

# Open Data in Practice

Ivan Herman

Hadley Beeman

Tutorial at the W3C Track at WWW2012

Lyon, France, April 17, 2012



Slides can be downloaded from:  
<http://www.w3.org/2012/Talks/0417-LD-Tutorial/>

# Part I: Introduction to Open Data and Semantic Web

Let's organize a trip from Amsterdam to Aix-en-Provence using the Web!



You try to find a proper flight with ...



Royal Dutch Airlines

Netherlands | [Change country & language](#)

Stel hier uw vraag

Vraag

[Login](#) | [Inschrijven](#)[Mijn profiel](#) | [Mijn boekingen](#)[Home](#) [Plan en Boek](#) [Bereid uw reis voor](#) [Flying Blue](#) [KLM Zakelijk](#) [Over KLM](#) [Customer Support](#)

## Selecteer uw ticketvoorwaarden

Zoeken

Selecteer

Oversteking

Betalen

Bevestiging

1

4

5

## Vluchten

**Vlucht: Amsterdam** (Schiphol) - **Marseille** (Provence) - **Retour****Heenreis:** ma 9 apr 12 13:55 Amsterdam (Schiphol) - 17:20 Marseille (Provence)**Terugreis:** vr 20 apr 12 19:40 Marseille (Provence) - 21:35 Amsterdam (Schiphol)**EUR 183,76**

per volwassene

## Ticketvoorwaarden

**Heenreis: Amsterdam - Marseille****Economy:** Aantrekkelijke Economy Class-tarieven

- Wijzigen is toegestaan tegen een toeslag van EUR 50
- Annuleren is niet toegestaan
- Flying Blue-deelnemers sparen 312 Miles ([meer over Flying Blue](#))

[Meer info](#)

Wijzig ticketvoorwaarden

[Bekijk opties >](#)**Terugreis: Marseille - Amsterdam****Economy:** Aantrekkelijke Economy Class-tarieven

- Wijzigen is toegestaan tegen een toeslag van EUR 50
- Annuleren is niet toegestaan
- Flying Blue-deelnemers sparen 187 Miles ([meer over Flying Blue](#))

Wijzig ticketvoorwaarden

[Bekijk opties >](#)

## Uw selectie

## Gezocht

Van Amsterdam  
(Schiphol)

Naar Marseille  
(Provence)

1 volwassene

Economy

## Geselecteerde data

**Heenreis:** ma 9 apr 12**Terugreis:** vr 20 apr 12

## Geselecteerde vluchten

**Heenreis:** 13:55 - 17:20  
(3h25)**Terugreis:** 19:40 - 21:35  
(1h55)

## Klantenservice

> [Contact opnemen met](#)  
het KLM Service Centre

**AIRFRANCE**

▼ FLYINGBLUE

Mon espace

Identifiant Flying Blue

Code d'accès

ok

S'inscrire | En savoir plus | Code oublié

**Billet  
& enregistrement****Infos vols  
& aéroports****Préparer votre voyage****Classes  
& confort****Flying Blue****Entreprises**

## Réservation en ligne

✈ recherche

✈ tarification

✈ réservation

✈ paiement

✈ confirmation

☒ Masquez le détail de votre voyage

### Votre vol aller : Amsterdam - Marseille

☐ Lundi 9 avril 2012

AF8281 - Economy

09:20

Amsterdam, Schiphol (AMS) - Pays Bas

11:20

Marseille, Provence (MRS) - France - Terminal 4

Effectué par : K L M

Classe de réservation : N

Appareil : Embraer 190

durée : 02h00mn Sans escale

Repas servi(s) à bord : Collation

Franchise : 1 bagage autorisé de 23 kg maximum

### Votre vol retour : Marseille - Amsterdam

☐ Vendredi 20 avril 2012

AF8288 - Economy

19:40

Marseille, Provence (MRS) - France - Terminal 3

21:35

Amsterdam, Schiphol (AMS) - Pays Bas

Effectué par : K L M

Classe de réservation : R

Appareil : FOKKER70

durée : 01h55mn Sans escale

Repas servi(s) à bord : Collation

Franchise : 1 bagage autorisé de 23 kg maximum

### Votre voyage

Votre vol aller

**Amsterdam - Marseille**

09/04/12 - 09:20

Votre vol retour

**Marseille - Amsterdam**

20/04/12 - 19:40

Passagers :

1 Adulte

Montant total : **188,24 €**

Retrouvez toutes les informations sur le poids, le nombre de bagages autorisé ou le prix d'un supplément bagage dans la rubrique Préparation voyage > Bagages.

