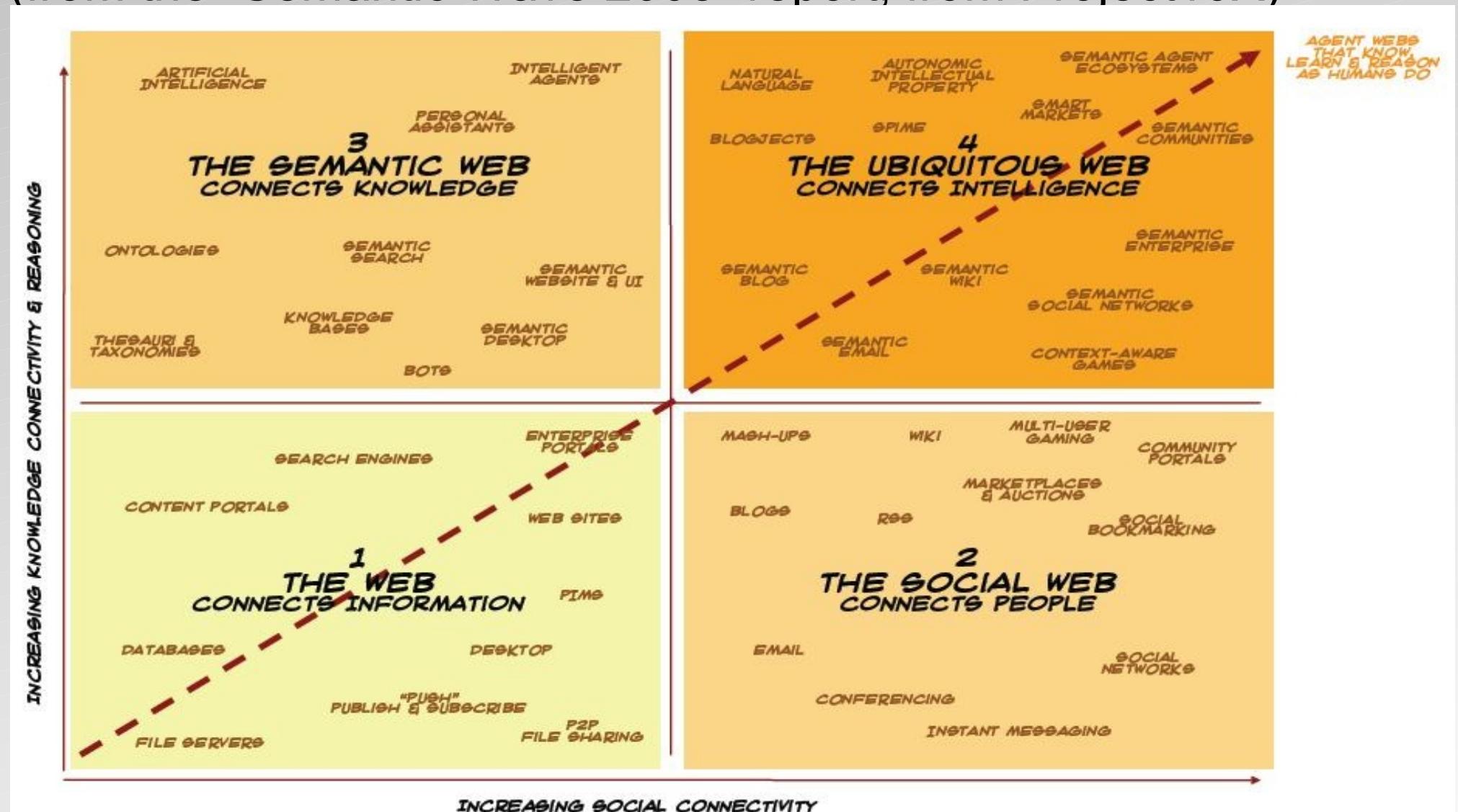
(from the “Semantic Wave 2008” report, from Project10X)



Courtesy of Mills Davis, Project10X; source: Nova Spivack, Radar Networks and John Breslin, DERTI

Another longer term vision...

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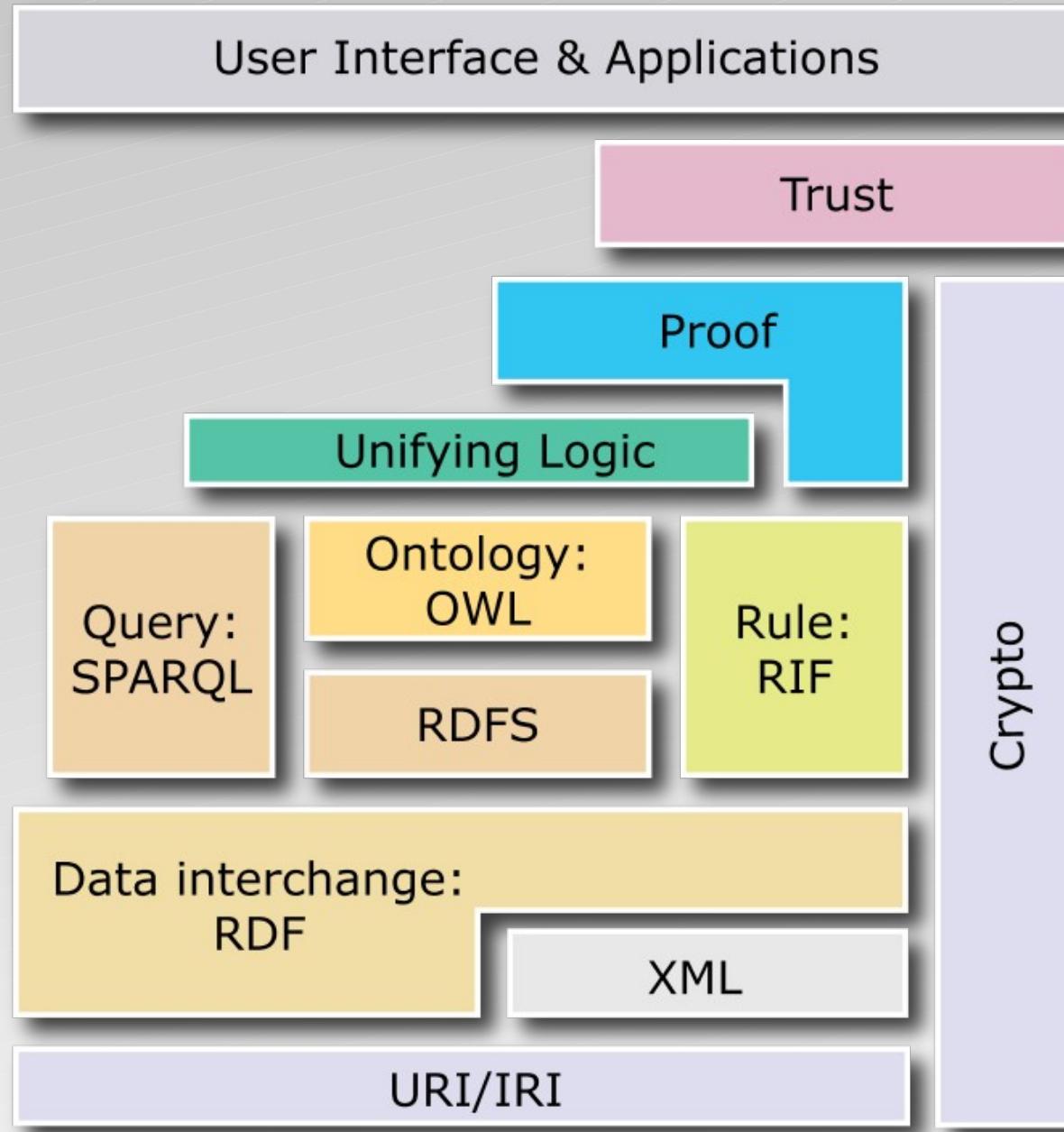


Courtesy of Mills Davis, Project10X; source: Nova Spivack, Radar Networks and John Breslin, DERTI

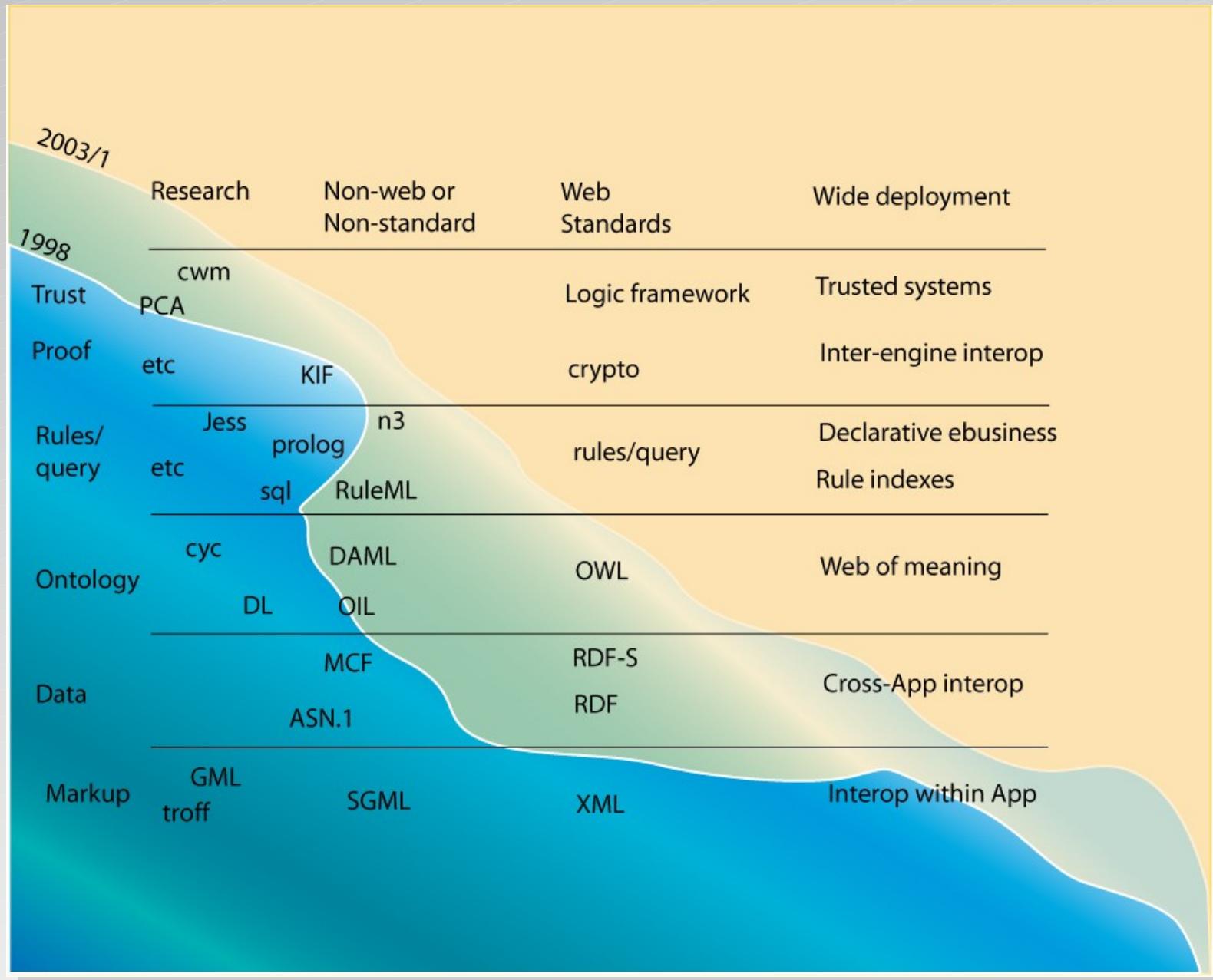
Let us keep to the Semantic Web for now...

- In what follows we will restrict ourselves to the Semantic Web
 - a way to specify data and data relationships
 - allows data to be shared and reused across application, enterprise, and community boundaries
 - emphasis on the *Web* aspect:
 - scale, inherent lack of knowledge, possible inconsistencies
 - possibility to combine everything that can be identified via a URI
 - a collection of fundamental technologies (RDF/S, OWL, GRDDL, SPARQL, ...)

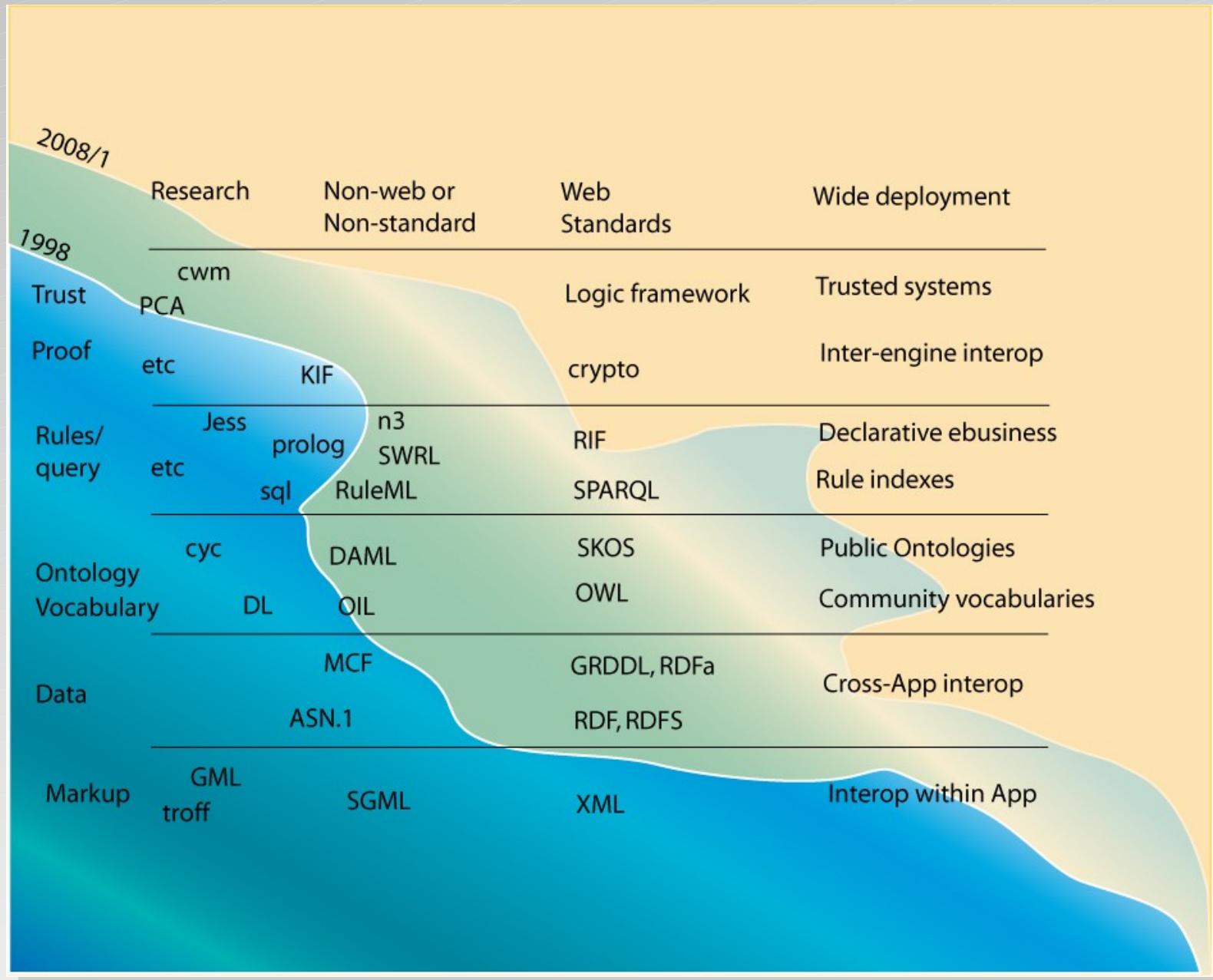
The (latest) Semantic Web Stack...



Tim Berners-Lee's Semantic Wave (2003)



Tim Berners-Lee's Semantic Wave (2008)



The “corporate” landscape is moving

- Major companies offer (or will offer) Semantic Web tools or systems using Semantic Web: Adobe, Oracle, IBM, HP, Software AG, GE, Northrop Grumman, Altova, Microsoft, Dow Jones, ...
- Others are using it (or consider using it) as part of their own operations: Novartis, Pfizer, Telefónica, ...
- Some of the names of active participants in W3C SW related groups: ILOG, HP, Agfa, SRI International, Fair Isaac Corp., Oracle, Boeing, IBM, Chevron, Siemens, Nokia, Pfizer, Sun, Eli Lilly, ...

Lots of Tools (*not* an exhaustive list!)

- Categories:

- Triple Stores
- Inference engines
- Converters
- Search engines
- Middleware
- CMS
- Semantic Web browsers
- Development environments
- Semantic Wikis
- ...

- Some names:

- Jena, AllegroGraph, Mulgara, Sesame, flickurl, ...
- TopBraid Suite, Virtuoso environment, Falcon, Drupal 7, Redland, Pellet, ...
- Disco, Oracle 11g, RacerPro, IODT, Ontobroker, OWLIM, Tallis Platform, ...
- RDF Gateway, RDFLib, Open Anzo, DartGrid, Zitgist, Ontotext, Protégé, ...
- Thetus publisher, SemanticWorks, SWI-Prolog, RDFStore...
- ...

May start with specific communities

- The needs of a deployment application area:
 - have serious problem or opportunity
 - have the intellectual interest to pick up new things
 - have motivation to fix the problem
 - its data connects to other application areas
 - have an influence as a showcase for others
- The high energy physics community played this role for the Web in the 90's

Some deployment communities

- Major communities pick the technology up: digital libraries, defence, eGovernment, energy sector, financial services, health care, oil and gas industry, life sciences ...
 - Health care and life science sector is now very active
 - also at W3C, in the form of an Interest Group
- Semantic Web also appear in the “Web 2.0/Web 3.0” applications (whatever that means 😊)
 - exchange of social data
 - personal “space” applications
 - dynamic Web site backends
 - multimedia asset management
 - etc

SWEO enterprise survey

- W3C's SW Education and Outreach Interest Group ("SWEO") conducted a survey in January 2007
- Around 50 responses from 10 countries
- Issues revealed
 - lack of general application examples (although this is improving now)
 - lack of available expertise, skill
 - education has a huge role to play

W3C SWEO's use case collection

- SWEO is actively collecting SW use cases and case studies
 - use case: prototype applications within the enterprise
 - case study: deployed applications, either in an enterprise, community, governmental, etc sites

SWEO's use case collection

- At present there are
 - 20 case studies and 11 use cases (August 2008)
 - from 12 different countries around the globe
 - activity areas of submitters include: automotive, broadcasting, financial institution, health care, oil & gas industry, pharmaceutical, public and governmental institutions, publishing, telecommunications, ...
 - usage areas include: data integration, portals with improved local search, business organization, B2B integration, ...
- Remember this URI:

<http://www.w3.org/2001/sw/UseCases/>

So how do applications look like?

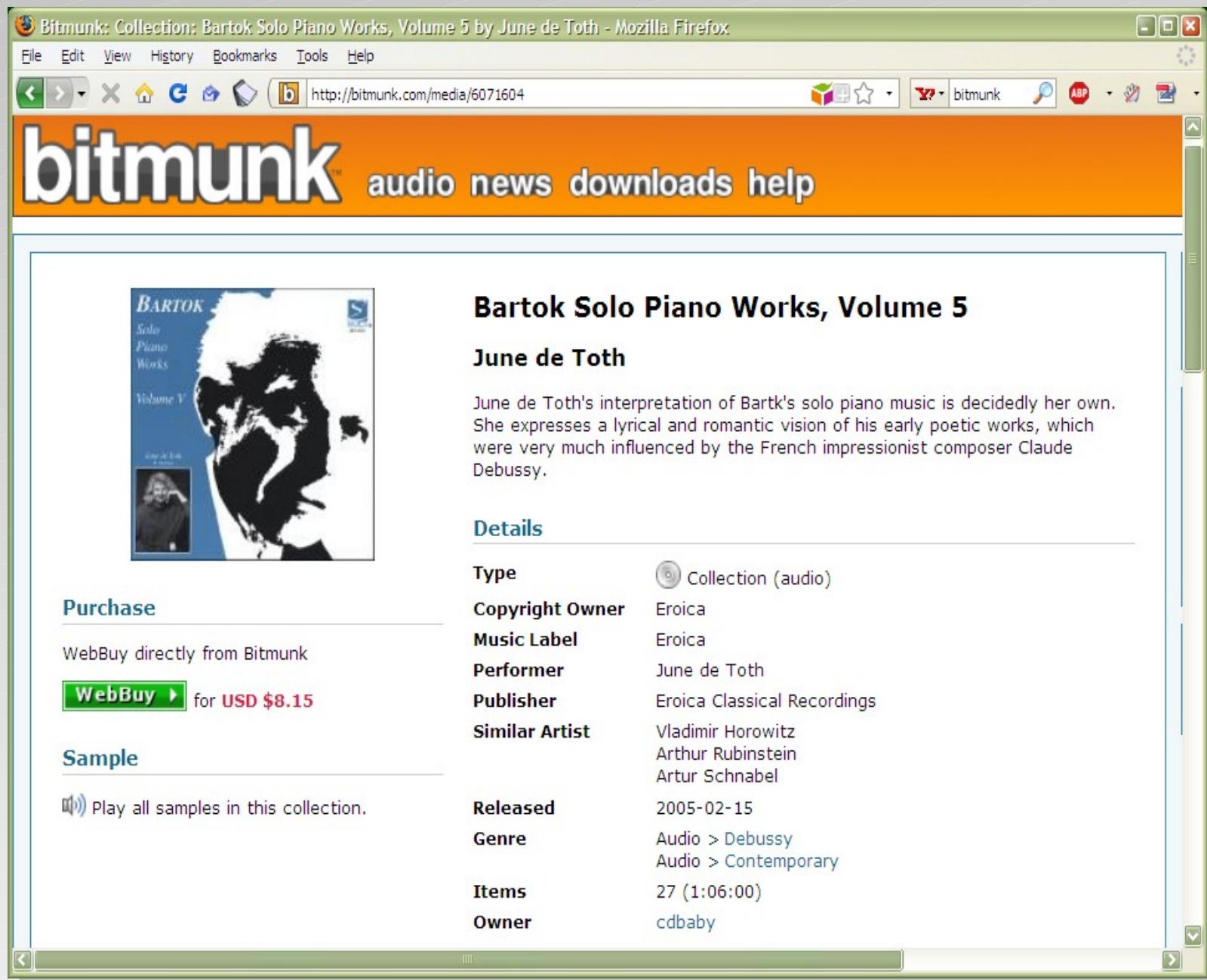
Application patterns

- It is fairly difficult to “categorize” applications (there are always overlaps)
- With this caveat, some of the application patterns:
 - data integration (ie, integrating data from major databases)
 - intelligent (specialized) Web sites (portals) with improved local search based on vocabularies and ontologies
 - content and knowledge organization
 - knowledge representation, decision support
 - X2X integration (often combined with Web Services)
 - data registries, repositories
 - collaboration tools (eg, social network applications)

Applications are not always very complex...

- Eg: simple semantic annotations of data provides easy integration (eg, with MusicBrainz, Wikipedia, geographic data sets, etc)
- What is needed: some simple vocabularies, simple annotation
 - annotation can be generated by a server automatically, or
 - added by the user via some user interface
- This extra data can be in some microformats, in RDFa, ...

A typical RDFa usage...

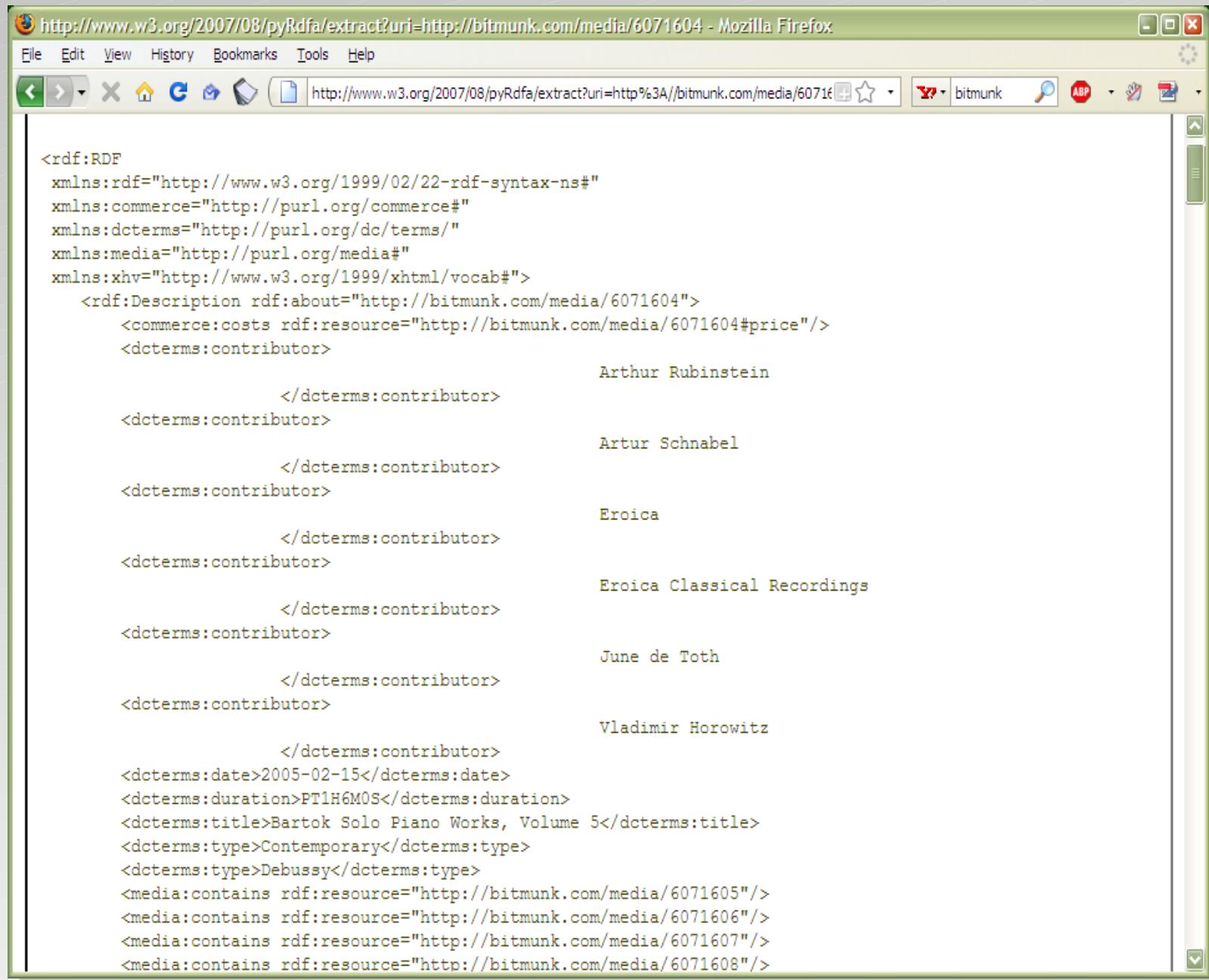


The screenshot shows a Mozilla Firefox browser window with the following details:

- Title Bar:** Bitmunk: Collection: Bartok Solo Piano Works, Volume 5 by June de Toth - Mozilla Firefox
- Menu Bar:** File, Edit, View, History, Bookmarks, Tools, Help
- Toolbar:** Back, Forward, Stop, Home, Refresh, Bookmarks, Address Bar (http://bitmunk.com/media/6071604), Bitmunk logo, ABP, and other icons.
- Header:** bitmunk audio news downloads help
- Content Area:**
 - Image:** Cover art for "BARTOK Solo Piano Works Volume V" by June de Toth.
 - Section:** Purchase
 - Text:** WebBuy directly from Bitmunk
 - Button:** WebBuy for USD \$8.15
 - Section:** Sample
 - Text:** Play all samples in this collection.
 - Section:** Details
 - Table:** RDFa data extracted from the page

Type	Collection (audio)
Copyright Owner	Eroica
Music Label	Eroica
Performer	June de Toth
Publisher	Eroica Classical Recordings
Similar Artist	Vladimir Horowitz Arthur Rubinstein Artur Schnabel
Released	2005-02-15
Genre	Audio > Debussy Audio > Contemporary
Items	27 (1:06:00)
Owner	cdbaby

A typical RDFa usage...



