

# SPARQL



- ◆ *SPARQL Protocol and RDF Query Language*
- ◆ The reference query language for RDF



# SPARQL: the basic idea

- ◆ Think of the triples that make the knowledge graphs:  
subject verb object
- ◆ The basic tool of SPARQL is provided by ***graph pattern matching*** using triples, for instance  
`?x verb object`

# Structure of the basic query..

- ◆ Similar to SQL:

- ◆ **PREFIX ...**

- SELECT ...**

- FROM ...**

- WHERE {**

- ...

- }

- ORDER BY ...**



# Shortcut: PREFIX

- ◆ Just syntactic sugar to create readable names for the URL/URI namespaces
- ◆ Example:  
PREFIX foaf:<<http://xmlns.com/foaf/0.1/>>

so then we can use things like  
foaf:name



# Let's model some data...

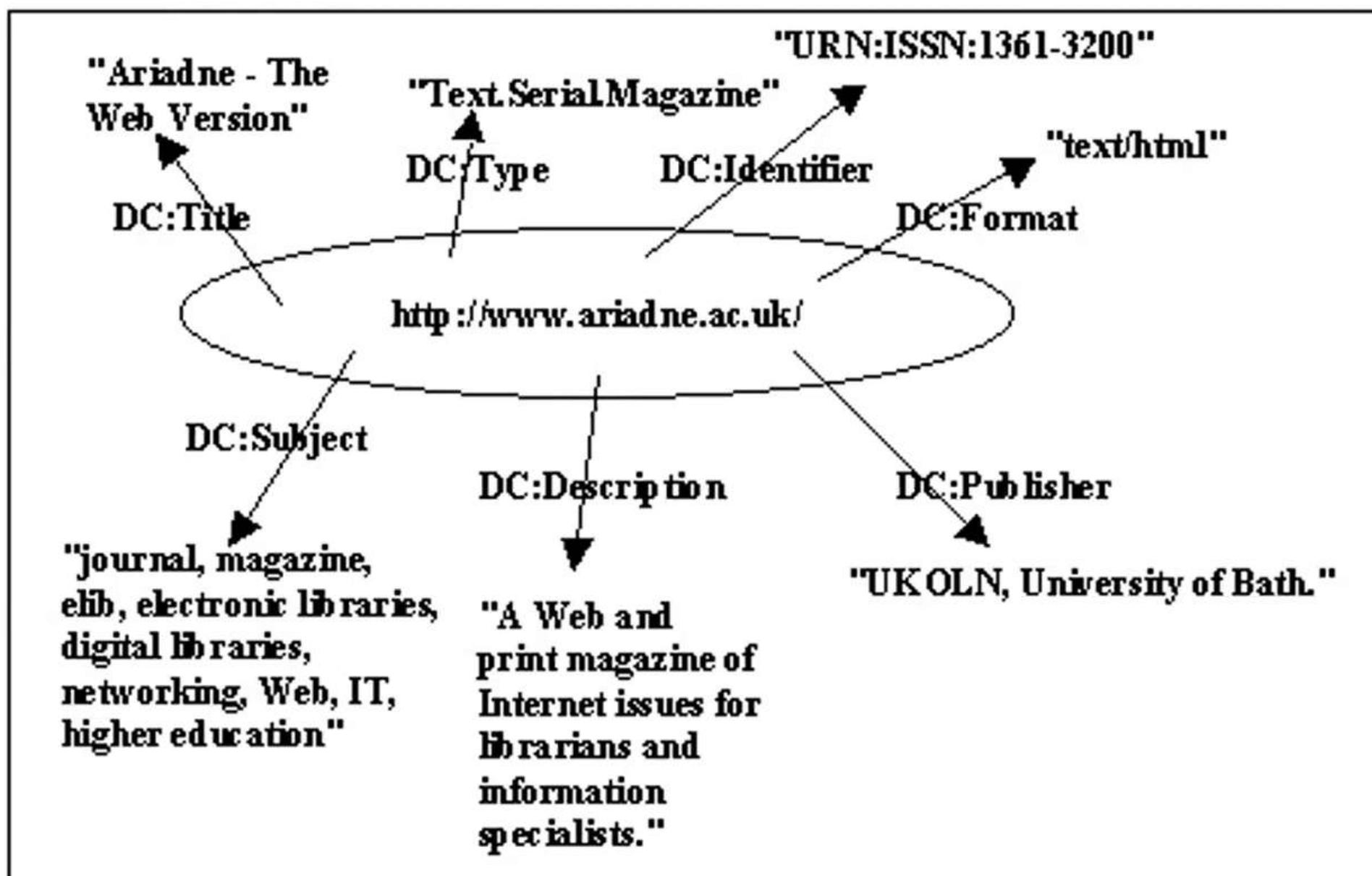
- ◆ ... So we can better understand how to manage information
- ◆ For instance, let's see **DC** and **FOAF**

# DC = Dublin Core



- ◆ The standard to describe the basic properties of documents
- ◆ 15 information elements:
  - ◆ Title Creator / Subject / Description / Publisher
  - ◆ Contributor / Date / Type / Format
  - ◆ Identifier / Source / Language
  - ◆ Relation / Coverage / Rights

# Example



# Example of embedding into HTML



- ◆ <meta name="DC.title" content="What is OWL?">
- <meta name="DC.subject" content="Semantic Web">
- <meta name="DC.author" content="Massimo Marchiori" >

# FOAF = Friend Of A Friend

- ◆ The standard ontology for the Social Web



# How to describe a person

- ◆ The class **Person**, with properties  
Name / title / firstName / surname /  
nick / schoolHomepage /  
workplaceHomePage /  
workInfoHomePage / myersBriggs /  
phone / webpage / weblog

# Example

- ◆ <foaf:Person>  
    <foaf:name>Massimo Marchiori  
    </foaf:name>  
    <foaf:mbox  
        rdf:resource="<mailto:massimo@w3.org>" />  
    </foaf:Person>

mm foaf:name "Massimo Marchiori".

mm foaf:mbox "mailto:massimo@w3.org".

# Social? Friends...

- ◆ The basic property is **foaf:knows**

- ◆ Example:

```
<foaf:Person>
```

```
<foaf:name>Massimo Marchiori
```

```
</foaf:name>
```

....

```
<foaf:knows>
```

```
  <foaf:Person>....</foaf:Person>
```

```
<foaf:knows>
```

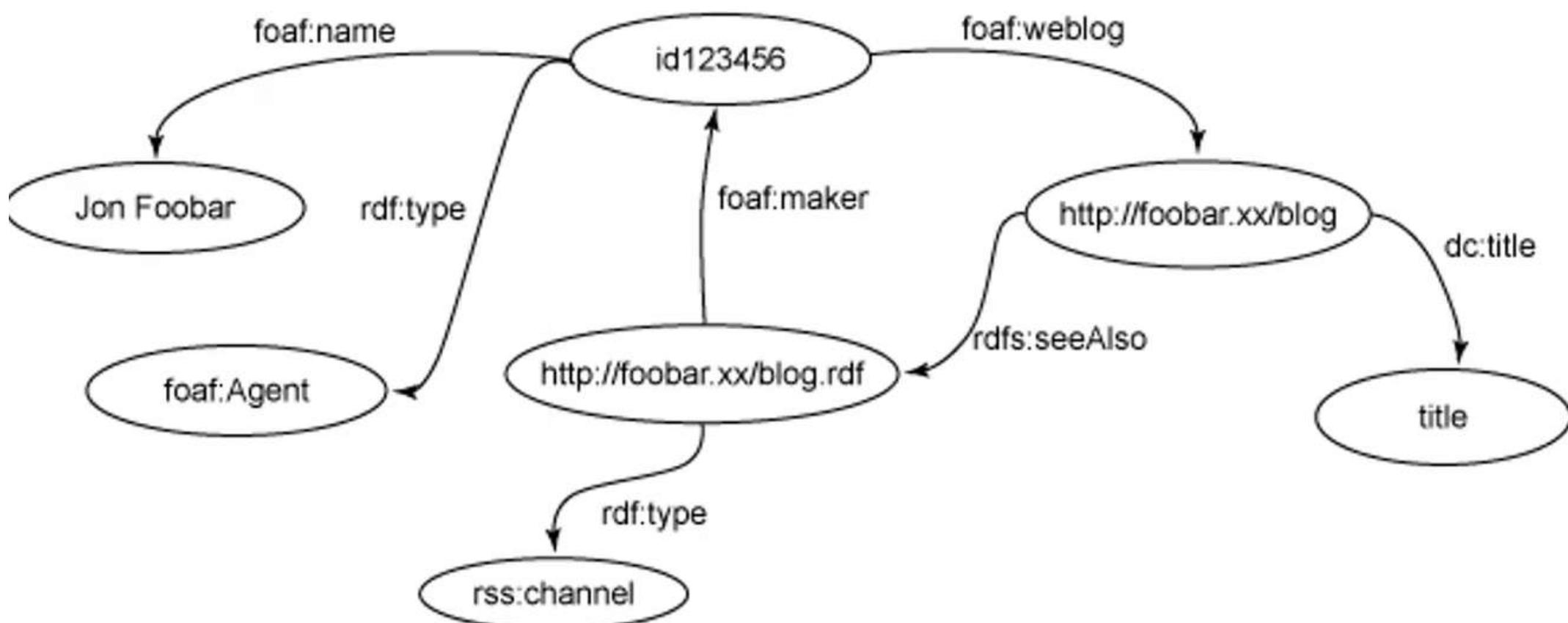
...

```
</foaf:Person>
```

# Let's see some example

- ◆ PlanetRDF has been one of the first «fully semantic» websites
- ◆ In particular, let's see a little piece of its structure (knowledge graph) about bloggers within the site

# A piece of PlanetRDF structure





# Let's search for...

- ◆ The web address of «Mark Twain»'s blog:
- ◆ PREFIX foaf:<<http://xmlns.com/foaf/0.1/>>  
SELECT ?url  
FROM <<http://planetrdf.com/bloggers.rdf>>  
WHERE {  
 ?someone foaf:name "Mark Twain" .  
 ?someone foaf:weblog ?url .  
}



# Optional data

- ◆ In the Semantic Web, knowledge graphs come from multiple sources, and can be anyway contain ***partial*** information
- ◆ → SPARQL allows to deal with partial information, by using the **OPTIONAL** command



# Example

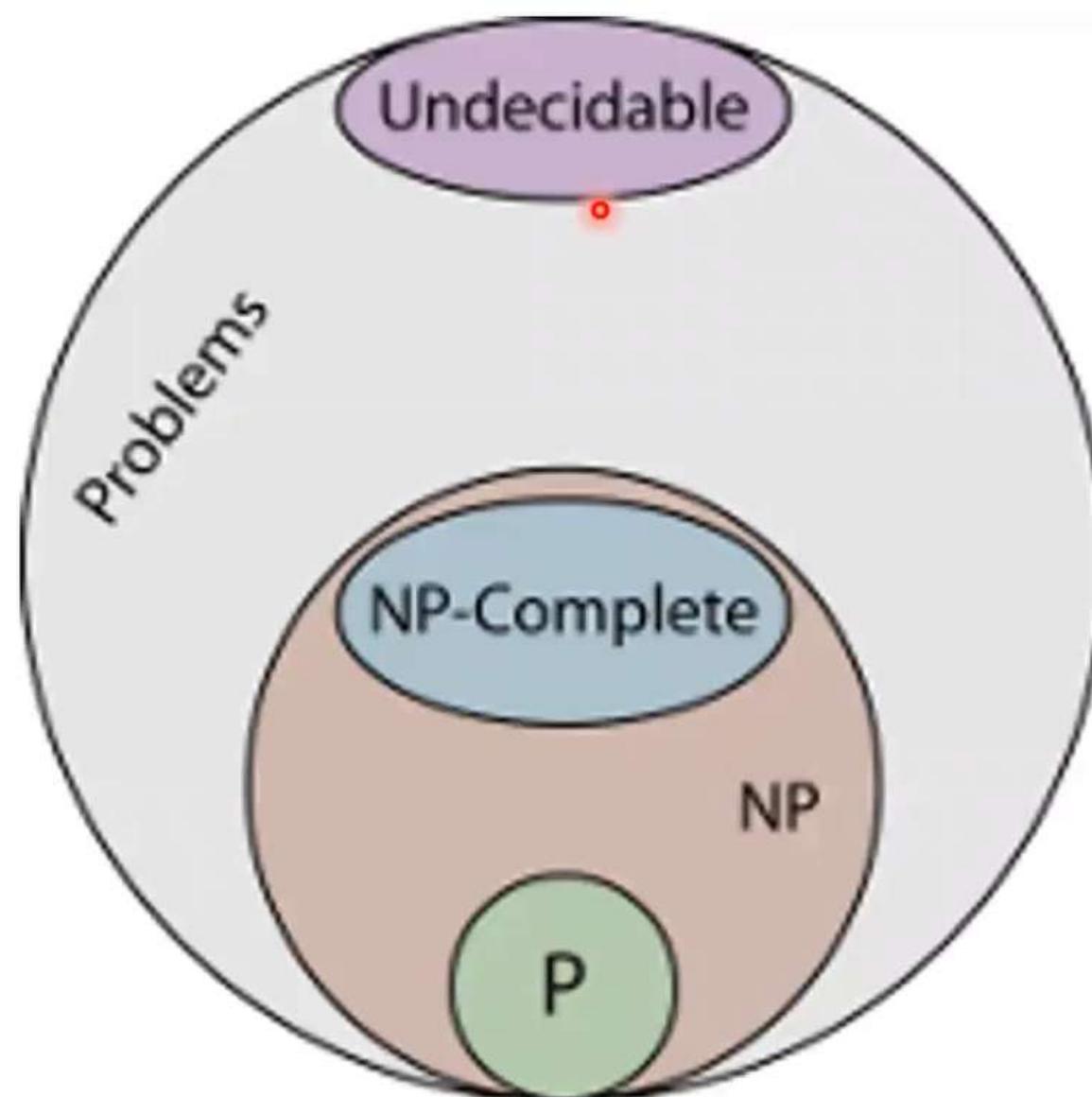
```
◆ PREFIX foaf:<http://xmlns.com/foaf/0.1/>
  SELECT ?name ?picture
  WHERE {
    ?someone foaf:name ?name .
    OPTIONAL {
      ?someone foaf:depiction ?picture .
    } .
  }
```

# Back to the initial point

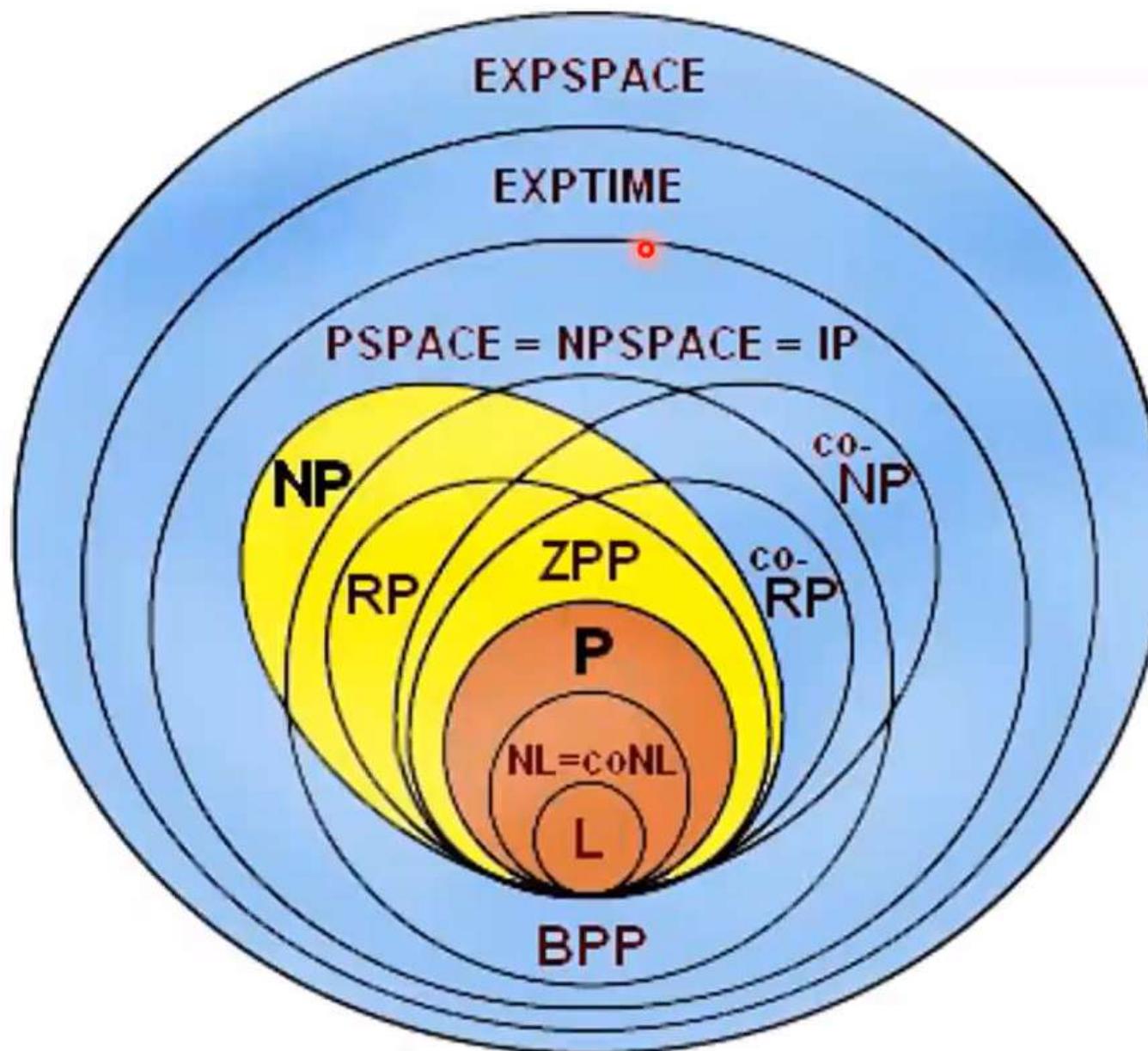
- ◆ Is SPARQL decidable?
- ◆ Answer: YES!
- ◆ And so, how efficient is it?