**RYANAIR.COM**[Search](#) » [Select](#) » [Services](#) » [Payment](#) » [Itinerary](#)

Here are the flights and fares available on the requested date(s).

1. Select the flight of your choice.
2. Click on the fare name to see the fare rules.

**Going Out From Eindhoven to Marseille MP2**[« Previous Day](#)[Next Day »](#)

<b>Fri</b> , 06 April 2012 low fares available	<b>Sat</b> , 07 April 2012 low fares available	<b>Sun</b> , 08 April 2012 low fares available	<b>Mon</b> , 09 April 2012 low fares available	<b>Tue</b> , 10 April 2012 low fares available	<b>Wed</b> , 11 April 2012 low fares available	<b>Thu</b> , 12 April 2012 low fares available
---	---	---	---	---	---	---

**Select A Flight**

Sorry, there are no available flights departing on the 09 April (Monday)  
This may be because:

1. The flight you have chosen is full
2. The route selected has not yet commenced operation, please [click here](#) to view our new route start dates
3. The travel dates requested are for our next schedule period and the fares/seats are yet not loaded for these dates
4. There may not be a flight scheduled for this day of the week
5. There are advance purchase restrictions on flights TO and FROM the following airports: Tallin, Riga, Kaunas, Vilnius and on the Palma-Madrid-Palma route  
Please call our [reservation centre](#) for assistance
6. All flights TO and FROM Berlin Schonefeld Airport will operate to/from Berlin Brandenburg Airport from 3rd June 2012

Please check our timetables at [Ryanair.com](#) or check the previous or next day's flight availability.

**Coming Back From Marseille MP2 to Eindhoven**[« Previous Day](#)[Next Day »](#)

<b>Tue</b> , 17 April 2012 low fares available	<b>Wed</b> , 18 April 2012 low fares available	<b>Thu</b> , 19 April 2012 low fares available	<b>Fri</b> , 20 April 2012 low fares available	<b>Sat</b> , 21 April 2012 low fares available	<b>Sun</b> , 22 April 2012 low fares available	<b>Mon</b> , 23 April 2012 low fares available
---	---	---	---	---	---	---

You have to find a hotel, so you can look for...





Italiano / English / Français / Русский / عربي | AAA

## VILLA GALlici AIX-EN-PROVENCE

HOTEL  
PHOTOGALLERY  
ROOMS  
SUITES  
RESTAURANT  
MEETING & INCENTIVE  
SPECIAL EVENTS  
PACKAGES  
GUEST COMMENTS  
CONCIERGE TIPS  
OFFICIAL RATES  
MAP AND CONTACTS

*A luxury hotel*

Arrival date **02/29/2012**



Nights

1



Adults

1



BOOK NOW

Home » Hotel

Share



## The French grandeur moved to Aix-en-Provence

Under the light Cézaune once knew, the Villa Gallici Hotel 18th century Provencal house member of Relais et Châteaux

WELCOME FROM THE GENERAL MANAGER

PHOTOGALLERY





**Hostel Traveler.com**

Hotel De France, Aix En Provence - HostelTraveler.com for intelligent travel to Hostels and Hotels

**Book Now**

**Hotel De France**  
reservations with low  
online rates. Check  
rates and availability  
instantly online, and  
book this Aix En  
Provence hotel now.



English

f Like

f b Share

Welcome

Travelers

Popular Hostels

Best Hostels

Cheapest Hostels

Work with Us

## Hotel De France Aix En Provence, France

63 Rue Espariat  
Aix En Provence, France  
13100

**Aix En Provence Hotel and Travel  
Information**

travelers

hostels

reviews

**Rates from €73 - 95****Book Now**

Located in the heart of Aix en Provence, the Hotel de France will offer  
you all the pleasures of an old hotel, in a original district.