The screenshot shows a Mozilla Firefox browser window with the URL <http://www.w3.org/2007/08/pyRdfa/extract?uri=http://bitmunk.com/media/6071604> in the address bar. The page content displays RDFa code extracted from the specified URL. The code is color-coded to highlight different namespaces: `http://www.w3.org/1999/02/22-rdf-syntax-ns#` (blue), `http://purl.org/commerce#` (orange), `http://purl.org/dc/terms/` (green), `http://purl.org/media#` (red), and `http://www.w3.org/1999/xhtml/vocab#` (purple). The extracted data includes the following triples:

- `<http://bitmunk.com/media/6071604> http://purl.org/commerce/costs <http://bitmunk.com/media/6071604#price>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/contributor <http://bitmunk.com/media/6071604#Arthur_Rubinstein>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/contributor <http://bitmunk.com/media/6071604#Artur_Schnabel>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/contributor <http://bitmunk.com/media/6071604#Eroica>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/contributor <http://bitmunk.com/media/6071604#Eroica_Classical_Recordings>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/contributor <http://bitmunk.com/media/6071604#June_de_Toth>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/contributor <http://bitmunk.com/media/6071604#Vladimir_Horowitz>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/date <http://bitmunk.com/media/6071604#2005-02-15>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/duration <http://bitmunk.com/media/6071604#PT1H6M0S>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/title <http://bitmunk.com/media/6071604#Bartok_Solo_Piano_Works,_Volume_5>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/type <http://bitmunk.com/media/6071604#Contemporary>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/dc/terms/type <http://bitmunk.com/media/6071604#Debussy>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/media/contains <http://bitmunk.com/media/6071605>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/media/contains <http://bitmunk.com/media/6071606>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/media/contains <http://bitmunk.com/media/6071607>.`
- `<http://bitmunk.com/media/6071604> http://purl.org/media/contains <http://bitmunk.com/media/6071608>.`

Another relatively simple application

- Goal: reuse of older experimental data
- Keep data in databases or XML, just export key “fact” as RDF
- Use a faceted browser to visualize and interact with the result

Internal Compound Repurposing Example

Welcome, Allergy & Respiratory Team Member

This tool allows you to identify opportunities for additional uses of compounds from other teams within your project. It combines internal data, public data and the results of data mining experiments to provide testable hypotheses.

Control Panel & Item Filtering

Area	5: Approach	3: Term+Reason	1: Max_Stage_Reached	1: Literature Links
29 Pain	<input checked="" type="checkbox"/> 7: Antibody	<input type="checkbox"/> 37 ACTIVE	<input type="checkbox"/> 51 Candidate	<input checked="" type="checkbox"/> 0 - 50
16 Metabolic Disease	<input checked="" type="checkbox"/> 1: Recombinant	<input type="checkbox"/> 12 BIOMARKER	<input type="checkbox"/> 10 Discovery	<input type="checkbox"/>
3: Cancer	<input type="checkbox"/> 18 SM_Agonist	<input checked="" type="checkbox"/> 51 EFFICACY	<input checked="" type="checkbox"/> 41 Exploratory	<input type="checkbox"/>

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3: Sexual Health	<input checked="" type="checkbox"/> 12 SM_Antagonist	<input type="checkbox"/> 11 MARKET	<input type="checkbox"/> 19 HTS	<input type="checkbox"/>
2: Infectives	<input checked="" type="checkbox"/> 21 SM_Inhibitor	<input type="checkbox"/> 11 REORG	<input type="checkbox"/> 11 Phase I	<input type="checkbox"/>
1: Urogenitals	<input type="checkbox"/>	<input type="checkbox"/> 10 TOXIC	<input type="checkbox"/> 13 Phase III	<input type="checkbox"/>
			<input type="checkbox"/> 41 Screening	<input type="checkbox"/>

51 items filtered from 710 originally (Reset All Filters)

Area	Original+Indication	Target_Name	Approach	Start	Term+Reason	Max_Stage_Reached	Owner	OMIM Lit>All Lit_2007 Lit_Mech IMA GEO Pathway Compounds	
Metabolic Disease	Diabetes	Liver glycogen phosphorylase	SM_Inhibitor	2007-Q2	EFFICACY	Candidate	P. Person	SW-030072	
Sexual Health	Erectile Dysfunction	Integrin alpha-3 (Glycoprotein 33/Mu3) (CD49c)	SM_Antagonist	2006-Q3	EFFICACY	Candidate	P. Person	1	SW-029782
Sexual Health	Erectile Dysfunction	Leukotriene C4 synthase	SM_Agonist	2006-Q3	EFFICACY	Candidate	M. Manager	1	SW-029638
Sexual Health	Erectile Dysfunction	transcription elongation factor A (SII)-like 4	SM_Inhibitor	2005-Q2	EFFICACY	Candidate	P. Person	1	SW-029926
Infectives	HBV	Rotavirus four-repeat open channel (R4)	SM_Inhibitor	2006-Q2	EFFICACY	Candidate	L. Leader		SW-029994
Infectives	HBV	Voltage-gated potassium channel protein KV2 (Kv)	SM_Agonist	2007-Q1	EFFICACY	Candidate	A. Scientist	1	SW-029653
Urogenitals	Incontinence	Human RNA binding motif (RBM) gene, partial cdk.	SM_Agonist	2007-Q3	EFFICACY	Candidate	L. Leader	1	SW-029684
Pain	Migraine	Monocarboxylate transporter homologue2294064CD1 (X)	SM_Inhibitor	2007-Q3	EFFICACY	Candidate	L. Leader	18	SW-030085

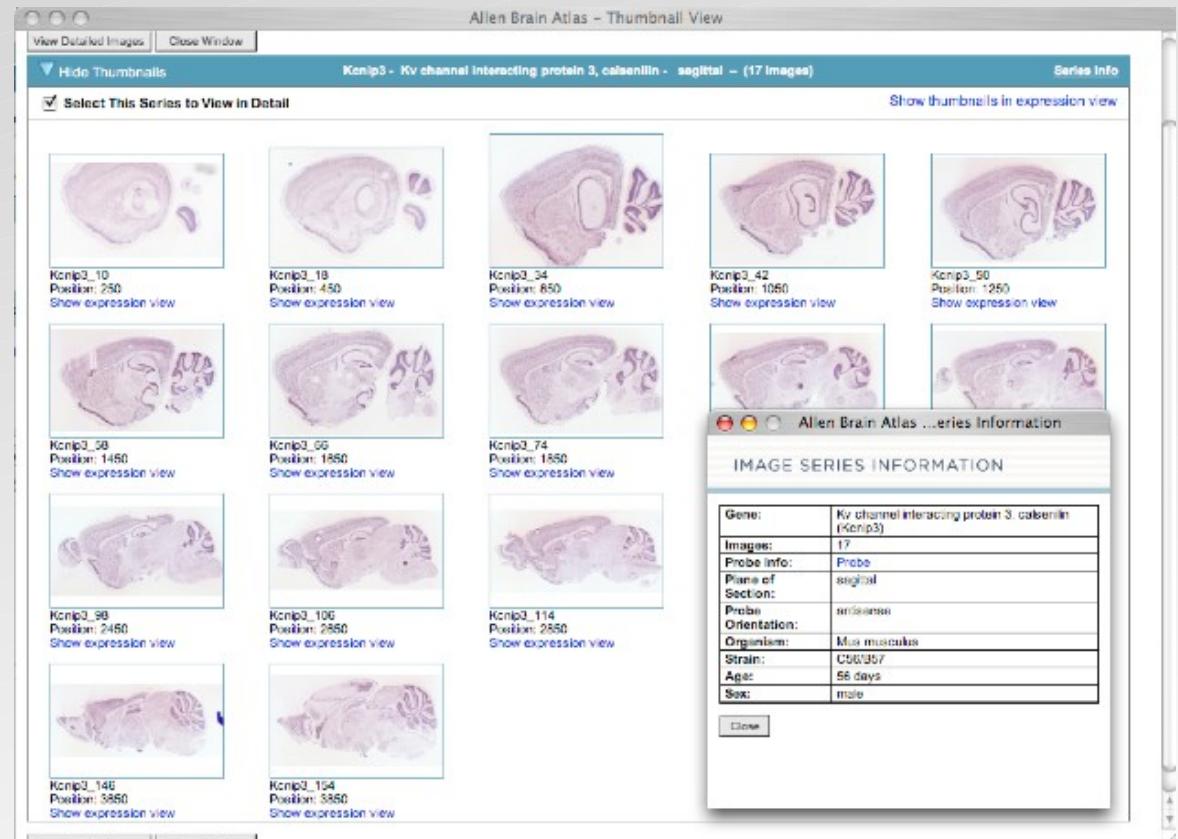
Courtesy of Nigel Wilkinson, Lee Harland, Pfizer Ltd, Melliyal Annamalai, Oracle (SWEO Case Study)

The “HCLS Demo”

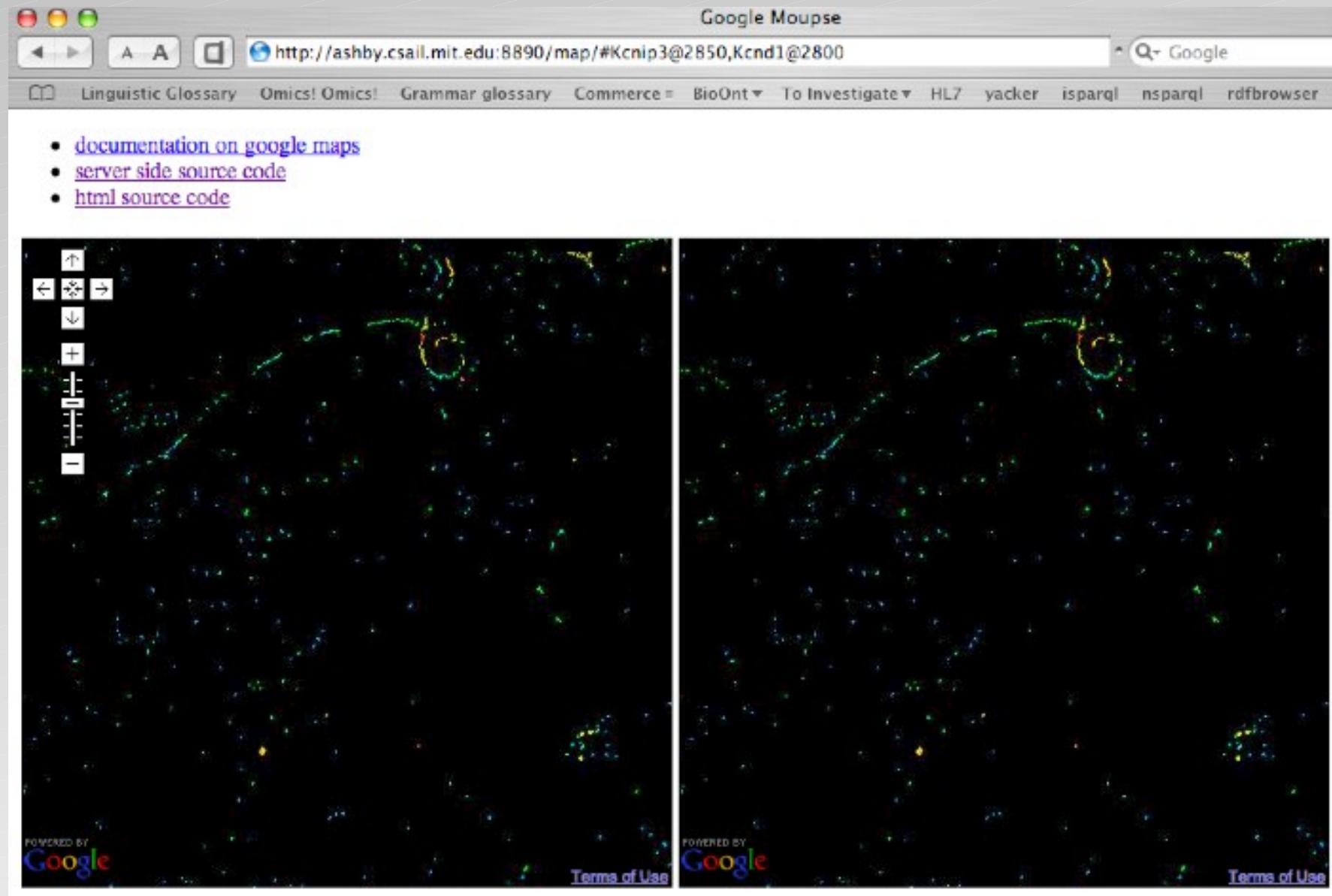
- The W3C Health Care and Life Sciences Interest Group (“HCLS”) has developed few demonstrations on SW usage
- Goal is to show:
 - the HCLS community how Semantic Web can be used
 - the SW community how this technology can be useful in this application are
 - it is a good example of Semantic Web usage in general in a non-trivial setting
- Prevailing paradigm is data integration

HCLS Demo: The Allen Brain Atlas

- Mouse brains cut in slices and stained for the presence of gene expression: 20,000 genes, 400,000 images at high resolution
- Currently available only through an HTML interface...



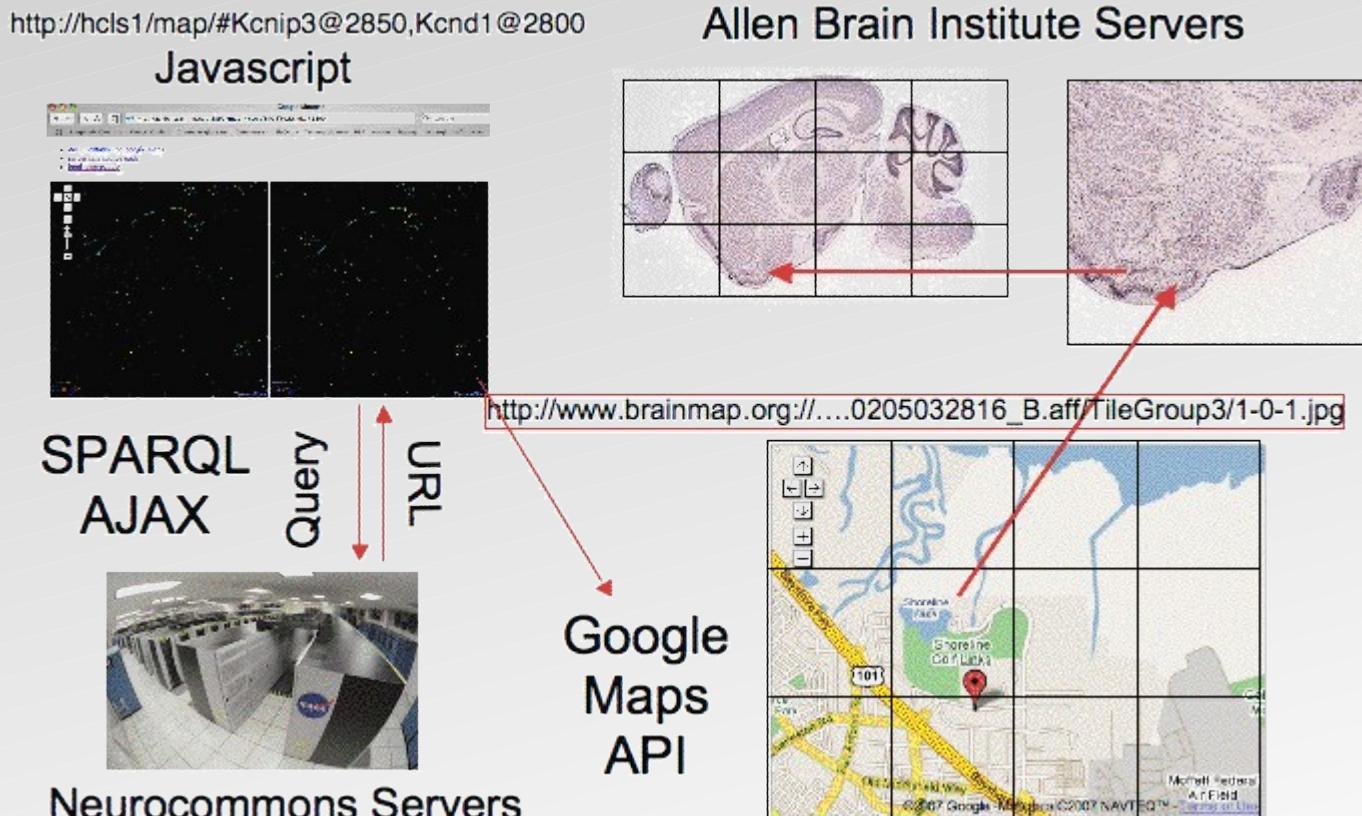
Brain Atlas “mashed up” with Google maps



Courtesy of Susie Stephens, Eli Lilly, Alan Ruttenberg, Science Commons, and the W3C HCLS IG

How is it done?

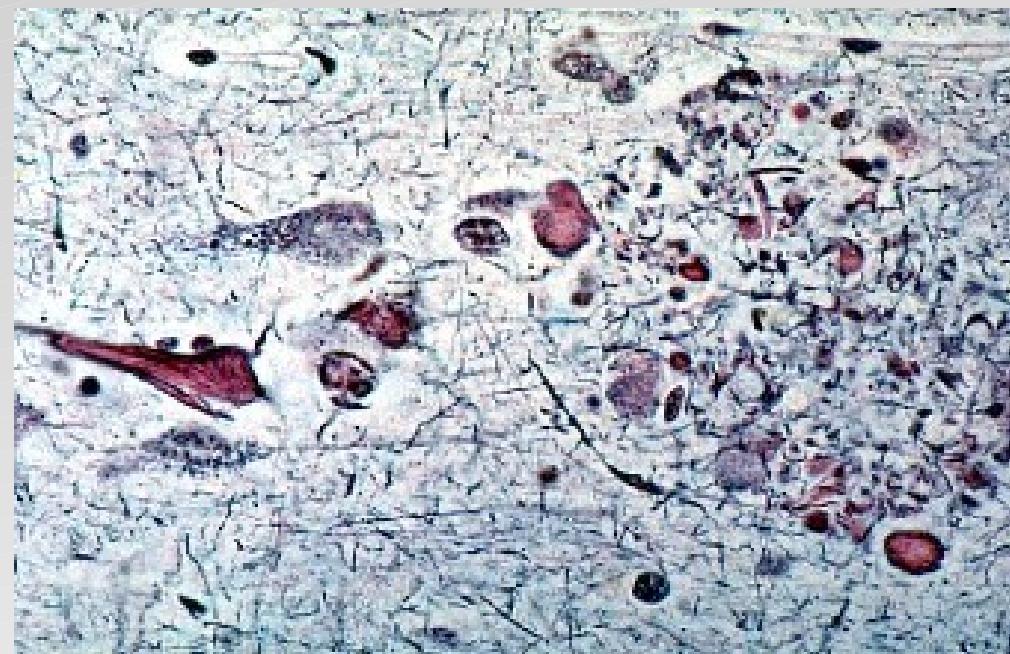
- Scrape 80K of Brain Atlas web pages to extract the information (images references, metadata, etc), turn this into RDF
- Combine it (SPARQL, Ajax, Google maps,...)



Courtesy of Susie Stephens, Eli Lilly, Alan Ruttenberg, Science Commons, and the W3C HCLS IG

HCLS demo: looking for Alzheimer's targets

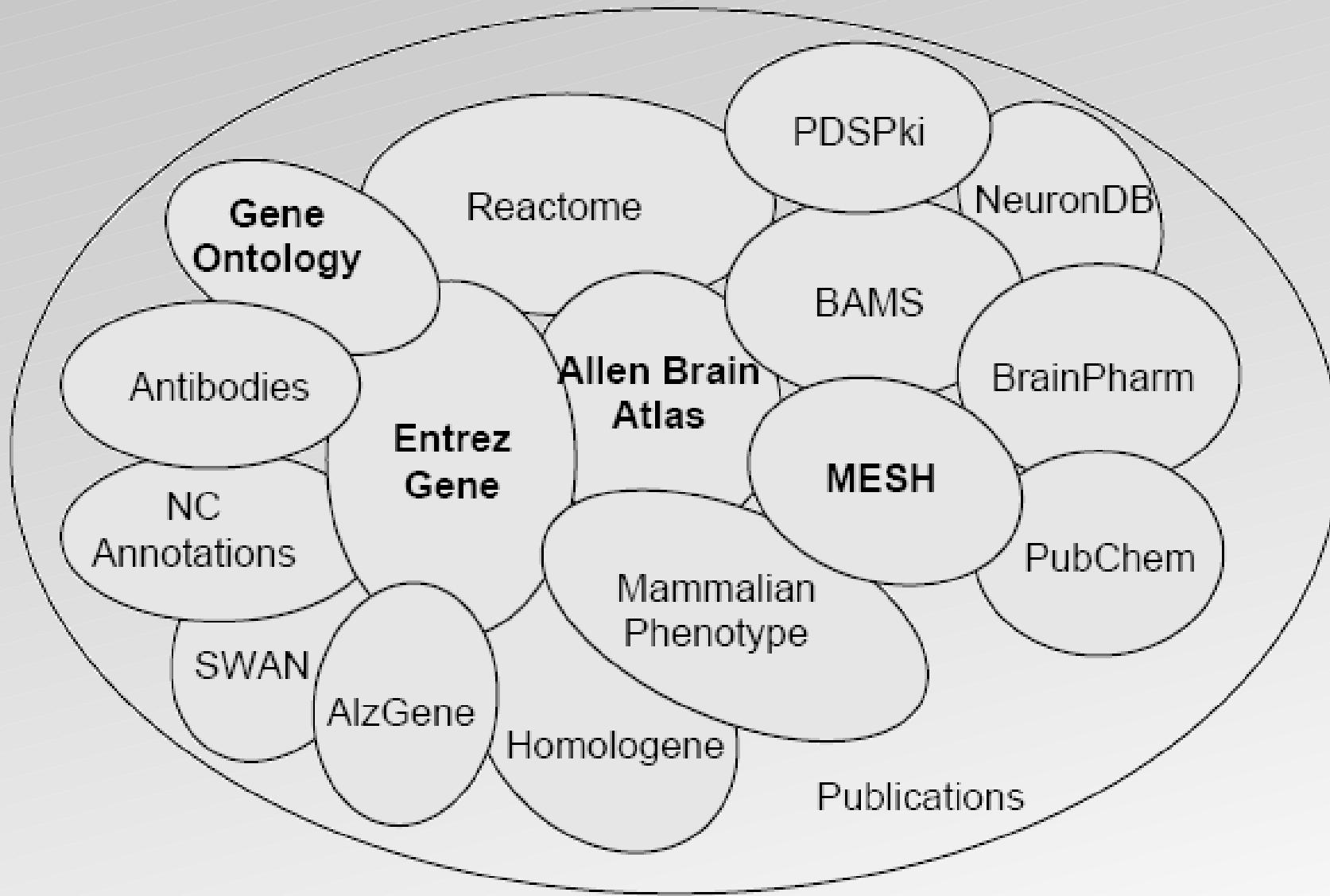
- Signal transduction pathways are considered to be rich in proteins that might respond to chemical therapy
- CA1 Pyramidal Neurons are known to be particularly damaged in Alzheimer's disease
- Can we find candidate genes known to be involved in signal transduction and active in Pyramidal Neurons?



To answer: integrate datasets

- W3C HCLS IG has already integrated a number of public datasets and ontologies
 - assign URI-s to bio entities
 - data converted or made reachable in RDF
 - use reasoners to infer extra triples to increase expressiveness
 - query the data with SPARQL and visualization tools
 - around 400M triples (in May 2007)

The datasets



Use SPARQL to integrate...

```
prefix go: <http://purl.org/obo/owl/GO#>
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix owl: <http://www.w3.org/2002/07/owl#>
prefix mesh: <http://purl.org/commons/record/mesh/>
prefix sc: <http://purl.org/science/owl/sciencecommons/>
prefix ro: <http://www.obofoundry.org/ro/ro.owl#>

select ?genename ?processname
where
{ graph <http://purl.org/commons/hcls/pubmesh>
  { ?paper ?p mesh:D017966 .
    ?article sc:identified_by_pmid ?paper .
    ?gene sc:describes_gene_or_gene_product_mentioned_by ?article .
  }
  graph <http://purl.org/commons/hcls/goa>
  { ?protein rdfs:subClassOf ?res .
    ?res owl:onProperty ro:has_function .
    ?res owl:someValuesFrom ?res2 .
    ?res2 owl:onProperty ro:realized_as .
    ?res2 owl:someValuesFrom ?process .
  }
  graph <http://purl.org/commons/hcls/20070416/classrelations>
  {{?process <http://purl.org/obo/owl/obo#part_of> go:GO_0007166}
  union
  {?process rdfs:subClassOf go:GO_0007166 }
  ?protein rdfs:subClassOf ?parent .
  ?parent owl:equivalentClass ?res3 .
  ?res3 owl:hasValue ?gene .
  }
  graph <http://purl.org/commons/hcls/gene>
  { ?gene rdfs:label ?genename }
  graph <http://purl.org/commons/hcls/20070416>
  { ?process rdfs:label ?processname }
}
```

Mesh: Pyramidal Neurons

Pubmed: Journal Articles

Entrez Gene: Genes

GO: Signal Transduction

Inference required

Courtesy of Susie Stephens, Eli Lilly, Alan Ruttenberg, Science Commons, and the W3C HCLS IG

Yielding results to the query...