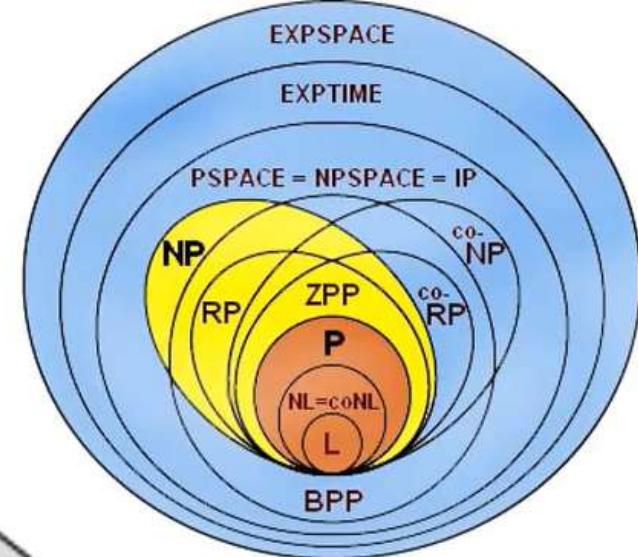
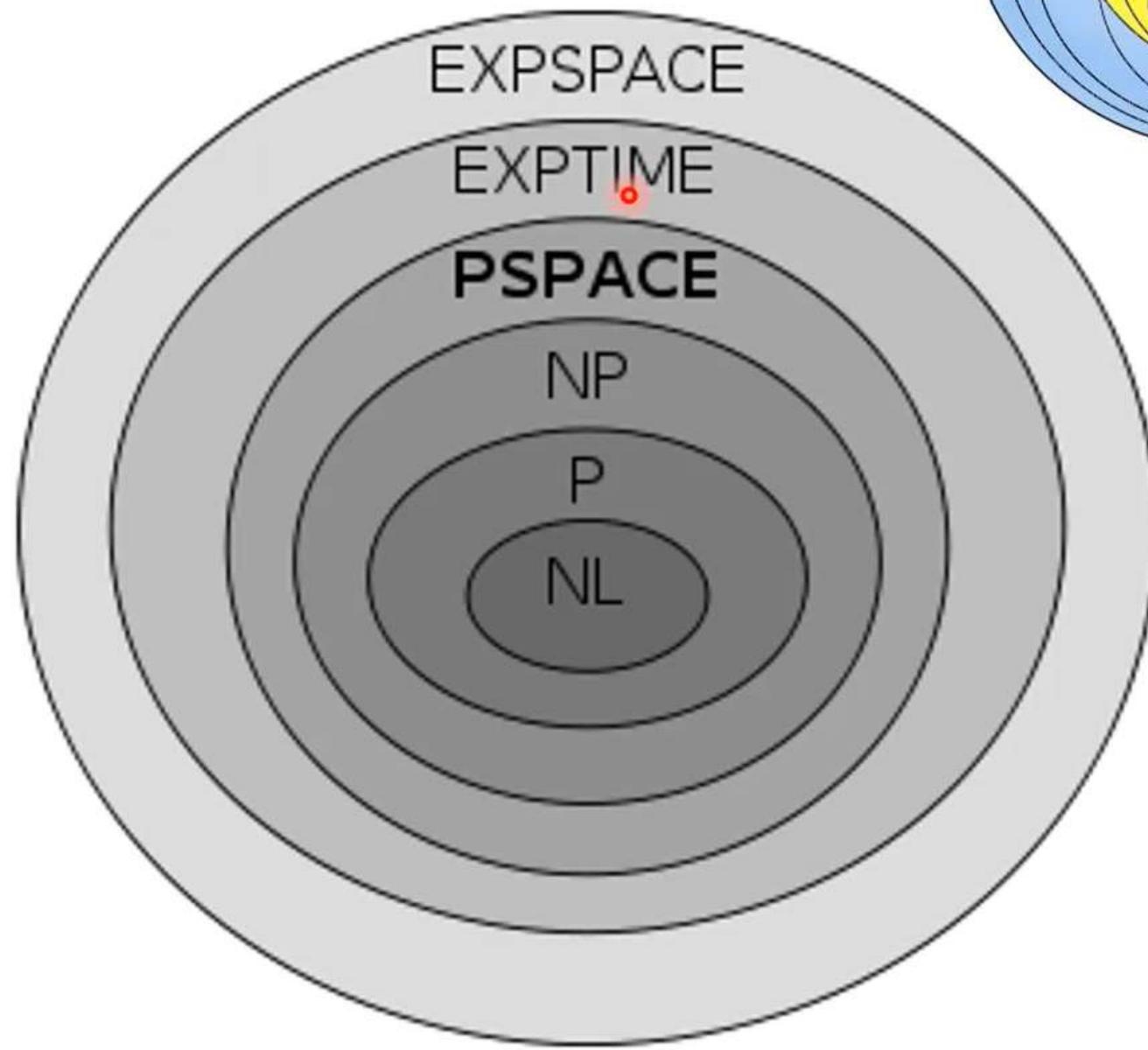
# Efficiency? → Complexity!



# Complexity classes (zoom)



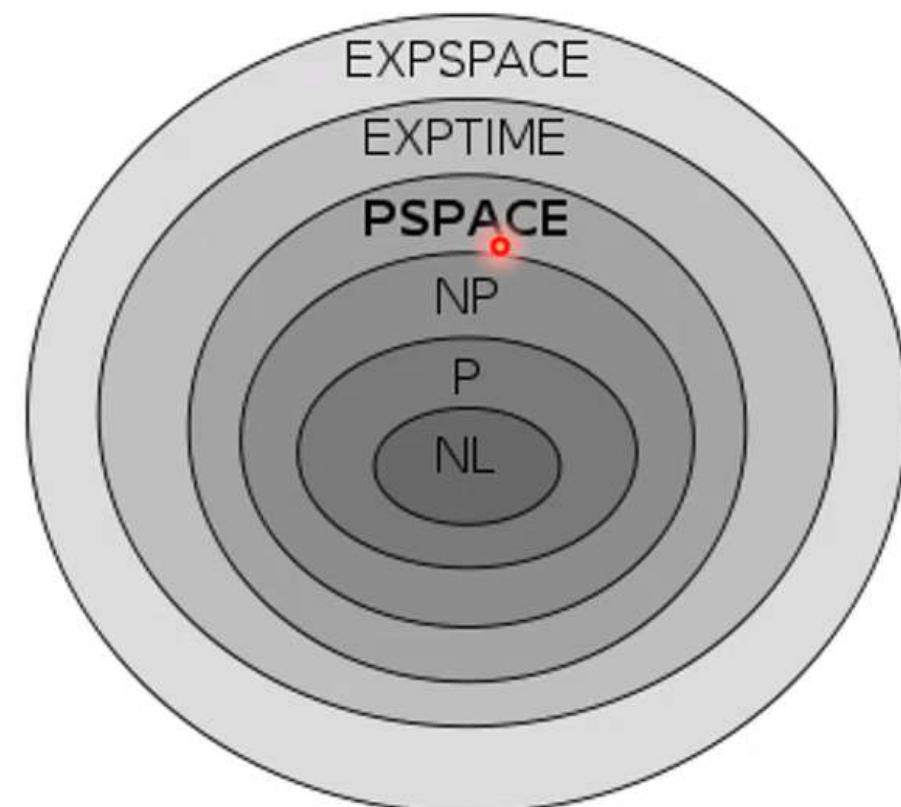
# The base hierarchy





# SPARQL complexity?

- ◆ SPARQL is *decidable* and stays in **PSPACE**
- ◆ Same as SQL!!!!



# So OK for RDF... and what about OWL?

- ◆ Do we restrict ourselves to a *decidable* logic and sacrifice *expressive power*, or...
- ◆ Do we choose an *expressive* logic, but we give up *computability* ° (undecidable logic) ??

# Solution?

◆ ***Both (!)***



# Three OWL layers

- ◆ In order of growing expressive power:
- ◆ **OWL Lite**
- ◆ **OWL DL**
- ◆ **OWL Full**



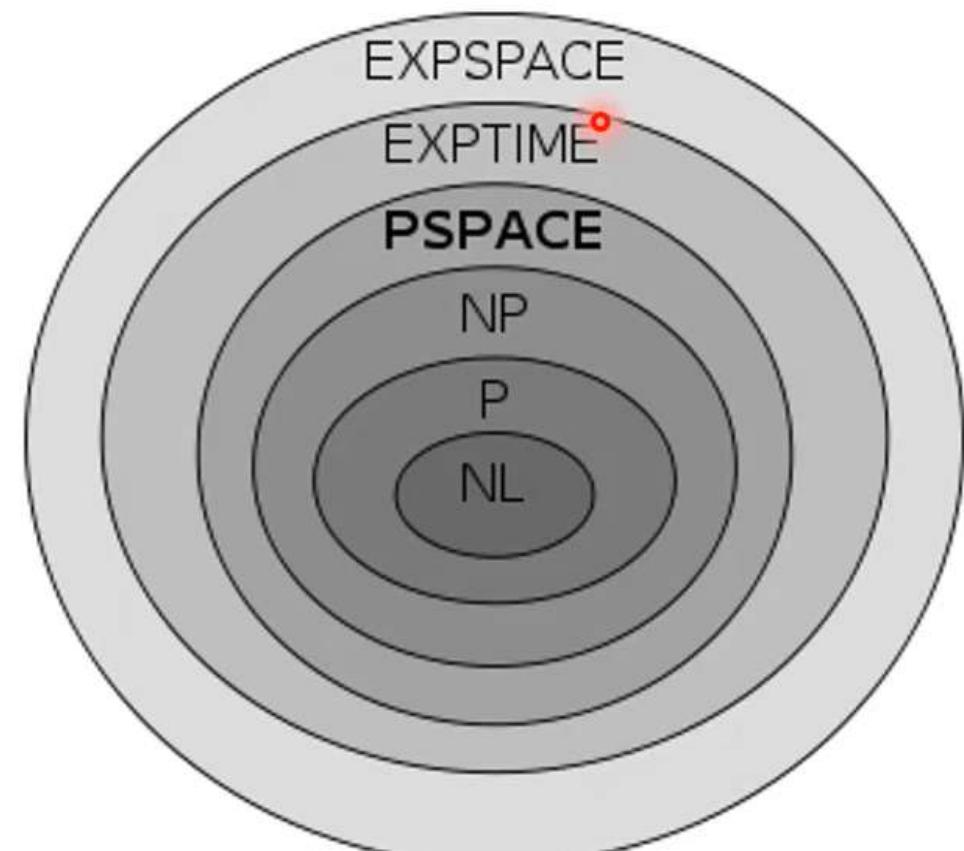
# The three OWLs...



- ◆ OWL Lite is ***decidable***  
(→ the so-called SHIF logic)
- ◆ OWL DL is ***decidable***  
(→ the so-called SHOIN logic, a  
descriptive logic (DL))
- ◆ OWL Full has no restrictions...  
(and it is ***undecidable***)

# Complexity?

- ◆ SHIF (OWL Lite) = EXPTIME
- ◆ SHOIN (OWL DL) = NEXPTIME



# And so?

- ◆ Complexity class= statistical measure
- ◆ **Aaron Levenstein:** *statistics are like bikinis. What they reveal is suggestive, but what they conceal is vital.*



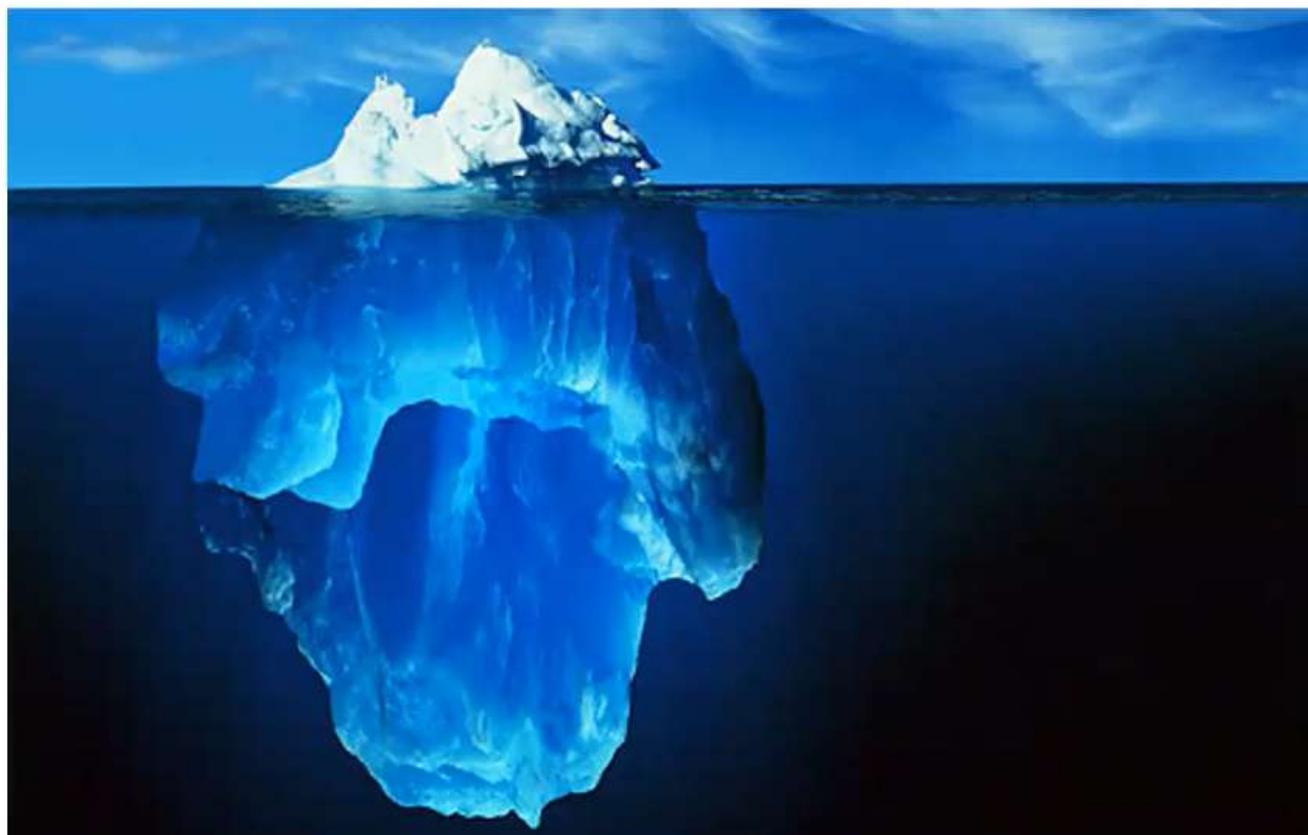
## In reality...

- ◆ The complexity class of a problem is just the tip of the iceberg...



# What really matters...

- ◆ Is the *average complexity* and the *context*



# Example 0

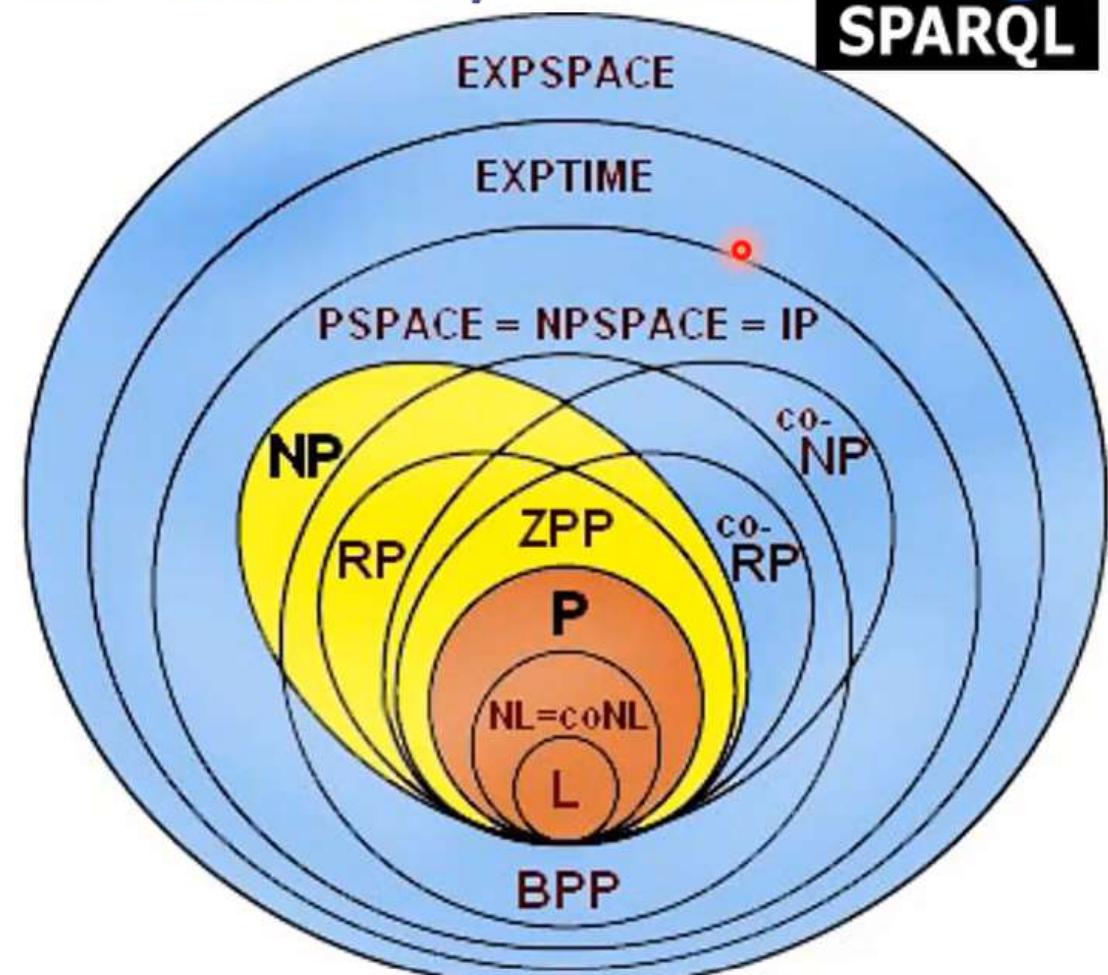
- ◆ Computational cost of search engine queries...



