

Geospatial Semantic Web

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An invited talk at UMBC (CMSC 491/691M)
March 27, 2007

Outline

- What's Geospatial Semantic Web
- Real world problems
- State-of-the-art solutions
- Demo
- Q&A



What's Geospatial Semantic Web

Geospatial + Semantic Web

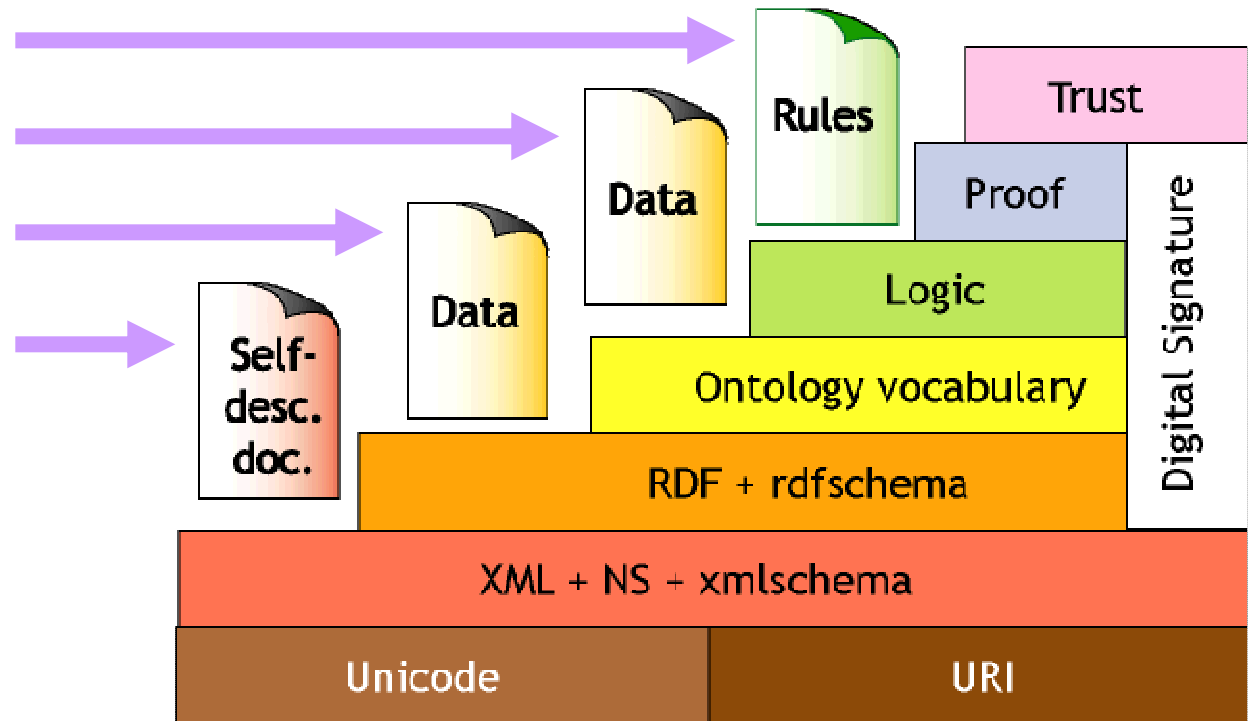
Geospatial Data

- Geographic info
- Photo imagery
- GIS data
- Maps

- Spatial relations
- Places, landmarks etc.
- Locations, lat/long etc.

- Time
- Temporal relations

- People
- Organizations
- Other things ...



Why is this interesting?

- **“Location” is ubiquitous on the Web**
 - Where do you go to school or work?
 - Where did you take your flickr photos?
 - Where is the nearest gas-station from “here”?
 - Where are my friends now?
 - What’s the avg. housing price in my neighborhood?
 - What’s ski condition in MD and PA?
 - ...

The present Web is for human

Harry Chen Thinks Aloud

On technology, business, current affairs & everything else

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Biosketch



3-Seconds Version

Harry Chen is a Computer Scientist at **Image Matters LLC**. He holds a PhD degree in Computer Science from UMBC.

3-Minutes Version

Harry Chen was born in Shanghai, China. He moved to Hong Kong with his parents when he was ten. During the last year of his high school, he studied in the US as an exchange student .

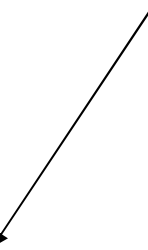
He completed undergraduate and graduate studies in Computer Science at the **University of Maryland, Baltimore County**. He was awarded a PhD fellowship from HP Labs for his work on intelligent agents in mobile and pervasive computing.

Dr. Chen is currently employed by Image Matter LLC as a Computer Scientist. He leads the research and development of geospatial semantic web applications. His research interests include geospatial technology, the Semantic Web, mobile and pervasive computing, and intelligent agents. Harry is a founding member of the **UMBC eBiquity Research Group** and the **eBiquity Blog** (previously known as ebiquity.org). He enjoys blogging and traveling. His recent blogging adventure

includes the **Geospatial Semantic Web Blog**. Currently he lives in Columbia, Maryland ([39.207806](#), [-76.825475](#)) with his wife Gigi.

<http://hchen1.com/contact-me/biosketch/>

Your browser doesn't know that my wife and I live in Columbia Maryland.



What's "london"?



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harrychen's photos

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acapulco architecture balloon baltimore **barcelona** boston britishmuseum
camdenlockmarket fjdsklfj fjkds foobar food france friends funny halloween
innerharbor **london** mexico orioles **paris** party **photolog** pumpkin
redbullflugtag sajfk sjfks **spain** toilet **uk** view wii wordpress

It's "London UK" stupid!

What's "london" to a machine?

london United States
search show on map [advanced search]

2544 records found for "london"

	Name	Country	Feature class	Latitude	Longitude
1	London Mountain	United States , Colorado	mountain elevation 4018m	N 39° 17' 3"	W 106° 9' 30"
2	New London County	United States , Connecticut	second-order administrative division population 254,957, elevation 22m	N 41° 29' 0"	W 72° 3' 58"
3	New London Nova Londres	United States , Connecticut	populated place population 26,294, elevation 17m	N 41° 21' 20"	W 72° 5' 58"
4	London	United States , Kentucky	populated place population 7,844, elevation 378m	N 37° 7' 44"	W 84° 4' 59"
5	London	United States , Ohio	populated place population 8,771, elevation 321m	N 39° 53' 11"	W 83° 26' 53"
6	New London	United States , Iowa	populated place population 1,857, elevation 232m	N 40° 55' 37"	W 91° 23' 58"
7	New London	United States , Minnesota	populated place population 1,123, elevation 368m	N 45° 18' 3"	W 94° 56' 39"
8	New London	United States , Wisconsin	populated place population 7,043, elevation 234m	N 44° 23' 33"	W 88° 44' 23"
9	London Londres	United States , California	populated place population 1,985, elevation 91m	N 36° 28' 33"	W 119° 26' 35"

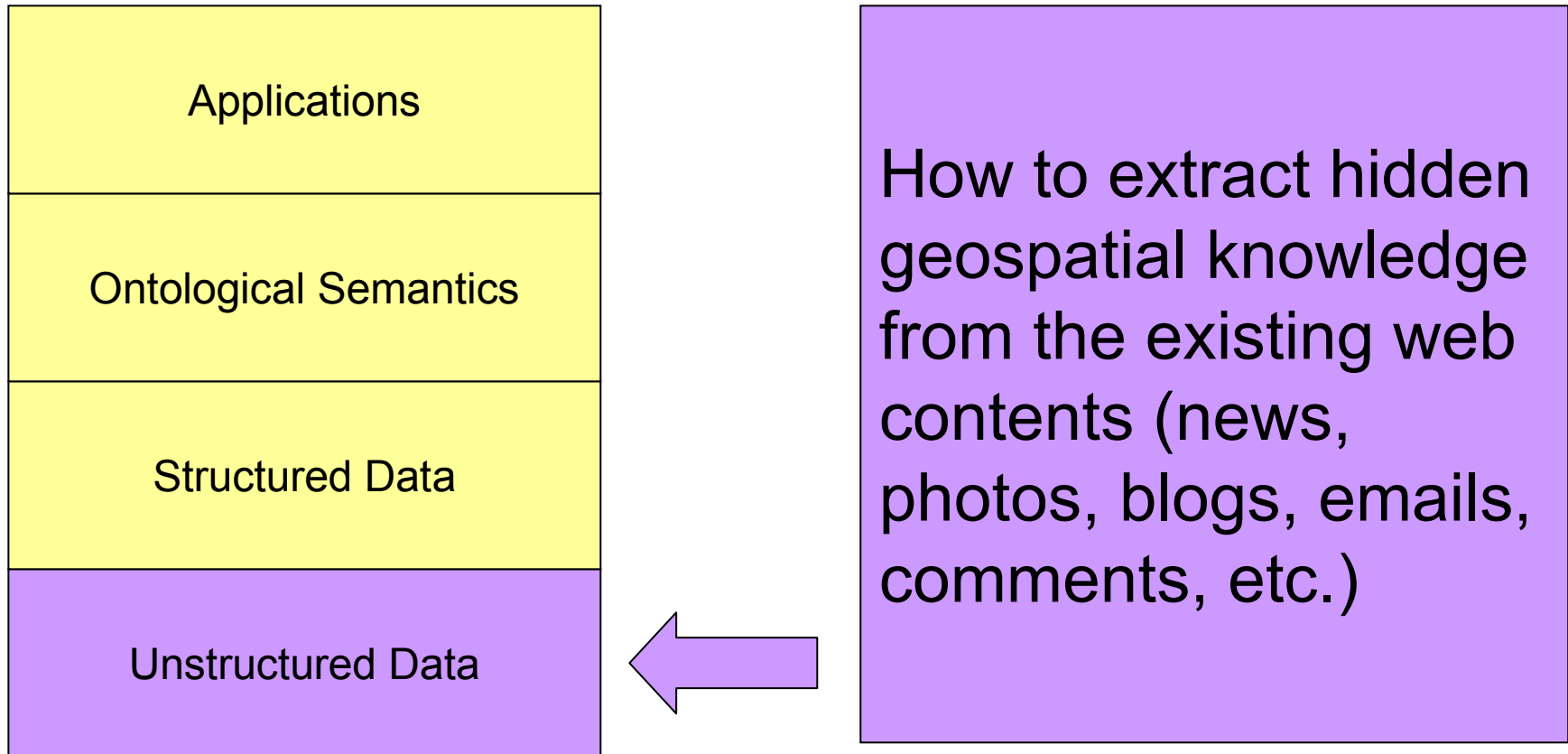
<http://www.geonames.org/search.html?q=london&country=US>