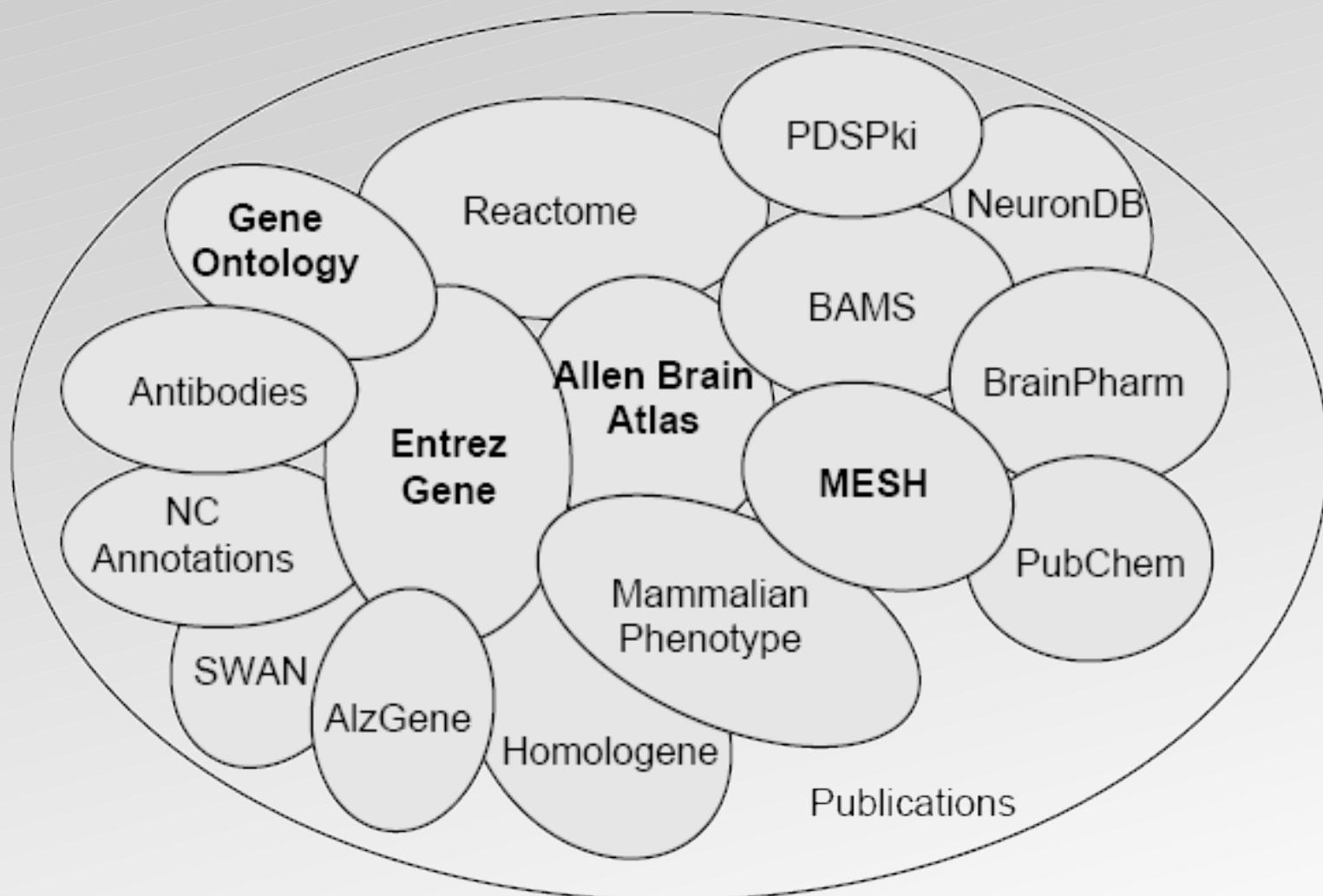
Many of the genes are indeed related to Alzheimer's Disease through gamma secretase

DRD1, 1812	adenylate cyclase activation
ADRB2, 154	adenylate cyclase activation
ADRB2, 154	arrestin mediated desensitization of G-protein coupled receptor protein signaling pathway
DRD1IP, 50632	dopamine receptor signaling pathway
DRD1, 1812	dopamine receptor, adenylate cyclase activating pathway
DRD2, 1813	dopamine receptor, adenylate cyclase inhibiting pathway
GRM7, 2917	G-protein coupled receptor protein signaling pathway
GNG3, 2785	G-protein coupled receptor protein signaling pathway
GNG12, 55970	G-protein coupled receptor protein signaling pathway
DRD2, 1813	G-protein coupled receptor protein signaling pathway
ADRB2, 154	G-protein coupled receptor protein signaling pathway
CALM3, 808	G-protein coupled receptor protein signaling pathway
HTR2A, 3356	G-protein coupled receptor protein signaling pathway
DRD1, 1812	G-protein signaling, coupled to cyclic nucleotide second messenger
SSTR5, 6755	G-protein signaling, coupled to cyclic nucleotide second messenger
MTNR1A, 4543	G-protein signaling, coupled to cyclic nucleotide second messenger
CNR2, 1269	G-protein signaling, coupled to cyclic nucleotide second messenger
HTR6, 3362	G-protein signaling, coupled to cyclic nucleotide second messenger
GRIK2, 2898	glutamate signaling pathway
GRIN1, 2902	glutamate signaling pathway
GRIN2A, 2903	glutamate signaling pathway
GRIN2B, 2904	glutamate signaling pathway
ADAM10, 102	integrin-mediated signaling pathway
GRM7, 2917	negative regulation of adenylate cyclase activity
LRP1, 4035	negative regulation of Wnt receptor signaling pathway
ADAM10, 102	Notch receptor processing
ASCL1, 429	Notch signaling pathway
HTR2A, 3356	serotonin receptor signaling pathway
ADRB2, 154	transmembrane receptor protein tyrosine kinase activation (dimerization)
PTPRG, 5793	transmembrane receptor protein tyrosine kinase signaling pathway
EPHA4, 2043	transmembrane receptor protein tyrosine kinase signaling pathway
NRTN, 4902	transmembrane receptor protein tyrosine kinase signaling pathway
CTNND1, 1500	Wnt receptor signaling pathway

Courtesy of Susie Stephens, Eli Lilly, Alan Ruttenberg, Science Commons, and the W3C HCLS IG

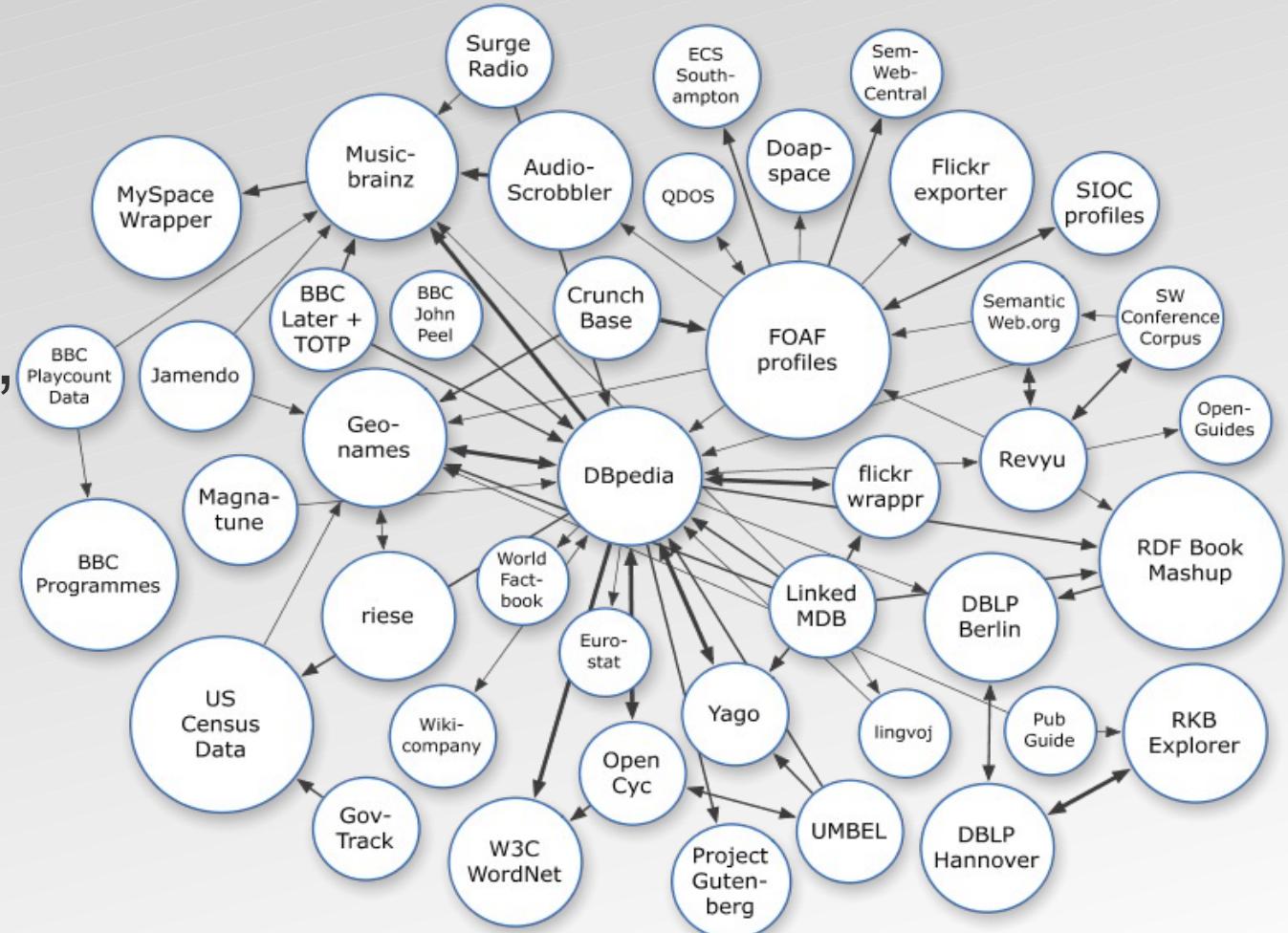
The “core”...

- The “core” of the HCLS demo was the access and integration of public datasets via the Semantic Web



Linking Open Data Project

- Goal: “expose” open datasets in RDF
- Set *RDF links among the data items* from different datasets
- Set up SPARQL endpoints
- Billions triples, millions of “links”



As of September 2008

Example data source: DBpedia

- DBpedia is a community effort to
 - extract structured (“infobox”) information from Wikipedia
 - provide a SPARQL endpoint to the dataset
 - interlink the DBpedia dataset with other datasets on the Web



UNIVERSITÄT LEIPZIG



Extracting structured data from Wikipedia

Amsterdam



The Keizersgracht at dusk

Location of Amsterdam

Coordinates:  52°22'23"N 4°53'32"E

Country	Netherlands
Province	North Holland
Government	
- Type	Municipality
- Mayor	Job Cohen ^[1] (PvdA)
- Aldermen	Lodewijk Asscher Carolien Gehrels Tjeerd Herrema Maarten van Poelgeest Marijke Vos Erik Gerritsen
- Secretary	
Area ^{[2][3]}	
- City	219 km ² (84.6 sq mi)
- Land	166 km ² (64.1 sq mi)
- Water	53 km ² (20.5 sq mi)
- Urban	1,003 km ² (387.3 sq mi)
- Metro	1,815 km ² (700.8 sq mi)
Elevation ^[4]	2 m (7 ft)
Population ^(1 October 2008) ^{[5][6]}	
- City	755,269
- Density	4,459/km ² (11,548.8/sq mi)
- Urban	1,364,422
- Metro	2,158,372
- Demonym	Amsterdamer
Time zone	
- Summer (DST)	CET (UTC+1) CEST (UTC+2)
Postcodes	1011 – 1109
Area code(s)	020
Website: www.amsterdam.nl 	

```
@prefix dbpedia <http://dbpedia.org/resource/>.
@prefix dbterm <http://dbpedia.org/property/>.
```

dbpedia:Amsterdam

```
dbterm:officialName "Amsterdam" ;
dbterm:longd "4" ;
dbterm:longm "53" ;
dbterm:longs "32" ;
...
dbterm:leaderTitle "Mayor" ;
dbterm:leaderName dbpedia:Job_Cohen ;
```

```
...
dbterm:areaTotalKm "219" ;
```

...

dbpedia:ABN_AMRO

```
dbterm:location dbpedia:Amsterdam ;
```

...

Automatic links among open datasets

```
<http://dbpedia.org/resource/Amsterdam>
owl:sameAs <http://rdf.freebase.com/ns/...> ;
owl:sameAs <http://sws.geonames.org/2759793> ;
...
...
```

```
<http://sws.geonames.org/2759793>
owl:sameAs <http://dbpedia.org/resource/Amsterdam>
wgs84_pos:lat "52.3666667" ;
wgs84_pos:long "4.8833333" ;
geo:inCountry <http://www.geonames.org/countries/#NL> ;
...
...
```

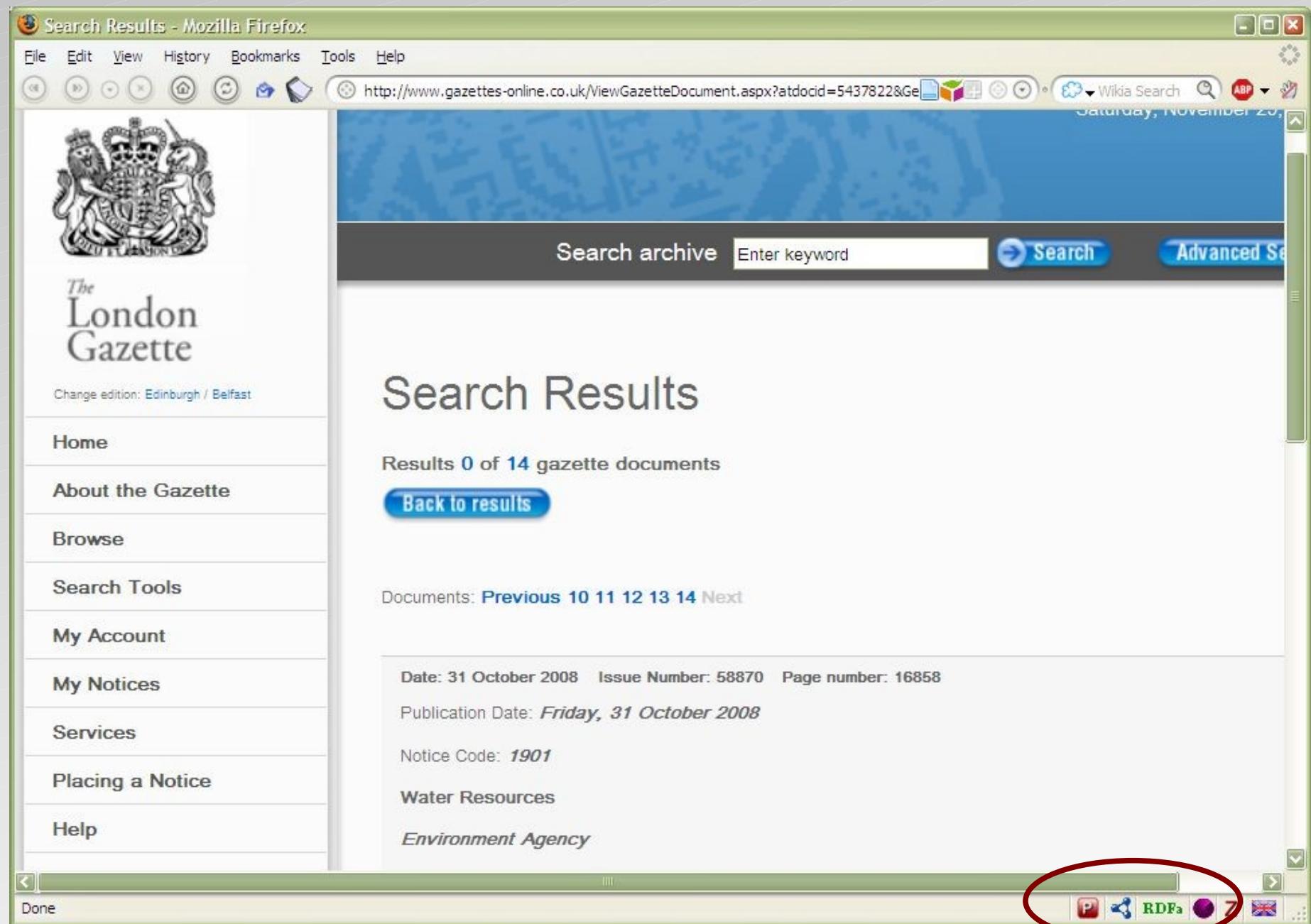
Processors can switch automatically from one to the other...

Linking Open Data Project (cont)

- This is a major community project
 - anybody can participate; to subscribe to the list:
 - <http://lists.w3.org/Archives/public/public-lod/>
 - or look at the project site:
 - <http://esw.w3.org/topic/SweoIG/TaskForces/CommunityProjects/LinkingOpenData>
 - if you know of open data sets: contact the project to incorporate it with the rest!
- Applications using this set of data in real-life setting should come to the fore soon



Data to the LOD can come from many places



Search Results - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.gazettes-online.co.uk/ViewGazetteDocument.aspx?atdocid=5437822&Ge

Wiki Search Saturday, November 20, 2008

Search archive Enter keyword Search Advanced Search

The London Gazette

Change edition: Edinburgh / Belfast

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Search Results

Results 0 of 14 gazette documents

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Documents: [Previous](#) [10](#) [11](#) [12](#) [13](#) [14](#) [Next](#)

Date: 31 October 2008 Issue Number: 58870 Page number: 16858

Publication Date: *Friday, 31 October 2008*

Notice Code: **1901**

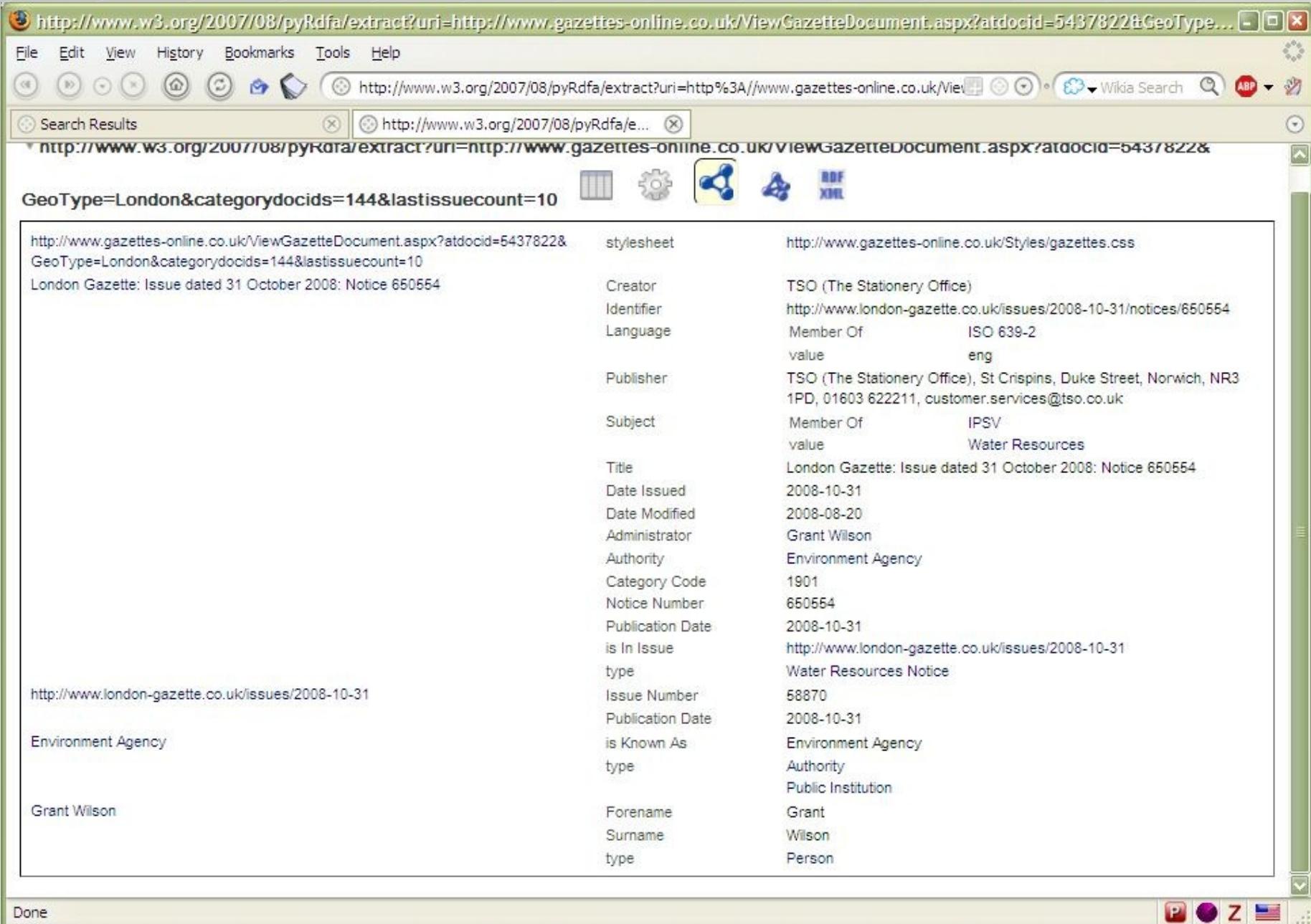
Water Resources

Environment Agency

RDFa

Done

Data to the LOD can come from many places



The screenshot shows a web browser window displaying RDFa extracted from a Gazette document. The browser interface includes a menu bar (File, Edit, View, History, Bookmarks, Tools, Help), a toolbar with various icons, and a search bar. The main content area shows the extracted RDFa triples in a table format.

URI	Property	Value
http://www.gazettes-online.co.uk/ViewGazetteDocument.aspx?atdocid=5437822&GeoType=London&categorydocids=144&lastissuecount=10	stylesheet	http://www.gazettes-online.co.uk/Styles/gazettes.css
London Gazette: Issue dated 31 October 2008: Notice 650554	Creator	TSO (The Stationery Office)
	Identifier	http://www.london-gazette.co.uk/issues/2008-10-31/notices/650554
	Language	Member Of ISO 639-2
		value eng
	Publisher	TSO (The Stationery Office), St Crispins, Duke Street, Norwich, NR3 1PD, 01603 622211, customer.services@tso.co.uk
	Subject	Member Of IPSV
		value Water Resources
	Title	London Gazette: Issue dated 31 October 2008: Notice 650554
	Date Issued	2008-10-31
	Date Modified	2008-08-20
	Administrator	Grant Wilson
	Authority	Environment Agency
	Category Code	1901
	Notice Number	650554
	Publication Date	2008-10-31
	is In Issue	http://www.london-gazette.co.uk/issues/2008-10-31
	type	Water Resources Notice
http://www.london-gazette.co.uk/issues/2008-10-31	Issue Number	58870
	Publication Date	2008-10-31
Environment Agency	is Known As	Environment Agency
	type	Authority
		Public Institution
Grant Wilson	Forename	Grant
	Surname	Wilson
	type	Person

Using the LOD cloud on an iPhone



Courtesy of Chris Bizer and Christian Becker, Freie Universität, Berlin

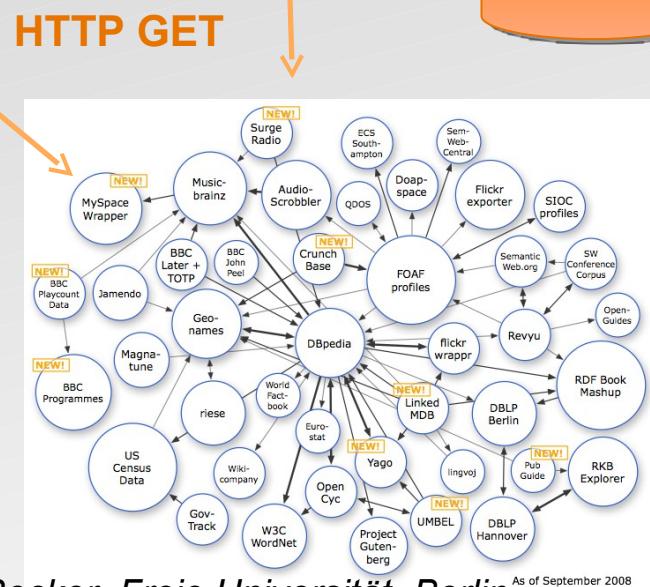
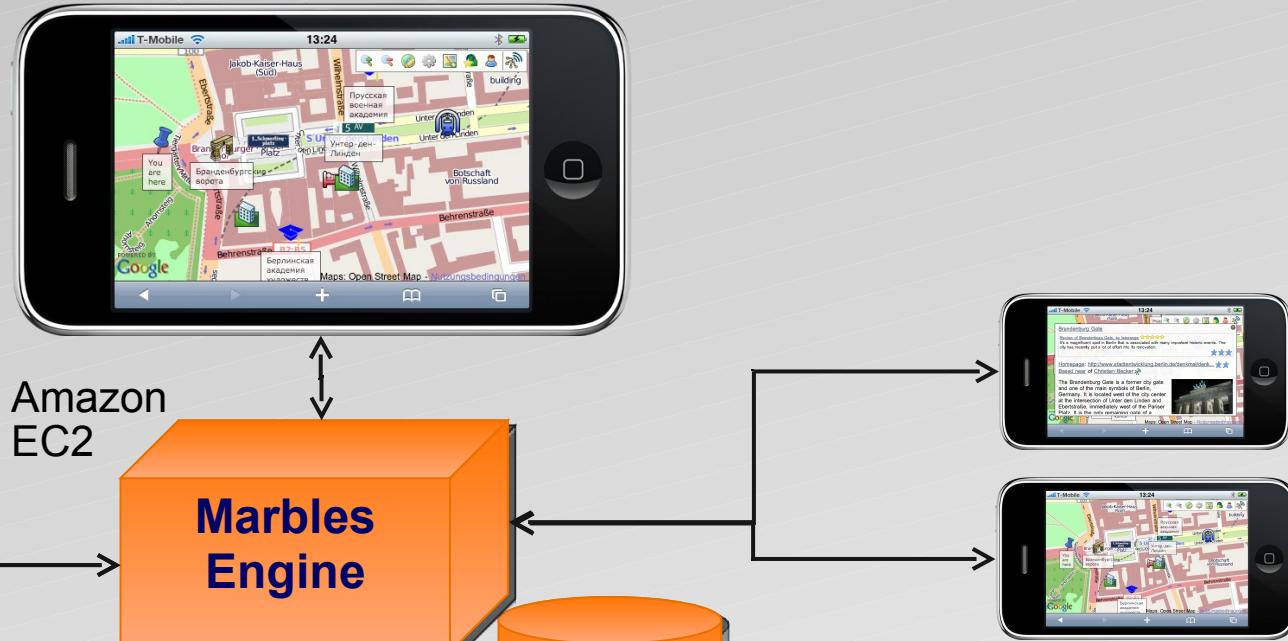
Using the LOD cloud on an iPhone



Courtesy of Chris Bizer and Christian Becker, Freie Universität, Berlin

Using the LOD cloud on an iPhone

Search
Engines



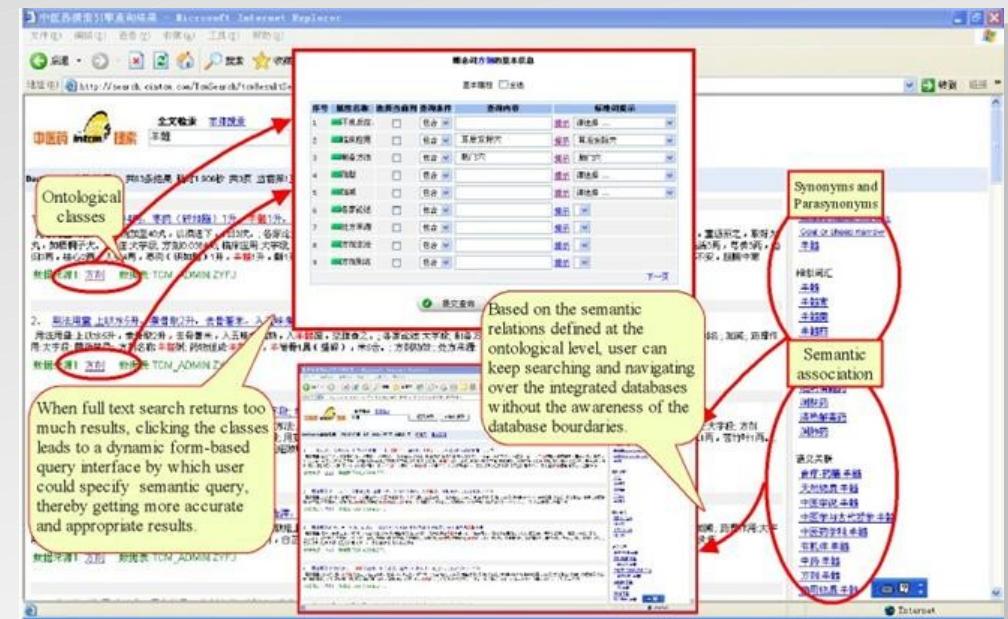
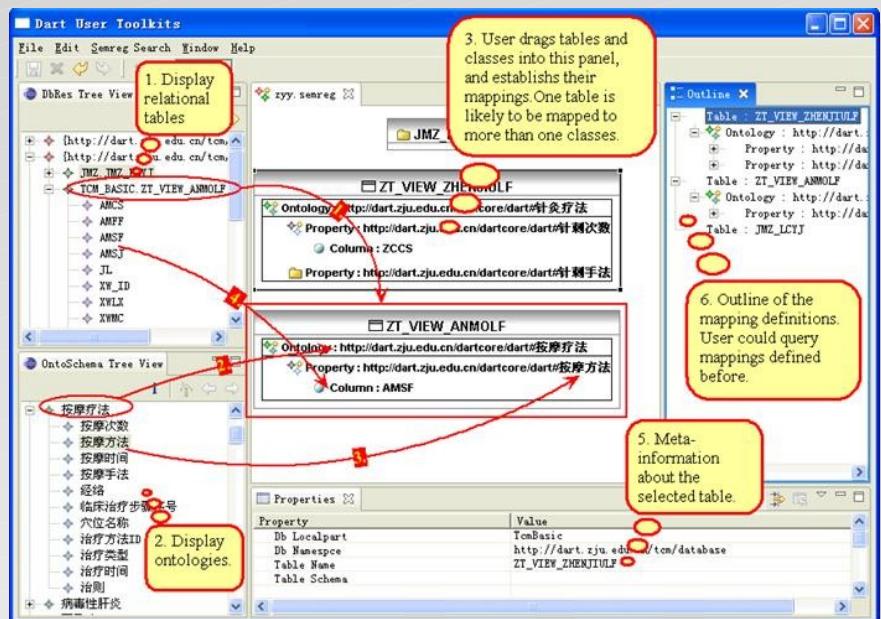
Linked Data on
the Web

Courtesy of Chris Bizer and Christian Becker, Freie Universität, Berlin

Applications examples...