# Example 1 (SPARQL)

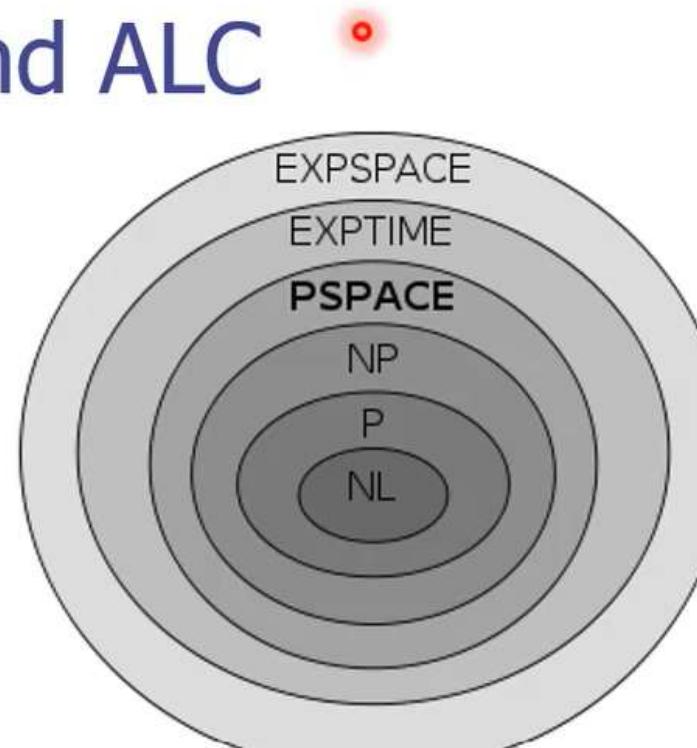


- ◆ SPARQL is in **PSPACE**
- ◆ But taking out just OPTIONAL, we fall back 100% into **co-NP**



## Example 2 (OWL)

- ◆ **Indecidable** (OWL Full) / **NEXPTIME** (OWL DL) / **EXPTIME** (OWL Lite)
- ◆ But statistically, most of the knowledge we use and that is also on the web stays in sub-logics like AL and ALC
- ◆ ALC → **PSPACE**
- ◆ AL → P



# So now, on to applications!

## ◆ **LINKED DATA**

- ◆ → The generalization of semantic web data: data that can be used to feed a Knowledge Graph

# The LOD

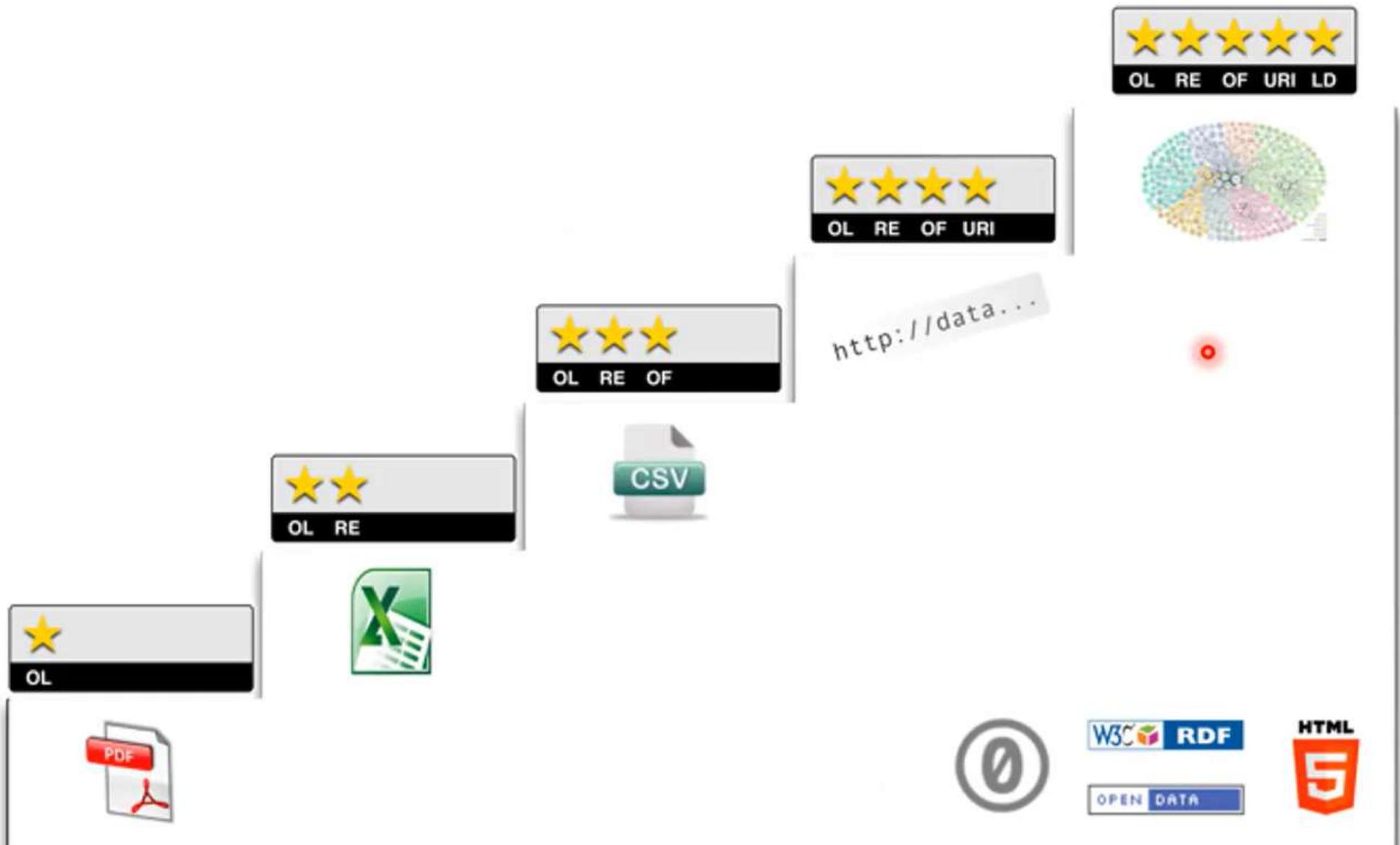
- ◆ LOD are a special kind Linked Data: the Linked Open Data (!)
- ◆ They can be classified from one to five stars



# LOD classification

- ◆ ★: data available on the web but with an open license (open data)
- ◆ ★★: as above, with data in a machine-readable structured format
- ◆ ★★★: as above, using a non-proprietary<sup>o</sup> data format
- ◆ ★★★★: as above, in Semantic Web format (RDF\*,OWL)
- ◆ ★★★★★: as above, with data linked to other data sources to provide context

# The Star Badges



LINKED **OPEN** DATA

On the web **OPEN LICENSE**

Machine-readable data

Non-proprietary format

RDF standards

Linked RDF

IS YOUR DATA 5 ★ ?

## Note...

- ◆ There are interesting «middle zones» in LODs
- ◆ In particular, the ★★★ layer (non-proprietary data), not necessarily in RDF\*/OWL format

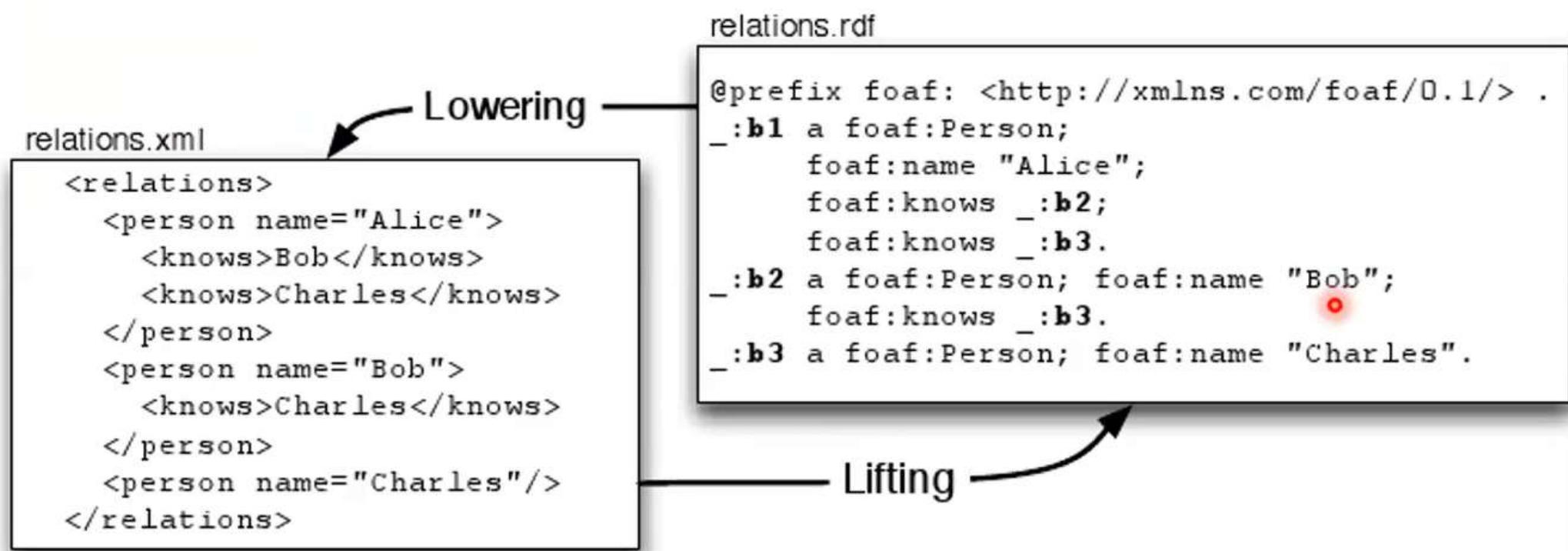


# Up and down...

- ◆ Going from the non-Semantic Web world (e.g., (XML/HTML/SQL etc) to the RDF world is called *lifting*
- ◆ The other direction is instead called *lowering*



# Example

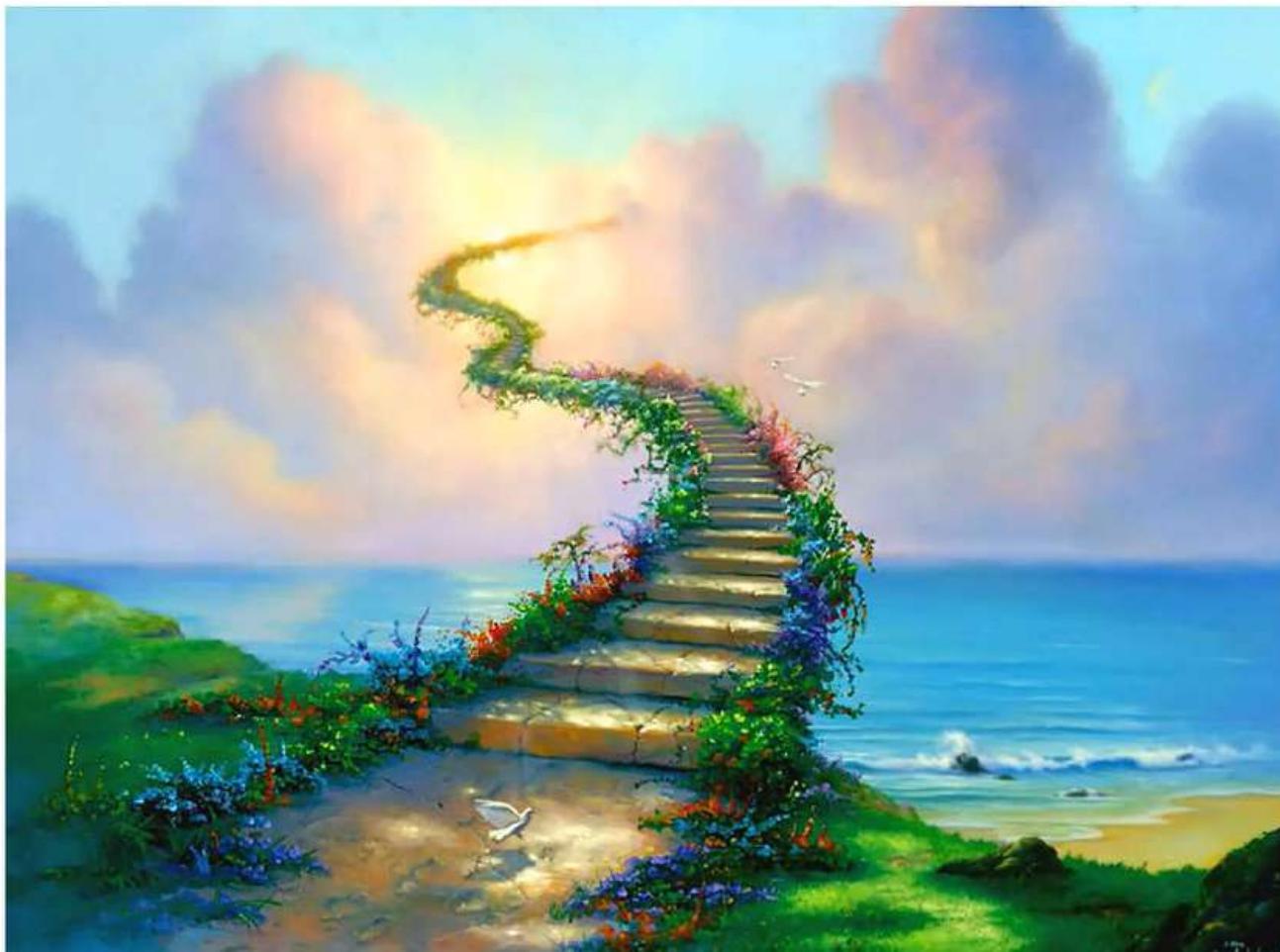


# Mashup

- ◆ Lowering and lifting are important to do the so-called ***mashup*** : join the XML/XHTML/HTML world (and all its huge amount of information) with the RDF/Semantic Web world, and vice versa

# Examples of Lifting

- ◆ From SQL / relational data



# D2RQ



- ◆ **D2RQ** ([d2rq.org](http://d2rq.org)) allows to automatically pass data from SQL to RDF
- ◆ (high-level: JDBC database connections)
- ◆ Can work also as a server, giving immediate web access to data as RDF

# Triplify



- ◆ Similar approach

Products

Id	Label	Price
1	Eeepc	\$399
2	iPod Nano 4GB	\$299

Triplify

Prod1	rdfs:label	"Eeeepc"
Prod1	shop:price	"\$399"
Prod1	rdf:type	shop:Product
Prod2	shop:label	"iPod Nano 4GB"
Prod2	shop:price	"\$299"
Prod2	rdf:type	shop:Product

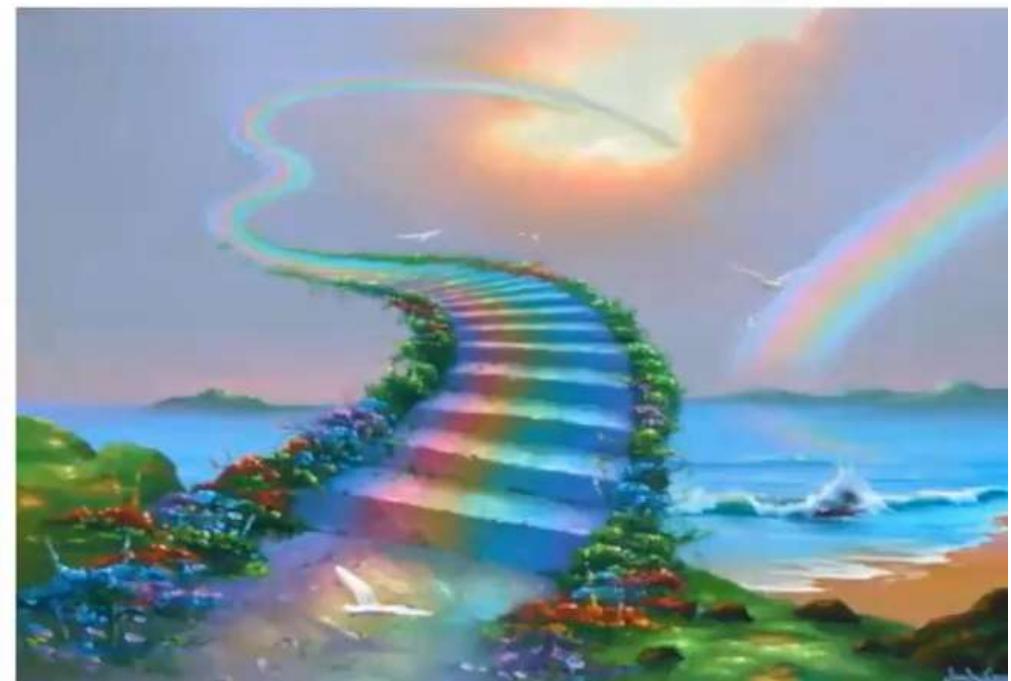
# Openlink Virtuoso



- ◆ Virtuoso is a “universal server”, implementing many protocols to handle information
- ◆ It allows interaction at various levels among SQL, XML, RDF, web services
- ◆ Available both in open-source and commercial editions

# And what about the other data?

- ◆ For instance ***web pages, text***, pdf, word etc?



# NLP tools



- ◆ NLP (= Natural Language Processing) tools analyze textual/hypertextual information and allow automatic lifting

# Examples



- ◆ Open Calais (developed by Thomson Reuters)
- ◆ And many others: Spotlight, Alchemy Extractiv, Ontos, Evri, Saplo, Lupedia...
- ◆ Let's see OpenCalais (now Refinitiv)

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Intelligent Tagging & Text Analytics

https://www.refinitiv.com/en/products/intelligent-tagging-text-analytics

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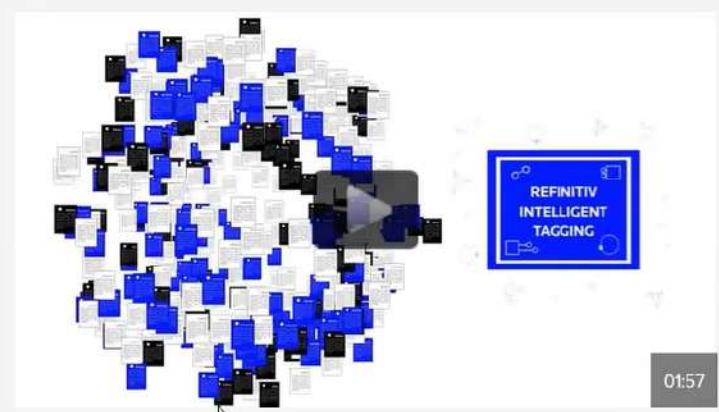
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TEXT ANALYTICS SERVICE

# Intelligent Tagging

Making data smarter: using natural language processing, text analytics, and data-mining technologies, Intelligent Tagging turns large amounts of unstructured data into precise advantage.