What did we learn?

- Most of the information on the Web today is meant for human consumption.
- Without an explicit semantic description, it's difficult for machines to consume Web information.
- The study of geospatial semantic web is to exploit Semantic Web and geospatial technology to improve human productivity
 - i.e., **get machines to do more work for us.**

Real World Problems

Hidden Knowledge on the Web



Scraping semantics from free text

The New York Times Europe

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION
AFRICA AMERICAS ASIA PACIFIC EUROPE MIDDLE EAST

Blair Says Iran Was 'Unjustified and Wrong' to Seize 15

By CHRISTINE HAUSER
Published: March 25, 2007

Prime Minister **Tony Blair of Britain** said today that the seizure of 15 **British naval personnel by Iranian forces** last week was "unjustified and wrong" and took place in Iraqi waters.

Iranian officials said today that charges against the naval personnel were being considered, and legal proceedings were under way.

Mr. Blair, speaking at a meeting of the heads of European governments in Berlin, said the situation was very serious.

"I have not been commenting up to now on this because I want to get it resolved in as easy and diplomatic way as possible, because it's the welfare of the people concerned that have been taken by the Iranian government that is most important," Mr. Blair said in a statement to reporters that was published on the prime minister's Web site.

Related

Iran Cites 'Aggression' in Case of Captured British Personnel (March 25, 2007)

Iran Seizes 15 Britons on Patrol in Persian Gulf (March 24, 2007)

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Location information hidden inside unstructured free text

Scraping semantics from tags

upcoming.org

[My Upcoming](#) / [My Scrapbook](#) | [My Friends' Events](#) | [Explore Events](#) | [Add New Event](#)

Home > Metro > Germany > Berlin > Berlin

Berlin Stadtführungen Sightseeing Tours

WHEN
Friday, June 1, 2007
8:00 PM

WHERE
[Berlin / Germany](#)
Unter den Linden 77
Berlin / Germany, Berlin 10177
([Yahoo! Maps](#), [Google Maps](#))

CATEGORY
Other

DESCRIPTION
Individuelle Berlin Stadtführungen und Berlin Stadtrundfahrten zum Wunschtermin im eigenen oder angemieteten Reisebus, Panorama Kleinbus, Mini Van oder Limousine vom Startpunkt nach Wahl; z.B. direkt von Ihrem Berliner Hotel. Mehrsprachige qualifizierte Berlin Stadtführer begleiten Sie mit fachkundiger und unterhaltsamer Moderation.

Offering guided Berlin sightseeing tours and Berlin walks. Driven tours in a coach, panorama bus, mini van or limousine from the starting point of your wish; i.e. directly from your Berlin hotel. Multi-lingual Berlin tour guides. Berlin Tourist Information.

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Tour Eiffel

ALL SIZES



Uploaded on December 2, 2006 by [harrychen](#)

harrychen's photostream

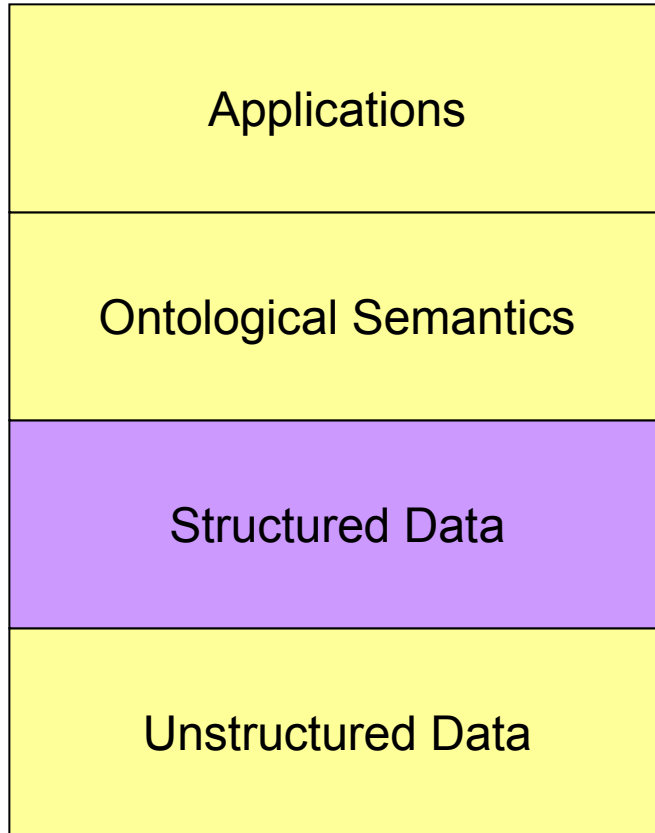
177 photos
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Tags
paris

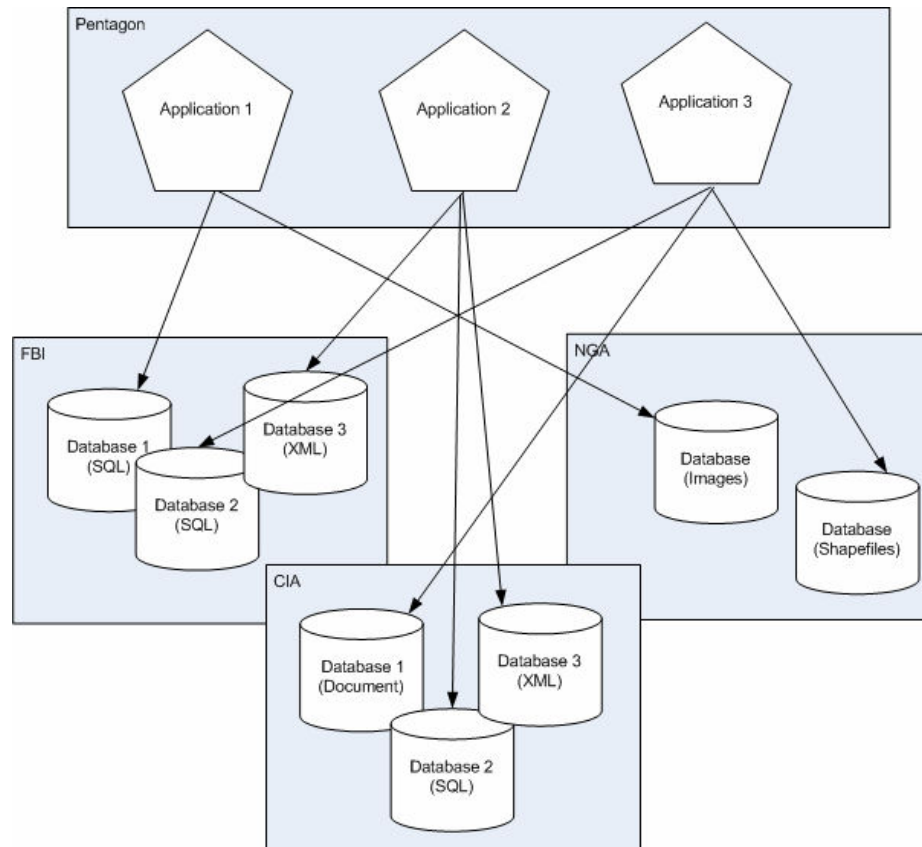
Additional Information
Some rights reserved.
Taken in Paris, Ile-de-France ([map](#))
Taken with a Canon PowerShot SD700 IS.
[More properties](#)
Taken on September 7, 2006
[See different sizes](#)
Viewed 38 times