Integrate knowledge for Chinese Medicine

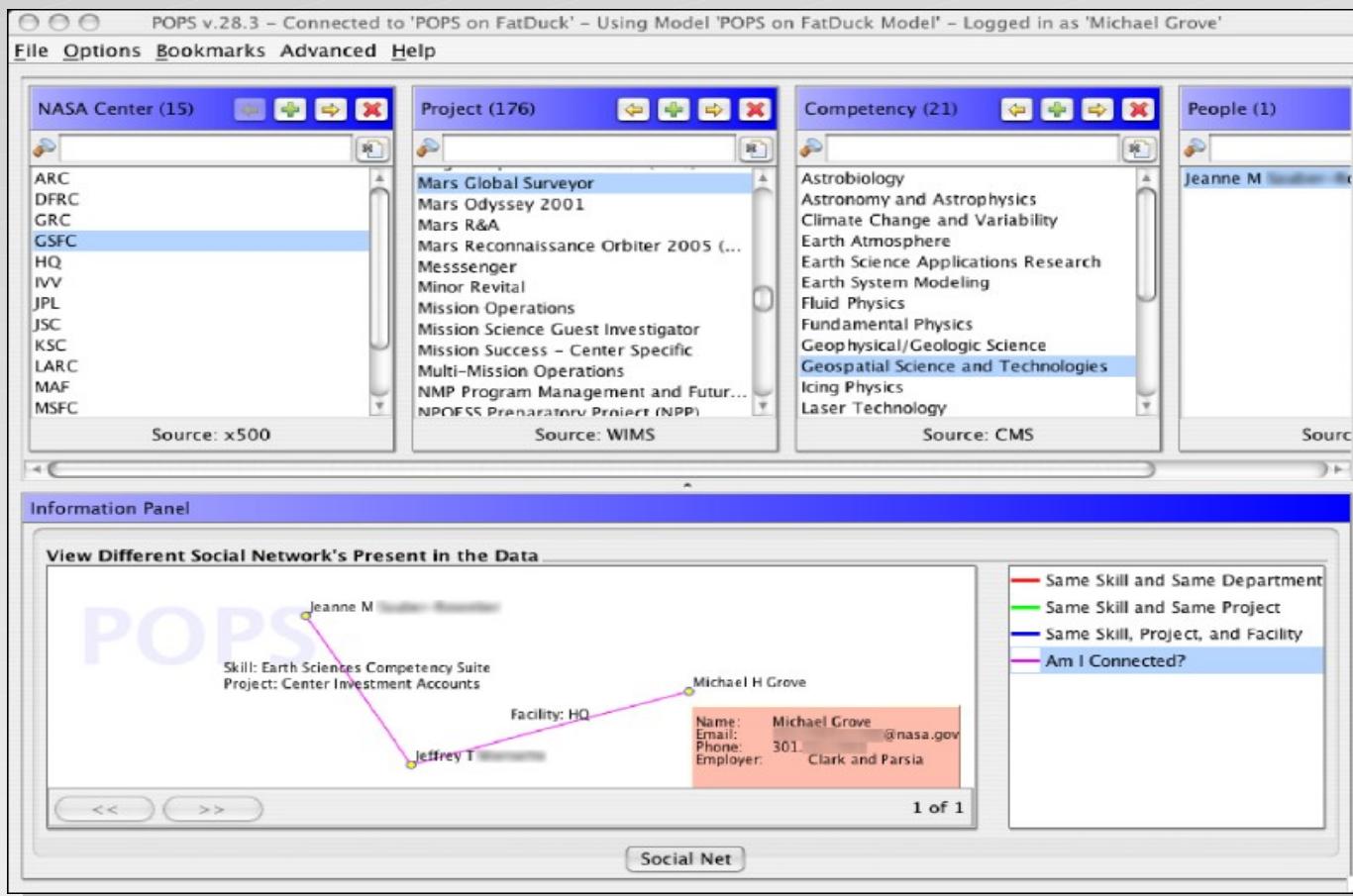
- Integration of a large number of TCM databases
 - around 80 databases, around 200,000 records each
 - A visual tool to map databases to the semantic layer using a specialized ontology
 - Form based query interface for end users



Courtesy of Huaijun Chen, Zhejiang University. (SWEO Case Study)

Find the right experts at NASA

- Expertise locator for nearly 70,000 NASA civil servants, using RDF integration techniques over 6 or 7 geographically distributed databases, data sources, and web services...



Michael Grove, Clark & Parsia, LLC, and Andrew Schain, NASA, (SWEO Case Study)

Find the right experts at Vodafone

- Very similar to the NASA application, though with different technologies...

The screenshot shows a web application interface for the Vodafone Semantic Search Engine. The top navigation bar is red with the Vodafone logo. Below it, a grey header bar contains the text "Start: Semantic Search Engine" and a "Return" link. The main content area is titled "Semantic Search Engine" in red. It features a "Search by topics" section with a "Search by free text" input field containing the query "Who is working in project Charcoal?". To the right, there is a "Select a topic" sidebar with a tree structure under "Physical Entity". The "Person" node is expanded, showing "External Person", "Internal Person", and "Non Physical Entity" as children. The "Internal Person" node is selected, highlighted in red. A form on the right side is populated with fields for "name" (Richard Benjamins), "email", "login", "phone", "photo", and "position". Below the form are buttons for "Search" and "Reset". At the bottom of the page, there are links for "Search by Topics" and "Search by free text", and a footer note: "Vodafone Social Network. Developed by: iSOCO".

Courtesy of Juan José Valverde Fúster, Vodafone R&D, and Richard Benjamins, iSOCO, (SWEO Use Case)

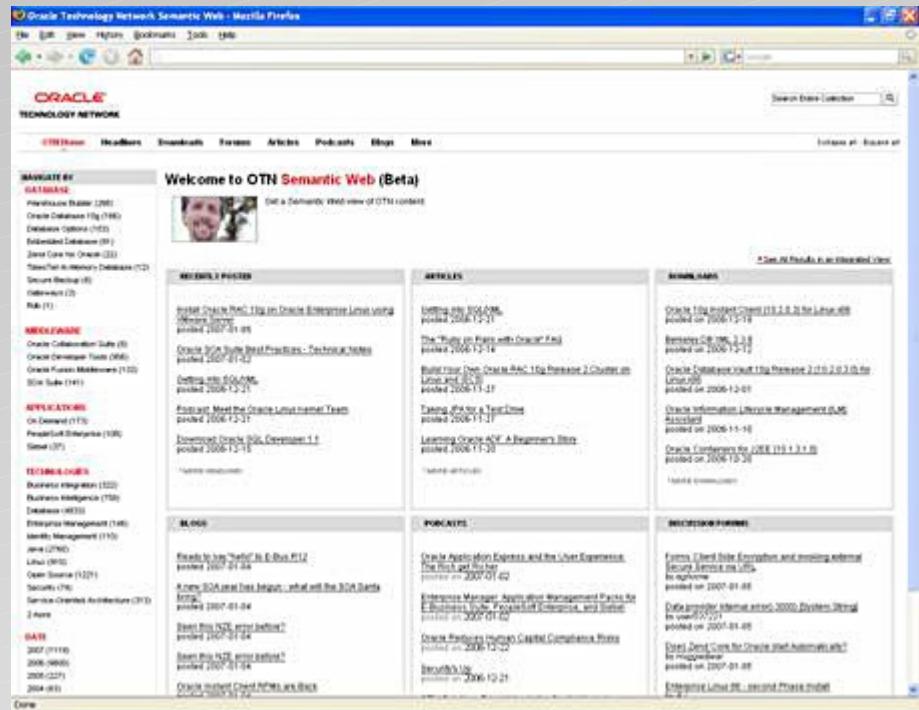
Public health surveillance (Sapphire)

- Integrated biosurveillance system (biohazards, bioterrorism, disease control, etc)
- Integrates multiple data sources
 - new data can be added easily

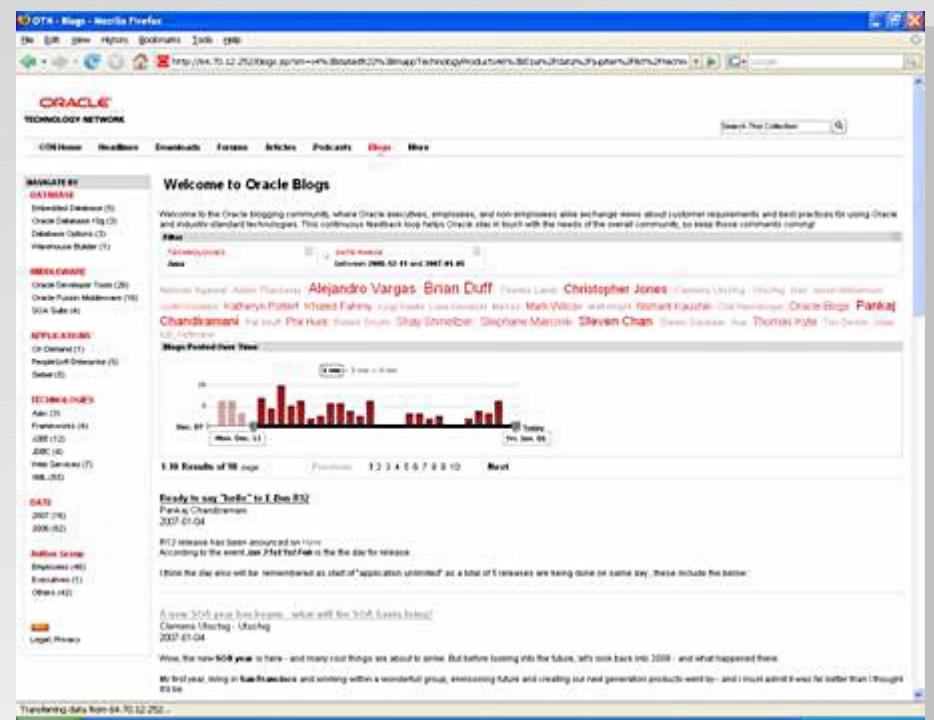


Courtesy of Parsa Mirhaji, School of Health Information Sciences, University of Texas (SWEO Case Study)

Oracle's Technology Network portal



Aggregates many source of content

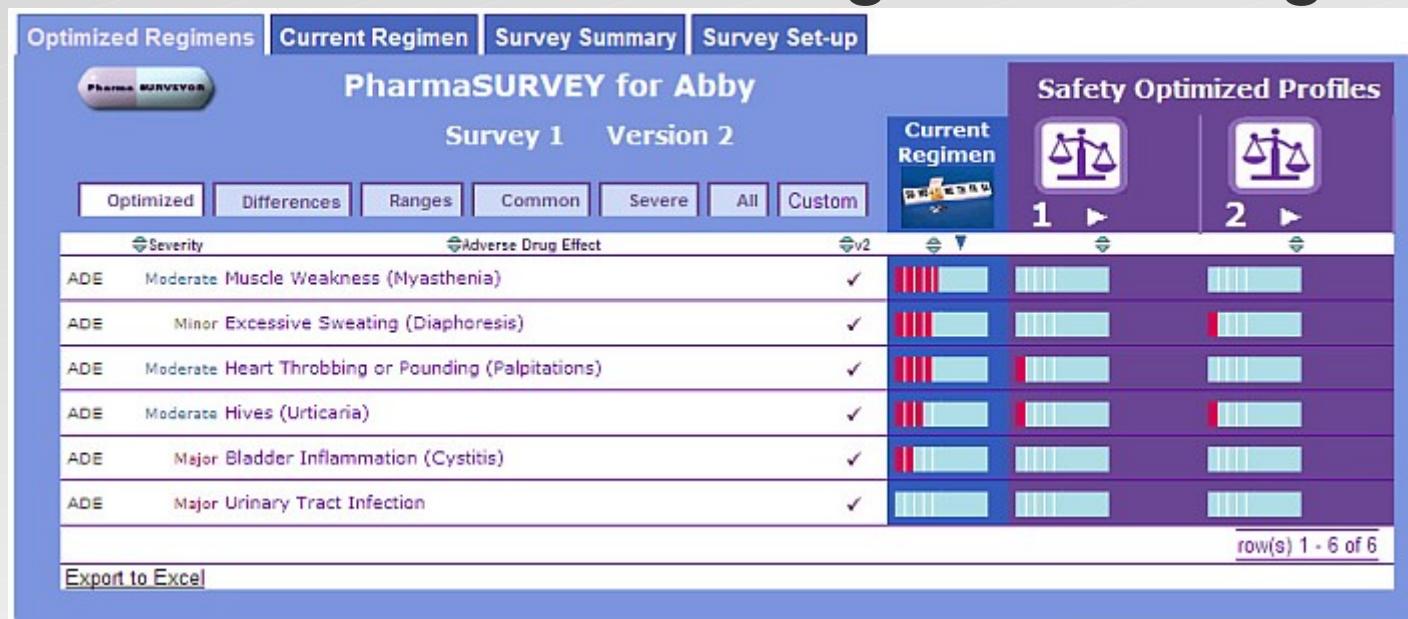


Re-group, categorize, etc content (using a taxonomy)

Courtesy of Mike DiLascio, Siderean Software, and Justin Kestelyn, Oracle Corporation (SWEO Case Study)

Help in choosing the right drug regimen

- Help in finding the best drug regimen for a specific case, per patient
- Integrate data from various sources (patients, physicians, Pharma, researchers, ontologies, etc)
- Data (eg, regulation, drugs) change often, but the tool is much more resistant against change



Courtesy of Erick Von Schweber, PharmaSURVEYOR Inc., (SWEO Use Case)

UK's Ordnance Survey

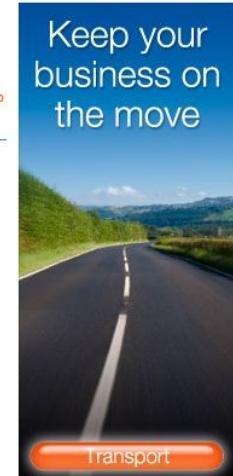
- Maintains a definitive mapping data of Great Britain
- Integrates different, semantically diverse source of data
- General ontologies are used to bridge terminology and for better queries

Ordnance Survey – Great Britain's national mapping agency [See all our sites](#) | [Login](#)

[Search](#)

 [View maps online](#)
Get-a-map™ – find anywhere in the United Kingdom:
 [Go](#)
By using this service you are deemed to have agreed to the [Get-a-map terms and conditions](#).

[Other ways to get maps](#)
Visit our online leisure map shop
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Buy on the high street
Planning application maps
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[Frequently asked questions](#)

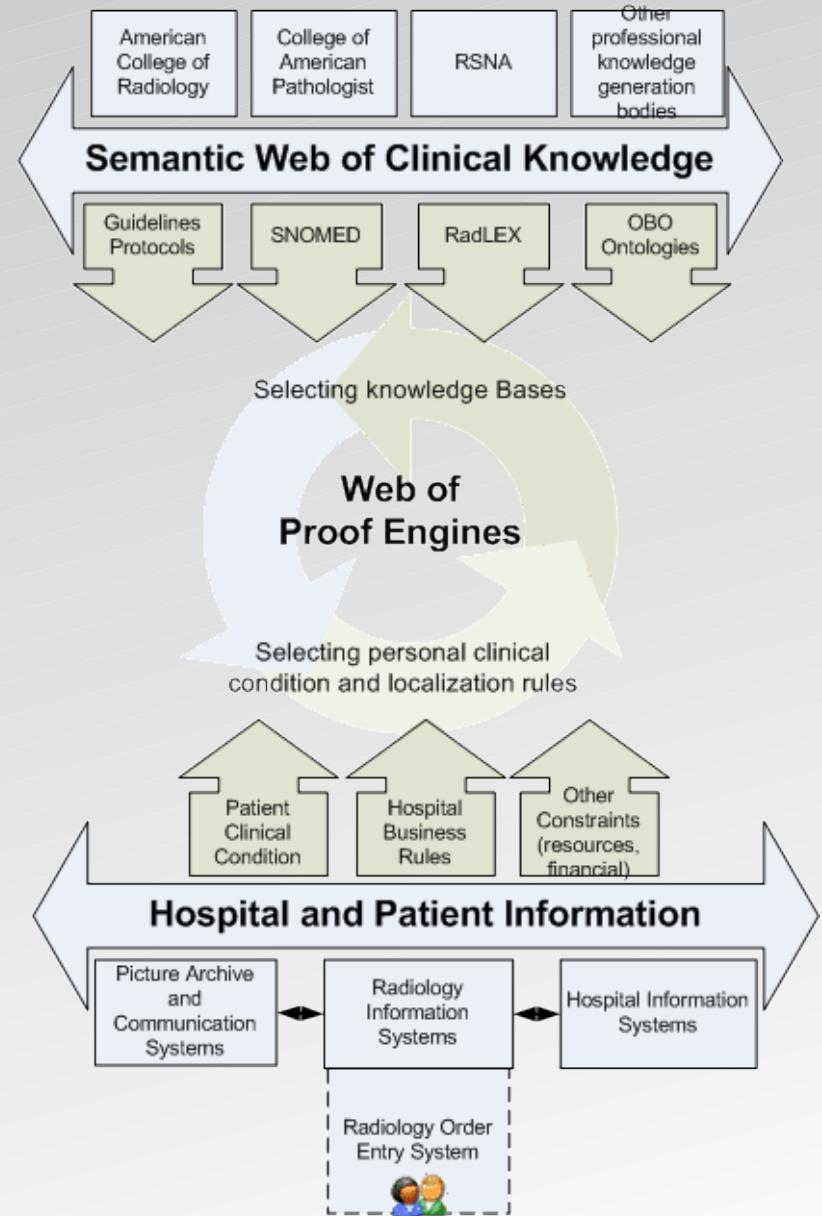
Ordnance Survey is Great Britain's national mapping agency, providing the most accurate and up-to-date geographic data, relied on by government, business and individuals.

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Courtesy of Catherine Dolbear, Ordnance Survey, ([SWEO Case Study](#))

Radiological procedure orders

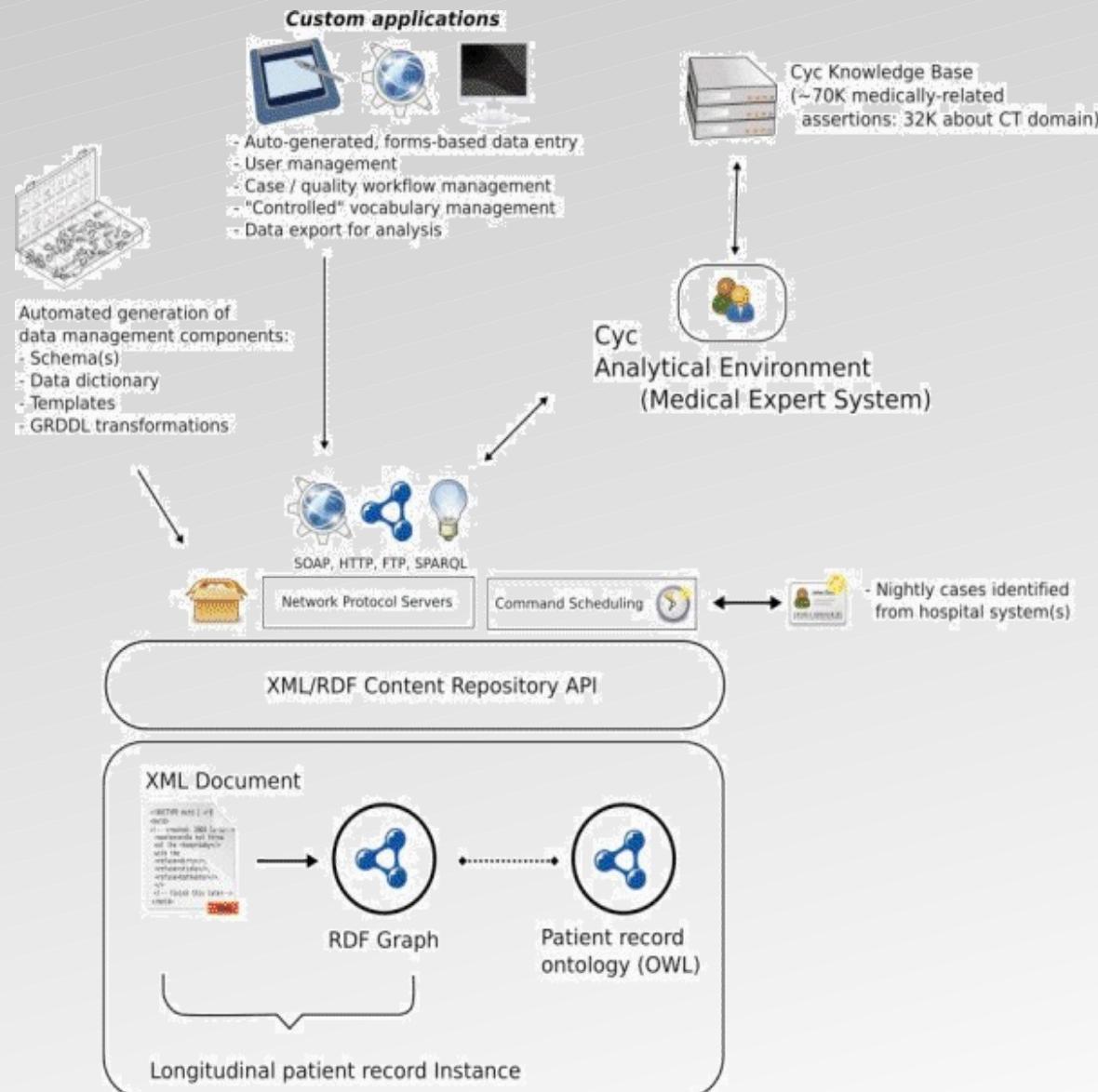
- Separates the general knowledge base
- Eases the burden of developing and maintaining knowledge
- Ability to trace decision provenance
 - may prevent, eg, medical errors
 - helps generating the right radiology order



Courtesy of Jos De Roo and Helen Chen, Agfa Healthcare, (SWEO Use Case)

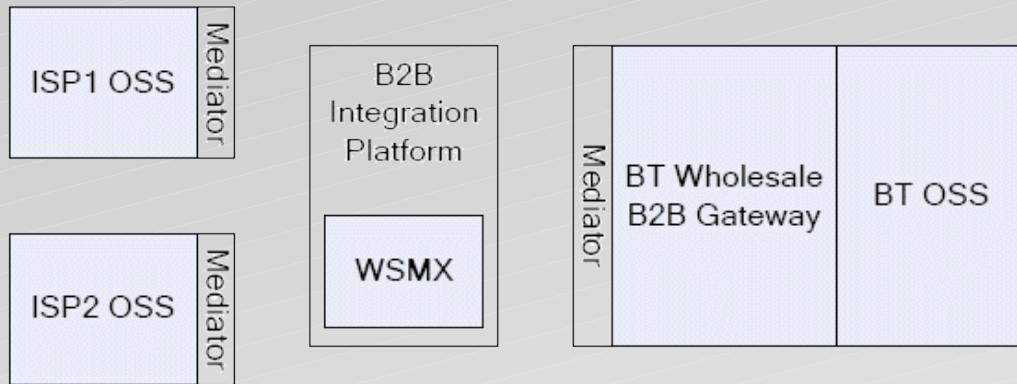
Semantic DB at the Cleveland Clinic

- Problem: extreme compartmentalization of medical knowledge
- Unified repository collects and stores various data
- Usage of OWL and rules allow high level operations on the data



Courtesy of Chimezie Ogbuji, ClevelandClinic, (SWEO Case Study)

B2B Integration by BT



OSS = Operational Support System

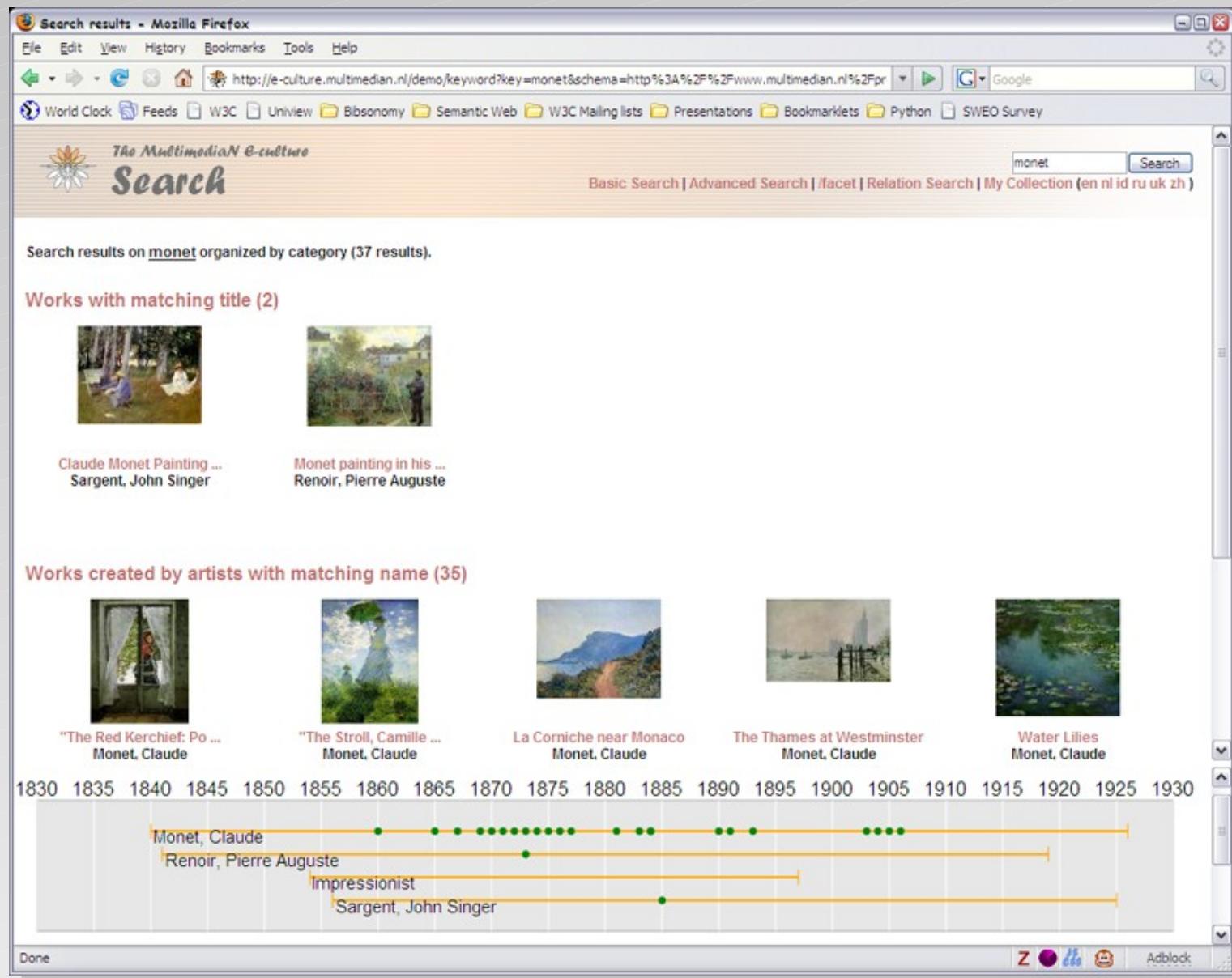
- Semantic description of system interfaces in BT's supply chain
- Providers integrate their support system with those of BT
- Possibility to integrate heterogeneous support systems of partners

Courtesy of Alistair Duke, BT, (SWEO Use Case)

A frequent paradigm: intelligent portals

- “Portals” collecting data and presenting them to users
- They can be public or behind corporate firewalls
Portal’s internal organization makes use of semantic data, ontologies
 - integration with external and internal data
 - better queries, often based on controlled vocabularies or ontologies...