Request product details



Intelligent Tagging enables quicker and smarter search of information that is important and relevant to your business

Overview Features & benefits Deployment options Find out more

## Why choose Intelligent Tagging?

USEFUL LINKS

[Read more on Refinitiv Intelligent Tagging >](#)

Intelligent Tagging overview (1:56)

## Intelligent Tagging Demo

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Try it out - Provide your content, and then click on Tag it.

Document Type  News  Research

Show premium results  show free results

```
<Document>
<Title> PLACE_YOUR_TITLE_HERE </Title>
<Body> PLACE_YOUR_BODY_HERE </Body>
</Document>
```

Enter or paste text in the space provided above. You can also drag and drop a file here OR [Upload PDF, XML, HTML or RDF files, OR even](#)

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# Rome

History, art and charm in the only eternal city: a kaleidoscope of emotions from ancient glories to the present.



Omaggio a Roma



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Rome, the cradle of civilization, **Rome caput mundi**, or simply Rome, the city of a thousand faces. Seat of the Papacy, its current countenance is the result of innumerable urbanistic and architectonic modifications that run through its layers and through the millennia.

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Fori Imperiali

Imperial Rome is certainly that which is best-known. The splendors of Antiquity are living and visible in the Capital today: from the Colosseum to





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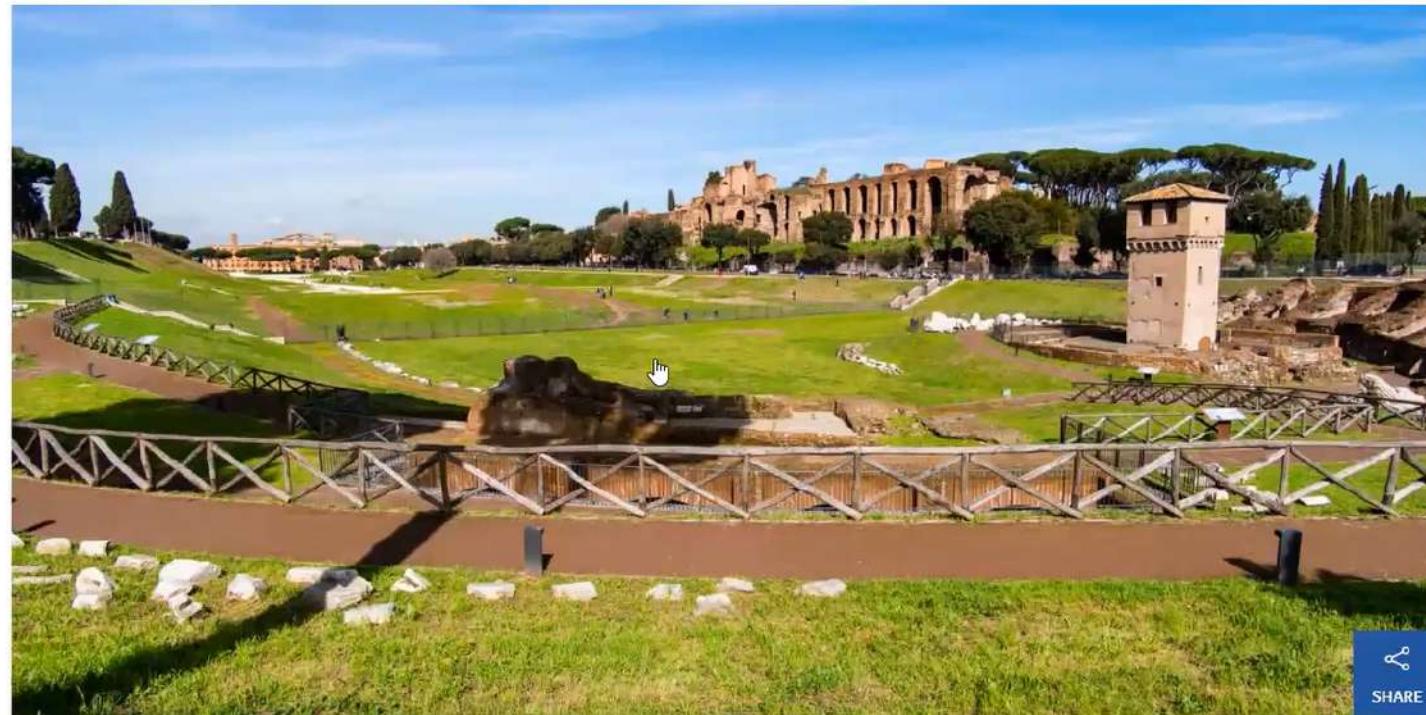
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Fori Imperiali

**Imperial Rome** is certainly that which is best-known. The splendors of Antiquity are living and visible in the Capital today: from the **Colosseum** to the **Imperial Forums**, the **Domus Aurea**, the **Pantheon** and **Circus Maximus**. At the end of the 1400s, the great Florentine **Renaissance** moved to Rome, where the Popes had become the important patrons of art, thus summoning the best artists to bedeck and embellish the city.



Circo Massimo

Rome appeared as if it were one great construction site: churches began to proliferate (e.g. **San Pietro in Montorio** and its Tempietto del



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Rome | Italia.it (English)

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Ponte Emilio

Valutazione

Tutti i filtri

Sito storico · Via del Circo Massimo  
Grande arena romana in pietra  
06 0608

Indicazioni stradali

Sito web

Circo Massimo

4,4 ★★★★★ (37.147)  
Sito storico · Via del Circo Massimo  
Grande arena romana in pietra  
06 0608

Indicazioni stradali

Sito web

Circo Massimo

4,0 ★★★★★ (5)  
Stazione di transito

Indicazioni stradali

Sito web

Osteria Circo

4,3 ★★★★★ (830) · €€  
Cucina romana · Via dei Cerchi,  
77/79  
Osteria rustica con cucina  
regionale  
Chiuso · Riapre alle 19:30 · 06 3107  
8932  
Consumazione sul posto

PRENOTA UN TAVOLO

Risultati visualizzati 1 - 3

Livelli

Fiume Tevere

San Giorgio in Velabro

Arco di Giano

Foro Boario

Cloaca Maxima

Mercato Campagna Amica al Circo...

Bocca della Verità

Via di S. Teodoro

Via dei Cerchi

Parcheggio

Monastero delle Benedettine Camaldolesi

Giardino degli Aranci

Basilica di Santa Sabina

Collection Services S.R.L.

Accademia Nazionale di Danza

Piazzale Ugo la Malfa

Roseto di Roma Capitale

Via di Valle Murcia

Belvedere Romolo e Remo

Septizodium

Circo Massimo Experience

Tempio di Eliogabalo

Chiesa San Bonaventura cardinale al Palatino

Domus Flavia

Palatino

Domus Augustana - Palatino

Museo Palatino

Stadio Palatino

Terme Severiane

Arcate Severiane sul Palatino

Piazza di San Gregorio

Parc

Via di San Gregorio

Piazza di Gregorio

Chiesa di Gregorio al C

Biglietteria

zzerosettantacinque

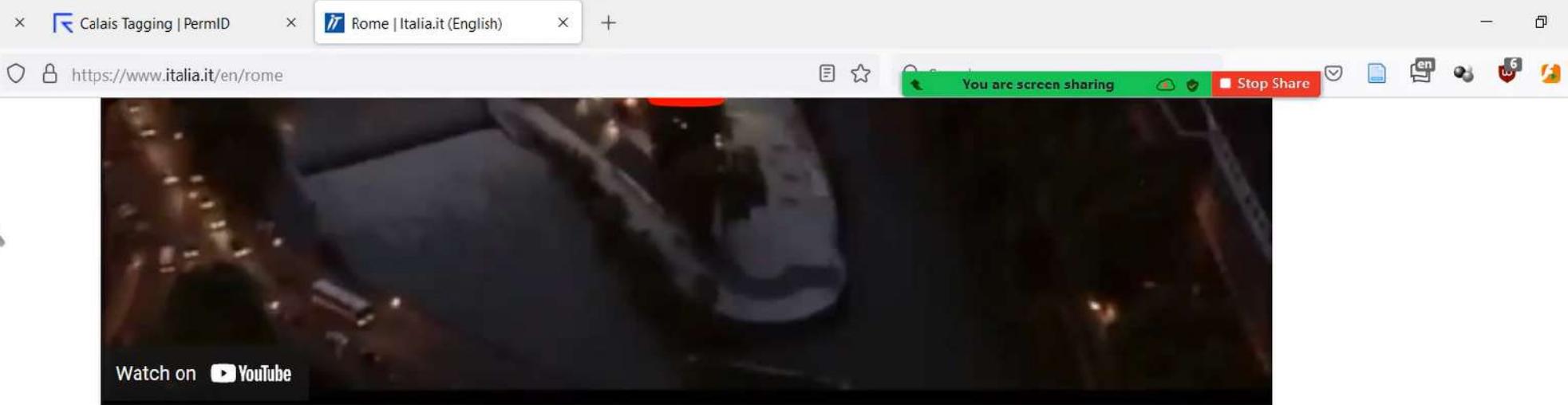
Osteria Circo

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100 m

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Rome, the cradle of civilization, **Rome caput mundi**, or simply Rome, the city of a thousand faces. Seat of the Papacy, its current countenance is the result of innumerable urbanistic and architectonic modifications that run through its layers and through the millennia.



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← → C https://permid.org/onecalaisViewer

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FOUND IN DOCUMENT

Entities

- City
- Company
- Country
- Facility
- Holiday
- Industry Term
- Movie
- Natural Feature
- Organization
- Person
- Position

DOCUMENT VIEW

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Rome

History, art and charm in the only eternal city: a kaleidoscope of emotions from ancient glories to the present.

Rome, the cradle of civilization, Rome caput mundi, or simply Rome, the city of a thousand faces. Seat of the Papacy, its current countenance is the result of innumerable urbanistic and architectonic modifications that run through its layers and through the millennia.

Fori Imperiali

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- >  Movie
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- >  Person
- >  Position
- >  Region
- >  Sports Event

DOCUMENT VIEW

Circo Massimo

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Rome appeared as if it were one great construction site: churches began to proliferate (e.g. San Pietro in Montorio and its Tempietto del Bramante, or Santa Maria della Pace and its frescoes by Raphael) and already-existing churches were restructured and newly-decorated - think Santa Maria in Aracoeli, where Pinturicchio and Donatello worked their magic. Princely palaces were built, such as the Palazzo Farnese in the Campidoglio and the Palazzo Vecchio in the Cancelleria. In the 16th century, the city was transformed by Pope Sixtus V, who had the Via Sacra and the Piazza Navona built. The city's architectural landscape was also shaped by the Baroque style of Bernini and Borromini, who created important piazzas, for example the Piazza del Popolo and the Piazza di Spagna.

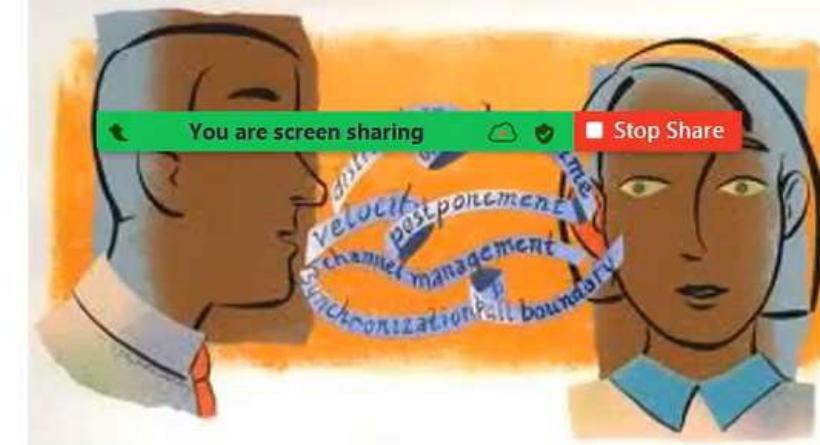
PERSON  
Pinturicchio

Relevance  
20%

confidencelevel 0.958

Upload Again RDF View RDF

# Examples



- ◆ Open Calais (developed by Thomson Reuters)
- ◆ And many others: Spotlight, Alchemy, Extractiv, Ontos, Evri, Saplo, Lupedia...
- ◆ Let's see OpenCalais (now [Refinitiv](#))
- ◆ A wealth of applications, let's see for instance [Wikido](#)

**COVID-19 advise:** In-person events may be cancelled. Please confirm details with the organizers. Or visit [WikiDo Live](#) to attend one of the coming events from your safe home! See [ONLINE Events](#).



# Search from over 5,356,382 events happening in the U.S.



TOWN IN U.S. (Type slowly for suggestions)

SEARCH

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New York, NY, US e.g. concert, blues, festival

today SEARCH

**CHANGE DATES**

- Today
- This weekend
- Next 3 days
- Next 7 days
- Next 30 days

**SEARCH TAGS**

Music	73
Arts	64
Culture	58
Art	40
School	34
Sport	31
Book	29
Technology	29
Learn	28
Theatre	28
Artists	27

**351 things to do**

**TODAY**  **Moulin Rouge!**  
Thu 12/16 New York, NY.   

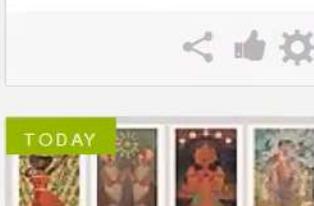
**TODAY**  **Magos Herrera: "Remanso"**  
winning Mexican singer and composer presents the music she created  
Thu 12/16 @ 7:00 pm New York, NY. New York.   

**TODAY**  **Dmitry Ishkhanov: Solo Piano Works By Chopin**  
Weill Recital Hall at Performed by - Dmitry Ishkhanov - Following his first performance at s Stern Auditorium / Perelman Stage with Distinguished Concerts Orchestra at age 14, returns to to to...  
Thu 12/16 New York, NY. New York NY United States.   

**TODAY**  **Illustration Art**  
Browse Catalogue - Highlights  
Thu 12/16 New York, NY. Sale 2592.   

**TODAY**  **92Y Presents Michelle Dorrance, Dormeshia & Guests**  
Dance - 20-40 - 92Y - The 92nd Street Y Harkness Dance Center's 2021-22 Mainstage Series continues on Thursday, with Michelle Dorrance, Dormeshia & Guests. It's billed as an evening of tap...  
Thu 12/16 @ 4:00 pm New York, NY. Manhattan.   

**TODAY**  **Hugh Pool KR2**  
The Hugh Pool Band has a residency here at 11th St. Bar on the third Thursday of each month unless Hugh's rest of

**TODAY**  **Deming King Harriman**  
Thu 12/16 [ +1 dates ] New York, NY.   

**TODAY**  **The Great Preservation Bake-Off Winner Is An Upper East Sider!**

**TODAY** 



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# Offering the data?

- ◆ To have at least 1 LOD star data must be on the Web, but how?
- ◆ We could just make the data available as a file in a certain URL address: in case of 3 LOD stars this is called an ***RDF dump***
- ◆ Problem: «dumping» data is just not very practical (think of Big Data etc)

# Other way

- ◆ Offering a more structured access, for instance via an interface



# Example: SPARQL

- ◆ Instead of providing a raw file, we could offer a SPARQL ***web service***: much more powerful and flexible
- ◆ In this case we talk about *SPARQL endpoints*

# Endpoints access

- ◆ Varios ways, the easiest is via GET
- ◆ → we can do an HTTP GET to the SPARQL endpoint, passing various parameters in the query part of the URL

# GET parameters

- ◆ **query** : the SPARQL query to execute (modified via the classic %-encoding ("urlencoding") for URLs)
- ◆ **default-graph-uri** (optional): the URI of the default knowledge graph
- ◆ **named-graph-uri** (optional): other knowledge graphs that can be used in the query

# Example

- ◆ Query SPARQL:

PREFIX dc:

<<http://purl.org/dc/elements/1.1/>>

SELECT ?book ?who

WHERE { ?book dc:creator ?who }

# Example (cont.)

- ◆ GET call:

`http://www.endpoint.com/?query=PRE  
FIX%20dc%3A%20%3Chttp%3A%2F%  
2Fpurl.org%2Fdc%2Felements%2F1.1  
%2F%3E%20%0ASELECT%20%3Fbo  
ok%20%3Fwho%20%0AWHERE%20%  
7B%20%3Fbook%20dc%3Acreator%20  
%3Fwho%20%7D%0A`

(%20=" ", %3A=":", %3C=< etc...)

# Let's see now...

- ◆ Examples of LOD instances that are available



- ◆ Essentially, the *semantic version of Wikipedia*
- ◆ <http://en.wikipedia.org/wiki/Italy> →  
<http://dbpedia.org/resource/Italy> →  
dbpedia:Italy

Corsi | EasyBadge

Calais Tagging | Permid

Rome | Italia.it (English)

Things to Do in New York, NY.

W Italy - Wikipedia

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https://en.wikipedia.org/wiki/Italy

Article | Talk

Read | View source | View history | Search Wikipedia

Coordinates: 43°N 12°E

# Italy

From Wikipedia, the free encyclopedia

For other uses, see [Italy \(disambiguation\)](#).

"*Italia*" redirects here. For other uses, see [Italia \(disambiguation\)](#).

**Italy** (Italian: *Italia* [i'ta:lia] (listen)), officially the **Italian Republic** (Italian: *Repubblica Italiana* [re'pubblika ita'lja:na]),<sup>[13][14]</sup> is a country consisting of a peninsula delimited by the Alps and several islands surrounding it,<sup>[15]</sup> whose territory largely coincides with the homonymous geographical region.<sup>[16]</sup> Italy is located in the centre of the Mediterranean Sea, in Southern Europe,<sup>[17][18][19]</sup> and is also considered part of Western Europe.<sup>[20][21]</sup> A unitary parliamentary republic with Rome as its capital and largest city, the country covers a total area of 301,340 km<sup>2</sup> (116,350 sq mi) and shares land borders with France, Switzerland, Austria, Slovenia, and the enclaved microstates of Vatican City and San Marino. Italy has a territorial exclave in Switzerland (Campione) and a maritime exclave in Tunisian waters (Lampedusa). With around 60 million inhabitants, Italy is the third-most populous member state of the European Union.