**User Rating: 3.7** [Read 1 user review](#) [Write a review](#)Property type: **Hotel** ★★ 27 guest rooms/units

Click on photo to enlarge



hide map

**Find more places:**  
near Hotel De France

[Find nearby accommodation](#)[Find tourist spots](#)[Find other places of interest](#)[Find geographic places](#)

Enable Search by Click



HOTEL ARTEA ★★

Or a nice, intermediate solution

AMBIANCE CHAMBRES TARIFS SEMINAIRES

Contact et réservation  
Tél. +33 (0)4 42 27 36 00

RESERVATION EN LIGNE

DATE D'ARRIVEE

29 Février 2012

Zoom x1 x2 x3



Parking sur réservation par téléphone

Quiétude, ambiance

Des chambres douces, spacieuses et lumineuses (de la single à la quadruple) idéales pour des nuits tranquilles. Cache-décor épuré, confort, raffiné, minuscule, climatisation, satellite, wifi gratuit, téléphone direct, minibar, service.

Une fois le seuil de cette belle demeure passé, la vie aixoise s'offre à vous... A deux pas, le centre historique avec ses cafés et restaurants en terrasse, ses allées de platanes, le Grand Théâtre de Provence et Le Pavillon Noir (Ballet Preljocag) qui vous plongent au cœur des plus grands festivals de danse et d'art lyrique.



OFFRES SPÉCIALES ACCÈS CONTACT



Of course, you could decide to trust a specialized site...



Aix-en-Provence Hotels

City, hotel name, etc.

SEARCH

[Home](#) [Aix-en-Provence](#) [Hotels](#) [Flights](#) [Vacation Rentals](#) [Restaurants](#) [Things to Do](#) [Best of 2012](#) [More](#) [Write a Review](#)[Home](#) > [Europe](#) > [France](#) > [Provence](#) > [Bouches-du-Rhone](#) > [Aix-en-Provence](#) > [Aix-en-Provence Hotels](#)

## Aix-en-Provence Hotels

What style of hotel do you prefer?

**All Hotels**  
(68)**Best Value**  
(6)**Romantic**  
(12)**Family** (12)**Luxury** (9)**Business** (7)**Trendy** (5)**Vacation Rentals**  
(25)**B&Bs** (29)

### Check availability

Check-in

mm/dd/yyyy



Check-out

mm/dd/yyyy



Adults

2

Search

### Refine search

Price per night

☒ All (68)☐ \$0 - \$75 (14)

### Special offers in Aix-en-Provence

**La Charlotte Aix en Provence**

Special offer Complimentary bottle of wine

**Hotel Cezanne**

Special offer 50% off room rate

## Hotels travelers recommend

68 of 68 hotels shown

« 1 2 3 »

Sorted by Ranking

List view | [Large map](#)

### [La Maison d'Aix](#)

\$402 - \$803\*



Ranked #1 of 68 hotels in Aix-en-Provence

56 reviews

### Search by location

Search by address or point of interest

[Larger map](#)

Sponsored by:

### Viewed hotels

[Delete all](#)**Aix Hotel**

by 3 travelers



Welkom - al lid? [ [Aanmelden](#) ] [Mijn reisplannen](#) | [Mijn account](#) | [Klantenservice](#) | [Geef uw mening](#)

[Online inchecken](#) | [Mijn hotelboeking annuleren](#)

Home AANBIEDINGEN Hotel Vliegtickets Vlucht + Hotel Vakanties Lastminute Autoverhuur Wintersport

## VIND JE REIS

Vertrek vanaf:

Amsterdam (en omgeving), Nederl

Naar:

Aix-en-Provence, Frankrijk

Heen:

9-4-2012

Terug:

20-4-2012

☐ Ik heb slechts voor een deel van mijn reis een hotel nodig

Kamers

1

Volw.