Semantic portal for art collections



Courtesy of Jacco van Ossenbruggen, CWI, and Guus Schreiber, VU Amsterdam

Semantic portal for art collections (2)

Search results - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Jacco.van.Ossenbruggen@cwi.nl

http://e-culture.multimedian.nl/demo/keyword?key=taichang iswc

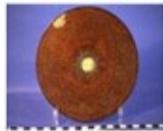
The MultimediaN E-culture Search

taichang Search

Basic Search | Advanced Search | /facet | Relation Search | My Collection (en nl id ru uk zh)

Search results on taichang organized by category (47 results).

Works style/period.period has narrower with matching preferred label (46)

 5664-2 (dc:creator unknown)

 pop; speelgoedpop (dc:creator unknown)

 mingqi (dc:creator unknown)

 mingqi (dc:creator unknown)

 kommetje (dc:creator unknown)

 kommetje (dc:creator unknown)

 mingqi (dc:creator unknown)

 draagkist (dc:creator unknown)

see more>

1360 1380 1400 1420 1440 1460 1480 1500 1520 1540 1560 1580 1600 1620 1640

5664-2
pop; speelgoedpop

Courtesy of Jacco van Ossenbruggen, CWI, and Guus Schreiber, VU Amsterdam

Semantic portal for cultural heritage

Patrimonio Cultural Cantabria Fundación Marcelino Botín

7 de Marzo de 2007

Inicio > Lugares > Cantabria

Buscador: buscar

Periodos Personas Instituciones Patrimonio Obras/Monumentos El Proyecto

ESPECIAL - Titular del especial

Beato de Liébana
Autor de comentarios al Apocalipsis, compone himno litúrgico

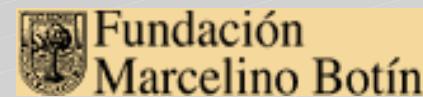
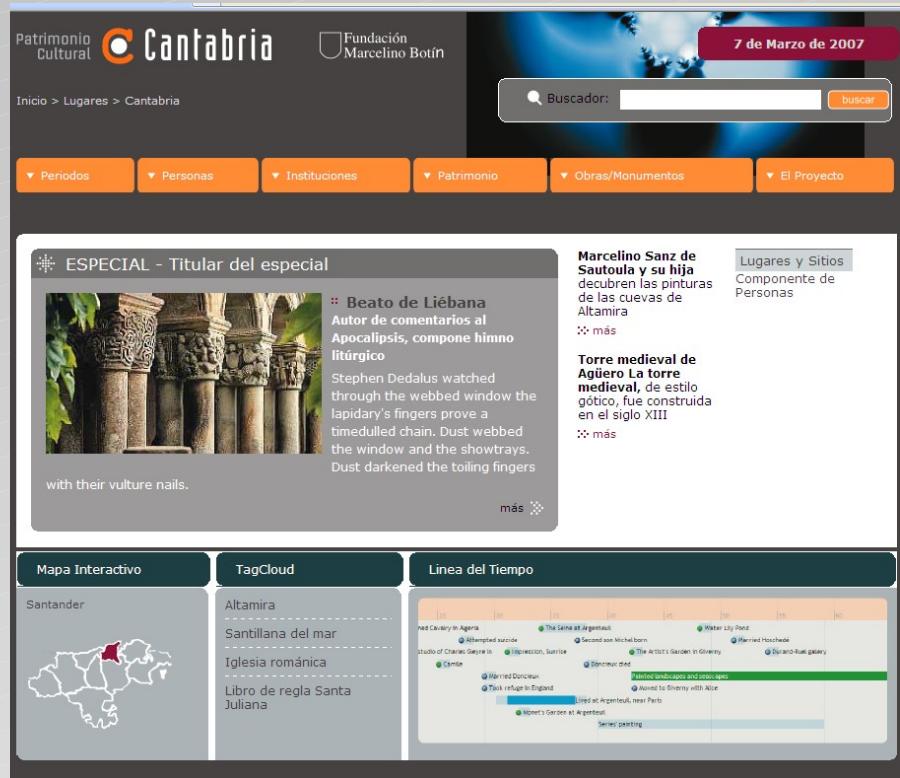
Stephen Dedalus watched through the webbed window the lapidary's fingers prove a timarded chain. Dust webbed the window and the showtrays. Dust darkened the toiling fingers with their vulture nails.

Marcelino Sanz de Sautuola y su hija descubren las pinturas de las cuevas de Altamira

Torre medieval de Agüero La torre medieval, de estilo gótico, fue construida en el siglo XIII

Mapa Interactivo TagCloud Línea del Tiempo

Santander Altamira Santillana del mar Iglesia románica Libro de regla Santa Juliana



¿LO SABÍA?

Pulse la BARRA ESPACIADORA para visualizar el siguiente resultado de la búsqueda. Pulse SHIFT-SPACE para volver al resultado anterior.

TÉRMINOS RELACIONADOS

- Gobierno de Cantabria
- Universidad de Cantabria
- Comunidad Autónoma de Cantabria
- Caja Cantabria
- Castro Urdiales
- San Vicente de la Barquera
- Norte de España
- Ciudad de Santander

CATEGORÍAS RELACIONADAS

- Negocios (59%)
- Mercado inmobiliario
- Guías y directo
- Viajes y turismo (36%)
- Rural
- Sociedad (4%)

UBICACIÓN SITIO WEB

- Europa (72%)
- España
- Norteamérica (27%)

IDIOMA DEL DOCUMENTO

- Español (32%)
- Inglés (15%)
- Francés (1%)

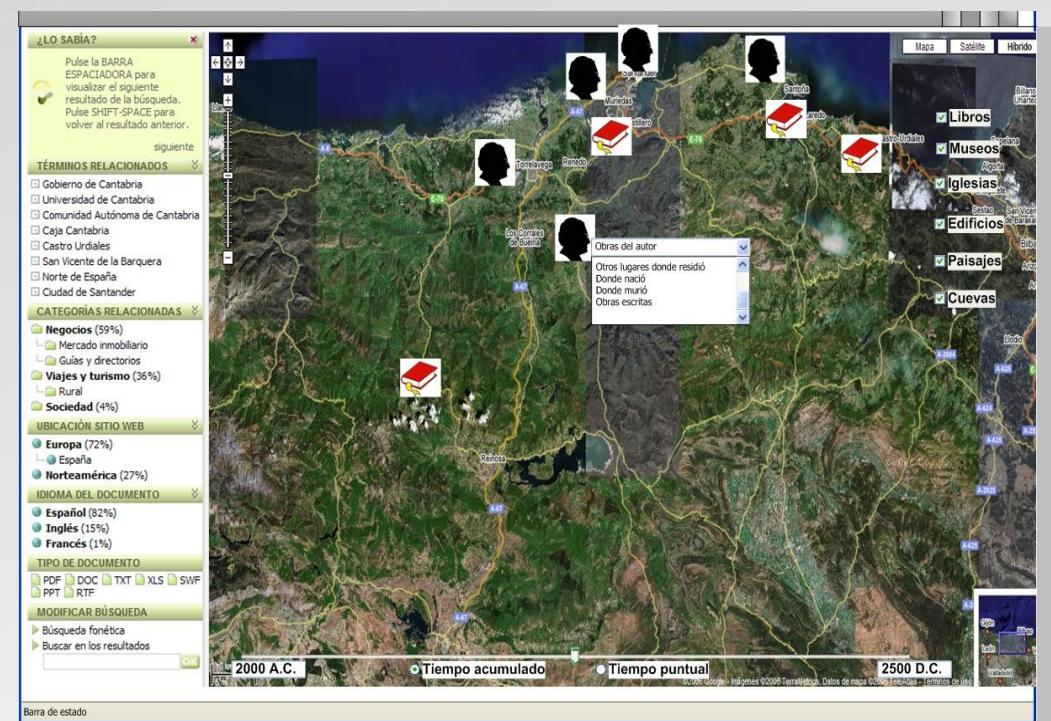
TIPO DE DOCUMENTO

- PDF DOC TXT XLS SWF
- PPT RTF

MODIFICAR BÚSQUEDA

- Búsqueda fonética
- Buscar en los resultados

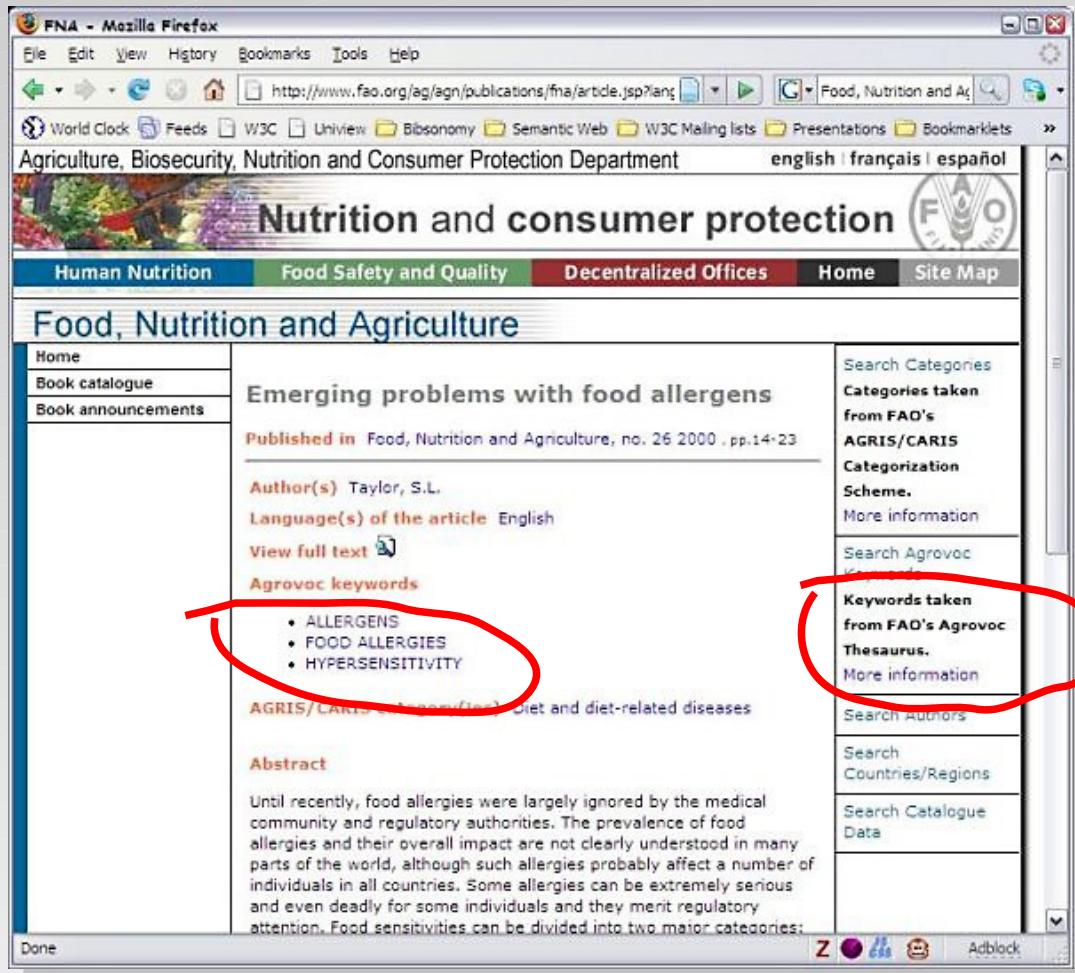
2000 A.C. Tiempo acumulado Tiempo puntual 2500 D.C.



Courtesy of Francisca Hernández, Fundación Marcelino Botín, and Richard Benjamins, iSOCO, (SWEO Case Study)

FAO Journal portal

- Improved search on journal content based on an agricultural ontology and thesaurus (AGROVOC)



Courtesy of Gauri Salokhe, Margherita Sini, and Johannes Keizer, FAO, (SWEO Case Study)

Portal to help new judges

- Helps new judges in
 - answering questions
 - jurisprudence search

The screenshot shows the IF@Q portal interface. At the top, there are tabs for 'PREGUNTAR', 'VER PREGUNTAS', 'BUSCAR SENTENCIAS', and 'AYUDA'. The main area is titled 'Pregunta formulada' and contains the following text:
"El mismo día de presentar una orden de protección, me pidieron que la retirase. ¿Qué hago?"
Below this is a section titled 'Pregunta encontrada' with the text:
"He vivido por la mañana una señora que quería una orden de protección. Llevamos todo el día con el tema. Se la acabo de atender y le estoy notificando la orden de protección y yo me dije que quería retirar la demanda y no quería la orden de protección. ¿Qué hago?"
A 'Respuesta' section follows, containing a block of text about the complexity of such cases and the need for legal advice. At the bottom, there is a 'Ver otras preguntas relacionadas' button.

The screenshot shows the IF@Q portal search results page. At the top, there are tabs for 'PREGUNTAR', 'VER PREGUNTAS', 'BUSCAR SENTENCIAS', and 'AYUDA'. The search results are titled 'RESULTADOS DE BÚSQUEDA' and show the following information:
Órgano Judicial: Tribunal Superior de Justicia de las Illes Balears, Sala de lo Contencioso-administrativo
Jurisdicción: CONTENCIOSO-ADMINISTRATIVA
Número de sentencia: 33/2005
Número de recurso: 449/2003
Fecha de la sentencia: 25 Ene 2005
Ponentes: Delfont Maza, Pablo.
Voces: EXTRANJEROS.

Text: En la ciudad de Palma de Mallorca a veinticinco de enero de dos mil cinco
JUICIO: BALEARES SALA CON/RO
PALMA DE MALLORCA
SENTENCIA: 00033/2005
Nº 33
JUEZ: SRS.
D. Gabriel Feli Gorilla.
MAJESTRADOS
D. Pablo Delfont Maza.
D. Fernando Sotelo Montero.
Vistos por la Sala de lo Contencioso-Administrativo del Tribunal Superior de Justicia de las Illes Balears los autos número 449 de 2003, seguidos entre partes; como demandante, Dña. Clara, representada por la Procuradora Dña. Margarita Borrás Sansalón, y asistida de la Letrada Dña. María Canudas Pujol, y como Administración demandada, la General del Estado, representado y asistido por su Abogado.
El objeto del recurso es la resolución de la Delegación del Gobierno, de 20 de marzo de 2003, por la que se impone sanción de expulsión con prohibición de entrada en España durante 5 años por la comisión de infracción grave prevista en el artículo 53 a. de la Ley Orgánica 4/2000 -expediente número 378/03-.
La cuantía del recurso se ha fijado como indeterminada.
Se ha seguido la tramitación correspondiente al procedimiento ordinario.
Ha sido Magistrado Ponente el Ilmo. sr. D. Pablo Delfont Maza, quien expresa el parecer de la Sala.

ANTECEDENTES DE HECHO
PRIMERO. El recurso fue interpuesto el 1 de abril de 2003, admitiéndose a trámite por providencia del día 9 de junio siguiente, reclamándose el expediente administrativo.
SEGUNDO. La demanda se formalizó el 21 de octubre de 2003, solicitando la estimación del recurso. No interesaba el recibimiento del juicio a prueba.
TERCERO. El Abogado del Estado contestó a la demanda el 29 de julio de 2004, solicitando la desestimación del recurso y la imposición de las costas. No interesaba el recibimiento del juicio a prueba.
CUARTO. Por providencia de 11 de enero de 2005, se señaló el día 25 siguiente para la votación y fallo del recurso.

Courtesy of Pompeu Casanovas, Spanish General Council of the Judiciary, and Richard Benjamins, iSOCO (SWEO Use Case)

Help for deep sea drilling operations

- Integration of experience and data in the planning and operation of deep sea drilling processes
- Discover relevant experiences that could affect current or planned drilling operations
 - uses an ontology backed search engine

The screenshot shows the AKSIO search interface. At the top, there is a search bar with the text "leak in barrier elements" and a "AKSIO-search" button. Below the search bar is a banner with the AKSIO logo and the text "leak in barrier elements". The main interface is divided into two main sections: "Search filters" on the left and "Results 1 - 7 of 7" on the right.

Search filters:

- discipline
- operation
- equipment
- state
 - select all unselect all
 - Corrosion (1)
 - Erosion (2)
 - Lack Of Maintenance (2)
 - Leak in barrier elements (5)
 - Scale Deposition (4)
 - Too High Mud Density (1)
 - Well Integrity Problem (7)
- keywords_ref
- wellbore_id_ref
- field_id
 - select all unselect all
 - EXPLORATION (1)
 - GULLFAKS (1)
 - GULLFAKS SØR (1)
 - HEIDRUN (1)
 - HULDRA (1)
 - MIDGARD (2)
 - RIMFAKS (1)
 - SNORRE (1)
 - VISUND (2)

Results 1 - 7 of 7

- Top plug / 20" E2SV**
2002-06-26T10:00:00Z
Description: Experience: In a "standard" OPR design, the upper cement plug would cover the 13 3/8" cut as well as...
EXPLORATION NO 6406/1-1 PA PLUGBACK/KICK-OFF
2007-06-12T07:05:58Z
Cementing Network Sementeringsnettverk Directional Drilling Network Directional Drilling Network Bronnintegritet Well Integrity
Casing Foringar Deep set tubing plug Deep set tubing plug Liner top packer Liner top packer Mechanical tubular plugs Well Integrity Problem Well Integrity Problem
- RJH with drill stem teststring.**
2002-06-13T10:00:00Z
Description: RJH with drill stem teststring. Took weight when entering 7" liner with test string. Worked same pas...
RIMFAKS NO 34/10-3-4 H DST DRILL STEM TEST
2007-06-12T07:05:58Z
Bronnintegritet Well Integrity
Snubbing Snubbing
Completion string component Completion string component Downhole tester valve Downhole tester valve Borestreng Drillingstring Subsea production tree Subsea test tree Subsea test tree Surface test tree Surface test tree Well test packer Well test string Well test string Well test string components Erosion Erosjon Lack Of Maintenance Lack Of Maintenance Leak in barrier elements Leak in barrier elements Well Integrity Problem Well Integrity Problem
- Flowing well**
2003-02-20T11:00:00Z
Description: The well was temporary handed back to production during changeover from slick line to 5/16" cable to...
HEIDRUN NO 6507/7-A-20 WIREL Holi Trond OTHER
2007-06-12T07:05:58Z
Cementing Network Sementeringsnettverk Technical Sidetrack Tekniske Sidesteg Bronnintegritet Well Integrity
Snubbing safety head Snubbing safety head UBD none return valve UBD none return valve
Corrosion Corrasjon Erosion Erosjon Lack Of Maintenance Lack Of Maintenance Leak in barrier elements Leak in barrier elements Scale Deposition Scale Deposition Too High Mud Density Too high mud density Well Integrity Problem Well Integrity Problem
- Fill drop sub assy prior to making up packer for barrier assy to avoid possible trapped pressure.**
2002-06-24T10:00:00Z
Description: Fill drop sub assy prior to making up packer for barrier assy to avoid possible trapped pressure...
HULDRA NO 30/2-A-6 8 1/2" Rodlevt Knut T/A PLUGS & MECH. PLUGS
2007-06-12T07:05:58Z
Cementing Network Sementeringsnettverk Bronnintegritet Well Integrity
Deep set tubing plug Deep set tubing plug
Leak in barrier elements Leak in barrier elements Scale Deposition Scale Deposition Well Integrity Problem Well Integrity Problem

Courtesy of David Norheim and Roar Fjellheim, Computas AS (SWEO Use Case)

eTourism: provide personalized itinerary

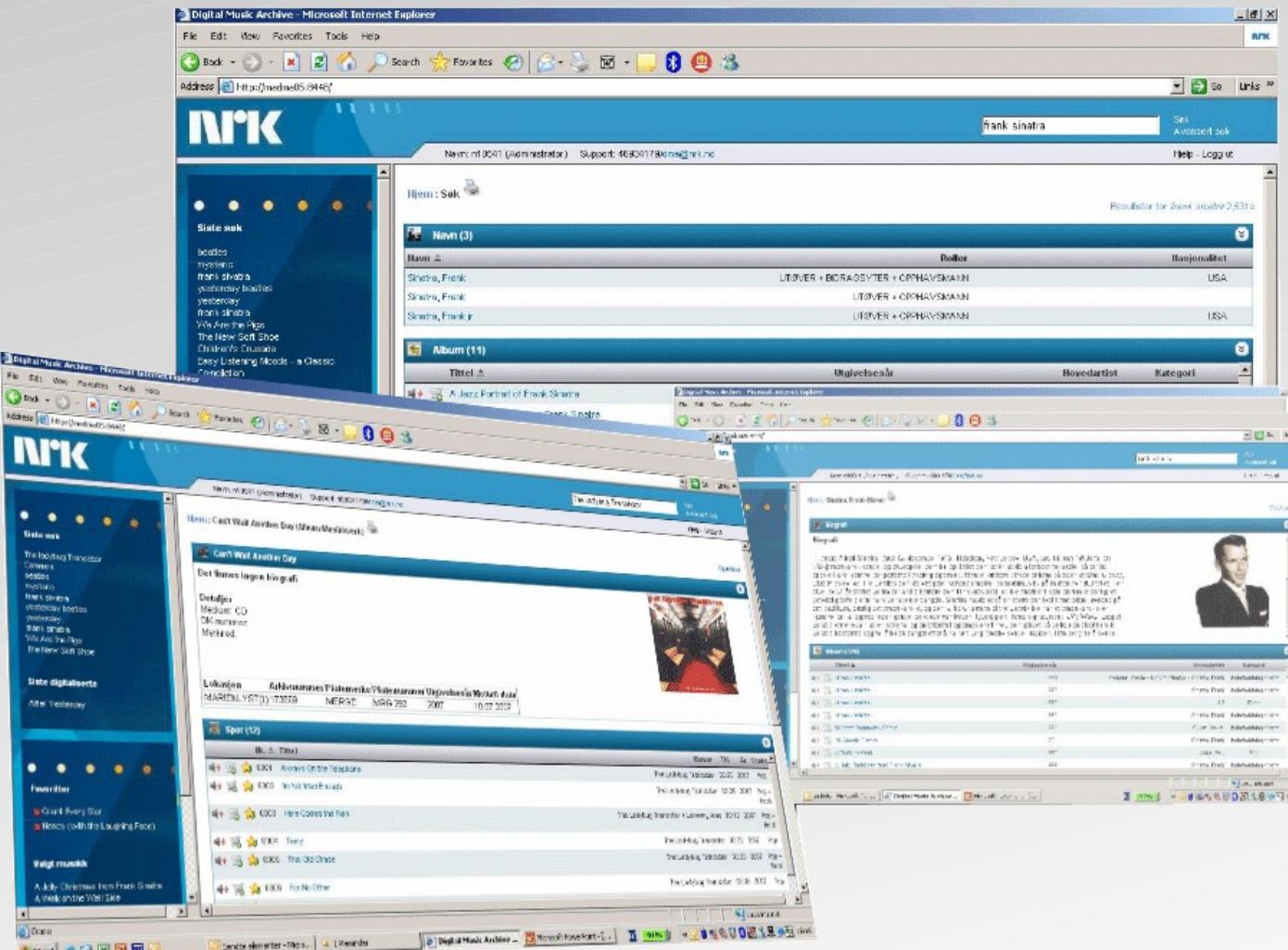
The screenshot shows a personalized itinerary for June 17, 2008, in Zaragoza. The itinerary is divided into Morning and Afternoon sessions. The Morning session includes sites like the Basilica of the Pilar, Ibercaja Camón Aznar Museum, and the Caesaraugusta Forum Museum. The Afternoon session includes sites like the Church of la Mantería, Church of San Ildefonso, and the Central market. A map of Zaragoza highlights the location of the Basilica of the Pilar and other tourist sites.