Knowledge integration

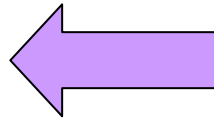
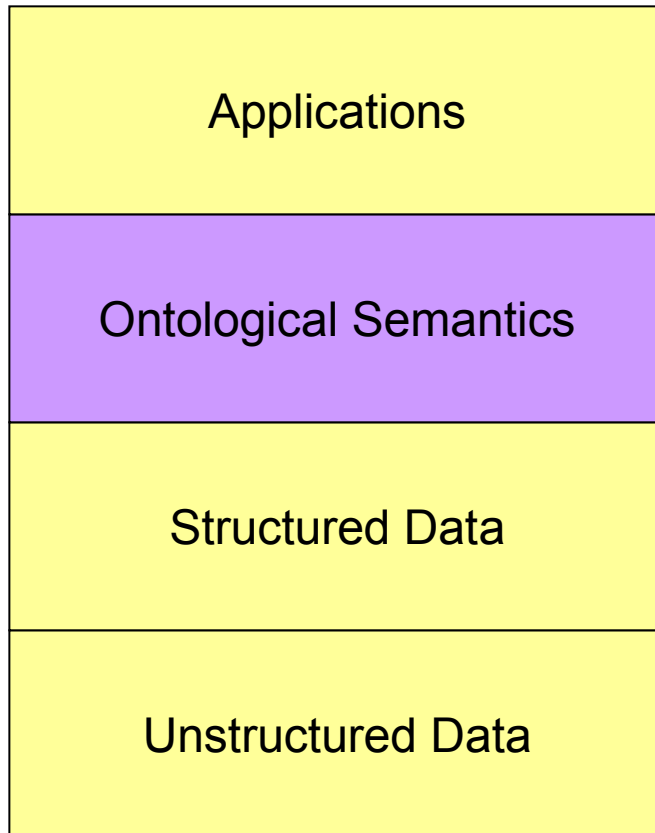


How to enable heterogeneous data stores to integrate and interoperate (RDBMS, shapefiles, XML, gazetteer, photo annotations, etc.)

Fuse knowledge from multiple datastores



Ontology sharing & reuse

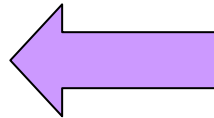
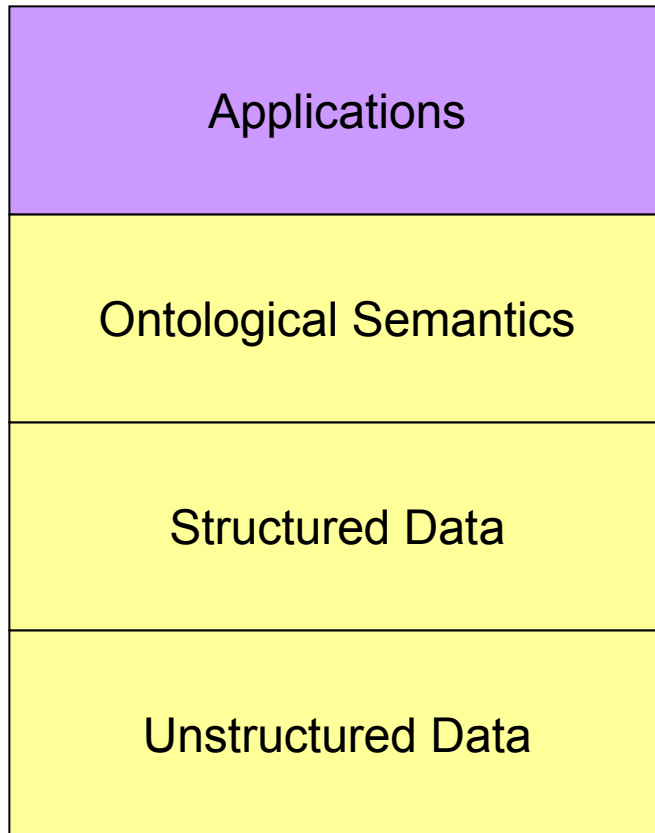


How to encourage people to share ontologies and reuse existing GIS standards (e.g., GML, OGC standards)

Many different ways to describe Geo

- **GML** (Geographical Markup Language) backed by OGC (Open Geospatial Consortium)
- **W3C geo ontology** backed by W3C
- **GeoRSS** – a language for embedding location information in RSS
- **Geonames ontology** – an open and free geographical data service
- **Google KML** – used by Google Maps and Google Earth

Application research issues



How to make easy for people to publish, annotate and search geospatial semantic information on the Web

A mystery to many people

```
<foaf:PersonalProfileDocument rdf:about="">
  <foaf:maker rdf:resource="http://hchen1.com/people/harrychen"/>
  <foaf:primaryTopic rdf:resource="http://hchen1.com/people/harrychen"/>
  <admin:generatorAgent rdf:resource="http://www.ldodds.com/foaf/foaf-a-matic"/>
  <admin:errorReportsTo rdf:resource="mailto:leigh@ldodds.com"/>
</foaf:PersonalProfileDocument>

<foaf:Person rdf:about="http://hchen1.com/people/harrychen">
  <foaf:name>Harry Chen</foaf:name>
  <foaf:title>Dr</foaf:title>
  <foaf:givenname>Harry</foaf:givenname>
  <foaf:family_name>Chen</foaf:family_name>
  <foaf:nick>hchen1</foaf:nick>
  <foaf:mbox_sha1sum>80368445d942c6e207c6694353355c3bd37f3e7a</foaf:mbox_sha1sum>
  <foaf:homepage rdf:resource="http://harry.hchen1.com"/>
  <foaf:depiction rdf:resource="http://harry.hchen1.com/images/hchen-small.jpg"/>
  <foaf:workplaceHomepage rdf:resource="http://www.imagemattersllc.com"/>
  <foaf:schoolHomepage rdf:resource="http://www.umbc.edu"/>

  <foaf:knows>
    <foaf:Person>
      <foaf:name>Tim Finin</foaf:name>
      <foaf:mbox_sha1sum>49953f47b9c33484a753eaf14102af56c0148d37</foaf:mbox_sha1sum>
      <rdfs:seeAlso rdf:resource="http://www.cs.umbc.edu/~finin/foaf.rdf"/>
    </foaf:Person>
  </foaf:knows>
```

- Do you really believe companies can make money from products that require people to edit and query data like this...

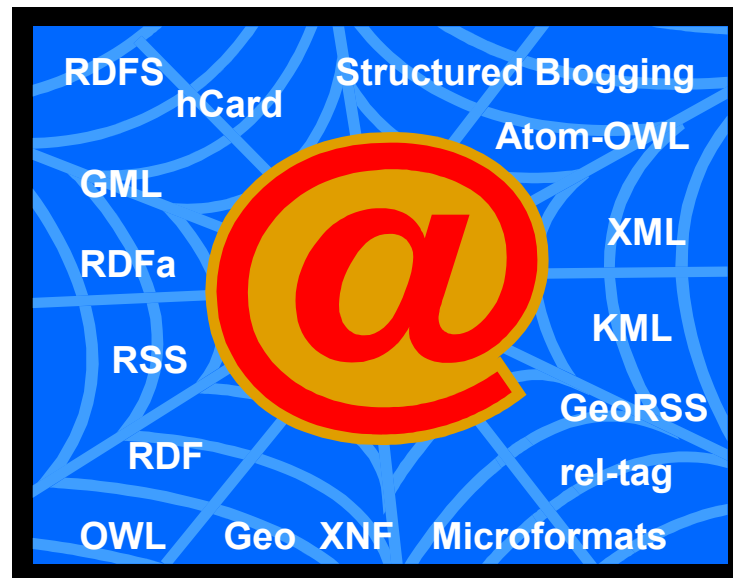
State-of-the-art Solutions

Technology overview

- Semantic **W**eb vs. semantic **w**eb
- Publishing W3C geo data on the Web
 - RDF, Microformats & RDFa
 - GeoRSS & flickr machine tags
- Knowledge integration technology
- Mashups and browser add-ons

Semantic **W**eb vs. semantic **w**eb

- There are two different schools of thinking on how semantics should be published, exported and searched on the Web.
 - <http://tantek.com/presentations/2004etech/realworldsemanticspres.html>