2

Senioren

0

Kinderen

0

ZOEKEN NAAR REIZEN

## 30 Vlucht + Hotelreizen gevonden voor Aix-en-Provence

ma 9 apr – vr 20 apr, 2 tickets, 11 overnachtingen

SORTEREN  
OP:

De keuze van Expedia Prijs Gastenbeoordeling Sterrenclassificatie



### Kyriad Mas des Oliviers ★★★★★

Gebied: Aix-en-Provence | [Weergeven op kaart](#)

Kamertype: Standaardkamer, tweepersoons | [Kamer upgraden](#)

Inclusief: Gratis parkeren, Gratis draadloos internet

**Verblijf 3 nachten en krijg de laatste nacht gratis!**

2,9 van 5  
8 beoordelingen

Vlucht (2-tickets) € 370

Hotel € 763

(11 overnachtingen)

**aanbieding € 554**

**Pakketvoordeel -€ 19**

Totaal € 905

**€453**

**Nog maar 2 reizen over voor deze prijs!**

Per persoon, omvat vlucht + hotel, belastingen & toeslagen

**SELECTEER & DOORGAAN**



Amsterdam (AMS) 17:05

→ Marseille (MRS) 19:00

Air France Vlucht 8289 verzorgd door KL /KLM CITYHOPPER FOR KLM ROYAL DU

Zonder

tussenstop

1uur 55m



Marseille (MRS) 19:40

→ Amsterdam (AMS) 21:35

Air France Vlucht 8288 verzorgd door KL /KLM CITYHOPPER FOR KLM ROYAL DU

Zonder

tussenstop

1uur 55m

[»Vluchten wijzigen](#)



### Hotel Le Pignonnet ★★★★★

4,5 van 5

Vlucht (2-tickets)

€ 370

You may want to know something  
about Aix-en-Provence:  
look for some photographs...

## Search

Photos

Groups

People

Everyone's Uploads

aix-en-provence

SEARCH

Full Text | Tags Only  
Advanced Search

Search

Sort: Relevant | Recent | Interesting

View: Small | Medium | Detail | Slideshow



From luca131313



From luca131313



From akari.eiri



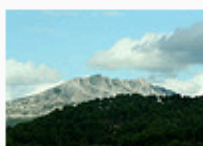
From Saint...



From Magali...



From Magali...



From Magali...



From Magali...



From Magali...



From Magali...



From Magali...



From Magali...



From Magali...



From Magali...



From Magali...

## Groups

more...

**AIX EN PROVENCE !**

355 members | 3,083 photos

**Provence (France)**

2,426 members | 32,919 photos

## Photographers

more...

**RedCactus Poker**

See related photos

**ell brown** - Birmingham, United Kingdom

See related photos

## Tag Clusters

Photos with tags like **france**, **provence** and **aix**Photos with tags like **nuit**, **night** and



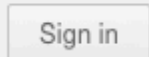
## Looking to license a photo?

Looking to license an image? You can search through the treasure trove of **Flickr members** enrolled in the Getty Images Program.

## Places

more...



 aix-en-provence  

Search

About 12,100,000 results (0.23 seconds)

SafeSearch



Everything

Related searches: [aix en provence france](#) [aix en provence fountains](#) [aix en provence map](#) [aix en provence market](#) [aix en provence cezanne](#)

Images

Maps

Videos

News

Shopping

More

All results

By subject

Any size

Large

Medium

Icon

Larger than...

Exactly...

Any color

Full color





# Aix-Photo.com

Aix-en-Provence Fontaines Jardins & Parcs Aix Moderne

*Aix-en-Provence, le Vieil Aix*







## Aix — (148 photos)

(back to the [photo index page](#))

Click a picture to see a larger view. You can navigate among pictures with the arrow keys or the explicit links.





# What happened?

---

- ▶ We had to consult a large number of sites, all different in style, purpose, possibly language...
- ▶ We had to mentally integrate all those information to achieve your goals
- ▶ We all know that, sometimes, this is a long and tedious process!

# The real “meat” is the data!

---



- ▶ All those pages are only tips of respective icebergs:
  - the real data is hidden in databases, XML files, Excel sheets, ...
  - you only have access to what the Web page designers allow you to see

- ▶ Specialized sites (Expedia, TripAdvisor) do a bit more:
  - they gather and *combine data* from other sources (usually with the approval of the data owners)
  - but they still control how you see those sources
- ▶ But sometimes you want to personalize: access the original data and combine it yourself!

Another example: social sites. I have a list of “friends” by...