- Integration of relevant data in Zaragoza (using RDF and ontologies)
- Use rules on the RDF data to provide a proper itinerary

Courtesy of Jesús Fernández, Municipality of Zaragoza, and Antonio Campos, CTIC (SWEO Use Case)

Digital music asset portal at NRK

- Used by program production to find the right music in the archive for a specific show



Courtesy of Robert Engels, ESIS, and Jon Roar Tønnesen, NRK (SWEO Case Study)

National Archives of Korea

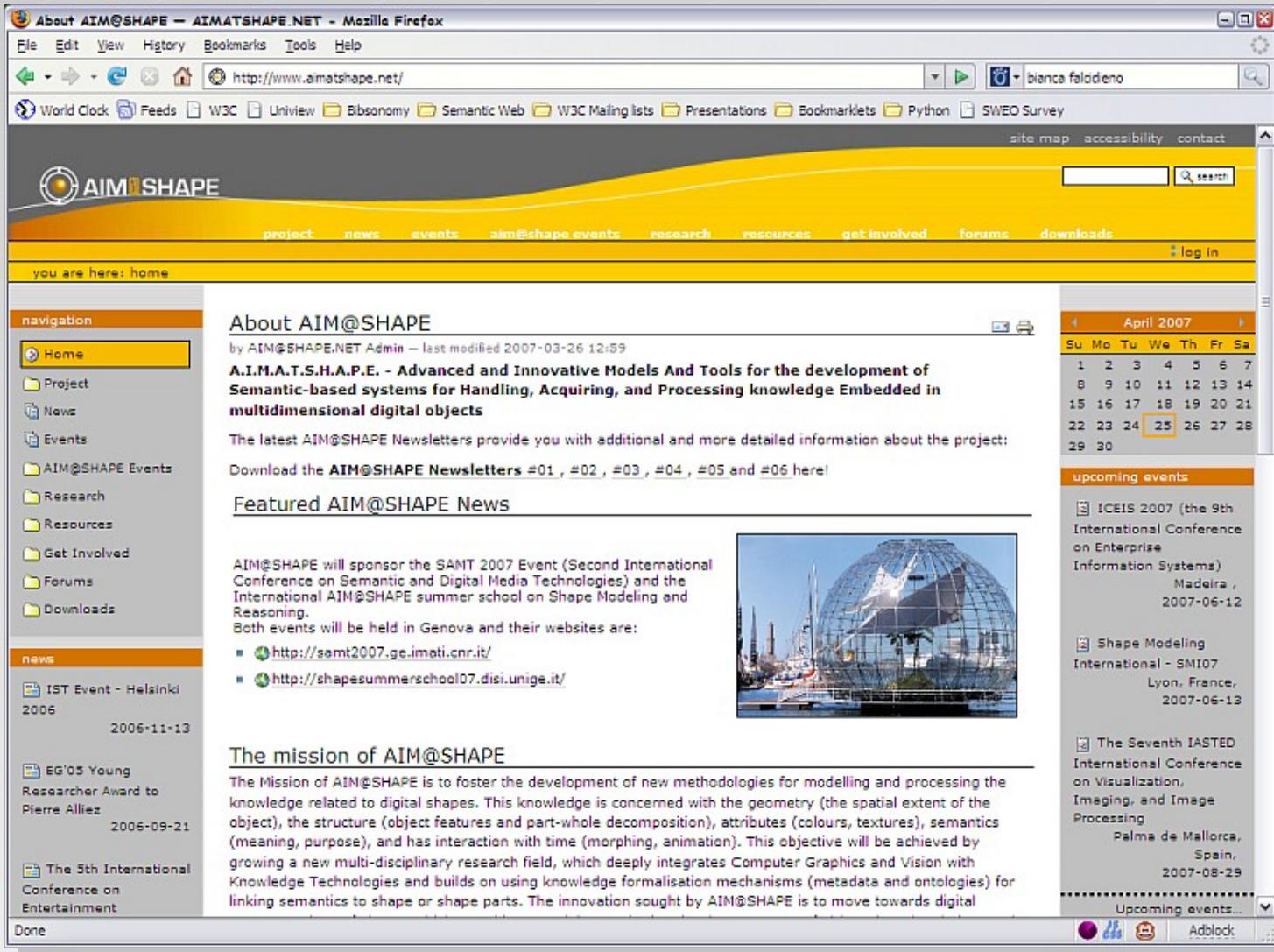
- Ontology based metadata infrastructure for NAK (over 12 million metadata statements)
- Usage of rules to retrieve information



Courtesy of Tony Lee, Jin Woo Kim, and Bok Ju Lee, Saltlux, Kyu Hyup Kim, Yoon Jung Kang, NAK (SWEO Case Study)

Aim@shape computer graphics portal

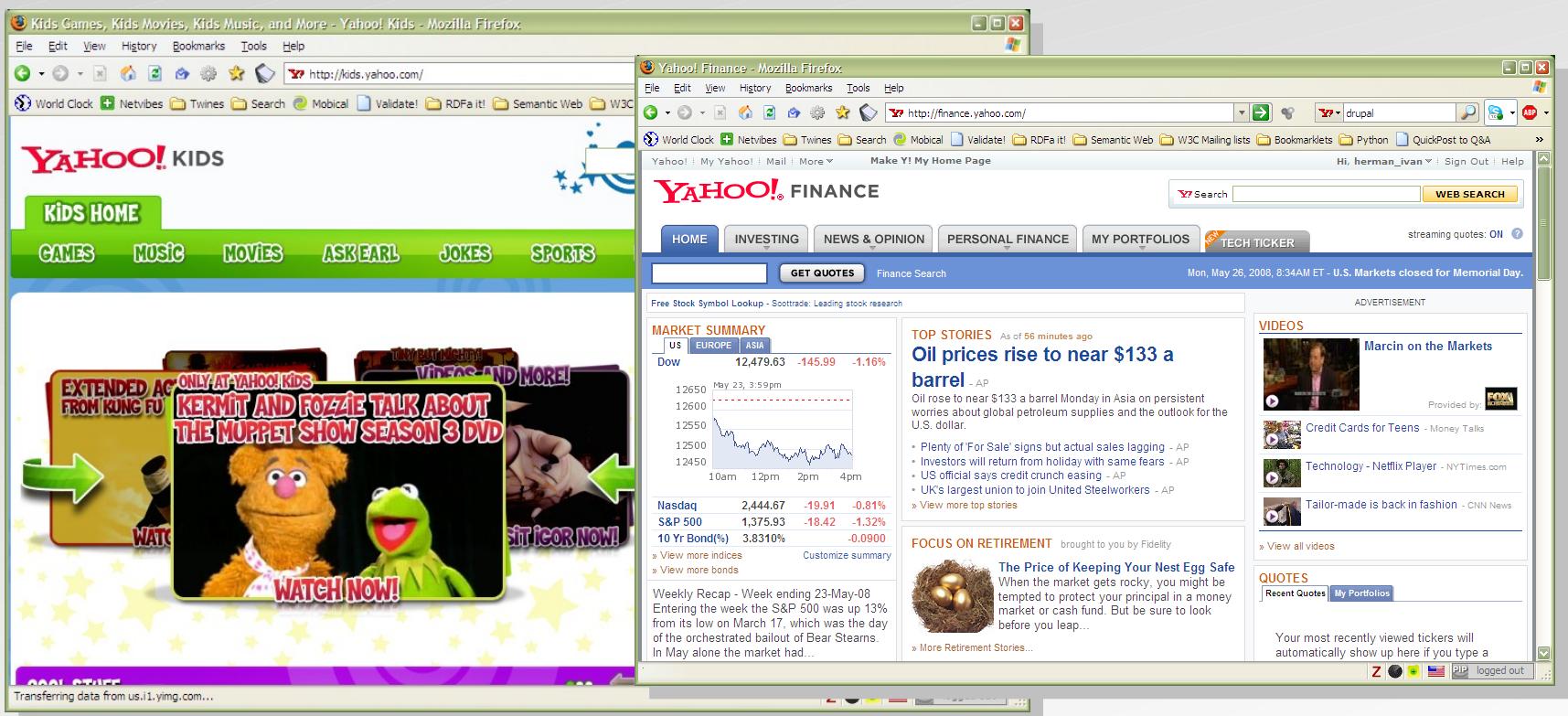
- eScience portal for computer graphics (storing digital shapes, surface data, virtual humans' data, tools)



The screenshot shows the AIM@SHAPE website as it appears in Mozilla Firefox. The browser's title bar reads "About AIM@SHAPE - AIM@SHAPE.NET - Mozilla Firefox". The address bar shows the URL "http://www.aimatshape.net/". The bookmarks bar contains links to "World Clock", "Feeds", "W3C", "Uniview", "Bibsonomy", "Semantic Web", "W3C Mailing lists", "Presentations", "Bookmarks", "Python", and "SWEO Survey". The main content area features a yellow header with the AIM@SHAPE logo and navigation links for "project", "news", "events", "aim@shape events", "research", "resources", "get involved", "forums", and "downloads". A "log in" link is also present. The left sidebar has a "navigation" section with links to "Home", "Project", "News", "Events", "AIM@SHAPE Events", "Research", "Resources", "Get Involved", "Forums", and "Downloads". Below that is a "news" section with links to "IST Event - Helsinki 2006" (date 2006-11-13) and "EG'05 Young Researcher Award to Pierre Alliez" (date 2006-09-21). The main content area includes a "About AIM@SHAPE" section with a brief description of the project, news links, and a "Featured AIM@SHAPE News" section. It also features a "The mission of AIM@SHAPE" section with a detailed description of the project's mission. On the right side, there is a "site map", "accessibility", and "contact" link, a search bar, a calendar for April 2007 (with the 25th highlighted), and a "upcoming events" section listing "ICEIS 2007", "Shape Modeling International", and "The Seventh IASTED International Conference on Visualization, Imaging, and Image Processing". The bottom of the page includes standard Firefox navigation buttons and an "Upcoming events..." link.

Yahoo! portals

- “Back-end” is built using SW tools
 - common (RDF) data model for data, metadata, relationships,...
 - constraints expressed in OWL, Rules
 - uses public (DC, PRISM) and private vocabularies



Digital assets with metadata (Fedora)

- Fedora: a general tool for storing digital assets
- The internal metadata architecture is fully based on RDF

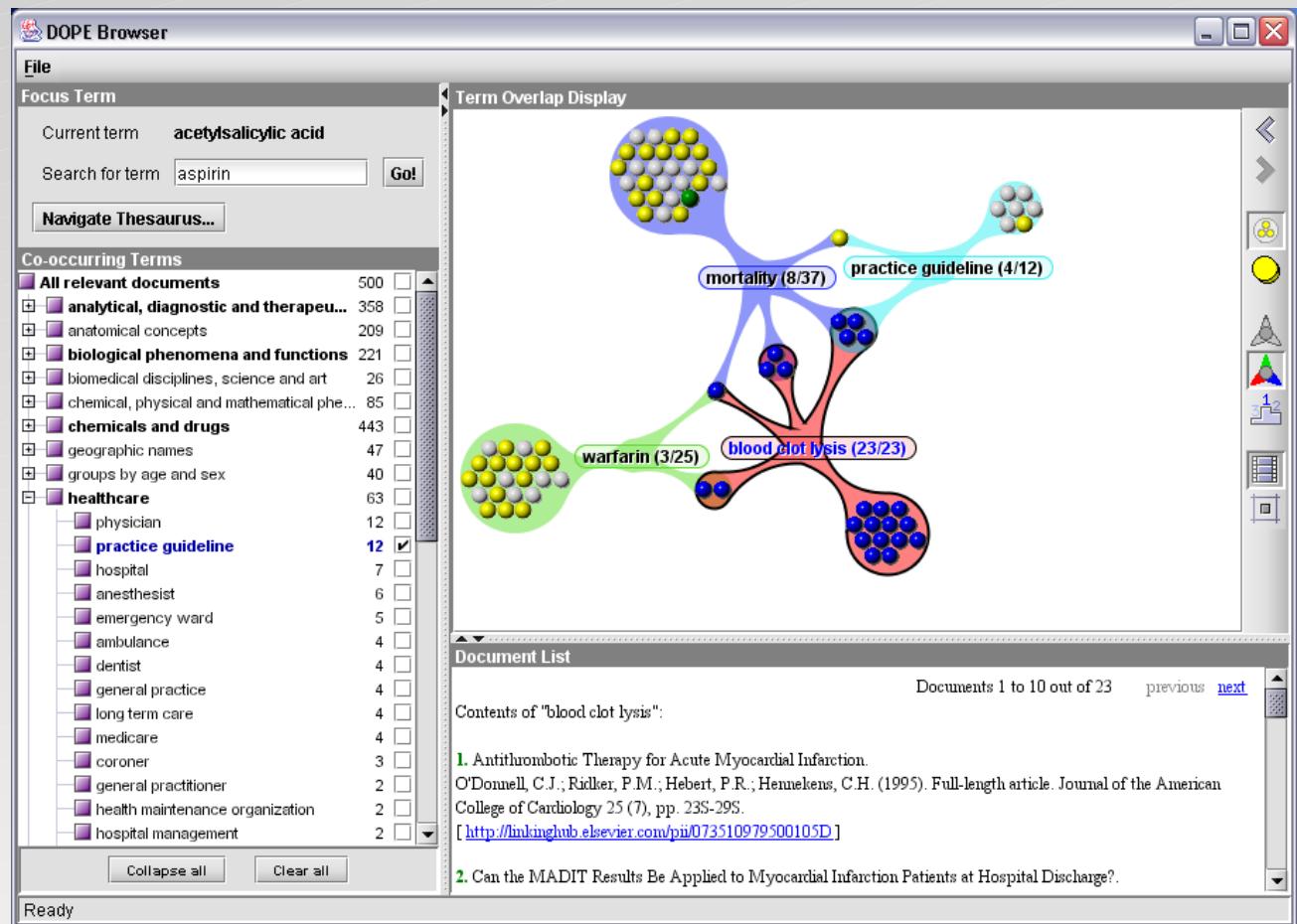
The collage includes the following screenshots:

- Tufts Libraries & Archives:** A screenshot of the Tufts University Libraries & Archives website, showing a search bar and links for Current Students, Faculty, and Staff.
- eSciDoc Project:** The homepage of the eSciDoc project, featuring the eSciDoc logo, a banner for the Bundesministerium für Bildung und Forschung, and news and events sections.
- AWI Stiftung Alfred-Wegener-Institut für Polar- und Meeresforschung:** A screenshot of the AWI website, showing a banner of a research vessel in the ice, and a "Tip of the Month" section for Biological Oceanography.
- Perseus Digital Library:** A screenshot of the Perseus Digital Library website, showing a world map of classical sites and a sidebar with links to various classical texts and figures.
- Perseus Digital Library - Windows Internet Explorer:** A screenshot of the Perseus Digital Library in a web browser, showing a news article about pyclobiophytes and a sidebar with links to classical texts and figures.
- University of Virginia Library:** A screenshot of the University of Virginia Library digital collections, showing a thumbnail view of images from George Catlin's "Illustrations of the Manners, Customs & Condition of the North American Indians".
- Memorial Sloan Cancer Center:** A screenshot of the Memorial Sloan Cancer Center website, featuring a banner with two doctors, and sections for Cancer Information, Patient Care, Research, Education & Training, and Living Beyond Cancer.

Courtesy of Sebastian Kruk, DERI Gallway, Sandy Payette, Cornell University

Elsevier's DOPE browser

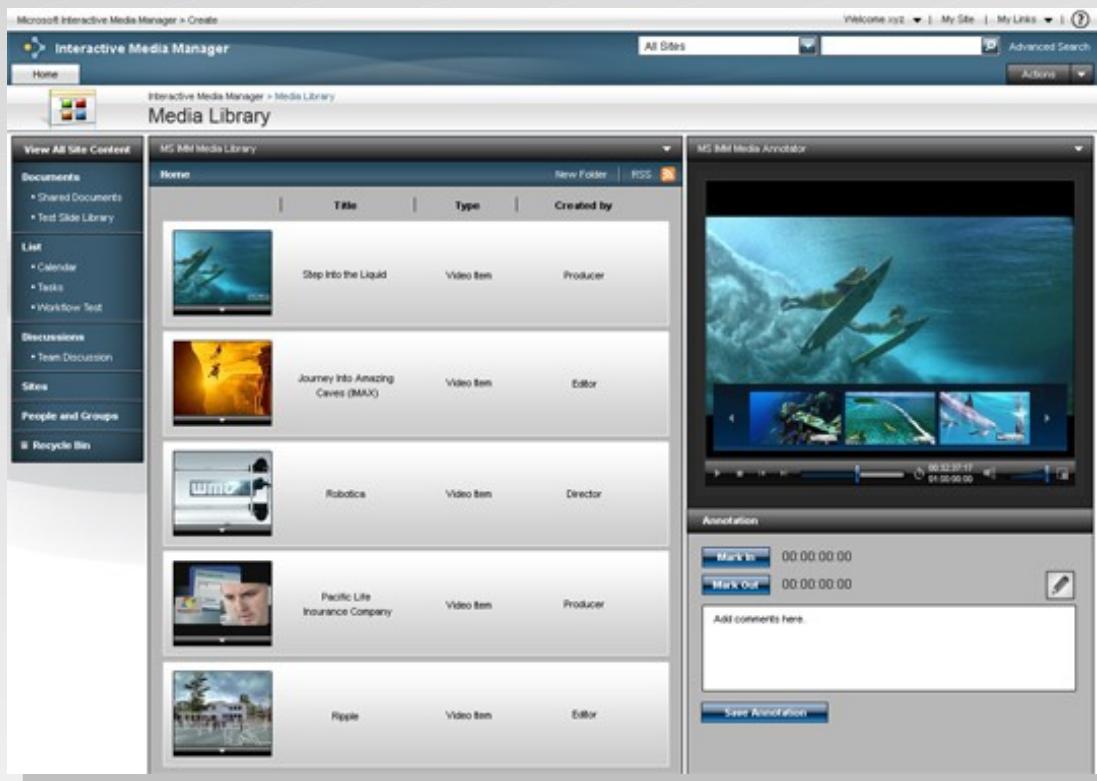
- Single interface to multiple data sources (in life sciences)
- Integration, search, etc, via thesauri and metadata in RDF(S)



Courtesy of Anita de Waard, Elsevier, Christiaan Fluit, Aduna, and Frank van Harmelen, VU Amsterdam (SWEO Use Case)

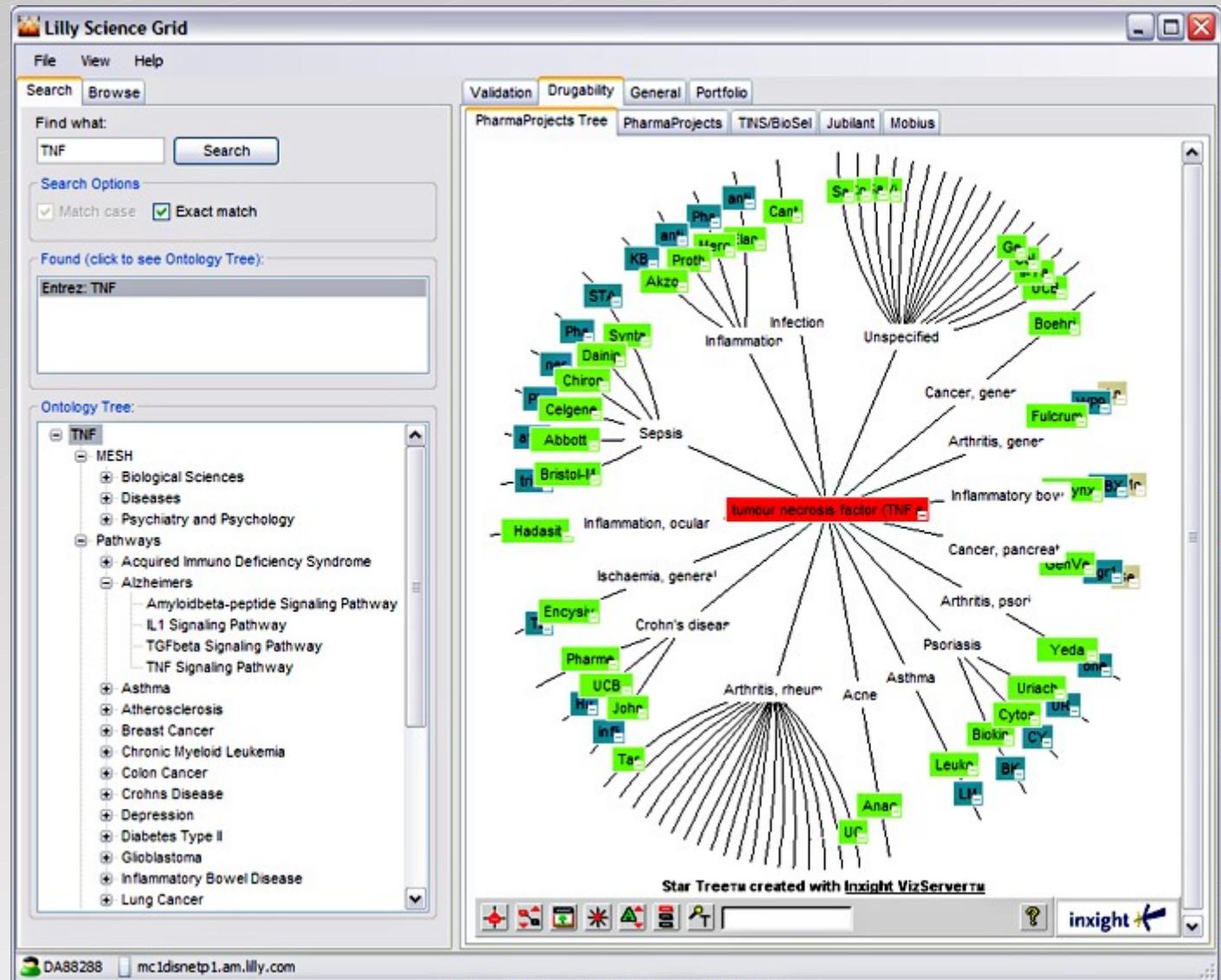
Microsoft Vista's Interactive Media Manager

- Uses an RDF/SPARQL/OWL based metadata framework
 - eg, for a better control over relationships among media assets and categories
- Custom OWL ontologies can be created and imported



Eli Lilly's Target Assessment Tool

- Prioritization of drug target, integrating data from different sources and formats
- Integration, search via ontologies (proprietary and public)



Courtesy of Susie Stephens, Eli Lilly (SWEO Case Study)

Novartis' UltraLink

- Semantic integration layer for knowledge resources
- uses of specialized ontologies (both local and public), SKOS taxonomies, etc

The screenshot shows a Microsoft Internet Explorer window with two open tabs. The main tab displays a research article from 'Nature Clinical Practice Rheumatology' (2007) about 'Imatinib for the treatment of rheumatic diseases'. The article is authored by Ricardo T Paniagua and William H Robinson. The sidebar on the left lists various resources and organizations, including APLAR. A tooltip for the word 'UltraLink' is overlaid on the page, pointing to a smaller window titled 'UltraLink - Microsoft Internet Explorer provided by Novartis'. This window shows a search interface for 'spondyloarthropathy', listing various search options and links to external databases like Ensembl, GeneCards, and OMIM.

Courtesy of Therèse Vachon, Novartis, W3C Workshop on RDF Access to Relational Databases

Intelligent search for public services

- Semantic Web based search engine for public services at the municipality of Zaragoza (Spain)
- The search is based a local ontology, natural language processing and ontological reasoning



Courtesy of Jesús Fernando Ruiz, Municipality of Zaragoza (SWEO Use Case)

Vodafone live!

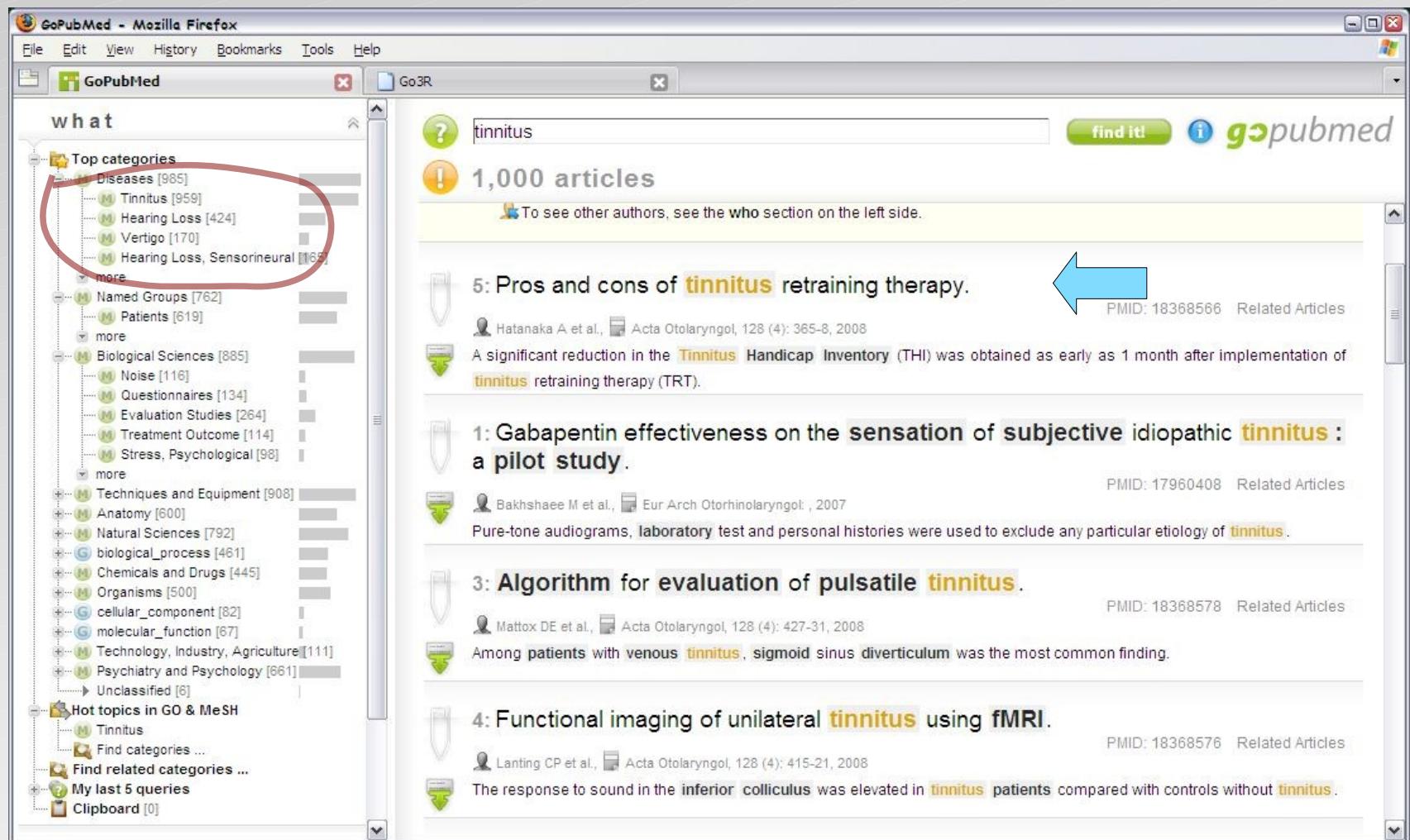
- Integrate various vendors' product descriptions via RDF
 - ring tones, games, wallpapers
 - manage complexity of handsets, binary formats
- A portal is created to offer appropriate content
- Significant increase in content download after the introduction



Courtesy of Kevin Smith, Vodafone Group R&D ([SWEO Case Study](#))

Improved Search via Ontology (GoPubMed)

- Search results are re-ranked using ontologies
- Related terms are highlighted, usable for further search



Improved Search via Ontology (Go3R)

- Same dataset, different ontology
 - (ontology is on non-animal experimentation)

Go3R - Mozilla Firefox

File Edit View History Bookmarks Tools Help

GoPubMed Go3R

what

tinnitus

1,000 articles

2: Microvascular decompression of cochleovestibular nerve.

Yap L et al., Eur Arch Otorhinolaryngol, 2008

This report provides a review of all the published studies on MVD of the eighth (8th) nerve in alleviating cochleovestibular symptoms and presents three additional patients who underwent MVD of the eighth nerve for **tinnitus** or **vertigo**.

PMID: 18389269 Related Articles

3: Algorithm for evaluation of pulsatile **tinnitus**.

Mattox DE et al., Acta Otolaryngol, 128 (4): 427-31, 2008

Among patients with arterial **tinnitus**, carotid atherosclerotic disease was the most common.

PMID: 18368578 Related Articles

4: Functional imaging of unilateral **tinnitus** using fMRI.

Lanting CP et al., Acta Otolaryngol, 128 (4): 415-21, 2008

This article shows that the inferior colliculus plays a key role in unilateral subjective **tinnitus**.

PMID: 18368576 Related Articles

5: Pros and cons of **tinnitus** retraining therapy.

Hatanaka A et al., Acta Otolaryngol, 128 (4): 365-8, 2008

A significant reduction in the **Tinnitus** Handicap Inventory (THI) was obtained as early as 1 month after implementation of **tinnitus** retraining therapy (TRT).