Semantic Web vs. semantic web

	Semantic Web	semantic web
Philosophy	Build a common data format for expressing the meaning of data. Use ontologies to help machines to understand web content.	Humans first, machines second. Encode existing Web content with special tags.
Language	RDF, RDFS, OWL	Microformats (based on XHTML)
Format	Must be well-formed RDF documents	Anything goes, as long as its XHTML
Semantic	Defined by the underlying ontology model (e.g., OWL)	Loosely defined. No formal semantic model.
Examples	FOAF, OWL-S, OWL-Time	XFN (social network), hCard (contact), hReview (opinions), rel-tag (tagging)

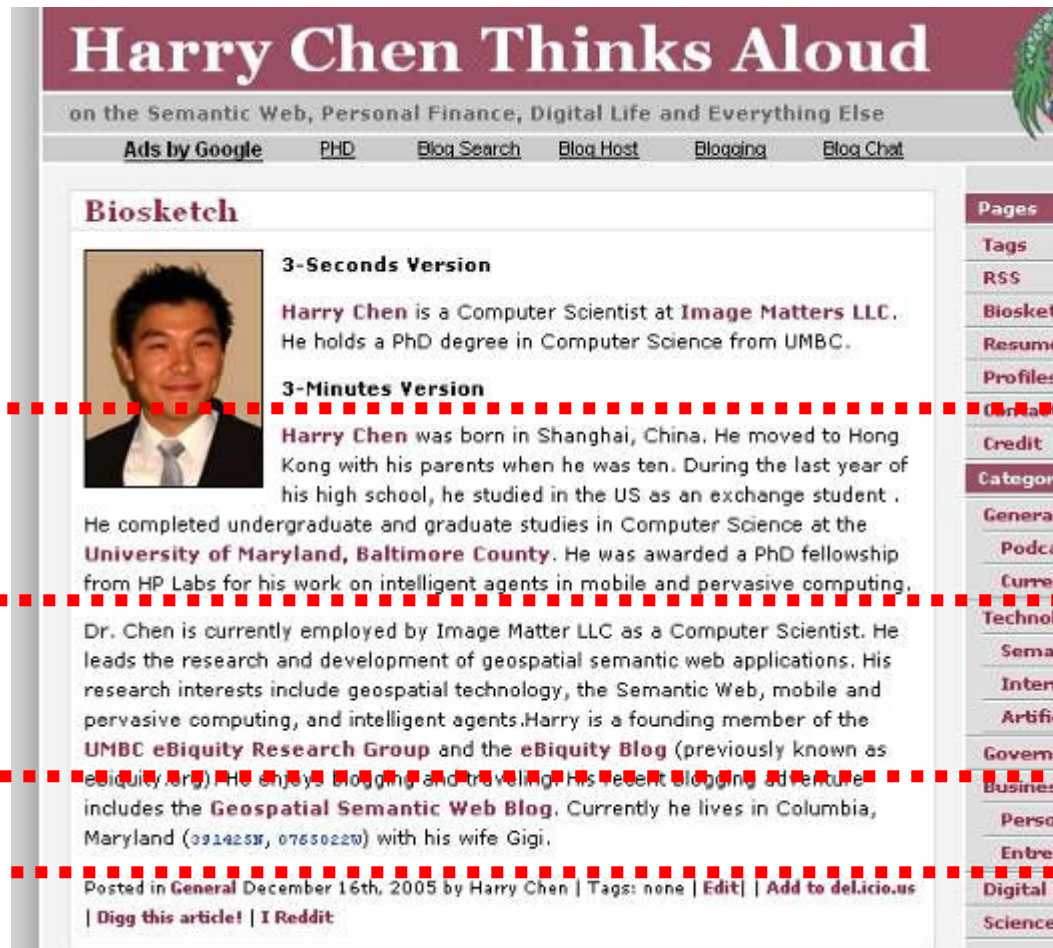
Using W3C Geo (RDF)

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns="http://xmlns.com/foaf/0.1/">
  <Person>
    <name>Dan Brickley</name>
    <homepage dc:title="Dan's home page"
      rdf:resource="http://danbri.org/" />
    <based_near geo:lat="51.47026" geo:long="-2.59466" />
    <rdfs:seeAlso rdf:resource="http://danbri.org/foaf.rdf" />
  </Person>
</rdf:RDF>
```

Subject	Predicate	Object
:_a	rdf:type	foaf:Person
:_a	foaf:name	"Dan Brickley"
:_a	foaf:base_near	:_geo
:_geo	geo:long	"-2.59466"
:_geo	geo:lat	"51.47026"

Source: <http://www.w3.org/2003/01/geo/>


Using Microformats Geo (1)



Harry Chen Thinks Aloud
on the Semantic Web, Personal Finance, Digital Life and Everything Else

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Posted in General December 16th, 2005 by Harry Chen | Tags: none | Edit | Add to del.icio.us | Digg this article! | I Reddit

Pages
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[Podcas](#)
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[Intern](#)
[Artifici](#)
[Govern](#)
[Business](#)
[Person](#)
[Entrep](#)
[Digital Li](#)
[Science](#)

Using Microformats (2)

```
<p class="vcard">
  <a class="url fn" href="http://harry.hchen1.com">Harry Chen</a> was born in Shanghai,
  China. He moved to Hong Kong with his parents when he was ten. During the last year of his
  high school, he studied in the US as an exchange student . He completed undergraduate and
  graduate studies in Computer Science at the
  <a title="UMBC" class="org" href="http://www.umbc.edu">University of Maryland, Baltimore
  County</a>. He was awarded a PhD fellowship from HP Labs for his work on intelligent agents
  in mobile and pervasive computing.
</p>
```

```
...
Currently he lives in Columbia, Maryland (
<span class="geo">
  <span class="latitude"> 39.207806 </span>,
  <span class="longitude">-76.825475 </span>
) with his wife Gigi.
</span>
...
```

Technorati: Microformats Search



Microformats Search: Harry Chen

home / search / results for Harry Chen

Technorati Kitchen

Welcome

Microformats Search

Contacts

Events

Reviews

Contacts results for **Harry Chen** - View 3 contacts

 **Harry Chen** - 12 days ago
Harry Chen - 14 days ago
Dr. Chen - 14 days ago

Want your contacts, events, and reviews to show up here?

First, publish your content with **microformats**. Many **tools and se** may already be done with this step! If the service or application y support department and ask them to support microformats. Send information

Second, ping us!

If you publish microformats **in your blog**, keep on pinging **techno** done.

If you publish microformats **somewhere else** (e.g. an "about" page), ping **Pingerati** with the URL.

Not yet understand "geo", but that's okay. At least it works!

<http://kitchen.technorati.com>

Technorati.com · Microformats Search · Contacts Search · Events S
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RDFa – embedding RDF in XHTML

```
<html xmlns:foaf="http://xmlns.com/foaf/0.1#"
      xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#">
...
<p class="foaf:Person" about="#me">
  <a rel="foaf:homepage" href="http://harry.hchen1.com">Harry Chen</a> was born in
  Shanghai, China. He moved to Hong Kong with his parents when he was ten. During the last
  year of his high school, he studied in the US as an exchange student . He completed
  undergraduate and graduate studies in Computer Science at the
  <a title="UMBC" rel="foaf:schoolHomepage" href="http://www.umbc.edu">University of
  Maryland, Baltimore County</a>. He was awarded a PhD fellowship from HP Labs for his work
  on intelligent agents in mobile and pervasive computing.
...
  Currently he lives in Columbia, Maryland (
  <div rel="foaf:base_near">
  <span class="geo:Point">
    <span property="geo:lat">39.207806</span>,
    <span property="geo:long">-76.825475</span>
  ) with his wife Gigi.
  </span>
  </div>
  </p>
```

Scraping Triples from RDFa

Subject	Predicate	Object
<#me>	rdf:type	foaf:Person
<#me>	foaf:homepage	http://harry.hchen1.com
<#me>	foaf:schoolHomepage	http://www.umbc.edu
<#me>	foaf:base_near	_:aa0
_:aa0	rdf:type	geo:Point
_:aa0	Geo:lat	39.207806
_:aa0	geo:long	-76.825475

GeoRSS

- GeoRSS is a language for embedding location object descriptions in RSS
- Three kinds of format representations are supported:
 - GeoRSS Simple
 - W3C Geo
 - GML Geometry
- How GeoRSS can be used:
 - Describe the reporting location of a news
 - Describe the location history of a traveler

W3C Geo in GeoRSS