Due to its central geographic location in Southern Europe and the Mediterranean, Italy has historically been home to myriad peoples and cultures. In addition to the various ancient peoples dispersed throughout what is now modern-day Italy, the most predominant being the Indo-European Italic peoples who gave the peninsula its name, beginning from the classical era, Phoenicians and Carthaginians founded colonies mostly in insular Italy,<sup>[22]</sup> Greeks established settlements in the so-called *Magna Graecia* of Southern Italy, while Etruscans and Celts inhabited central and northern Italy respectively. An Italic tribe known as the Latins formed the Roman Kingdom in the 8th century BC, which eventually became a republic with a government of the Senate and the People. The Roman Republic initially conquered and assimilated its neighbours on the Italian peninsula, eventually expanding and conquering parts of Europe, North Africa and Asia. By the first century BC, the Roman Empire emerged as the dominant power in the Mediterranean Basin and became a leading cultural, political and religious centre, inaugurating the Pax Romana, a period of more than 200 years during which Italy's law, technology, economy, art, and literature developed.<sup>[23][24]</sup>

During the Early Middle Ages, Italy endured the fall of the Western Roman Empire and barbarian invasions, but by the 11th century numerous rival city-states and maritime republics, mainly in the northern and central regions of Italy, became prosperous through trade, commerce, and banking, laying the groundwork for modern capitalism.<sup>[25]</sup> These mostly independent statelets served as Europe's main trading hubs with Asia and the Near East, often enjoying a greater degree of democracy than the larger feudal monarchies that were consolidating throughout Europe; however, part of central Italy was under the control of the theocratic Papal States, while Southern Italy remained largely feudal until the 19th century, partially as a result of a succession of Byzantine, Arab, Norman, Angevin, Aragonese, and other foreign conquests of the region.<sup>[26]</sup> The Renaissance began in Italy and spread to the rest of Europe, bringing a renewed interest in humanism, science, exploration, and art. Italian culture flourished, producing famous scholars, artists, and polymaths. During the Middle Ages, Italian explorers discovered new routes to the Far East and the New World, helping to usher in the European Age of Discovery. Nevertheless, Italy's commercial and political power significantly waned with the opening of trade routes that bypassed the Mediterranean.<sup>[27]</sup> Centuries of foreign meddling and conquest, and the rivalry and

**Italian Republic**  
*Repubblica Italiana* (Italian)

 Flag  
 Emblem

Anthem: *Il Canto degli Italiani* (Italian)  
"The Song of the Italians"

0:00 MENU

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Show map of Europe  
Show all



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## D About: Italy

## About: [Italy](#)

An Entity of Type: [person](#), from Named Graph: <http://dbpedia.org>, within Data Space: [dbpedia.org](http://dbpedia.org)

Italy (Italian: Italia [i'ta:lja]), officially the Italian Republic (Italian: Repubblica Italiana [re'pubblika ita'lja:na]), is a country consisting of a peninsula delimited by the Alps and several islands surrounding it. Italy is located in the center of the Mediterranean Sea, in Southern Europe, and is also often considered part of Western Europe. A unitary parliamentary republic with Rome as its capital and largest city, the country covers a total area of 301,340 km<sup>2</sup> (116,350 sq mi) and shares land borders with France, Switzerland, Austria, Slovenia, and the enclaved microstates of Vatican City and San Marino. Italy has a territorial enclave in Switzerland (Campione) and a maritime exclave in Tunisian waters (Lampedusa). With around 60 million inhabitants, Italy is the third-most pop

Property	Value
<a href="#">dbo:PopulatedPlace/area</a>	<ul style="list-style-type: none"> <li>• 301337.3466732626</li> <li>• 301340.0</li> </ul>
<a href="#">dbo:PopulatedPlace/populationDensity</a>	<ul style="list-style-type: none"> <li>• 201.3</li> <li>• 201.35227567988554</li> </ul>
<a href="#">dbo:abstract</a>	<ul style="list-style-type: none"> <li>• Italy (Italian: Italia [i'ta:lja]), officially the Italian Republic (Italian: Repubblica Italiana [re'pubblika ita'lja:nā]), is a country consisting of a peninsula delimited by the Alps and several islands surrounding it. Italy is located in the center of the Mediterranean Sea, in Southern Europe, and is also often considered part of Western Europe. A unitary parliamentary republic with Rome as its capital and largest city, the country covers a total area of 301,340 km<sup>2</sup> (116,350 sq mi) and shares land borders with France, Switzerland, Austria, Slovenia, and the enclaved microstates of Vatican City and San Marino. Italy has a territorial enclave in Switzerland (Campione) and a maritime enclave in Tunisian waters (Lampedusa). With around 60 million inhabitants, Italy is the third-most populous member state of the European Union, after Germany and France. Due to its central geographic location in Southern Europe and the Mediterranean, Italy has historically been home to myriad peoples and cultures. In addition to the various ancient peoples dispersed throughout what is now modern-day Italy, the most predominant being the Indo-European Italic peoples who gave the peninsula its name, beginning from the classical era, Phoenicians</li> </ul>

# Ontologies?

- ◆ DBpedia has its own ontology, and also reuses the reference web ontologies, so to be interoperable

# DBpedia ontology

- ◆ More than 4.8 million resources
- ◆ 967.000 places  
1.590.000 persons  
552.000 works  
317.000 organizations  
190.000 species  
etc etc...
- ◆ Also with endpoints!

# DBpedia ontology

- ◆ More than 4.8 million resources
- ◆ 967.000 places
  - 1.590.000 persons
  - 552.000 works
  - 317.000 organizations
  - 190.000 species
  - etc etc...
- ◆ Also with endpoints!
- ◆ [Let's see it](#)



RESOURCES ▾ MEMBERS ▾ COMMUNITY ▾

# Ontology (DBO)

The DBpedia ontology is the heart of DBpedia. Having started as a manually created ontology based on the most commonly used infoboxes within Wikipedia in 2008, it soon evolved into a successful crowd-sourcing effort resulting in a shallow cross-domain ontology. The DBpedia community is continuously contributing to the DBpedia ontology schema and the DBpedia infobox-to-ontology mappings by actively using the [DBpedia Mappings Wiki](#). Daily snapshots of these manually created specifications are automatically made available on the [DBpedia Databus](#). The monthly DBpedia dataset release is based on the latest snapshot available at point of time the dataset creation starts.

The ontology currently covers 768 classes which form a subsumption hierarchy and are described by 3000 different properties. The DBpedia Ontology currently contains about 4,233,000 instances. The table below lists the number of instances for several classes within the ontology:

Class	Instances
owl:Thing	4233000
dbpedia:Person	1000000
dbpedia:Location	800000
dbpedia:Organization	500000
dbpedia:Concept	300000
dbpedia:Animal	200000
dbpedia:Plant	150000
dbpedia:Institution	100000
dbpedia:WorkOfArt	80000
dbpedia:GeopoliticalEntity	70000
dbpedia:MediaObject	60000
dbpedia:SportsTeam	50000
dbpedia:FoodAndDrink	40000
dbpedia:ComputerSystem	30000
dbpedia:Software	20000
dbpedia:Vehicle	15000
dbpedia:Game	10000
dbpedia:Law	8000
dbpedia:ChemicalSubstance	7000
dbpedia:SportsTeam	6000
dbpedia:Book	5000
dbpedia:Song	4000
dbpedia:Album	3000
dbpedia:Song	2000
dbpedia:Song	1500
dbpedia:Song	1000
dbpedia:Song	800
dbpedia:Song	600
dbpedia:Song	500
dbpedia:Song	400
dbpedia:Song	300
dbpedia:Song	200
dbpedia:Song	150
dbpedia:Song	100
dbpedia:Song	80
dbpedia:Song	60
dbpedia:Song	50
dbpedia:Song	40
dbpedia:Song	30
dbpedia:Song	20
dbpedia:Song	15
dbpedia:Song	10
dbpedia:Song	8
dbpedia:Song	6
dbpedia:Song	5
dbpedia:Song	4
dbpedia:Song	3
dbpedia:Song	2
dbpedia:Song	1

# Reference ontologies

- ◆ As said, Dbpedia favors interoperability by reusing reference ontologies, like the ones provided by...

# Schema.org

- ◆ It defines the most important/used ontologies for Web data
- ◆ For instance about *people, products, events, organizations, places, restaurants* etc etc

# Example in schema.org

- ◆ Let's see <http://schema.org/Restaurant>



Schema.org



# Restaurant

## A Schema.org Type

Thing > Organization > LocalBusiness > FoodEstablishment > Restaurant

Thing > Place > LocalBusiness > FoodEstablishment > Restaurant

[more...]

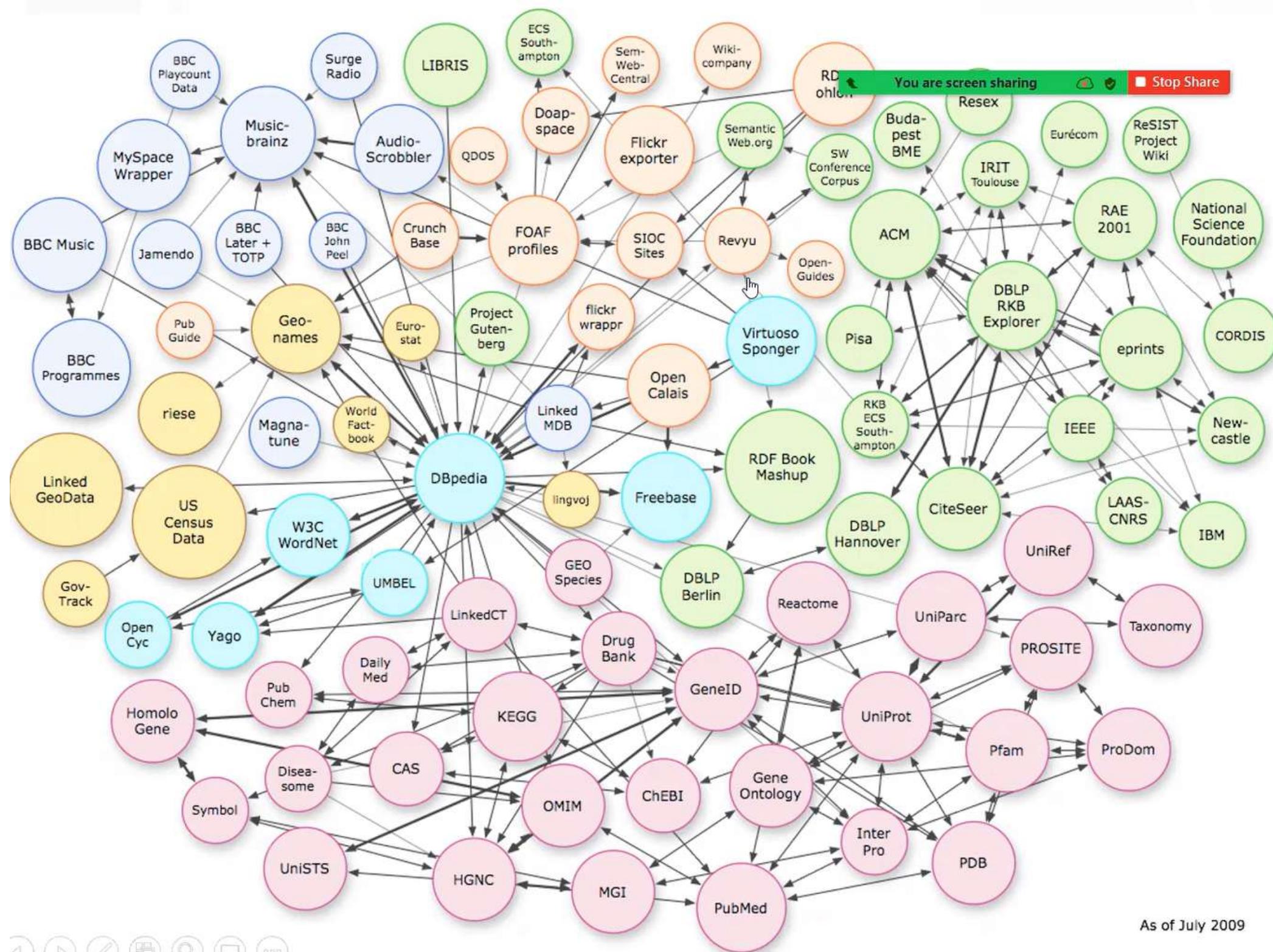
A restaurant.

Property	Expected Type	Description
<b>Properties from FoodEstablishment</b>		
<code>acceptsReservations</code>	Boolean or Text or URL	Indicates whether a FoodEstablishment accepts reservations. Values can be Boolean, an URL at which reservations can be made or (for backwards compatibility) the strings Yes or No.
<code>hasMenu</code>	Menu or Text or URL	Either the actual menu as a structured representation, as text, or a URL of the menu. Supersedes <code>menu</code> .
<code>servesCuisine</code>	Text	The cuisine of the restaurant.
	Rating	An official rating for a lodging business or food establishment, such as a star rating.

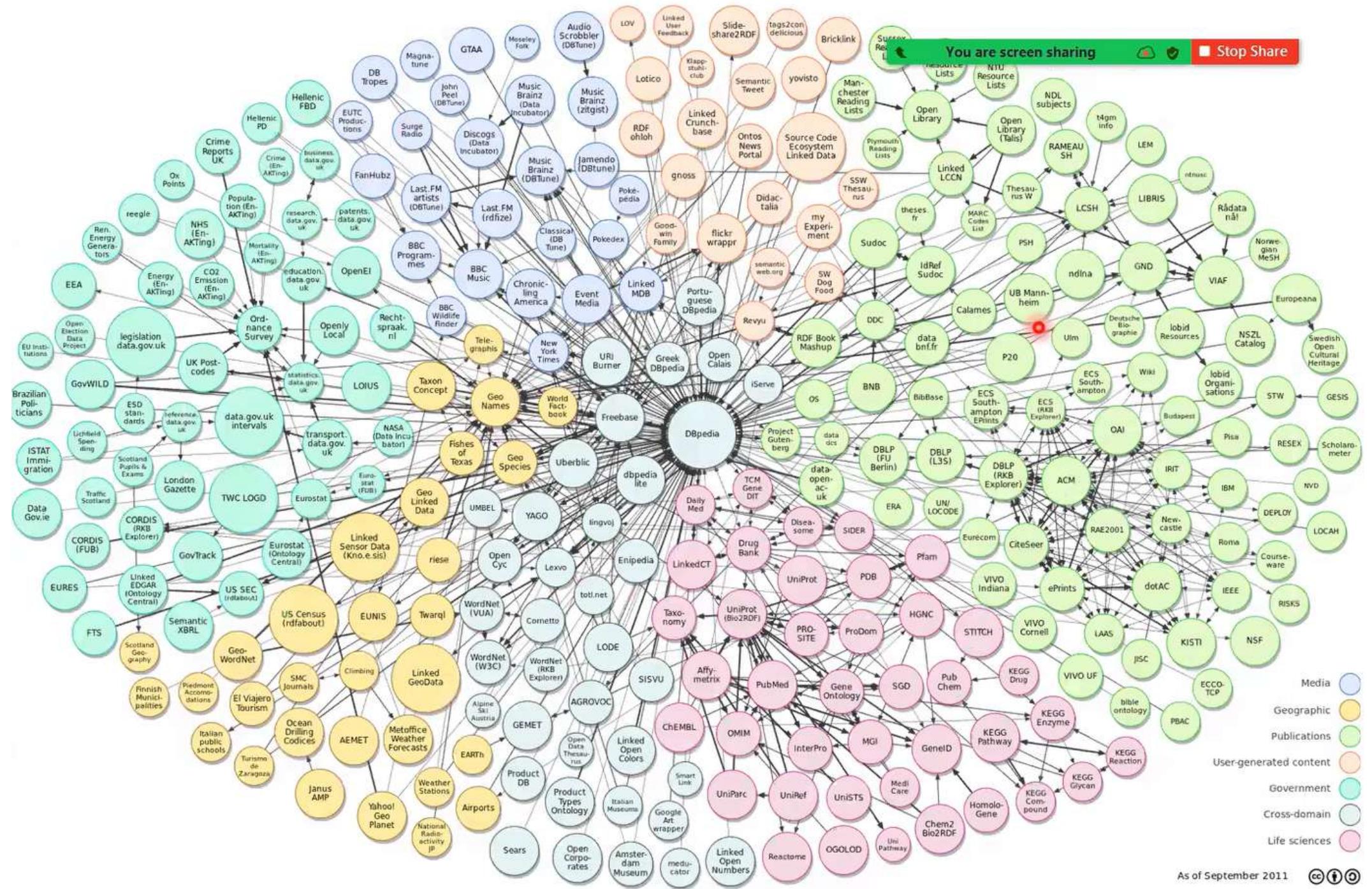
# The Semantic Web data structure

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- ◆ Let's see how it changed along time with three «photos»



As of July 2009

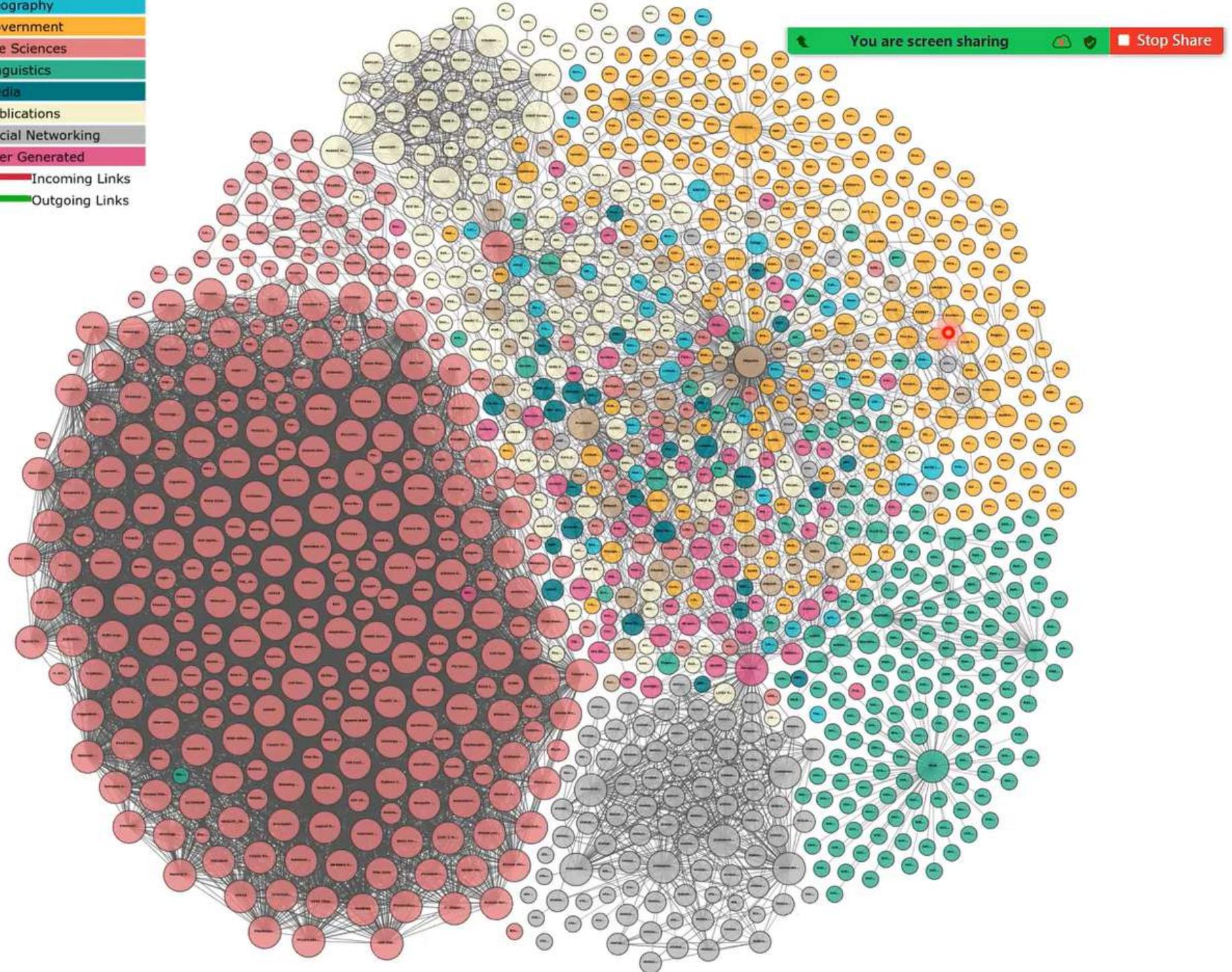


As of September 2011



Legend

- Cross Domain
- Geography
- Government
- Life Sciences
- Linguistics
- Media
- Publications
- Social Networking
- User Generated
- Incoming Links
- Outgoing Links