PMID: 18368566 Related Articles

6: Mass casualty incident management triage, injury distribution of casualties and

Same problem, different solution...

How do I use Anatomy Lens? [BASIC](#) [ADVANCED](#)

Best viewed in Firefox at 1280 x 1024

ANATOMY LENS: Semantic Search Over PubMed

PUBMED SEMANTIC QUERY

Search Stop Clear All

Specify Medical Subject Heading(s) (MeSH):

Lung

Specify Anatomical Part(s) (FMA):

Lung

Specify Genetic Process(es) (GO):

respiratory tube development

Published between 2005 and 2008

Result Limit 100

Query Results

23 result(s) found between 2005 and 2008 in 1.612 seconds [Continue semantic search on additional related concepts?](#)

Compare results with standard PubMed search on [Lung respiratory tube development](#).

2005 [Lysyl oxidase](#) is essential for normal development and function of the respiratory system and for the integrity of elastic and collagen fibers in [various tissues](#). [A]

2005 [Nmyc](#) plays an essential role during lung development as a dosage-sensitive regulator of progenitor cell proliferation and differentiation. [A]

2005 [Pathophysiological consequences following inhibition of a CFTR-dependent developmental cascade in the lung](#). [A]

2005 [The transcription factor gene Nfib](#) is essential for both lung maturation and brain development. [A]

2005 [Vascular endothelial growth factor](#) co-ordinates proper development of lung epithelium and vasculature. [A]

6 articles found related to [Lung] and [alveolus development] [Why?](#) Rate:

Date PubMed Article

2007 [Fgf10 dosage](#) is critical for the amplification of epithelial cell development. [A]

2007 [Foxp2 and Foxp1](#) cooperatively regulate lung and esophagus. [A]

2007 [Respiratory distress and neonatal lethality](#) in mice lacking [Gαo](#). [A]

2006 [Alterations in gene expression](#) in [T1 alpha null](#) lung: a model. [A]

2005 [Inactivation of tensin3](#) in mice results in growth retardation and death. [A]

2005 [Vascular endothelial growth factor gene therapy](#) increases survival in [hyperoxia-induced lung injury](#): evidence that angiogenesis plays a role. [A]

Annotations on Article

MeSH Terms: [abnormalities, Epithelial Cells, Male, embryology, Mice, Transgenic, Animals, Newborn, Gene Dosage, metabolism, Heterozygote, Myocytes, Smooth Muscle, Gene Expression Regulation, Developmental, Embryonic Stem Cells, Vascular Endothelial Growth Factor A, Mice, Knockout, Fibroblast Growth Factor 10, growth & development, Female, Lac Operon, Wnt Proteins, Mesoderm, cytology, Phenotype, Pregnancy, Animals, genetics, Lung, Platelet-Derived Growth Factor, Mice]

FMA Concepts: [Embryonic stem cell, Mesoderm, Lung]

Result Explanation

These articles talk about **alveolus development** which is related to the queried term **respiratory tube development**

This is because...

[alveolus development](#) is a [part_of](#) [lung development](#)

[lung development](#) is a [part_of](#) [respiratory tube development](#)

[part_of](#) is Transitive

Courtesy of Kavitha Srinivas, IBM J Watson Research Center

Health portal for laypersons

- The “ontology-based” search is combined with a layperson oriented portal...

The screenshot shows a Mozilla Firefox browser window with the URL <http://challenge.semanticweb.org/>. The page is titled 'tervesuomi.fi prototyyppi'. The main content area shows a search results list for 'infectious diseases' with the following items:

hepatitis c (16)	tuberculosis (35) tuberculosis, pulmonary
hemorrhagic fever with renal syndrome (16)	dengue (8)
toxoplasmosis (2)	influenza in birds (36)
malaria (17) malaria, falciparum	bacterial diseases (33) dysentery, bacillary, syphilis, tetanus
anthrax (6)	hepatitis a (24)
aids (30)	polio (19)
parasitic diseases (3) cryptosporidiosis, toxoplasmosis	herpes (10) genital herpes
poxes (35) chickenpox, measles, rubella	legionellosis (13)

The sidebar on the left is titled 'Narrow your search' and contains two sections: 'Life event' and 'Group of people'. The 'Life event' section lists:

course of life
death 3
refugeedom 1
falling ill 1
family and relationships
pregnancy 19
breastfeeding 1
puerperal period 1
leisure
travel 22
seasons
autumn 3
spring 1
summer 1
winter 4

The 'Group of people' section is partially visible.

Health portal for laypersons

- The “ontology-based” search is combined with a layperson oriented portal...

challenge.semanticweb.org - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://challenge.semanticweb.org/

tervesuomi.fi prototyppi

Kansalaisen portti luotettavaan terveystietoon

HOME

HealthFinland is a channel to a wide selection of reliable health information produced by Finnish research and expert organizations, government institutions and health organizations.

Läs mera...

Topic areas

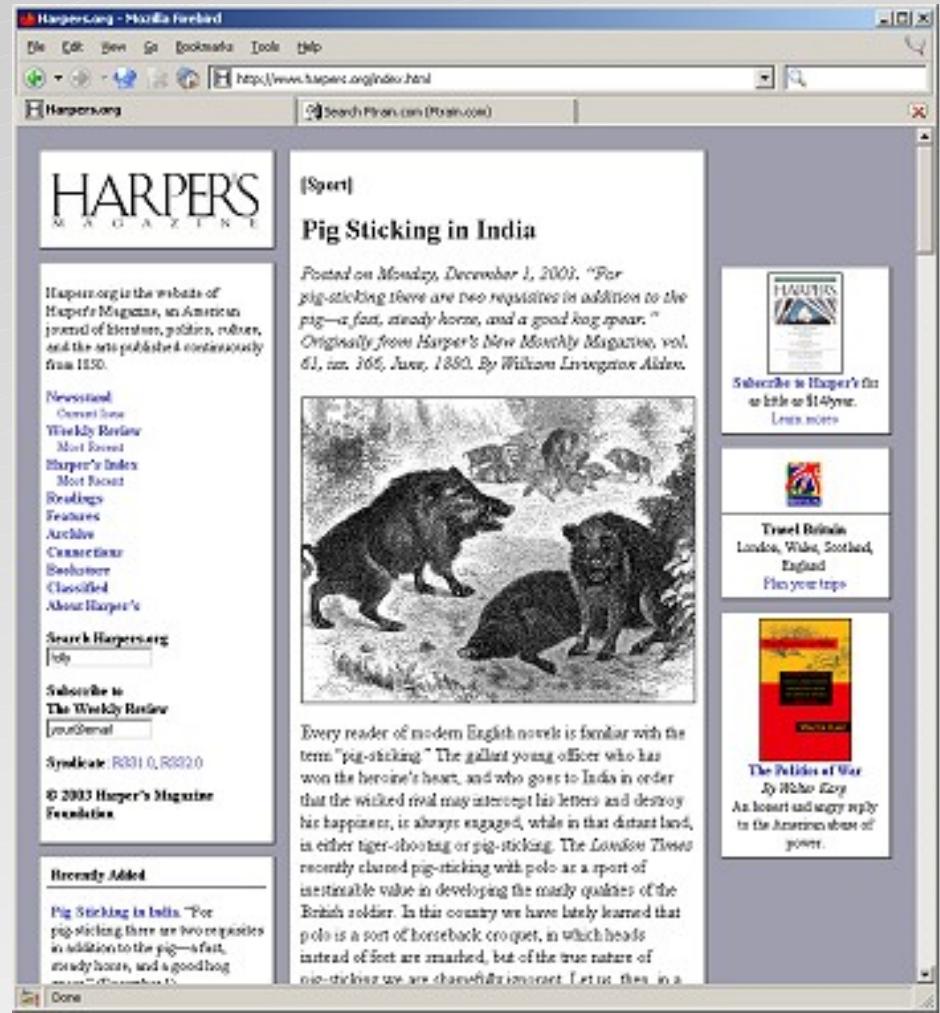
Food and nutrition diet and eating habits, foodstuffs, nutrients...	Intoxicants alcohol, intoxicant problems, smoking...	Conditions and symptoms conditions, symptoms, treatment methods...
Exercise (hälsomotion), fitness and physical activity, sports...	Catastrophes chemical accidents, disasters, terrorism...	Accidents and first aid accident prevention, accidental falls, wounds and injuries...
Weight control body mass index, fatness, overweight...	Epidemics and infectious diseases bacteria, infectious diseases, vaccines...	Finding help care institutions, health centres, public health service...
Sexuality sexual health, sexual intercourse, sexually transmitted diseases...	Mental health and sleep depression, mental disorders, sleep and sleep disorders...	Environment air, residential environment, water...
Family and children breastfeeding, delivery, pregnancy...	Violence and crises	Occupational health koulutus, toimintakyky, työ...

News

- Cross-lingual search**
20.10.2008
The portal now supports any language. Searches can be conducted using the language of the user's choice and results are returned in the user's language.
- Portaalista uusi artikkeli**
18.9.2008
Portaalista uusi artikkeli on julkaistu.
- Aineistot ovat parhaillaan p**
- Portaalista uusi osoitteessa t**
- TerveSuomi**
12.9.2008
Kansanterveys ja terveysk

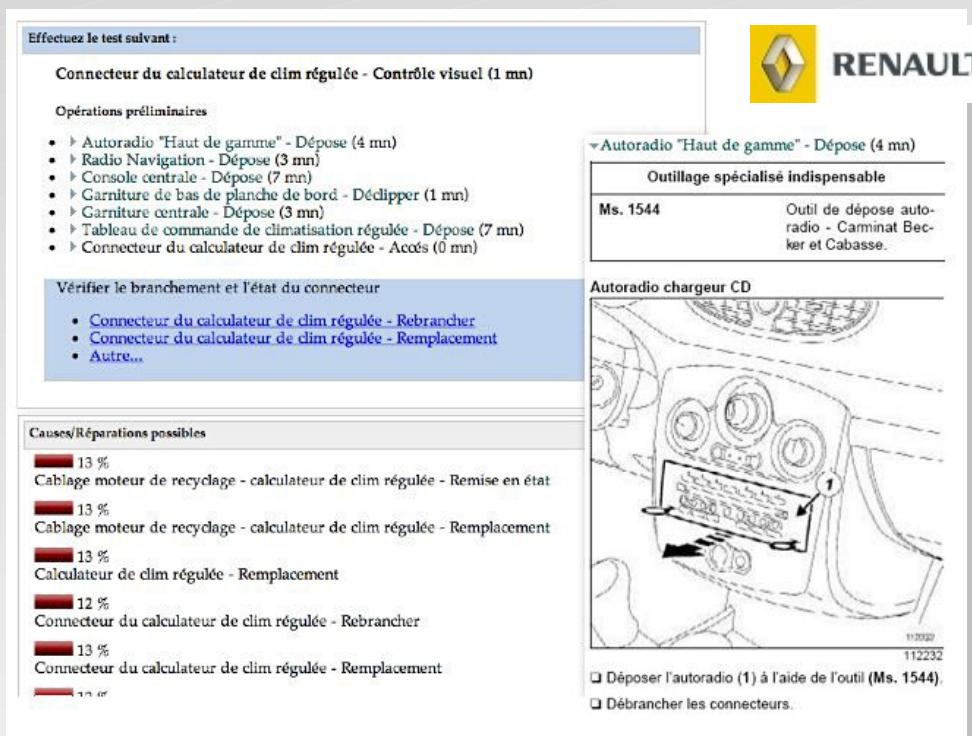
Other examples...

- Sun's White Paper and System Handbook collections
- Nokia's S60 support portal
- Harper's Online Magazine
- Oracle's virtual pressroom
- Opera's community site
- Dow Jones' Synaptica



Repair and Diagnostics Documentation

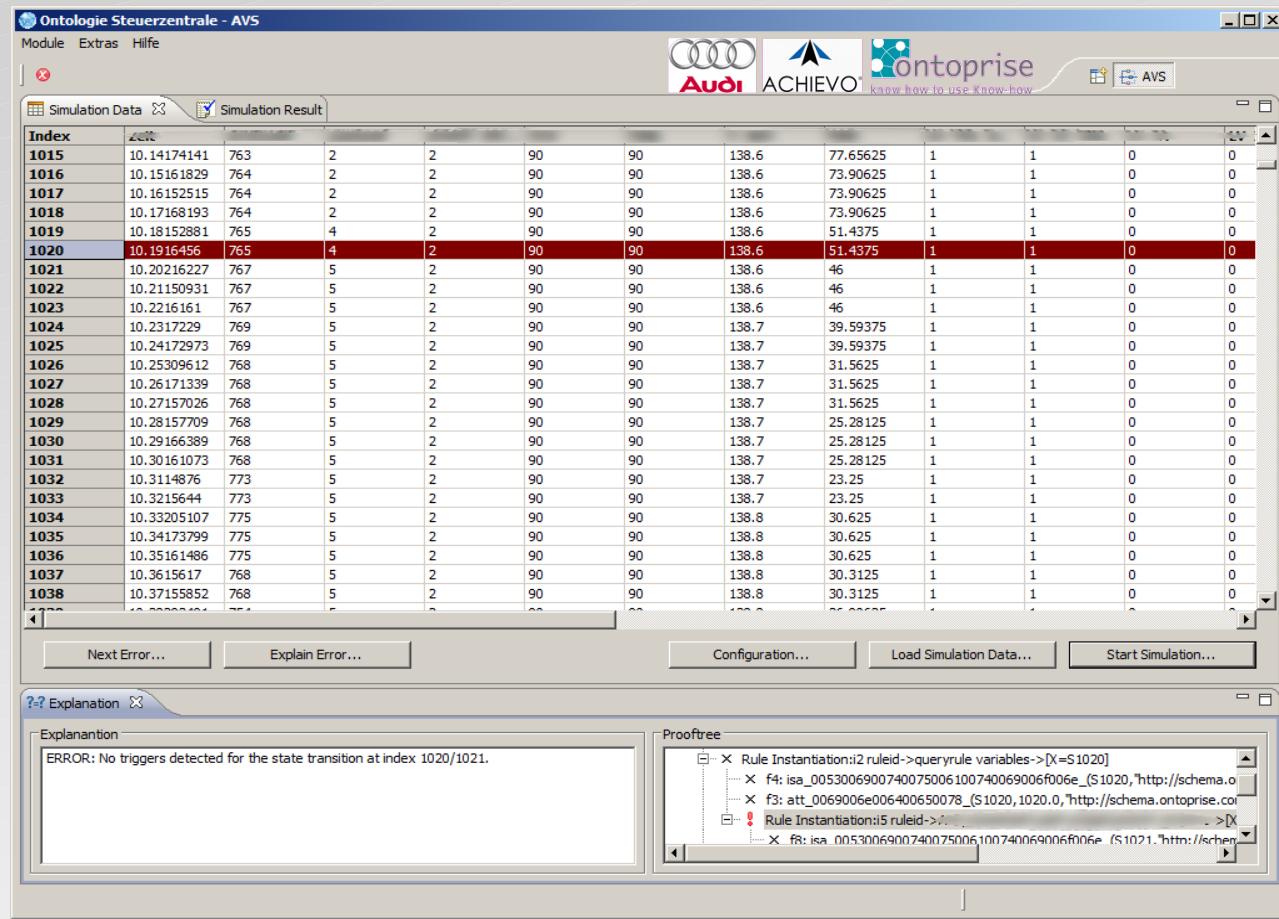
- Store repair and diagnostic operations in a repository with an OWL model
- A “diagnostic engine” generates the manuals on the fly, using RDF for information exchange (from engineering, repair shop, ...)



Courtesy of François-Paul Servant, Renault, (SWEO Use Case)

Car electronics' simulation

- Simulation of car electronics' physical conditions
- Integration of rules and different domain ontologies
- “Explanation” of query results



Ontologie Steuerzentrale - AVS

Module Extras Hilfe

Simulation Data Simulation Result

Index	Zeit												
1015	10.14174141	763	2	2	90	90	138.6	77.65625	1	1	1	0	0
1016	10.15161829	764	2	2	90	90	138.6	73.90625	1	1	1	0	0
1017	10.16152515	764	2	2	90	90	138.6	73.90625	1	1	0	0	0
1018	10.17168193	764	2	2	90	90	138.6	73.90625	1	1	1	0	0
1019	10.18152881	765	4	2	90	90	138.6	51.4375	1	1	1	0	0
1020	10.1916456	765	4	2	90	90	138.6	51.4375	1	1	1	0	0
1021	10.20216227	767	5	2	90	90	138.6	46	1	1	1	0	0
1022	10.21150931	767	5	2	90	90	138.6	46	1	1	1	0	0
1023	10.2216161	767	5	2	90	90	138.6	46	1	1	1	0	0
1024	10.2317229	769	5	2	90	90	138.7	39.59375	1	1	1	0	0
1025	10.24172973	769	5	2	90	90	138.7	39.59375	1	1	1	0	0
1026	10.25309612	768	5	2	90	90	138.7	31.5625	1	1	1	0	0
1027	10.26171339	768	5	2	90	90	138.7	31.5625	1	1	1	0	0
1028	10.27157026	768	5	2	90	90	138.7	31.5625	1	1	1	0	0
1029	10.28157709	768	5	2	90	90	138.7	25.28125	1	1	1	0	0
1030	10.29166389	768	5	2	90	90	138.7	25.28125	1	1	1	0	0
1031	10.30161073	768	5	2	90	90	138.7	25.28125	1	1	1	0	0
1032	10.3114876	773	5	2	90	90	138.7	23.25	1	1	1	0	0
1033	10.3215644	773	5	2	90	90	138.7	23.25	1	1	1	0	0
1034	10.33205107	775	5	2	90	90	138.8	30.625	1	1	1	0	0
1035	10.34173799	775	5	2	90	90	138.8	30.625	1	1	1	0	0
1036	10.35161486	775	5	2	90	90	138.8	30.625	1	1	1	0	0
1037	10.3615617	768	5	2	90	90	138.8	30.3125	1	1	1	0	0
1038	10.37155852	768	5	2	90	90	138.8	30.3125	1	1	1	0	0

Next Error... Explain Error... Configuration... Load Simulation Data... Start Simulation...

Explanation

Explanation: ERROR: No triggers detected for the state transition at index 1020/1021.

Prooftree

- Rule Instantiation:2 ruleid->queryrule variables->[X=51020]
- f4: isa_0053006900740075006100740069006f00e_(S1020, "http://schema.owl#")
- f3: att_0069006e006400650078_(S1020, 1020.0, "http://schema.ontoprise.com#")
- Rule Instantiation:5 ruleid->...
- f8: isa_0053006900740075006100740069006f00e_(S1021, "http://schema.owl#")

Courtesy of Thomas Syldatke et al., Audi, Achievo, and ontoprise, (SWEO Use Case)

New type of Web 2.0 applications

- New Web 2.0 applications come every day
- Some begin to look at Semantic Web as possible technology to improve their operation
 - more structured tagging, making use of external services
 - providing extra information to users
 - etc.
- Some examples: Twine, Revyu, Faviki, ...

“Review Anything”

Licence to Kill - Things - Revyu.com - Mozilla Firefox

File Edit View History Bookmarks Tools Help

World Clock Netvibes Twines Search Mobicat Validate! RDFa it! Semantic Web W3C Mailing lists Bookmarklets Python

Home | Browse Things | Search Things | Browse People

Login/Register | New Review

Licence to Kill

Links
See Also: http://en.wikipedia.org/wiki/Licence_to_kill

Tags
action film james-bond movie

Reviews (1)
 by tom on 31 Dec 2006
Utterly forgettable Bond film. Over the top action sequences, unconvincing romances, and a disjointed storyline. There aren't even any good Bond one-liners. Passes the time but not much else.

What do you think of Licence to Kill? [Write Your Own Review...](#)

Licence to Kill



directed by [John Glen](#)

[RDF Metadata About Licence to Kill](#)

links to, eg, (DB/Wiki)Pedia

enhance output with linked data

data in RDF

Radar Network's Twine

- “Social bookmarking on steroids”

- Relationships are based on ontologies

- evolving over time, possibly enriched by users

- Internals in RDF

The screenshot shows a Mozilla Firefox browser window displaying the Twine application. The title bar reads "The Manhattan Project: The Birth of the Atomic Bomb in the Words of Its Creators, Eyewitnesses and Historians. © twine - Mozilla Firefox". The main content is a "Private" twine titled "Ivan's private twine". The interface includes a navigation bar with "Home", "My Twines", "My Connections", "Explore", "Start a Twine", and a search bar. Below the navigation is a toolbar with "Summary", "Items", "Members", "Manage", and "Add Item". The main area shows a summary of the item "The Manhattan Project: The Birth of the Atomic Bomb in the Words of Its Creators, Eyewitnesses and Historians." Book added by Ivan Herman to Ivan's private twine on Dec 31, 2007. The item is marked as "Private". To the right, there are sections for "Places", "People", "Organizations", and "Other tags", each with a list of entities and an "Add [entity type]" button. Three specific entities are circled in green: "Publisher" (Black Dog & Leventhal Publishers), "Release Date" (Sep 17, 2007 (3 months ago)), and "Price" (\$24.95). The "Places" section also has two entities circled in green: "United States" and "Albert Einstein".

Faviki: social bookmarking, semantic tagging

- Social bookmarking system (a bit like del.icio.us) but with a controlled set of tags
 - tags are terms extracted from Wikipedia/DBpedia
 - tags are categorized using the relationships stored in DBpedia
 - tags can be multilingual, DBpedia providing the linguistic bridge
- The tagging process itself is done via a user interface hiding the complexities

Faviki Example

Sviatoslav Richter, legendary pianist - Mozilla Firefox

File Edit View History Bookmarks Tools Help

cool uris Done.

http://www.fanfaire.com/transitions/richter.html

TRANSITIONS
SVIATOSLAV RICHTER

SVIATOSLAV RICHTER

20 March 2008

Le

"...the only

That was how one critic was compelled to describe Sviatoslav Richter when he how Clara Schumann spoke of the venerable Franz Liszt. The musical world m a great artist, indisputably one of the greatest pianists of the 20th century. Richter with his exquisite mastery of the keyboard ever since the 1960s when he first m bloc countries where he had been renowned for years. He consistently played t legend in the process. With his compatriots, cellist Mstislav Rostropovich and violinist David Oistrakh, he was responsible for the robust Soviet-American cultural exchange that began in the 1970s.

He was born in Zhitomir in the Ukraine to a family of German ancestry. His father was a respected pianist and piano teacher and his mother an amateur musician who was one of the early admirers of Debussy and Scriabin. He had his first music lessons with his father, becoming a master of the keyboard at the age of 8. The family later moved to Odessa where the young Sviatoslav enrolled at the Odessa Conservatory. In his teens, he was attracted to a career in conducting and at the astoundingly young age of 15 became a conductor for the Odessa Opera and the Ballet Theater, a post he held for four years. He gave his first piano recital at age 19 also in Odessa. Cognizant of his extraordinary talent, his superiors convinced him to study in Moscow with one of Russia's foremost piano teachers, Heinrich Neuhaus. He did so at the age of 22 and soon after completed his studies with the great piano teacher, who later wrote of his star student: "I must say in all honesty that there was nothing more I could teach Richter."

Start to type, then choose from the list or search by Google: [help](#) >

add new tag G

Tags you added:

Classical music Sviatoslav Richter

Suggested tags **My recent tags**

Anne-Sophie Mutter Jean-Pierre Rampal Ravi Shankar
ARIA Music Awards Fabio (DJ) Anoushka Shankar Mario (singer)
Joan Sutherland

powered by **Google™** and **Zemanta** +

edit title, my note, privacy...

Save

Close

faviki

Buy sheet music
sheetmusicplus
sheetmusicplus.com

Sign up:
EMAIL UPDATE
FREE CD!

fanfaire
STORE

Faviki Example

Sviatoslav Richter, legendary pianist - Mozilla Firefox

File Edit View History Bookmarks Tools Help

cool uris

http://www.fanfaire.com/transitions/richter.html

Start to type, then choose from the list or search by Google: [help](#) >

russian mu G

Russian Museum

Russian music

Russian Music Competition

Russian Musical Society

Suggested tags **My recent tags**

Anne-Sophie Mutter Jean-Pierre Rampal Ravi Shankar
ARIA Music Awards Fabio (DJ) Anoushka Shankar Mario (singer)
Joan Sutherland

powered by [Google™](#) and [Zemanta](#) +

...the only

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edit title, my note, privacy...

Save

Close

faviki

Buy sheet music
sheetmusicplus
*****.com

Sign up:
EMAIL UPDATE
FREE CD!

fanfaire
STORE

Faviki Example

Classical music | Faviki. Tags that make sense. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

cool uris

http://www.faviki.com/tag/Classical_music

faviki BETA
TAGS THAT MAKE SENSE.

edit profile sign out ivan friends

Classical music

PEOPLE: TAGS: Classical music; OR AND

close all rss

This Month

▼ ivan Sviatoslav Richter, legendary pianist Dec 02
Classical music, Sviatoslav Richter, [1 person]

▼ ivan Sviatoslav Richter pages Dec 02
Page on Richter
Classical music, German, Jew, Keyboard instrument, Piano, Sviatoslav Richter, Ukrainian, [1 person]

November

▼ ivan YouTube entries with Gabriela Montero Nov 16
Classical music, Gabriela Montero, Improvisation, [1 person]

▼ Janos.Haits MUSOLIFE.COM: Classical Music News for Enthusiasts, Professionals and Students Nov 14
MUSOLIFE.COM
Classical music, Social web, Web 2.0, [1 person]

October

▼ ivan france musique Oct 12
Classical music, France Musique, Radio, Radio France, [1 person]

tag

Classical music
16 bookmarks

Classical music is a broad term that usually refers to mainstream music produced in, or rooted in the traditions of Western liturgical and secular music, encompassing a broad period from roughly the 9th century to present times.