```
<item rdf:about= 'http://www.oreillynet.com/pub/wlg/8466?CMP=OTC-TY3388567169'>
  <title>Live Coverage XML 2005 (Tuesday Keynotes)</title>
  <link>http://www.oreillynet.com/pub/wlg/8466?CMP=OTC-TY3388567169</link>
  <description> <![CDATA[A live look at the XML Keynotes and seminal talks.]]>
</description>
  <dc:creator>Kurt Cagle</dc:creator>
  <dc:date>2005-11-15T07:45:58-08:00</dc:date>
  <geo:Point>
  <geo:lat>46.183</geo:lat>
  <geo:long>-123.816</geo:long>
</geo:Point>
</item>
```

Embedding GeoRSS in a RSS 1.0 document

GeoRSS Simple properties

- Point
- Line
- Polygon
- Box
- Elevation
- Radius
- Feature Type
- Feature Name
- Relationship Tags

For more information:
<http://www.georss.org/simple.html>

Machine tags

- Flickr machine tags are a special kind of tags for defining semantic information

Like tags, there are no rules for machine tags beyond the syntax to specify the parts of a machine tag. For example, you could tag a photo with :

* flickr:user=straup

* flora:tree=coniferous

* medium:paint=oil

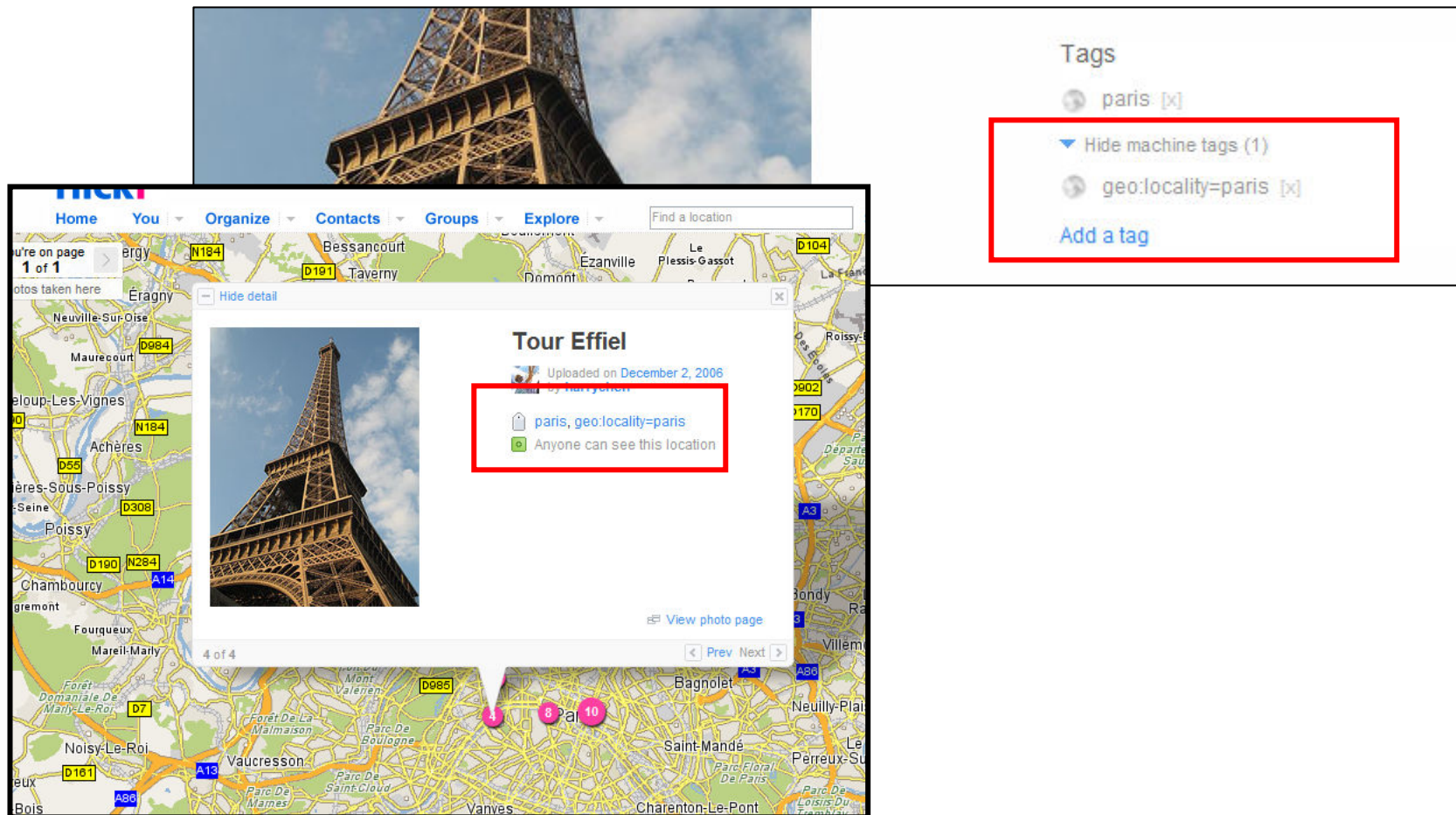
* geo:quartier="plateau mont royal"

* geo:neighbourhood=geo:quartier

For more information:

<http://www.flickr.com/groups/api/discuss/72157594497877875/>

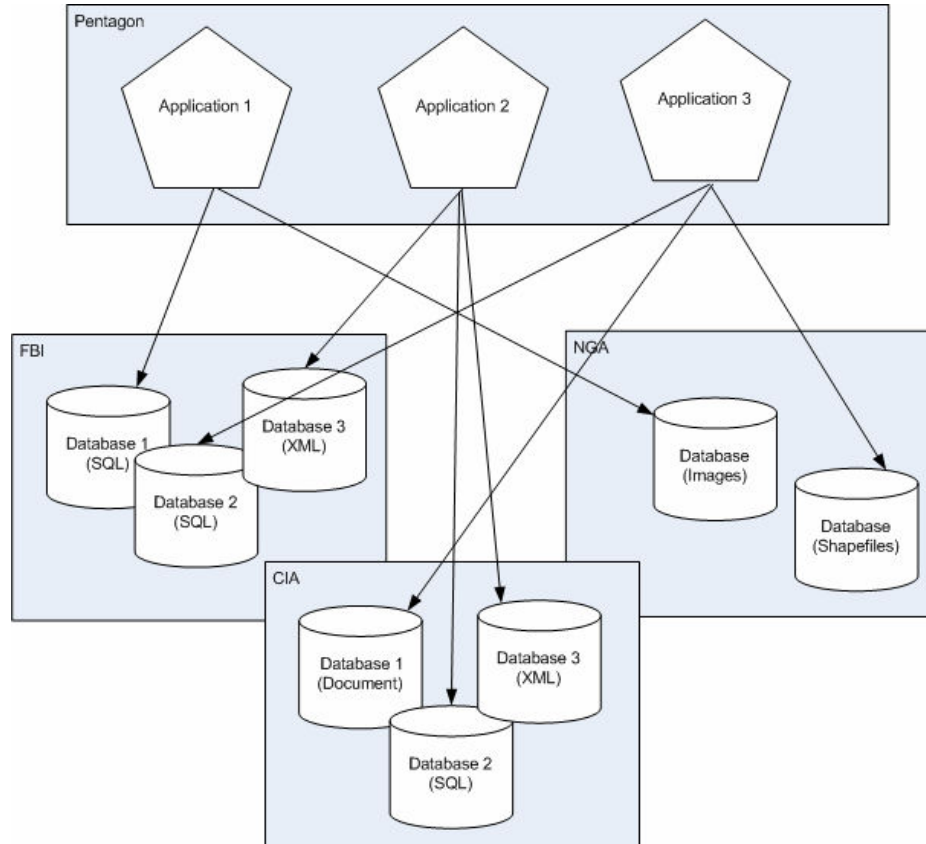
A machine tag example



The image shows a screenshot of a Flickr photo of the Eiffel Tower. The photo is titled "Tour Eiffel" and was uploaded on December 2, 2006. The photo is displayed on a map of Paris, with the Eiffel Tower's location marked. The photo's metadata includes the title "Tour Eiffel", the upload date "Uploaded on December 2, 2006", and the tags "paris, geo:locality=paris". The tags are highlighted with a red box. Below the tags, it says "Anyone can see this location". To the right of the photo, there is a "Tags" section with a red box around it, containing the following items:

- paris [x]
- Hide machine tags (1)
- geo:locality=paris [x]
- Add a tag

Remember our example?



How to effectively integrate knowledge stored in multiple data sources with heterogeneous representations?

Why knowledge integration?

- Much data is hidden in our legacy systems. We must find ways to export this data onto the Web

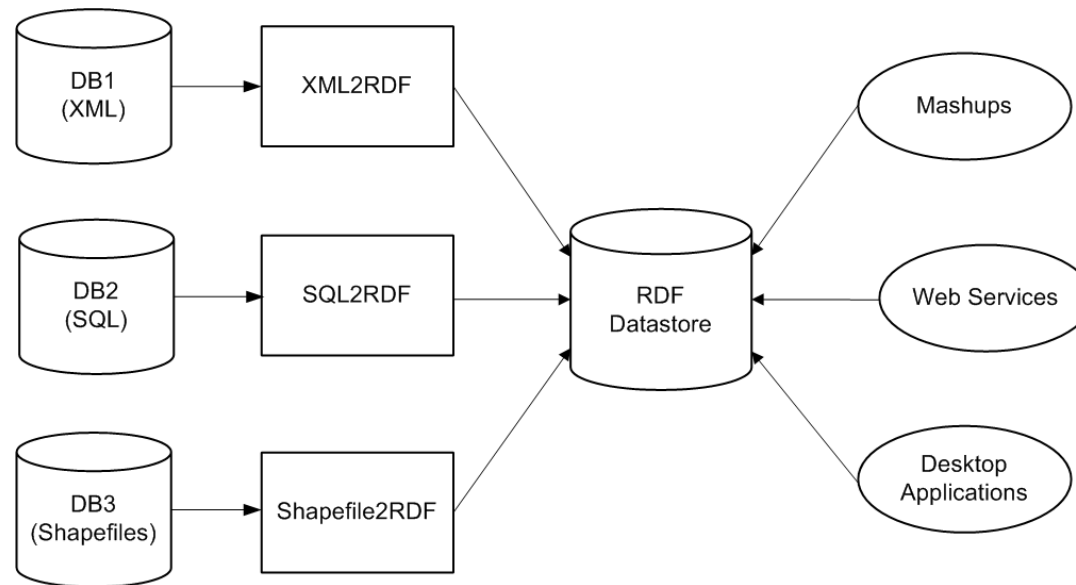
Web pages are designed for people. For the Semantic Web we need to look at existing databases and the data in them.

-Tim Berners-Lee, March 2006.

<http://www.bcs.org/server.php?show=ConWebDoc.3337>

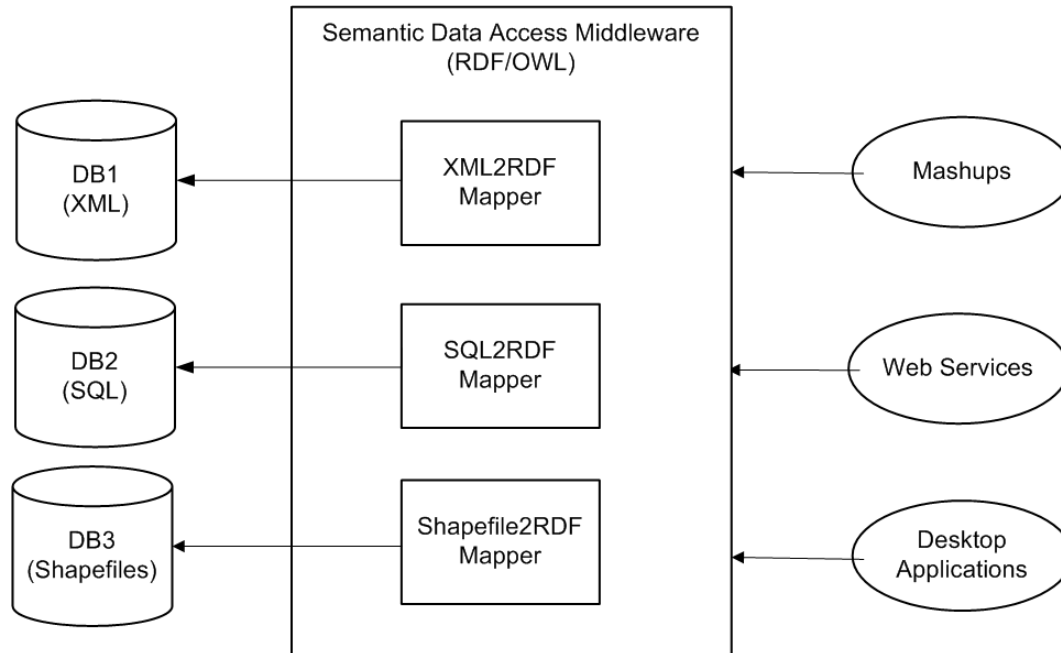
Getting data onto the Web

- Approach 1: Consolidate everything into a single database



Getting data onto the Web

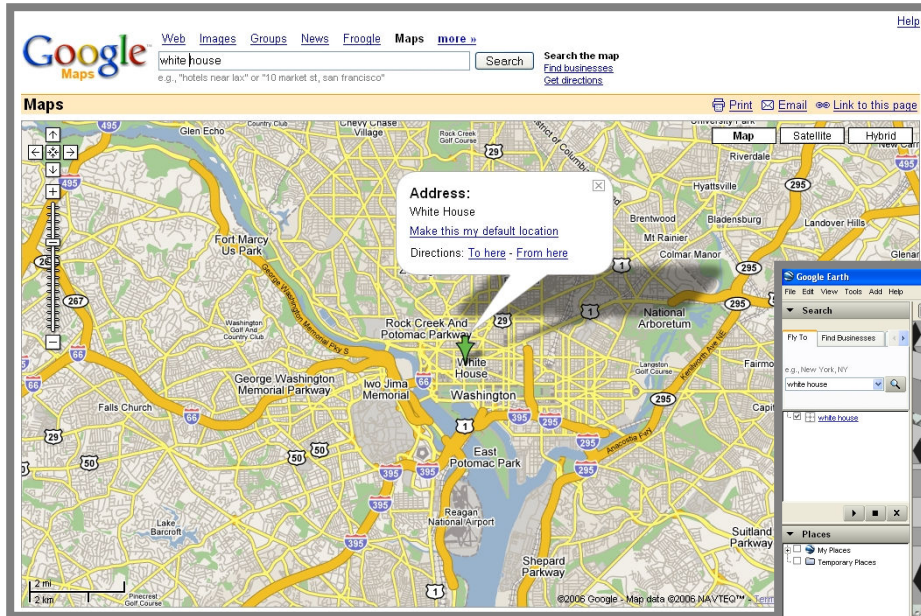
- Approach 2: Dynamically integrate data into a uniformed representation



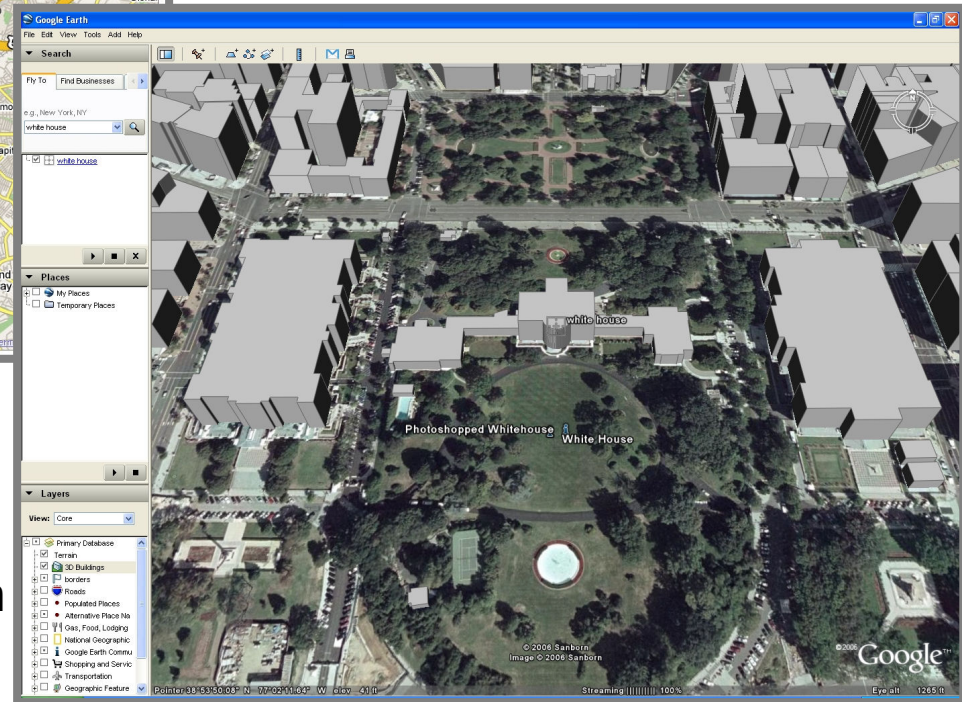
Data integration systems

- **Oracle RDF database** (Oracle)
 - Supports full RDF and RDFS
 - Support SQL query over RDF graph model
 - Built-in subsumption support: subClassOf and subPropertyOf