# Example of LOD data usage

- ◆ RelFinder ([example](#))



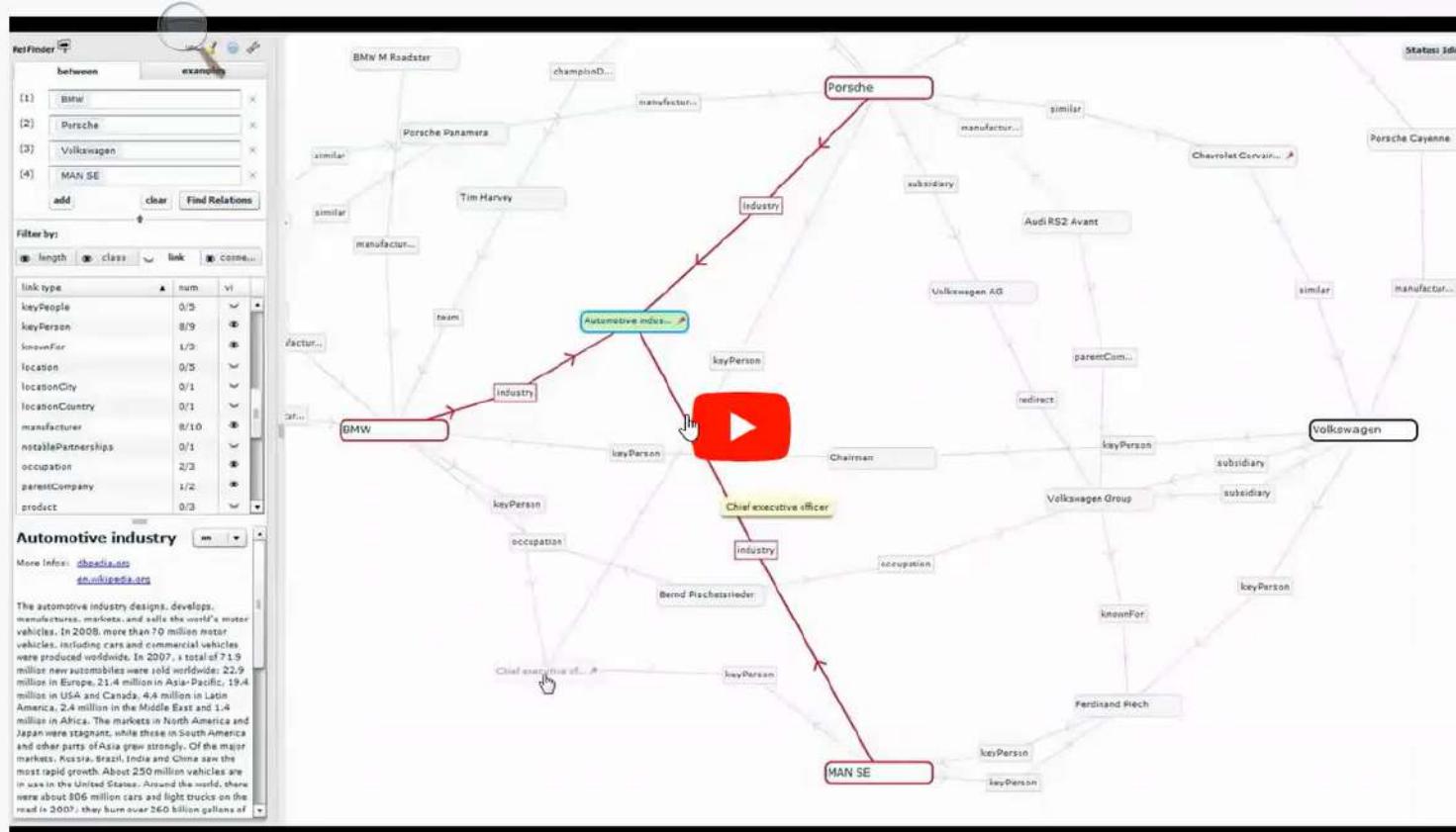


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## RelFinder screencast

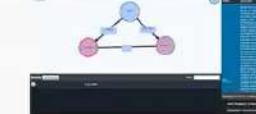
4,023 views • Mar 10, 2011

23 DISLIKE SHARE SAVE ...



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Academic Lesson 350K views • 2 years ago



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visualdataweb 2.8K views • 6 years ago



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TravelTV 51M views • 4 years ago



ProtégéVOWL - VOWL Plugin for Protégé

visualdataweb 20K views • 7 years ago



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Love Forever 949 watching LIVE NOW



Passenger | Let Her Go (Official Video)

Passenger 3.1B views • 9 years ago



How to create Ultimate Excel Gantt Chart for Project...

The Office Lab 508K views • 3 months ago



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between

examples

(1)

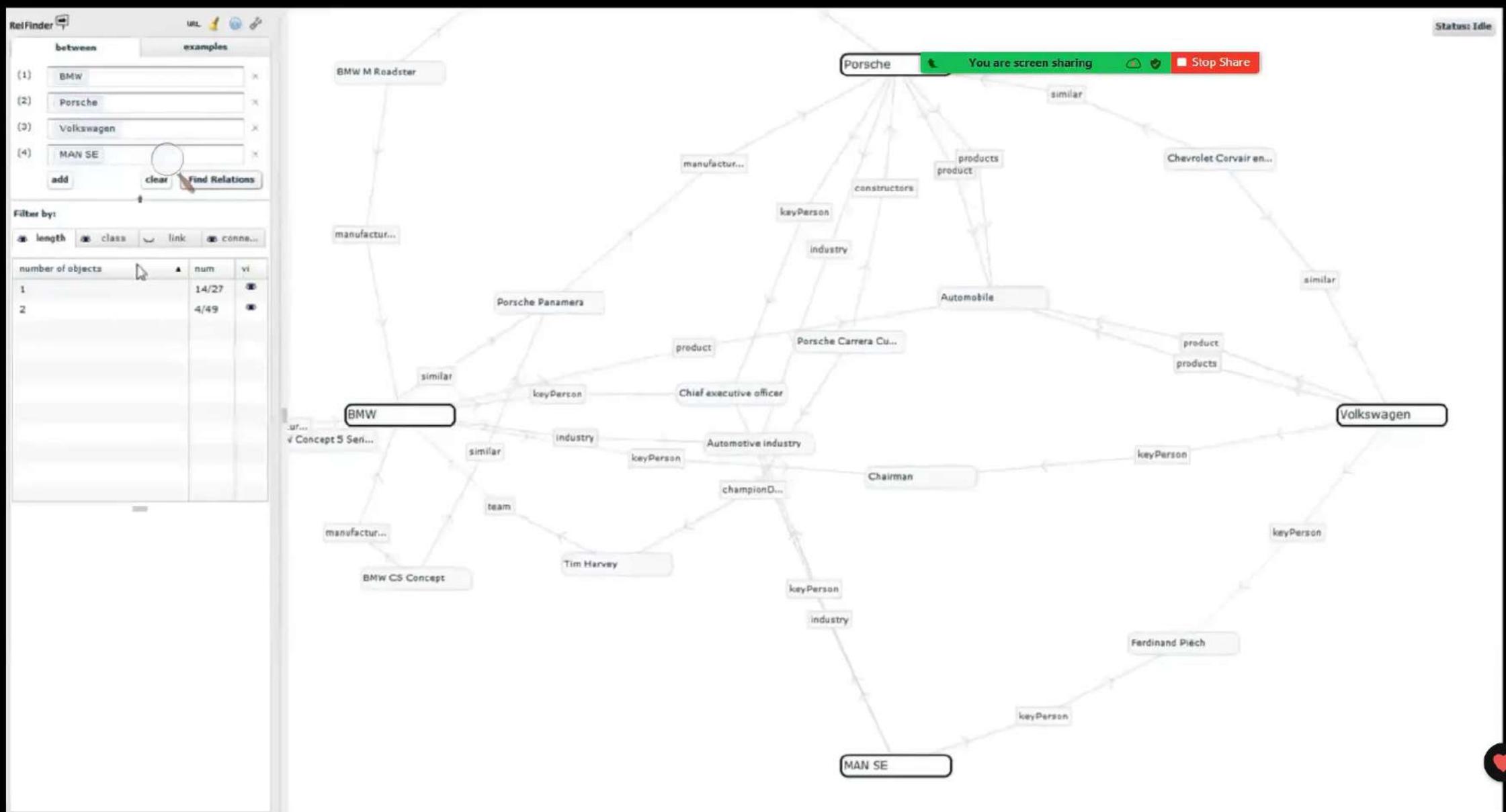
BMW

(2)

Porsche

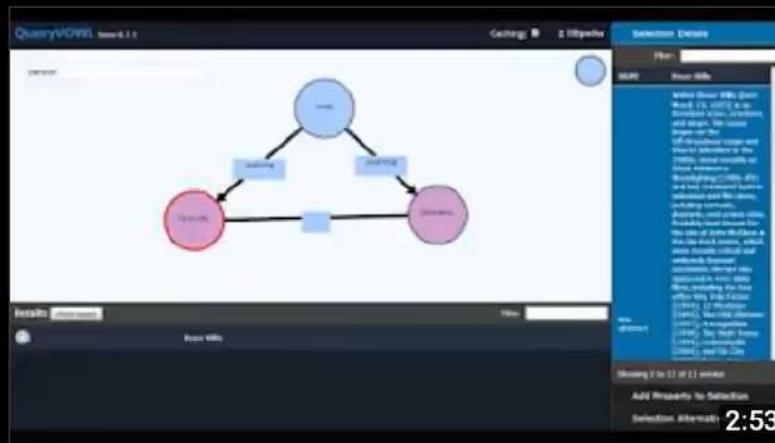
PorschePorsche 911Porsche in motorsportFerdinand PorschePorsche CayennePorsche Supercup

Scroll for details



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Up next in 4



QueryVOWL Screencast

visualdataweb

CANCEL

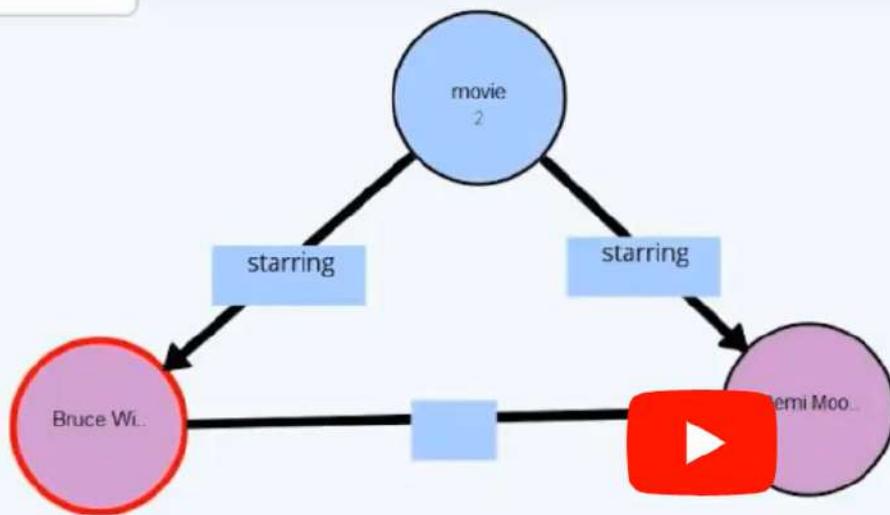
PLAY NOW



Filter:

NAME	Bruce Willis
Walter Bruce Willis (born March 19, 1955) is an American actor, producer, and singer. His career began on the Off-Broadway stage and then in television in the 1980s, most notably as David Addison in <i>Moonlighting</i> (1985–89) and has continued both in television and film since, including comedic, dramatic, and action roles. Probably best known for his role of John McClane in the <i>Die Hard</i> series, which were mostly critical and uniformly financial successes. He has also appeared in over sixty films, including the box office hits, <i>Pulp Fiction</i> (1994), <i>12 Monkeys</i> (1995), <i>The Fifth Element</i> (1997), <i>Armageddon</i> (1998), <i>The Sixth Sense</i> (1999), <i>Unbreakable</i> (2000), and <i>Sin City</i> (2005). More details	

person



Results show query

Filter:

has abstract

Showing 1 to 11 of 11 entries

Add Property to Selection

Selection Alternatives

Bruce Willis



# National data

- ◆ Please note that every state usually makes open data available
- ◆ For instance in Italy: [dati.gov.it](http://dati.gov.it)
- ◆ (actually by European Law it's mandatory for every public data...!!  
Public data = public access without restrictions!)

## Agenzia per l'Italia Digitale



Dati ▾ Fare Open Data ▾ Monitoraggio ▾ Sviluppatori Scrivi alla redazione

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Cerca nei metadati



[Ricerca avanzata](#)

## naviga i dati per categoria tematica

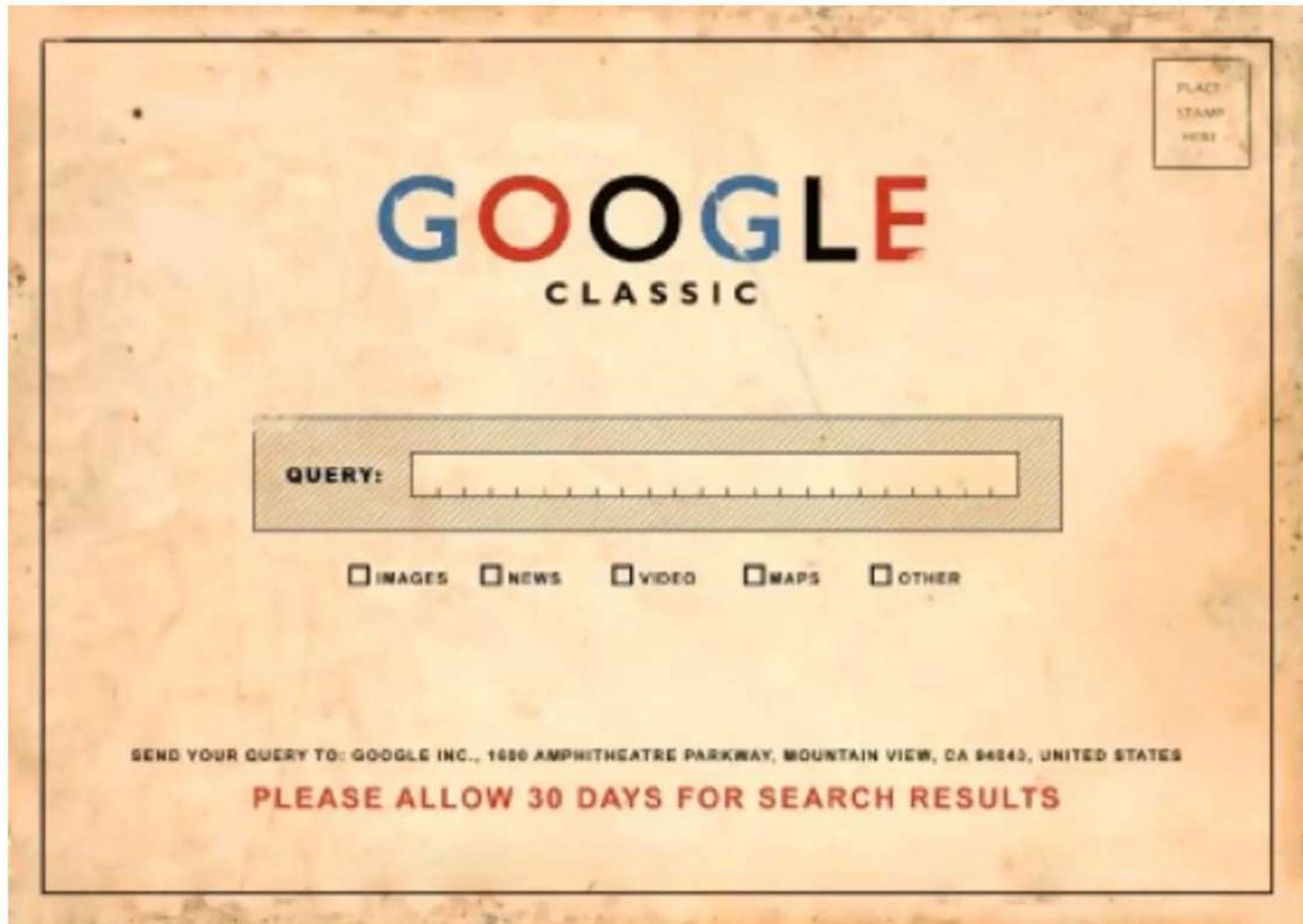


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[Maggiori informazioni](#)

Accetto **No, Grazie**

# And Google?



# First...

- ◆ Google has full support for the semantic web
- ◆ It understands all schema.org and beyond
- ◆ All the semantics is used internally
- ◆ Externally only some properties are visible to the users
- ◆ For instance via...