Topics:

Music genres
Classical music
European music

W [Read more on Wikipedia](#)

related tags

Takashi Yoshimatsu
Sviatoslav Richter
András Schiff
Social web
Frédéric Chopin
Web 2.0
Igor Stravinsky

Faviki Example

Russian classical pianists (topic) | Faviki. Tags that make sense. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

cool uris ABP

http://www.faviki.com/topic/Russian_classical_pianists

faviki BETA TAGS THAT MAKE SENSE.

edit profile sign out ivan friends

Russian classical pianists (topic)

PEOPLE: TAGS: Search OR AND

close all [rss](#)

This Month

▼ **ivan** Sviatoslav Richter, legendary pianist Dec 02
Classical music : [Sviatoslav Richter](#) [1 person]

▼ **ivan** Sviatoslav Richter pages Dec 02
Page on Richter
Classical music : German ; Jew ; Keyboard instrument ; Piano . [Sviatoslav Richter](#) ; Ukrainian . [1 person]

May

▼ **matejr** YouTube - Korsakov-Rachmaninov; Hummelflug (Bumble Bee)Evgeny Kissin May 30
[Evgeny Kissin](#) ; Flight of the Bumblebee ; Piano . [1 person]

April

▼ **jerry** YouTube - Rachmaninov plays Rachmaninov Apr 17
wow!
Piano : Prelude in C-sharp minor (Rachmaninoff) . [Sergei Rachmaninoff](#) [1 person]

topic

Russian classical pianists
4 bookmarks

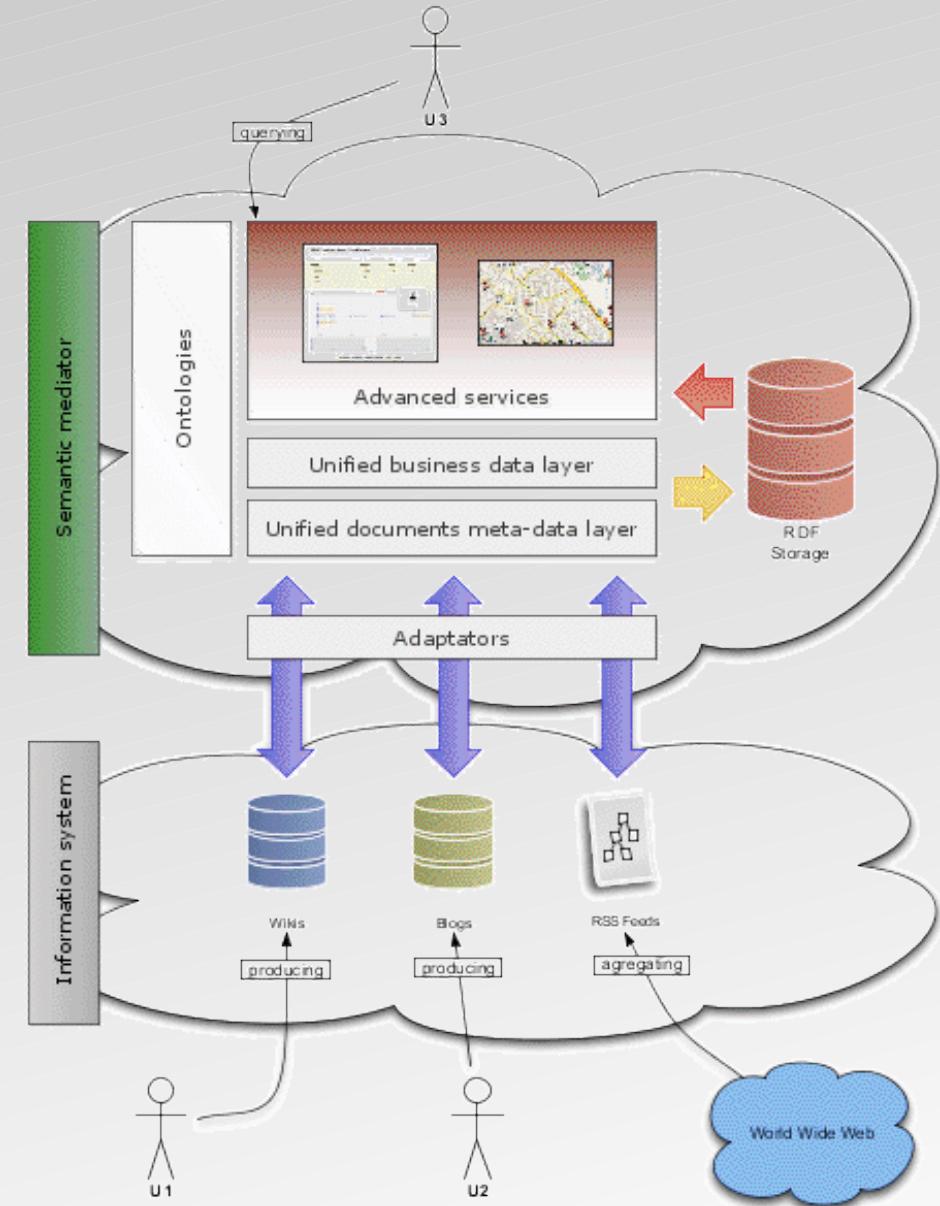
Tags:
[Evgeny Kissin](#)
[Sergei Rachmaninoff](#)
[Sviatoslav Richter](#)

this page topics:

1873 births
1892 works
1915 births
1943 deaths
1971 births
1997 deaths
20th century classical composers
American classical pianists
American composers
Ancient peoples
Chordophones

Integration of “social” software data

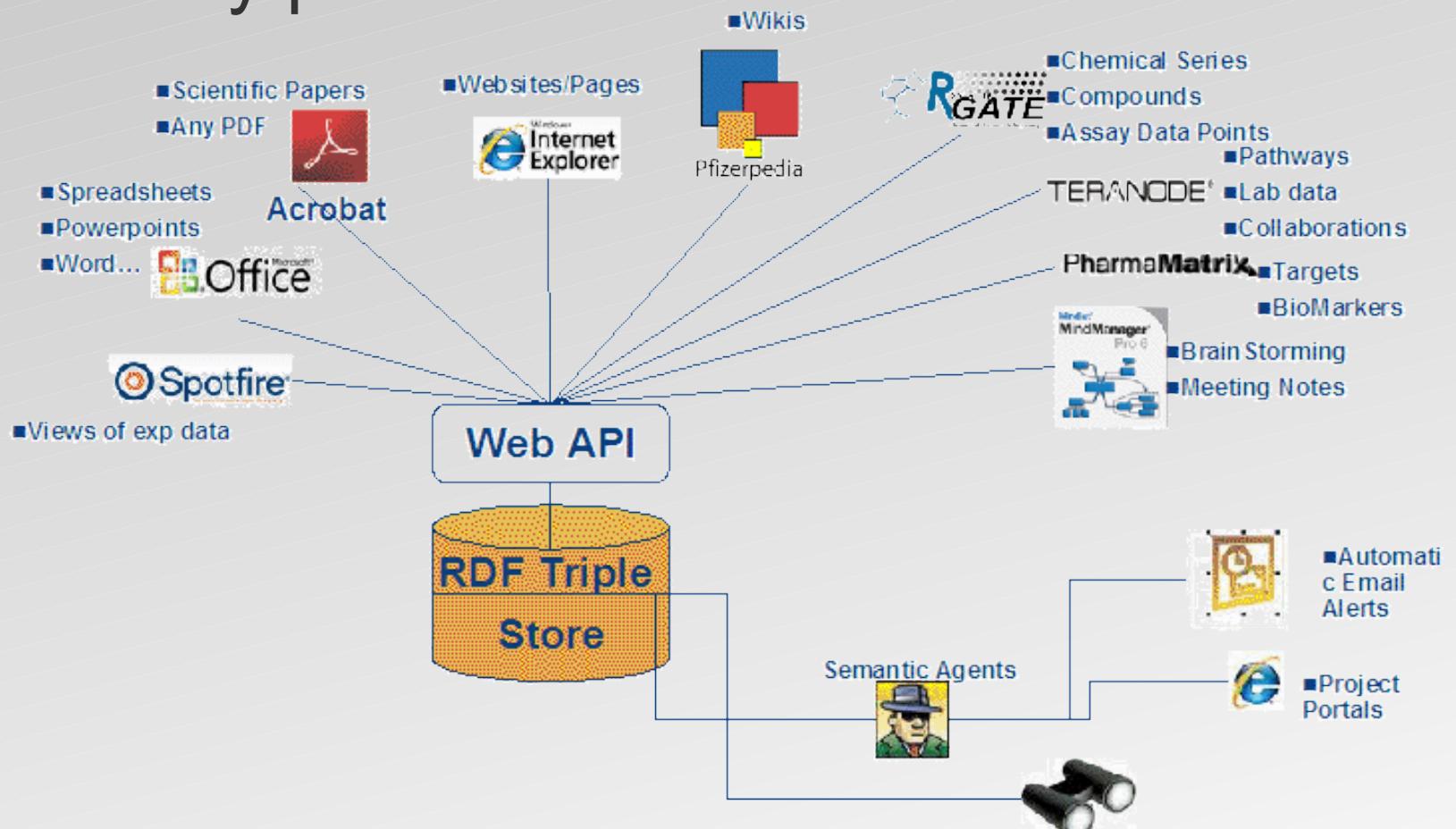
- Internal usage of wikis, blogs, RSS, etc, at EDF
 - uses:
 - public ontologies (SIOC, FOAF, DC, Geonames)
 - public datasets for tagging
 - SPARQL as integration tool for queries
- Details are hidden from end users (via plugins, extra layers, etc)



Courtesy of Alexandre Passant, EDF R&D and LaLIC, Université Paris-Sorbonne, (SWEO Case Study)

Ontology controlled annotation

- Annotation of different data formats all along the full drug discovery process...

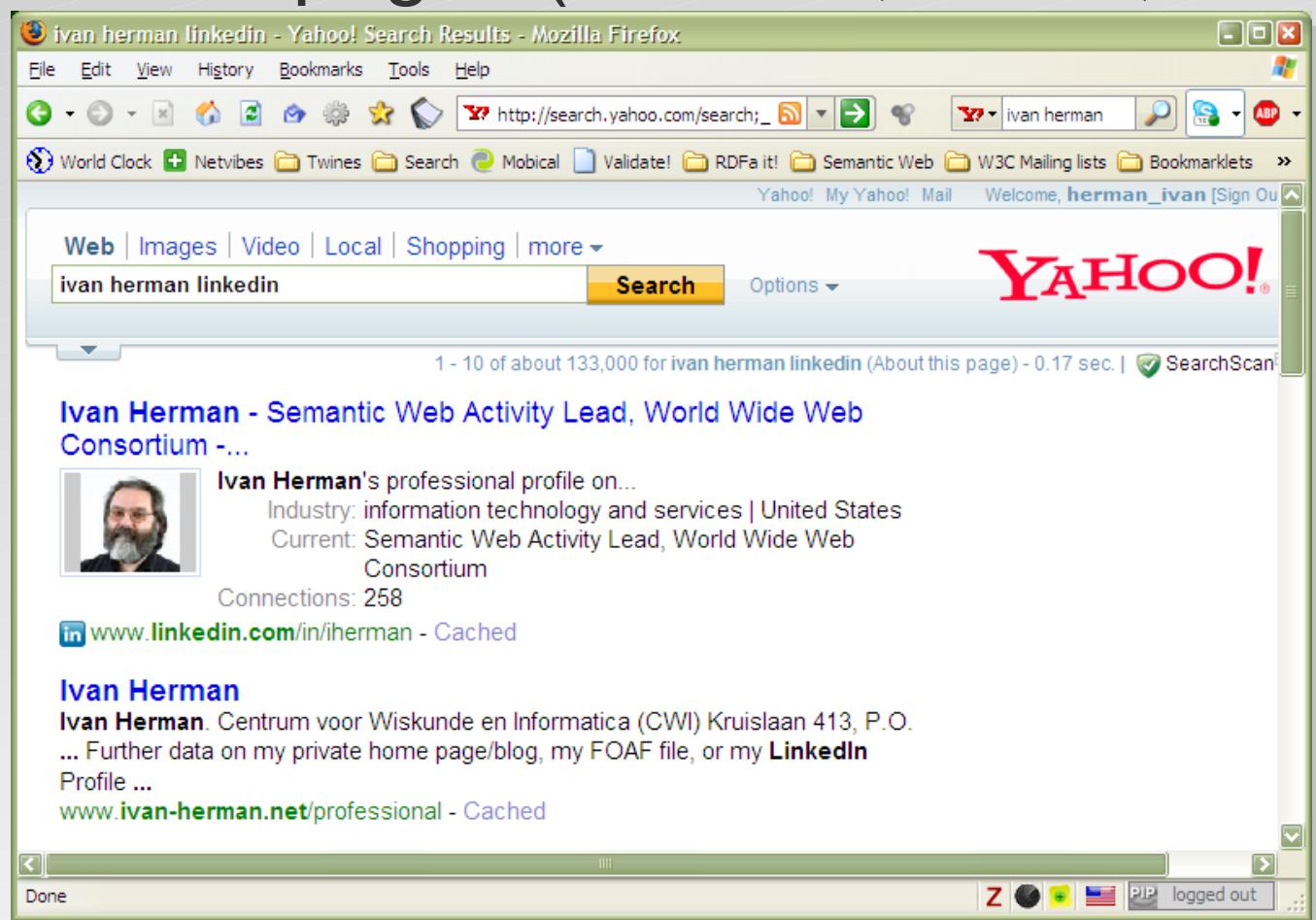


Worldwide Technology
R&D Informatics

Courtesy of Giles Day, Pfizer

Yahoo's SearchMonkey

- Search based results may be customized via small applications
- Metadata embedded in pages (in RDFa, eRDF, etc) are reused
- Publishers can export extra (RDF) data via other formats



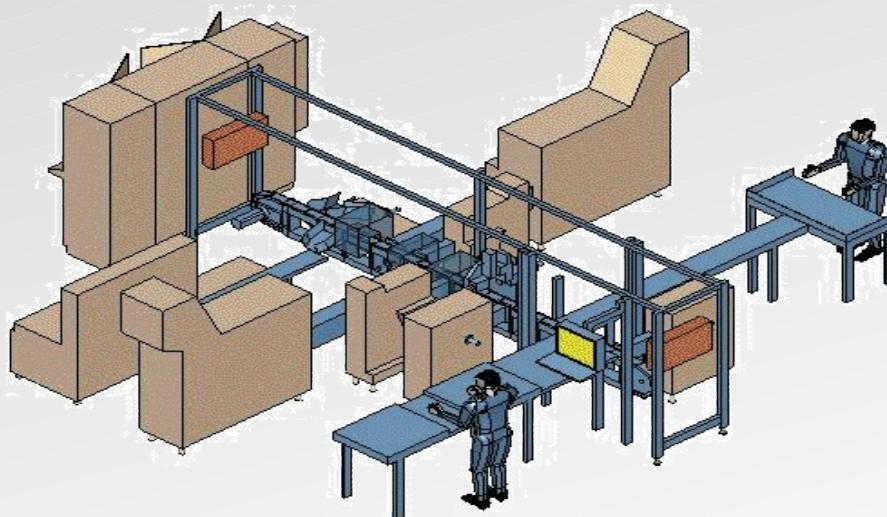
Courtesy of Peter Mika, Yahoo! Research, (SWEO Case Study)

Other application areas come to the fore

- Content management
- Business intelligence
- Collaborative user interfaces
- Sensor-based services
- Linking virtual communities
- Grid infrastructure
- Multimedia data management
- Etc

Open Engineering Platform

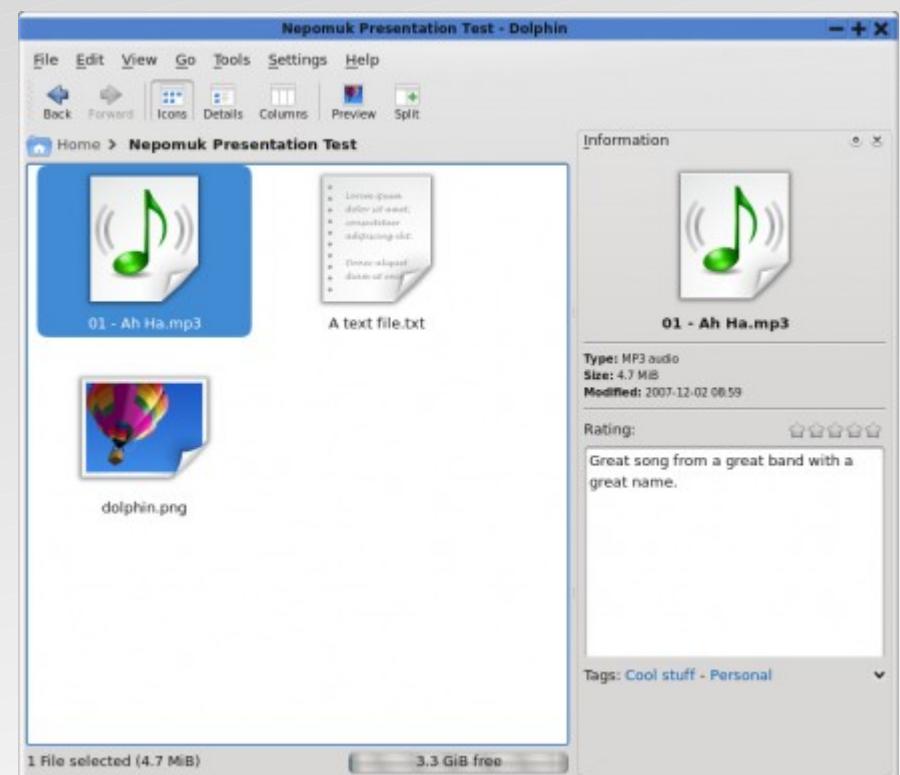
- EU project (**SWOP**) on end-user product configuration and optimisation
 - end user product ontologies based on semantic product modelling
 - reasoning combined with powerful user interfaces
- Applications in different business contexts (measurement equipments, electronic engineering, furniture fitting, building & public works)



Courtesy of Michel Böhms, TNO

Semantic tagging and search in KDE

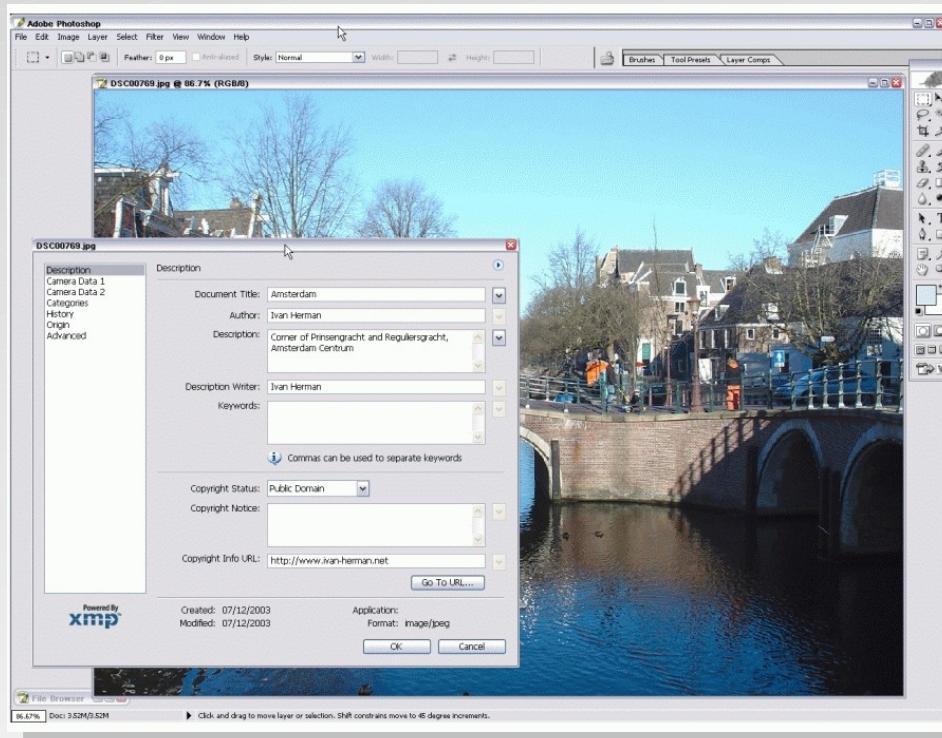
- Metadata backend fully based on RDF
- Each file can be tagged, rated, commented, and automatically indexed
- Queries are made via the combination of all those



Courtesy of Leo Sauermann, DFKI, and Sebastian Trüg, Mandriva Linux (SWEO Case Study)

Adobe's XMP

- Metadata added by, e.g., Photoshop into files in RDF
- **XMP** is a way of embedding + vocabulary + a set of (public) tools
- Used by a number of platform solutions



Content labelling for better search (Segala)

- Use content labelling to qualify search results



Courtesy of David Rooks, Segala, (SWEO Case Study)

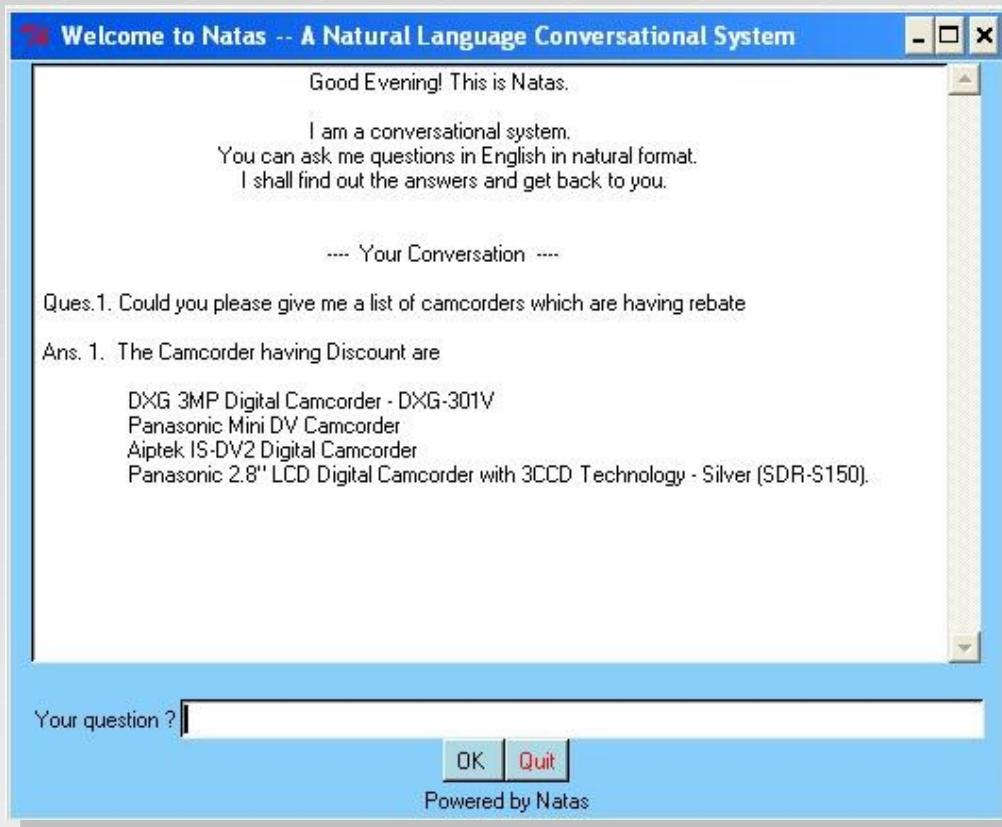
Portal to Principality of Asturias' documents

- Search through governmental documents
- A “bridge” is created between the users and the juridical jargon using SW vocabularies and tools

Courtesy of Diego Berrueta and Luis Polo, CTIC, U. of Oviedo, and the Principality of Asturias, (SWEO Case Study)

Natural interface to business applications

- Users interact with a business application (eg, via email) in natural language; OWL helps in the retrieval of relevant concepts



Mobile Content Recommendation System

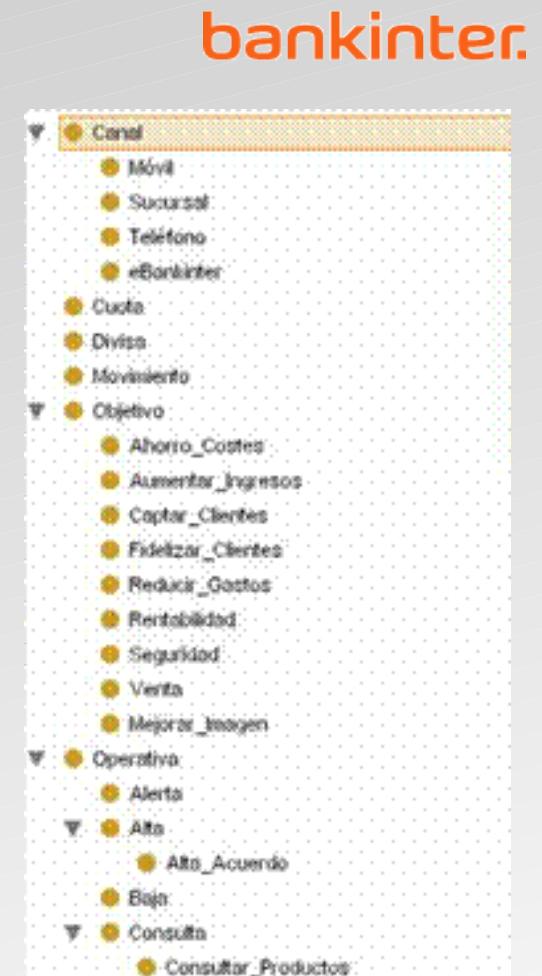
- Analyse the user behaviour of IP network users of Korea Telecom Freetel
 - build user characterization based on usage history
- Recommendations for content are provided based on user preference, time, place, weather, etc



Courtesy of Tony Lee, Jin Woo Kim, and Bok Ju Lee, Saltlux, Kyu Hyup Kim, KTF (SWEO Use Case)

Suggestions' database...

- Employees of the bank can submit new ideas for innovation, improving the business process, reduce costs, etc
- The entry system analyses the entry, shows similar ideas already in the system based on the concepts (not words)
- User gets immediate feedback, system gets better search, analysis, etc



Courtesy of José Luis Bas Uribe, Bankinter, and Richard Benjamins, iSOCO, (SWEO Case Study)

Baby CareLink

- Center of information for the treatment of premature babies
- Provides an OWL service as a Web Service
 - combines disparate vocabularies like medical, insurance, etc
 - users can add new entries to ontologies
 - complex questions can be asked through the service

The screenshot shows the 'Product Map' section of the CST Baby CareLink website. The page has a blue header with the 'CST Baby CareLink' logo. Below the header, on the left, is a sidebar with a 'Product Map' section and a 'Components:' list. The components listed are: Neonatal Intensive Care, Neonatal Care Management Program, After the NICU, Healthy Beginnings / First Year of Life, and High Risk Pregnancy. To the right of the sidebar is the main content area. The main content area has a title 'Product Map' and a sub-section 'CST Baby CareLink is a complete maternal/child health solution.' Below this, a note says 'To view the contents of each component, mouse over the sections or click directly on them to view a complete product description.' There are three main sections: 'Prenatal Care', 'Newborn Intensive Care', and 'Infant Care'. Under 'Prenatal Care', there are 'Clinician Tools' with categories: Healthy Beginnings, High-Risk Pregnancy, Neonatal Intensive Care, After the NICU, and First Year of Life. Under 'Infant Care', there are 'Care Manager Tools'. A 'Did You Know?' box contains the text: '7.6% (300,000) of all births in the U.S. each year are low birthweight (< 2500 gms, 5 pounds, 8 ounces).'. At the bottom of the page, there are links for 'Product Map', 'The Opportunity', 'About Us', 'In the News', 'Contact Us', and 'Home'. On the right side, there are links for 'Care Manager Tools', 'Prescribed Education', 'Discharge Coordination', 'Assessments', 'Registration', 'Census', 'Reporting', and 'Message Center'. The footer contains the text '© 2004 Clinician Support Technology - One' and '2459-3226 USA'.

CEO guide for SW: the “DO-s”

- **Start small:** Test the Semantic Web waters with a pilot project [...] before investing large sums of time and money.
- **Check credentials:** A lot of systems integrators don't really have the skills to deal with Semantic Web technologies. Get someone who's savvy in semantics.
- **Expect training challenges:** It often takes people a while to understand the technology. [...]
- **Find an ally:** It can be hard to articulate the potential benefits, so find someone with a problem that can be solved with the Semantic Web and make that person a partner.

Source: [BusinessWeek Online](#), April 2007

CEO guide for SW: the “DON’T-s”

- **Go it alone:** The Semantic Web is complex, and it's best to get help.
[...]
- **Forget privacy:** Just because you can gather and correlate data about employees doesn't mean you should. Set usage guidelines to safeguard employee privacy.
- **Expect perfection:** While these technologies will help you find and correlate information more quickly, they're far from perfect. Nothing can help if data are unreliable in the first place.
- **Be impatient:** One early adopter at NASA says that the potential benefits can justify the investments in time, money, and resources, but there must be a multi-year commitment to have any hope of success

Source: [BusinessWeek Online](#), April 2007

Thank you for your attention!

- These slides are publicly available on:

<http://www.w3.org/People/Ivan/CorePresentations/Applications/>