- **D2RQ** (Freie Universität Berlin):
 - Declarative language for describing mappings between relational DB schemas and RDFS/OWL ontologies
 - Support SQL
 - D2RQ Server allows accesses to SQL using SPARQL queries over HTTP
- **KnowledgeSmarts** (Image Matters LLC)
 - A middle-ware system for knowledge integration over heterogeneous datastores
 - Supports SQL, Shapefiles, XML, WFS and more.
 - Optimized for applications that require spatial and temporal computation support.

Visiting the White House



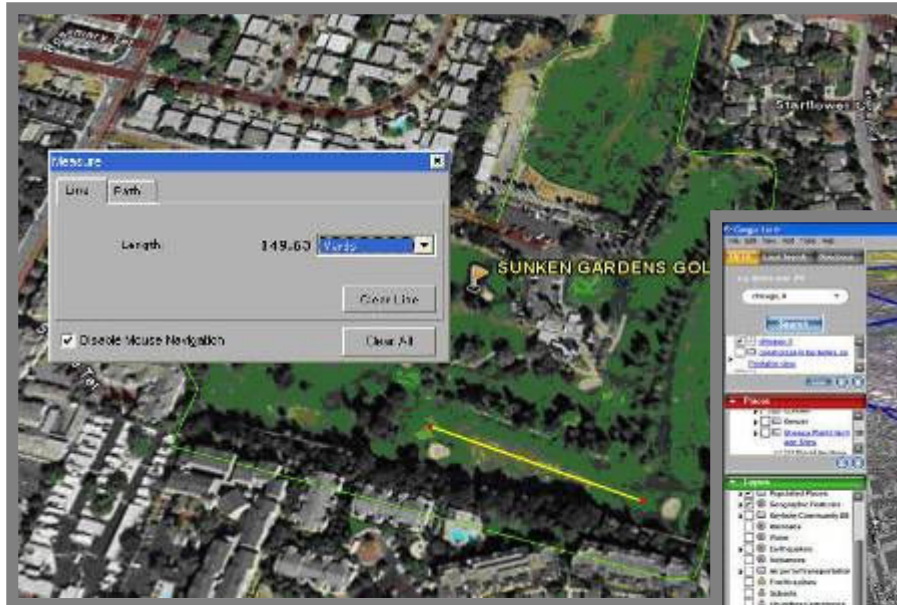
The White House in Google Maps



The White House in Google Earth

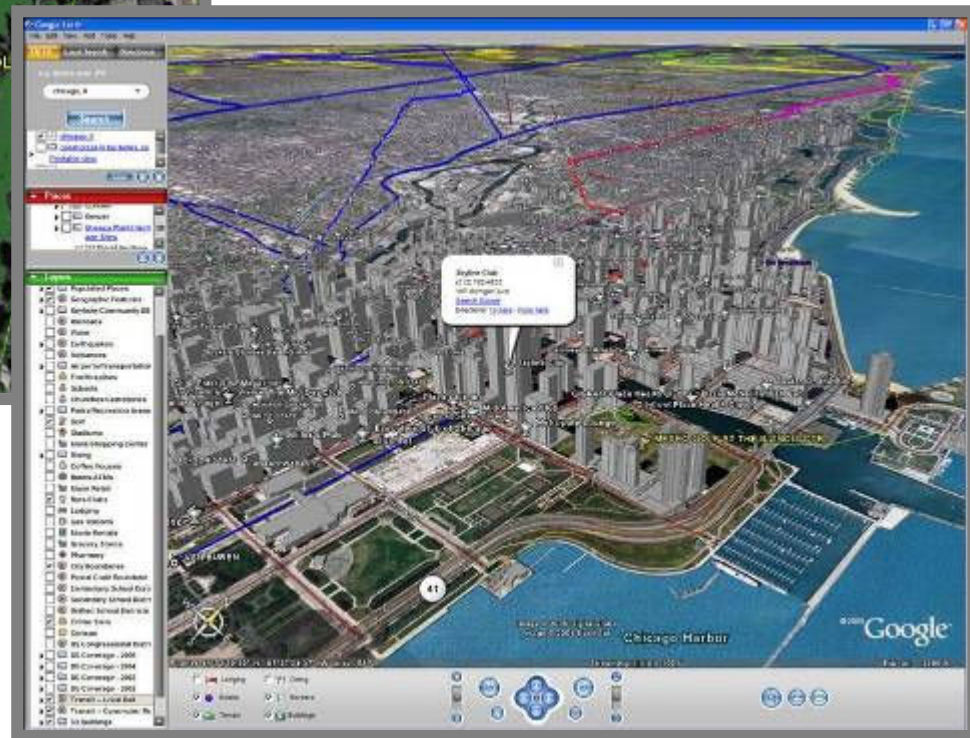


Special features in Google Earth



Measure Distances

3D buildings and terrain



Questions

- Why is there a sudden explosion of “mashups”?
- Is it the “holy grail” in building the next generation Web?
- What’s the use of semantic technology in building mashups?

Mashups are growing fast

- Ubiquitous web service API
 - Google Maps, Yahoo! Maps, Amazon, Flickr, del.icio.us, etc.
- People can create new applications by reusing the existing parts
 - The whole is more than the sum of its parts
- Maps are intuitive UI interface.

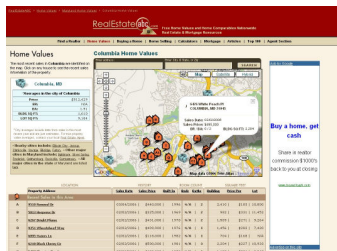
Mashup issues (1 of 3)

- The present Web is built for human users. Information is meant for humans to consume and not for computer programs.
 - A map image is a map to the humans, but is a image to the machines.



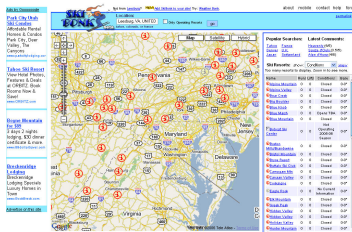
Mashup issues (2 of 3)

- It's difficult to discover and integrate legacy data into new mashup applications.



Real Estate Value Mashup

Where can I find real estate data?
Data format? Permission to use it?

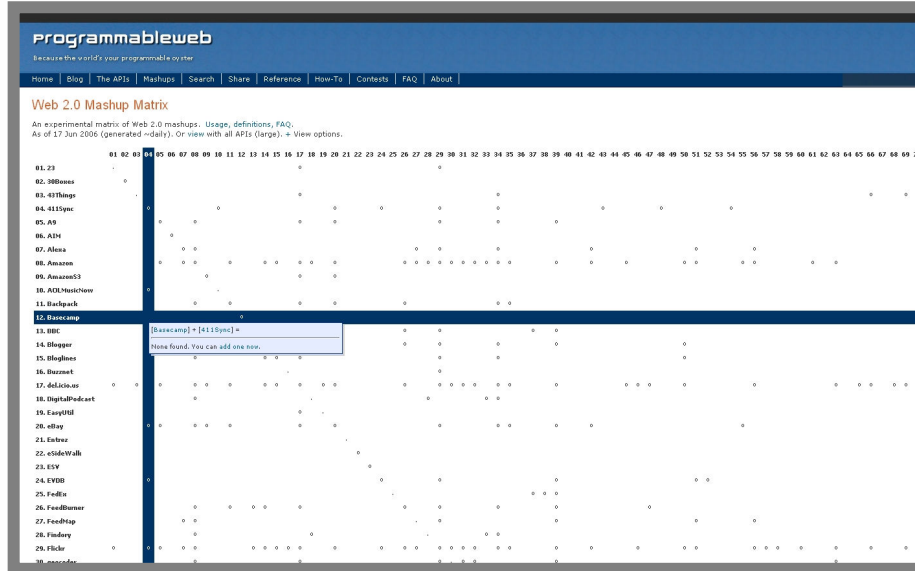


National Ski Condition Mashup

Where can I find weather data?
Data format? Permission to use it?

Mashup issues (3 of 3)

- Too many wrongly think that mashups must be Google Maps on “steroid”.



Web 2.0 Mashup Matrix

- Records **104** Web 2.0 API
- **104 x 104** possibilities
- Google Maps **1 of 104**

<http://www.programmableweb.com/matrix>

Semantic mashup: Piggy Bank

- **Piggy Bank** is a Firefox extension that uses JavaScript to scrape RDF triples from the Web.
 - Part of MIT's SIMILE project
 - <http://simile.mit.edu/piggy-bank>



Movies at Toronto.Com

toronto.com > Movies - Mozilla Firefox

http://www.toronto.com/search?type=theater&flavor_id=1&sort=rc

toronto.com

ALL YOU NEED TO KNOW ABOUT T.O.

Search

Showing 1 - 10 out of 64 movie theatres :
1-10 11-20 21-30 31-40 41-50 next >>

Or, jump to movie theatres beginning with the letter:
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

theatre	Click linked showtimes to	neighbourhood