Filter Connections

All Connections (565)

Tags

partners (227)

colleagues (143)

friends (41)

group members (22)

classmates (3)

untagged (136)

Last Name

Companies

Locations


Industries

Recent Activity

Select: All, None

A


☐



**Abramatic, Jean-François**  
Director - IBM

339


☐



**Adida, Ben**  
Tech Lead - Mozilla Corporation

432


☐



**Alonso, José Manuel**  
Member of the Nominating Committee (NomCom) - ICANN

455


☐



**Alvarez Espinar, Martin**  
eGovernment Consultant - Fundacion CTIC

217


☐



**Amin, Alia**  
Sr. User Experience Specialist - Elsevier

304


☐



**Apt, Krzysztof**  
Professor - CWI and University of Amsterdam

184

☐



**Arbab, Farhad**  
Professor - Leiden University

288

Tag

colleagues

Send message

Members: 143

facebook

Search



Ivan Herman

Find friends

Home



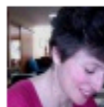
- Wall
- Info
- Photos (10)
- Notes
- Friends**
- Subscriptions

Married to



Éva Bóka

Friends (359)



Janet Daly



Eyal Oren  
Vrije Universiteit...



Reho White

## Ivan Herman ▶ Friends

Search by name

Type a friend's name



**Ádám Vesztig**

Pénzügyi vezető at For-Vid Kft

✓ Friends



**Alain Mille**

✓ Friends



**Alan Ruttenberg**

✓ Friends



**Aldo Gangemi**

Senior Researcher at C.N.R. - I.S.T.C.

✓ Friends



**Alexander Falk**

Works at Altova, Inc.

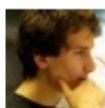
✓ Friends



**Alexander Wahler**

Works at Seekda

✓ Friends



**Alexandre Bertails**

Works at World Wide Web Consortium

✓ Friends



**Alexandre Passant**

CEO & Founder at Seevl

✓ Friends

### Friend Requests

See all



**Johannes La Poutre**

5 mutual friends

Confirm friend

### Sponsored





Search Google+



Ivan Herm...

2

+ Share



CREATE CIRCLE

Your circles (264)

- ☐ Friends
- ☐ Family
- ☐ General IT People
- ☐ W3C Team
- ☐ Semantic Web People
- ☐ Amsterdam
- More ▾

Have you in circles

Find people

Your circles (264)

Relevance ▾

More ▾

Type a name



Add a new person



Michael Hausenblas



Manu Sporny



The Semantic Web



Thomas Roessler

Eva bóka

eva@eva-boka.na...



Richard Ishida



Cameron Neylon



Shelley Powers



Web of Data



Christophe Guéret



M. Scott Marshall



Michael Smith



Danny Ayers



Julian Reschke



Drag people to your circles to follow and share







Képek Események Klubok Alkalmazások Apró Fórum Szavazás Hírek



Profilom



Kezdőlap Állítsd be az iWiW-et kezdőlapnak



Ismerőseidet mostantól a jobb felső sarokból érheted el

Keresés

Dr Herman Iván

Névjegy oldala

iwiw.hu/herman.ivan



Publikus adatlapom módosítása

Adatlap

Képek

Hírfolyam

Ismerősök

Klubok

Alkalmazások

Vélemények



(1) Ács K - Deván

1

2

3

4

5

6

7

▶

▶▶



Ács Katalin

57 éves  
Budapest



Andréka Béla

58 éves  
Budapest



Balassa András

53 éves  
Budapest



dr. Bárdos Katalin

[volt/van, \_]  
Budapest



Bárdossy András

58 éves  
Stuttgart



Barna Imre

Budapest



Bertalan Vera [Szoke]