# Rich Snippets

Google  Microphone icon

Web Images Maps Shopping Recipes More ▾ Search tools

About 71,000,000 results (0.20 seconds)

1

[Apple Pie by Grandma Ople Recipe - Allrecipes.com](#)



[allrecipes.com/recipe/apple-pie-by-grandma-ople/](http://allrecipes.com/recipe/apple-pie-by-grandma-ople/)

★★★★★ Rating: 4.8 - 5223 reviews - 1 hr 30 mins - 512 cal

A unique and popular recipe. Sliced apples under a lattice crust get bathed with a sweet buttery sauce before baking.

Apple Pie by Grandma Ople - Apple Pie I - Grandma Ople's Apple Pie  
- Reviewer

2

[Apple pie - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/wiki/Apple\\_pie](http://en.wikipedia.org/wiki/Apple_pie)

An apple pie is a fruit pie (or tart) in which the principal filling ingredient is apples. It is sometimes served with whipped cream or ice cream on top, or alongside ...

# Rich Snippets

- ◆ Many kinds of items supported, for instance...

## [Battlestar Galactica \(TV Series 2004–2009\) - IMDb](#)

[www.imdb.com/title/tt0407362/](http://www.imdb.com/title/tt0407362/)

★★★★★ Rating: 8.8/10 - 71506 votes

The second war against the Cylons is over and The Twelve Colonies have been destroyed. Now Commander Adama of the **Battlestar** Galactica and President Laura...  
Starring Jamie Bamber, Edward James Olmos, Mary McDonnell.

Full cast and crew - Episodes - Tricia Helfer - Episodes cast

Rocky Pardjo shared this on Google+

## [Battlestar Galactica.com Leading the BSG Universe](#)

[www.battlestargalactica.com/](http://www.battlestargalactica.com/)

**Battlestar Galactica.com**, Richard Hatch inspired site dedicated to showcasing the BSG Universe and Promoting **Battlestar Galactica**. GSP NETWORK.

Google  Microphone

Web Images Maps Shopping Recipes More Search tools

About 71,000,000 results (0.20 seconds)

1 [Apple Pie by Grandma Ople Recipe - Allrecipes.com](#)  
  
allrecipes.com/recipe/apple-pie-by-grandma-ople/  
★★★★★ Rating: 4.8 - 5223 reviews - 1 hr 30 mins - 512 cal  
A unique and popular recipe. Sliced apples under a lattice crust get bathed with a sweet buttery sauce before baking.  
Apple Pie by Grandma Ople - Apple Pie I - Grandma Ople's Apple Pie - Reviewer

2 [Apple pie - Wikipedia, the free encyclopedia](#)  
en.wikipedia.org/wiki/Apple\_pie  
An apple pie is a fruit pie (or tart) in which the principal filling ingredient is apples. It is sometimes served with whipped cream or ice cream on top, or alongside ...

# Authors

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# (Google was the «bad guy»...)

Google best laptop for travel

Web Images Maps Shopping More Search tools

About 187,000,000 results (0.36 seconds)

What is the best laptop for travel? Hint: it's under \$500 and it comes ...  
[drivinginertia.com/.../what-is-the-best-laptop-for-travel-hint-its-under...](http://drivinginertia.com/.../what-is-the-best-laptop-for-travel-hint-its-under...)  
Jan 10, 2013 – One of the most-read posts on our site is about laptops. Travel laptops, specifically, and which one to buy. It's about a year old, so here's an ...

Hey, a person!

Laptop buying guide - CNET Reviews  
[reviews.cnet.com/Reviews/Laptops](http://reviews.cnet.com/Reviews/Laptops)  
by Dan Ackerman - in 3,598 Google+ circles - More by Dan Ackerman  
Oct 4, 2012 – Want to skip all the details and research and just buy a great laptop? ... consumer laptop you can buy; the Lenovo IdeaPad 13, the best example of the .... above on choosing a laptop based on how often it will travel with you.

If these people are paying attention, maybe I should, too.

# Business and Organizations

## [Banana Republic: Apparel, Handbags, Shoes and Accessories for ...](#)

[banana-republic.gap.com/](http://banana-republic.gap.com/)

FREE Shipping on Orders Over \$50. Banana Republic Offers Modern, Refined Clothing for Men and Women, Plus Shoes and Accessories.

[Google+ page](#) · Write a review

100 CambridgeSide Pl, Cambridge, MA 02141  
(617) 494-4952

### [Store Locator](#)

Banana Republic - Modern Apparel, Handbags, Shoes, and ...

### [Banana Republic Factory Store](#)

Stylist services (in-store only) · How to write ... Banana ...

### [Pants](#)

Sorry, this page cannot be displayed. To continue ...

[More results from gap.com](#) »

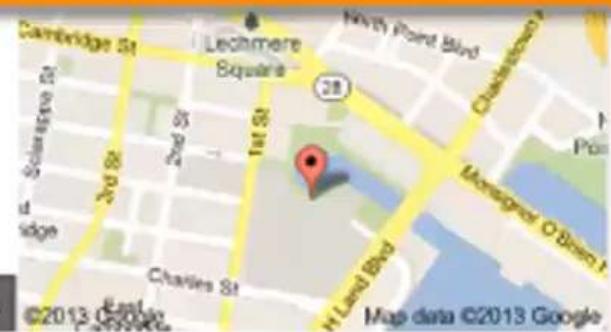
## [Banana republic - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/wiki/Banana\\_republic](http://en.wikipedia.org/wiki/Banana_republic)

Banana republic is a political science term for a politically unstable country whose economy is largely dependent on the export of a single limited-resource ...

BANANA REPUBLIC

[See photos](#)



## Banana Republic

[Directions](#)

[Write a review](#)

Address: 100 CambridgeSide Pl, Cambridge, MA 02141

Phone: (617) 494-4952

Prices: \$\$\$

Hours: Thursday hours 10:00 am–9:00 pm · See all

Transit: Lechmere Station

[Feedback](#)

# Events

[fun. Tickets | fun. Concert Tickets & Tour Dates | Ticketmaster.com](#)

[www.ticketmaster.com](#) › ... › Music Tickets › Alternative Rock

Nov 10, 2012 – Find **fun.** tour schedule, **concert** details, reviews and ...

Sat, May 25 Boston Calling Music Festival - Boston City Hall Plaza, Boston, MA

Sat, May 25 Boston Calling: 2-Day Weekend ... - Boston City Hall Plaza, Boston ...

Thu, Jun 27 **fun.** - Marcus Amphitheater Summerfest, Milwaukee, WI

Oooh,  
options!

[Boston Concerts | 2013 Boston Concert Schedule & Tickets](#)

[www.bostonconcerts.net/](#)

Boston Concert Tickets 2013 - Experience the Biggest Names in Music and Comedy

Live in Boston - All 2013 Boston Concert Tickets are On-Sale Now!

Meh...

# Music

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## [U2 – The Unforgettable Fire – Listen and discover music at Last.fm](#)

[www.last.fm/music/U2/\\_/The+Unforgettable+Fire](http://www.last.fm/music/U2/_/The+Unforgettable+Fire)

Watch the video & listen to U2 – The Unforgettable Fire for free. The Unforgettable Fire appears on the album The Best of 1980-1990. U2 is an Irish rock band ...

## [The Unforgettable Fire – U2 – Listen and discover music at Last.fm](#)

[www.last.fm/music/U2/The+Unforgettable+Fire](http://www.last.fm/music/U2/The+Unforgettable+Fire)

Listen free to U2 – The Unforgettable Fire (Pride (in the Name of Love), Bad and more). 10 tracks (42:06). The Unforgettable Fire was released 14 Jul 2009.

Track	Duration	Album
A Sort of Homecoming	⌚ 0:30	The Unforgettable Fire
Pride (in the Name of Love)	⌚ 0:30	The Unforgettable Fire
Wire	⌚ 0:30	The Unforgettable Fire
The Unforgettable Fire	⌚ 0:30	The Unforgettable Fire

*Songs in  
the  
album*

# People

[Diana Urban | LinkedIn](#)

[www.linkedin.com/in/dianaurban](http://www.linkedin.com/in/dianaurban)

Greater Boston Area - Head of Prospect Marketing at HubSpot | Founder & Author of U Stand Out

View **Diana Urban's** professional profile on LinkedIn. LinkedIn is the world's largest business network, helping professionals like **Diana Urban** discover inside ...

People snippet

[Diana Urban - Head of Prospect Marketing at HubSpot](#)

[www.hubspot.com/diana-urban/](http://www.hubspot.com/diana-urban/)



by Diana Urban - in 339 Google+ circles - More by Diana Urban

**Diana Urban** is the Head of Prospect Marketing at HubSpot, author of U Stand Out, and inbound marketing expert.

Author snippet

# Products

## Dyson Vacuum Cleaners - Best Buy

[www.bestbuy.com/site/Brands/Dyson/pcmcat162500050026.c?id...](http://www.bestbuy.com/site/Brands/Dyson/pcmcat162500050026.c?id...)

Shop for **Dyson Vacuum cleaners** at Best Buy. Patented root cyclone technology gives Dyson vacuums years of use without maintenance or loss of suction.



Yawn

## Amazon.com: Dyson DC25 Ball All-Floors Upright Vacuum Cleaner ...

[www.amazon.com > ... > Vacuums > Upright Vacuums](http://www.amazon.com...>Vacuums>Upright Vacuums)

★★★★★ Rating: 4.1 - 577 reviews - \$446.90 - In stock

Upright **vacuum cleaner** with **Dyson** Ball technology for smooth steering; Root Cyclone technology ensures no clogging or loss of suction; Effective for all floor ...



There's the  
info I wanted!

# Recipes

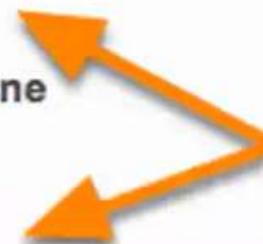
## [Minestrone Soup with Pasta, Beans and Vegetables Recipe : Robin ...](#)



[www.foodnetwork.com](#) › Recipes › Italian

★★★★★ Rating: 4 - 127 reviews - 4 hrs 15 mins

Mar 5, 2013 – Get this all-star, easy-to-follow Food Network **Minestrone** Soup with Pasta, Beans and Vegetables recipe from Robin Miller.



Yummy!

## [Minestrone Soup Recipe : Ellie Krieger : Recipes : Food Network](#)



[www.foodnetwork.com](#) › Recipes › Comfort food

★★★★★ Rating: 5 - 85 reviews - 45 mins

Mar 16, 2013 – Get this all-star, easy-to-follow Food Network **Minestrone** Soup recipe from Ellie Krieger.

## [Minestrone - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/wiki/Minestrone](#)

Minestrone is a thick **soup** of Italian origin made with vegetables, often with the addition of pasta or rice. Common ingredients include beans, onions, celery, ...



Boring...

# Video

## [The Hunger Games Official Trailer 2012 HD - YouTube](#)



[www.youtube.com/watch?v=4S9a5V9ODuY](http://www.youtube.com/watch?v=4S9a5V9ODuY)

Nov 14, 2011 - Uploaded by mantucijo333

Hunger Games Trailer HD. First official HD Trailer of The Hunger Games Movie, after a first teaser, unveils the ...

## [The Hunger Games Trailer \(Super Bowl Spot\) - IMDb](#)



[www.imdb.com/video/imdb/vi1187553561/](http://www.imdb.com/video/imdb/vi1187553561/)

Feb 3, 2012

Title: **The Hunger Games Trailer (Super Bowl Spot)**. Description: Set in a future where the Capitol selects a boy ...

[More videos for the hunger games trailer »](#)

# Just use semantic data on your pages to enrich them

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- ◆ For instance Products, Recipes and so on



https://developers.google.com/search/docs/advanced/structured-data/product

## Google Search Central Documentation

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How Google Search works  
Developer's guide to Search  
Advanced guide to Search Console

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Product

Are you here because you got a message from Search Console? Check our troubleshooting resources.

Add markup to your product pages so Google can provide detailed product information as a rich result in Google Search — including Google Images. Users can see price, availability, and review ratings right in search results.

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  - Shipping details best practices
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  - Offer
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  - AggregateOffer
  - Monitor rich results with Search Console
  - After deploying structured data for the first time
  - After releasing new templates or updating your code
  - Analyzing traffic periodically
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# All this...

- ◆ Is integrated with the much bigger knowledge graph (used also for ranking): so, users only see a very limited amount of information



# Google and Knowledge Graph

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Google

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120 personal results. 1,180,000,000 other results.

**1,540 miles (2,478 km)**

US Route 101, Length

[U.S. Route 101 - Wikipedia, the free encyclopedia](#)  
[en.wikipedia.org/wiki/U.S.\\_Route\\_101](http://en.wikipedia.org/wiki/U.S._Route_101)

The old road is known as County Road S-21 or Historic Route 101 in northern San Diego County. The nearly 2,500 km (1,550 mi)-long highway's "northern" ...

[US Route 101 in Washington](#)  
This article is about the section of U.S. Route 101 in Washington ...

[US Route 101 in California](#)  
This article is about the section of U.S. Route 101 in California ...

[More results from wikipedia.org »](#)

[Driving from SF to LA on 101 - how long? | San Francisco | ...](#)  
[www.yelp.com/.../san-francisco-driving-from-sf-to-la-on-101-how-long](http://www.yelp.com/.../san-francisco-driving-from-sf-to-la-on-101-how-long)

Aug 17, 2009 – Hi yelpers, I need some advice about driving from SF to LA. This will be my first visit to California and I'm trying to squeeze in as many touristy ...

**US Route 101**

Road

U.S. Route 101, or U.S. Highway 101, is a north-south U.S. highway that runs through the states of California, Oregon, and Washington, on the West Coast of the United States. [Wikipedia](#)

**Length:** 1,540 miles (2,478 km)

**Constructed:** 1926

**Highway system:** US Numbered Highways

**Major cities:** Los Angeles, San Francisco, San Jose, Newport, Olympia

[Feedback / More info](#)

# Existence of concepts

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About 90,700,000 results (0.22 seconds)

**[Giants.com | The official website of the New York Giants](#)**  
[www.giants.com/](#) Official team site with audio and video clips, team news, depth charts, transactions, statistics, and player profiles. Also available in Spanish and Chinese.  
[Season Schedule](#) - [New York Giants Apparel](#) - [Roster](#) - [New York Giants Fan Forum](#)

**[The Official Site of The San Francisco Giants | SFGiants.com ...](#)**  
[sanfrancisco.giants.mlb.com/](#) Headlines, statistics, photograph galleries and general team information.

**[Giant \(mythology\) - Wikipedia, the free encyclopedia](#)**  
[en.wikipedia.org/wiki/Giant\\_\(mythology\)](#) The mythology and legends of many different cultures include monsters of human appearance but prodigious size and strength. "Giant" is the English word ...  
Religious literature and beliefs - Names and tribal origins of giants - See also  
- Notes

**[News for giants](#)**

 [Eli Manning hopes Victor Cruz will come to Giants' OTAs](#)  
[NFL News](#) - 3 hours ago  
Victor Cruz's contract squabble with the New York Giants is starting to become a drawn-out situation. Eli Manning is the latest member of the ...

[Cell phone giants unite on anti-texting ads](#)  
[Houston Chronicle](#) - 2 hours ago

[Fast start, big finish? Giants again look sharp](#)  
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 **New York Giants**  
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The New York Giants are a professional American football team based in East Rutherford, New Jersey, ...

 **San Francisco Giants**  
Baseball Team  
The San Francisco Giants are a Major League Baseball team based in San Francisco, California, ...

 **Giant**  
Mythology  
The mythology and legends of many different cultures include monsters of human appearance but ...

 **Huddersfield Giants**  
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Huddersfield Giants are an English professional rugby league club from Huddersfield, West Yorkshire ...

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sfgiants.mlb.com/Tickets](#)

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San Francisco Giants has 1,089,724 followers on Google+

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2013 Schedule

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## San Francisco Giants

23-15, 1st in NL Western Division

Rogers Centre, Toronto, Ontario  
Today, 4:07 PM (PT)

 San Francisco  
Giants  
(23-15)

[Preview - Tickets](#)



Toronto Blue Jays  
(15-24)  


Sun, May 12 vs.  Braves

W 1 - 5

Final

[The Official Site of The San Francisco Giants | SFGiants.com](#)

[sanfrancisco.giants.mlb.com/](#)

Headlines, statistics, photograph galleries and general team information.

### Schedule

Schedule. In this section. Regular  
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### Scoreboard

Scoreboard. Current day's games  
are shown starting at 11am ET ...

### MLB News

The Giants rewarded Brett Pill for  
his torrid hitting by recalling the ...

### News for sf giants



[Giants demote one, promote one](#)

[San Francisco Chronicle \(blog\) · 1 day ago](#)

The Giants have optioned outfielder Francisco Peguero to Triple-A  
Fresno and recalled first baseman Brett Pill, who has wielded a hot  
bat ...

[Will the SF Giants players confront Melky Cabrera on Tuesday night?](#)

[San Francisco Chronicle \(blog\) · 7 hours ago](#)

[Lincecum leads SFGiants past Atlanta](#)

[San Francisco Chronicle · 1 day ago](#)



## San Francisco Giants



1,089,714 followers on Google+

The San Francisco Giants are a Major League Baseball team based  
in San Francisco, California, playing in the National League West  
Division. Originally known as the New York Giants, the team moved  
to San Francisco in 1958. [Wikipedia](#)

Manager: [Bruce Bochy](#)

Location: [San Francisco](#)

League: [National League](#)

Stadiums: [AT&T Park](#), [Seals Stadium](#), [Candlestick Park](#), More

World Series championships: 1905, 1921, 1922, 1933, 1954, 2010,  
2012

Mascots: Lou Seal, Crazy Crab

### Recent posts



Lincecum fans 7, allows only 2 hits over 7  
shutout innings in 5-1 win over Braves.

RECAP: [http://atmlb.com/163uJ4O](#)

May 12, 2013

### Roster

Player	Num	Position
Buster Posey	28	Catcher
Tim Lincecum	55	Pitcher
Pablo Sandoval	48	Infielder
Matt Cain	18	Pitcher
Barry Zito	75	Pitcher

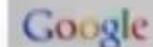
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AT&T park



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[AT&T Park | SFGiants.com: Ballpark](#)

[sanfrancisco.giants.mlb.com/mlb/ballpark/index.jsp](#)

AT&T Park, with its breathtaking views and classic design, was chosen as the 2008 Sports Facility of the Year by Sports Business Journal and Sports Business ...