Burlington 8 Cinemas (Famous Players) 2250 Brant St., Burlington (905) 319-8677 Map Evite Friends	The Interpreter (PG-13) 12:15 pm 3:20 pm 6:40 pm 9:50 pm The Hitchhiker's Guide to the Galaxy (PG) 1:00 pm 4:10 pm 7:20 pm 10:15 pm A Lot Like Love (PG-13) 1:45 pm Kingdom of Heaven (R) 11:45 am 3:10 pm 6:50 pm 10:20 pm House of Wax (R) 4:45 pm 7:50 pm 10:50 pm Crash (R) 1:30 pm 4:30 pm 7:40 pm 10:40 pm Monster-in-Law (PG-13) 1:15 pm 4:20 pm 7:10 pm 10:10 pm Kicking & Screaming (PG) 12:45 pm 3:45 pm 6:45 pm 9:20 pm Unleashed (R) 2:00 pm 5:00 pm 8:00 pm 10:45 pm Star Wars: Episode III - Revenge of the Sith (PG-13) 11:30 am 12:00 pm 12:30 pm 3:00 pm 3:30 pm 4:00 pm 5:30 pm 7:00 pm 7:30 pm 10:00 pm 10:30 pm 11:00 pm WWE: One Night Stand (NR) WWE: Judgment Day (NR)	Burlington
Canada Square (Famous Players) 2200 Yonge St., (Canada Square), Toronto (416) 646-2913 Map Evite Friends		Yonge & Eglinton

Typical movies listing

Piggy Bank this information

Semantic Data in a Piggy Bank

Location information

Information collected from toronto.com > Movies - Mozilla Firefox

toronto.com > Movies
Collected Information

2 filter criteria (remove all)

- date: After 10:00 PM (remove) [add more]
- type: Show (remove)

168 items
sorted by URI [A to Z]

Sahara 22:00

- address: 33 William Kitchens Rd., Toronto, Canada
- coordinates: 43.7726,-79.2824
- date: Aug 5, 2006 10:00:00 PM
- movie-link: <http://www.rottentomatoes.com/profile?fid=12&id=856857>
- movie-title: Sahara
- phone: (416) 335-5323
- rating: PG-13
- theatre-name: Kennedy Commons (AMC)
- title: Sahara 22:00
- type: Show

Show Referers

Save Persist Publish Tags: Tag

Done

movie-title

- "A Lot Like Love" (1)
- "Crash" (8)
- "Dear Frankie" (2)
- "Downfall (Der Untergang)" (1)
- "Enron: The Smartest Guys in the Room" (1)
- "House M.D." (1)

rating

- "NR" (2)
- "PG" (16)
- "PG-13" (77)
- "R" (62)

Movies!!!!

Location! Location! Location!

The screenshot shows a Mozilla Firefox browser window displaying a web page titled "toronto.com > Movies". The page is titled "Collected Information" and features a map of Toronto with several red location pins. A pop-up window over the map lists three items:

- Unleashed 22:00
- Star Wars: Episode III - Revenge of the Sith 22:20
- House of Wax 22:30

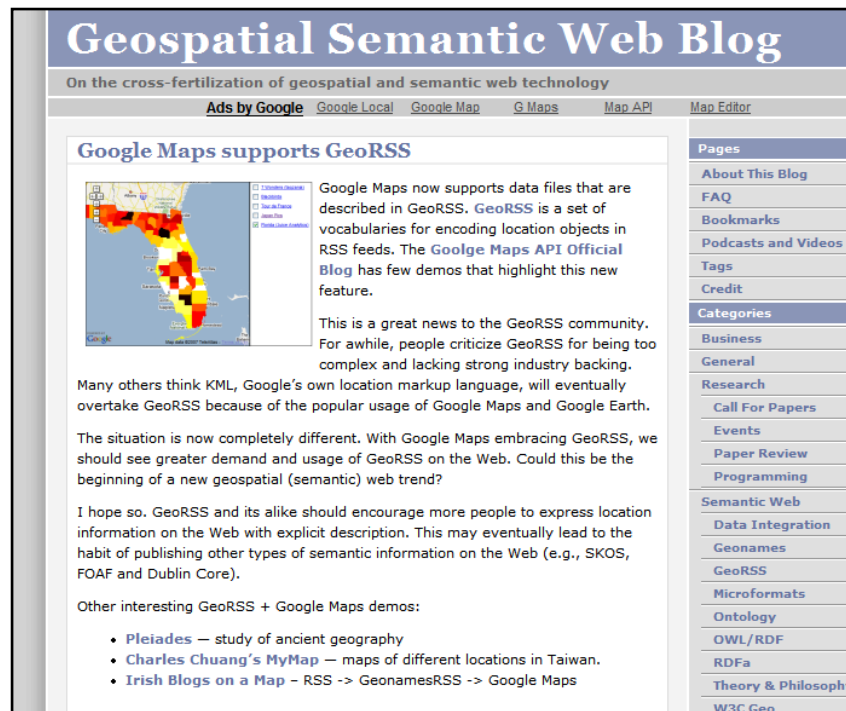
The page also includes a search bar and several filter criteria on the right side:

- filter criteria** (remove all):
 - date: After 10:00 PM (remove) [add more]
 - type: Show (remove)
- date**: By hour, with a list of times: 10:00 PM (100), 11:00 PM (21).
- movie title**: A list of titles including "A Lot Like Love" (1), "Crash" (8), "Dear Frankie" (2), "Downfall (Der Untergang)" (1), and "Enron: The Smartest Guys in the Room" (1).
- rating**: A list of ratings including "NR" (2), "PG" (16), "PG-13" (77), and "R" (52).
- address**: A filter section.

Demo

Google Maps Supports GeoRSS

- Recently Google Maps announced the support for GeoRSS in addition to KML



The screenshot shows a blog post from the 'Geospatial Semantic Web Blog'. The post title is 'Google Maps supports GeoRSS'. The main content includes a small map of Florida with red and yellow markers, and text explaining that Google Maps now supports GeoRSS data files. The text discusses the benefits of GeoRSS over KML and mentions other interesting GeoRSS + Google Maps demos like 'Pleiades', 'Charles Chuang's MyMap', and 'Irish Blogs on a Map'.

Geospatial Semantic Web Blog
On the cross-fertilization of geospatial and semantic web technology

Ads by Google Google Local Google Map G Maps Map API Map Editor

Google Maps supports GeoRSS

Google Maps now supports data files that are described in GeoRSS. GeoRSS is a set of vocabularies for encoding location objects in RSS feeds. The [Google Maps API Official Blog](#) has few demos that highlight this new feature.

This is a great news to the GeoRSS community. For awhile, people criticize GeoRSS for being too complex and lacking strong industry backing. Many others think KML, Google's own location markup language, will eventually overtake GeoRSS because of the popular usage of Google Maps and Google Earth.

The situation is now completely different. With Google Maps embracing GeoRSS, we should see greater demand and usage of GeoRSS on the Web. Could this be the beginning of a new geospatial (semantic) web trend?

I hope so. GeoRSS and its alike should encourage more people to express location information on the Web with explicit description. This may eventually lead to the habit of publishing other types of semantic information on the Web (e.g., SKOS, FOAF and Dublin Core).

Other interesting GeoRSS + Google Maps demos:

- [Pleiades](#) — study of ancient geography
- [Charles Chuang's MyMap](#) — maps of different locations in Taiwan.
- [Irish Blogs on a Map](#) - RSS -> GeonamesRSS -> Google Maps

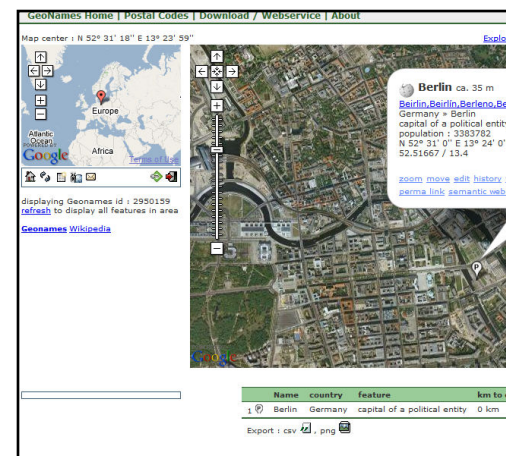
Pages
About This Blog
FAQ
Bookmarks
Podcasts and Videos
Tags
Credit

Categories
Business
General
Research
Call For Papers
Events
Paper Review
Programming
Semantic Web
Data Integration
Geonames
GeoRSS
Microformats
Ontology
OWL/RDF
RDFa
Theory & Philosophy
W3C Geo

Geonames

- The largest geographical database that is licensed under the Creative Commons License (it's free!)
 - Search world locations by name
 - Open Source API
 - Query results in RDF
 - Geonames OWL + SKOS

<http://www.geonames.org>



Concluding Remarks

- Geospatial data and applications are intrinsic part of the future Web
- A cross-fertilization of geospatial and Semantic Web technology will help to improve people's productivity
- We should build useful applications and not worry about the difference between Semantic **W**eb and **s**emantic **w**eb

Web Resources

- Geospatial Semantic Web Blog
 - <http://geospaticsemanticweb.com>
- W3C Geospatial Incubator Group
 - <http://www.w3.org/2005/Incubator/geo/>
- W3C Geo Ontology
 - <http://www.w3.org/2003/01/geo/>
- GeoRSS
 - <http://www.georss.org/>
- Geonames
 - <http://www.geonames.org>
- Microformats Geo
 - <http://microformats.org/wiki/geo>
- RDFa (additional geo usage examples)
 - <http://www.w3.org/2006/07/SWD/RDFa/syntax/>