Score: 26 / 30 323 Google reviews Write a review

24 Willie Mays Plaza San Francisco, CA 94107  
(415) 972-2000

[Ballpark Seating Chart - Events at AT&T Park](#)

[Events at AT&T Park | SFGiants.com: ballpark](#)

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Events at AT&T Park: THERE'S MORE THAN BASEBALL AT AT&T PARK!

[Getting to AT&T Park - Official San Francisco Giants - Major League](#)

[sanfrancisco.giants.mlb.com/mlb/ballpark/directions/index.jsp](#)

Getting to AT&T Park. Attending a Giants game at AT&T Park is a unique and ...

[AT&T Park Seating Chart - Official San Francisco Giants - Major](#)

[sanfrancisco.giants.mlb.com/mlb/ballpark/seating\\_index.jsp](#)

AT&T Park Seating Chart: 2013 Seating Chart. Click on the map below for a ...

[AT&T Park - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/w/index.php?title=AT%26T\\_Park](#)

AT&T Park is a ballpark used for Major League Baseball. It is located in the South of Market (SoMa) neighborhood of San Francisco, California, at 24 Willie Mays ...  
History · Features · See also · References

[AT&T Park - San Francisco - Reviews of AT&T Park - TripAdvisor](#)

[www.tripadvisor.com/.../Things-to-Do-in-San-Francisco...](#)

5.0 · Rating: 4.5 · 1074 reviews

AT&T Park, San Francisco: See 1074 reviews, articles, and 274 photos of AT&T Park, ranked No.6 on TripAdvisor among 322 attractions in San Francisco.

[AT&T Park - SoMa - San Francisco, CA - Yelp](#)

[www.yelp.com/.../Arts-Entertainment/Stadiums-Arenas/](#)

4.5 · Rating: 4.5 · 1055 reviews

1055 Reviews of AT&T Park "Excellent world class baseball stadium. Been there no less than 10 times and had great seats and a blast every single time. I might ...

[AT&T Park Tickets - AT&T Park Schedule at StubHub!](#)

[www.stubhub.com/mlb-park-events-tickets/](#)

AT&T Park Tickets - Buy and sell AT&T Park event tickets and check out the AT&T Park schedule in San Francisco, CA at StubHub!

Mon, May 20 Washington Nationals at San Francisco Giants Tickets

Tue, May 21 Washington Nationals at San Francisco Giants Tickets

Wed, May 22 Washington Nationals at San Francisco Giants Tickets



## AT&T Park

Baseball Stadium

### Directions

AT&T Park is a ballpark used for Major League Baseball. It is located in the South of Market neighborhood of San Francisco, California, at 24 Willie Mays Plaza, at the corner of Third and King Streets. [View map](#)

Capacity: 41,503

Opened: March 31, 2000

Address: 24 Willie Mays Plaza, San Francisco, CA 94107

Phone: (415) 972-2000

Team: San Francisco Giants

Architecture firm: Populous

### Upcoming events

Mon, May 20 San Francisco Giants vs. Washington Nationals

Tue, May 21 San Francisco Giants vs. Washington Nationals

Wed, May 22 San Francisco Giants vs. Washington Nationals

Fri, May 24 San Francisco Giants vs. Colorado Rockies

OVERALL  
**26** 323 Google reviews

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From Structured Data to ... star trek into darkness

https://www.google.com/search?q=star+trek+into+darkness&oq=star+tre&aqs=chrome.0.59i2j57j5j62i2.7620j0&sourceid=chrome&ie=UTF-8

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**Star Trek Into Darkness showtimes for San Francisco, CA**

See showtimes for 3D and IMAX 3D

2hr 3min - Rated PG-13 - SciFi  
When the crew of the Enterprise is called back home, they find an unstoppable force of terror from within their own organization ...

AMC Van Ness 14 - 1000 Van Ness Avenue, San Francisco, CA - Map  
10:30 - 11:45am - 1:45 - 2:15 - 3:00 - 5:00 - 6:15 - 8:00 ...

Sundance Kabuki Cinemas - 1881 Post Street, San Francisco, CA - Map  
4:00pm

+ Show more theaters

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News for star trek into darkness

Review: 'Star Trek Into Darkness' ramps up action, leaves room for heart  
Los Angeles Times - 1 hour ago  
Kirk and crew beam aboard J.J. Abrams' Enterprise for a mission full of action, emotions and this time terrorism.

MTV UK

'Star Trek Into Darkness': The Reviews Are In!  
MTV.com - 1 hour ago

Review: Disappointing Star Trek Into Darkness Is Just a Disposable Summer...  
Wired - 1 hour ago

**Star Trek Into Darkness (2013) - IMDb**  
[www.imdb.com/title/tt1408101/](http://www.imdb.com/title/tt1408101/)  
★★★★★ Rating: 8.3/10 - 21701 votes  
Directed by J.J. Abrams. With Chris Pine, Zachary Quinto, Zoe Saldana, Benedict Cumberbatch. After the crew of the Enterprise find an unstoppable force of ...  
Full cast and - Pictures & Photos from Star ... - (2013) - News - Videos

**Star Trek Into Darkness - Wikipedia, the free encyclopedia**  
[https://en.wikipedia.org/wiki/Star\\_Trek\\_Into\\_Darkness](https://en.wikipedia.org/wiki/Star_Trek_Into_Darkness)  
Star Trek Into Darkness is a 2013 American science fiction action film. It is the twelfth installment in the Star Trek franchise and the sequel to 2009's Star Trek. Wikipedia  
Plot - Cast - Production - Marketing

**Star Trek Into Darkness | Trailer & Official Movie Site | Tomorrow**  
[www.startrekmovie.com/](http://www.startrekmovie.com/)  
In Summer 2013, pioneering director J.J. Abrams will deliver an explosive action thriller that takes Star Trek Into Darkness. When the crew of the Enterprise is ...

**Star Trek Into Darkness - Movie Trailers - iTunes**  
[trailers.apple.com/trailers/.../startrekintodarkness/](http://trailers.apple.com/trailers/.../startrekintodarkness/)  
Apr 29, 2013  
Synopsis: In Summer 2013, pioneering director J.J. Abrams will deliver an explosive action thriller that takes Star Trek Into Darkness. When the crew of the Enterprise is ...

**Star Trek into Darkness**  
2013 Film

★★★★★ 8.3/10 - IMDb  
★★★★★ 87% - Rotten Tomatoes

Star Trek Into Darkness is a 2013 American science fiction action film. It is the twelfth installment in the Star Trek franchise and the sequel to 2009's Star Trek. Wikipedia

Release date: May 17, 2013 (USA)  
Director: J.J. Abrams  
Prequel: Star Trek  
Production company: Bad Robot Productions  
Screenplay: Roberto Orci

Cast

Chris Pine James T. Kirk  
 Benedict Cumberbatch Spock  
 Zachary Quinto Uhura  
 Zoe Saldana Bones  
 Karl Urban Bones

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### BLADE RUNNER - 30th Anniversary

[bladerunnermemovie.wembebro.com/](http://bladerunnermemovie.wembebro.com/) \*

BLADE RUNNER, a film by Ridley Scott, starring Harrison Ford, Rutger Hauer, Daryl Hannah, Sean Young, Edward James Olmos, M. Emmet Walsh, William ...

### Blade Runner (1982) - IMDb

[www.imdb.com/title/tt0083658/](http://www.imdb.com/title/tt0083658/) \*

★★★★★ Rating: 8.3/10 · 299,139 votes

Directed by Ridley Scott. With Harrison Ford, Rutger Hauer, Sean Young, Edward James Olmos. Deckard, a blade runner, has to track down and terminate 4 ...

Full cast and crew · Trivia · Quotes · Sean Young

You visited this page on 5/9/13.

### Blade Runner - Wikipedia, the free encyclopedia

[en.wikipedia.org/wiki/Blade\\_Runner](http://en.wikipedia.org/wiki/Blade_Runner) \*

Blade Runner is a 1982 American dystopian science fiction action film directed by Ridley Scott and starring Harrison Ford, Rutger Hauer, and Sean Young.

Versions · Sean Young · Characters · Rutger Hauer

### Blade Runner - Rotten Tomatoes

[www.rottentomatoes.com/m/bladerunner/](http://www.rottentomatoes.com/m/bladerunner/) \*

★★★★★ Rating: 92% · 104 reviews

Review: Misunderstood when it first hit theaters, the influence of Ridley Scott's mysterious, neo-noir Blade Runner has deepened with time. A visually...

### Amazon.com: Blade Runner (The Director's Cut): Harrison Ford, ...

[www.amazon.com/Movies-TV/Movies](http://www.amazon.com/Movies-TV/Movies) \*

When Ridley Scott's cut of Blade Runner was finally released in 1993, one had to wonder why the studio hadn't done it right the first time—11 years earlier.

### Amazon.com: Blade Runner (Five-Disc Complete Collector's Edition): ...

[www.amazon.com/Movies-TV/Movies](http://www.amazon.com/Movies-TV/Movies) \*

In celebration of Blade Runner's 25th anniversary, director Ridley Scott has gone back into post production to create the long-awaited definitive new version.

### 2013: Off-World (Blade Runner Page) - Scribble.com

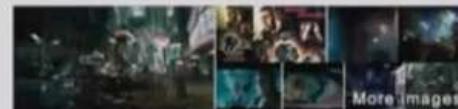
[scribble.com/uWfD/](http://scribble.com/uWfD/) \*

For people looking for extensive, organized Blade Runner sites, I recommend BRmovie.com and BladeZone. They are two of my favorites and are full of ...

### Blade-Runner - Trailer - Cast - Showtimes - NYTimes.com

[movies.nytimes.com/movie/5994/Blade-Runnernoviewer](http://movies.nytimes.com/movie/5994/Blade-Runnernoviewer) \*

An overview of Blade Runner, including cast and credit details, a review summary, and more.



## Blade Runner

1982 Film

★★★★★ 8.3/10 · IMDb

★★★★★ 92% · Rotten Tomatoes

Blade Runner is a 1982 American dystopian science fiction action film directed by Ridley Scott and starring Harrison Ford, Rutger Hauer, and Sean Young. [Wikipedia](#)

Release date: June 25, 1982 (USA)

Director: Ridley Scott

Running time: 120 minutes

Story by: Philip K. Dick

Screenplay: Hampton Fancher, David Peoples

### Cast



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## Blade Runner (1982)



R: 117 min · Drama · Sci-Fi · Thriller · 25 June 1982 (USA)

Your rating: ★★★★★ → 10

Ratings: 8.3/10 from 299,319 users · Metascore: 88/100 · Reviews: 1,043 user · 233 critic · 10 from Metacritic.com

Deckard, a blade runner, has to track down and terminate 4 replicants who hijacked a ship in space and have returned to Earth seeking their maker.

Director: Ridley Scott

Writers: Hampton Fancher (screenplay), David Webb Peoples (screenplay), 1 more credit \*

Stars: Harrison Ford, Rutger Hauer, Sean Young | See full cast and crew



## Blade Runner (1982)



Average Rating: 8.3/10 · Reviews Counted: 104 · Fresh: 96 | Rotten: 8

All Critics | Top Critics



Average Rating: 4.5 · User Ratings: 298,583

liked it



REVIEWS

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58

From Structured Data to ... Star Trek Into Darkness mumford and sons - Google Search

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Ad related to **mumford and sons**

**Mumford And Sons - Official Tickets Source Online**  
greek.theatreberkeley.com/  
Mumford & Sons Concert Berkeley, CA  
Mumford & Sons - Fun. & Tegan And Sara - The Postal Service

**Mumford & Sons - Home**  
[www.mumfordandsongs.com/](http://www.mumfordandsongs.com/) Mumford & Sons announce new album 'Babel' to be released on September 24th 2012.  
Tour - Store - Biography - Discography

**Mumford & Sons - Wikipedia, the free encyclopedia**  
[en.wikipedia.org/wiki/Mumford\\_%26\\_Sons](http://en.wikipedia.org/wiki/Mumford_%26_Sons) Mumford & Sons are an English folk rock band. The band consists of Marcus Mumford (lead vocals, guitar, drums, mandolin), Ben Lovett (vocals, keyboards, ...  
Discography - Marcus Mumford - Babel - Sigh No More

**Mumford & Sons - I Will Wait - YouTube**  
 www.youtube.com/watch?v=rGKfrgqWcv0 Sep 9, 2012 - Uploaded by MumfordAndSonsVEVO The single 'I Will Wait' is now available from iTunes : http://tinyurl.com/Bfdxmm9 Order the new album 'Babel' ...  
More videos for **mumford and sons**

**Mumford & Sons - YouTube**  
[www.youtube.com/artist/mumford-and-sons](http://www.youtube.com/artist/mumford-and-sons) Inspired by folk, rock, country, and bluegrass, the London-based Mumford & Sons feature singer/guitarist/drummer Marcus Mumford, vocalist and banjo/Dobro ...

**Mumford & Sons | Free Music, Tour Dates, Photos, Videos - MySpace**  
[www.myspace.com/mumfordandsons](http://www.myspace.com/mumfordandsons) Mumford & Sons's official profile including the latest music, albums, songs, music videos and more updates.

**Mumford & Sons Tickets | Mumford & Sons Concert Tickets & Tour...**  
[www.ticketmaster.com](http://www.ticketmaster.com) All Tickets > Music Tickets > Country & Folk Results 1 - 10 of 20 - Buy Mumford & Sons tickets from the official Ticketmaster.com site. Find Mumford & Sons tour schedule, concert details, reviews and photos.  
Fri, May 24 Sasquatch! Music Festival 4-Day ... Gorge Amphitheatre, George, WA  
Wed, May 29 Mumford & Sons Greek Theatre-U.C. Berkeley, Berkeley, CA  
Thu, May 30 Mumford & Sons Greek Theatre-U.C. Berkeley, Berkeley, CA

**Mumford & Sons – Free listening, concerts, stats, & pictures at Last.fm**  
[www.last.fm/music/Mumford%26Sons](http://www.last.fm/music/Mumford%26Sons)

  
More Images

## Mumford & Sons

Band

Mumford & Sons are an English folk rock band. The band consists of Marcus Mumford, Ben Lovett, Winston Marshall, and Ted Dwane.  
Wikipedia

Lead singer: Marcus Mumford  
Origin: London  
Albums: Babel, Sigh No More, The Road to Red Rocks, The Cave, More  
Members: Marcus Mumford, Ben Lovett, Winston Marshall, Ted Dwane  
Awards: Grammy Award for Album of the Year, More

### Upcoming events

May 29	Mumford & Sons
Wed	Berkeley, CA (near you)
May 30	Mumford & Sons
Thu	Berkeley, CA (near you)
May 31	Mumford & Sons
Fri	Berkeley, CA (near you)

### Songs

I Will Wait	2012	Babel
Little Lion Man	2009	Now, Vol. 74
The Cave	2007	The Saturday Session...
Lover of the Light	2012	Babel
White Blank Page	2009	Sigh No More

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All Tickets > Music Tickets > Country & Folk > Mumford & Sons > May 29, 2013 06:00 PM



### Mumford & Sons

★★★★★ (1202)  
Greek Theatre-U.C. Berkeley, Berkeley, CA  
Wed, May 29, 2013 06:00 PM

Details: Mumford & Sons, Michael Kwanuka, Mystery Jets

Please Note: All events are rain or shine. This show is entirely general ad ...more  
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### Greek Theatre-U.C. Berkeley

General Admission



Seating charts reflect the general layout for the venue at this time. For some events, the layout and specific seat locations may vary without notice.

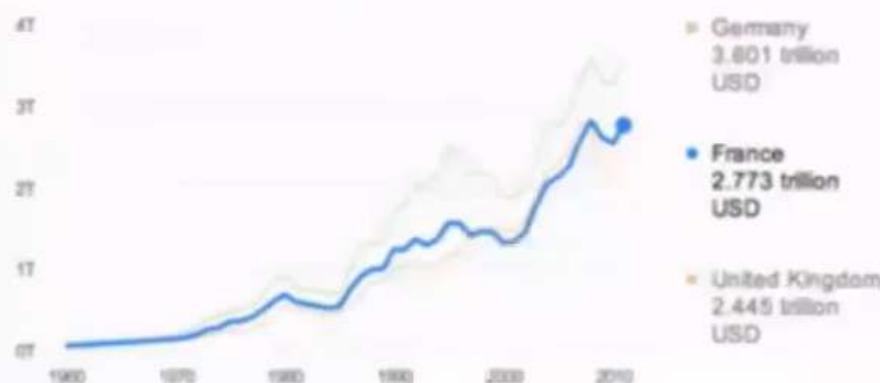
**Greek Theatre-U.C. Berkeley**  
2001 Gayley Road, Berkeley, CA 94720  
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## 2.773 trillion USD (2011)

France, Gross domestic product


[Explore more](#)

Sources include: World Bank

### [FRANCE GDP | LATEST DATA | FORECAST | NEWS](#)

[www.tradingeconomics.com/france/gdp](http://www.tradingeconomics.com/france/gdp)

The Gross Domestic Product (GDP) in France was worth 2773.03 billion US dollars in 2011. The GDP value of France represents 4.47 percent of the world ...

### [FRANCE GDP GROWTH RATE | LATEST DATA | FORECAST | NEWS](#)

[www.tradingeconomics.com/france/gdp-growth](http://www.tradingeconomics.com/france/gdp-growth)

Mar 27, 2013 – The Gross Domestic Product (GDP) in France contracted 0.30 percent in the fourth quarter of 2012 over the previous quarter. GDP Growth Rate

### [Economy of France - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/wiki/Economy\\_of\\_France](http://en.wikipedia.org/wiki/Economy_of_France)

Between January and March 2011, France's GDP growth had been stronger than expected at 0.9%, one of the best figures in Europe but shrunk between April ...

France's world leading ... - Rise and decline of dirigisme - Government finance



## France

Country

France, officially the French Republic, is a unitary semi-presidential republic located mostly in Western Europe, with several overseas regions and territories. [Wikipedia](#)

### Related statistics

Population	65.44 million (2011)
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Government debt	86.0% (2011)
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### Gross domestic product elsewhere

Italy	2.194 trillion USD (2011)
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United States of America	14.99 trillion USD (2011)
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Spain	1.477 trillion USD (2011)
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Sources include: World Bank, Eurostat

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