Budapest



Bessenyei József

62 éves  
Balatonmárfürdő



dr. Biro Eszter

49 éves  
Budapest

Keresés az ismerősök között

Összes ismerős: 112 ismerős  
Találatok: 112 ismerős

Keresés: Név, város, munkahely

Nem: ☒ Nő ☒ Férfi

Kor:  től -  ig

Keresés



Alkalmazásaim



Kedvenceim

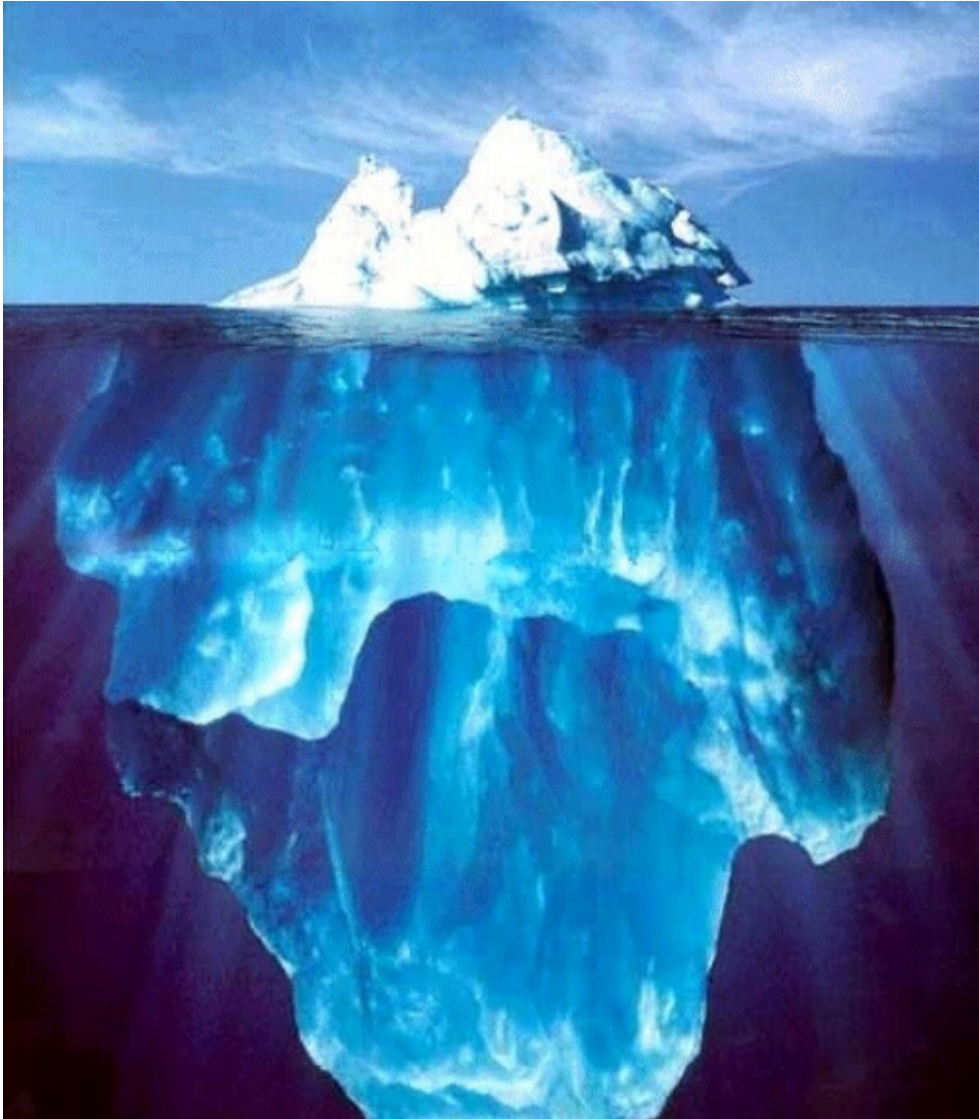


Chat



# and it gets boring...

---



- ▶ I have to type the same data again and again...
- ▶ And this is even worse: I feed the icebergs...☹

# What would we like to have?

---

- ▶ The *raw data* should be available on the Web
  - let the community figure out what applications are possible...

But wait! Isn't what mashup sites are already using?



See where office travel dollars are going

Start your free trial of TripIt for Business

Ivan Herman | Apps | Add a trip | Support

Home

Trips

Network

Point Tracker

Triplt Pro

Business

Share your trips



## WWW2012

Apr 13 - Apr 24, 2012 - Lyon, France  
Marseille, France

Details

Map

Share

Print

Edit

Export to calendar

Get a link

Add plans

More

Itinerary: Expand | Collapse

Fri, Apr 13

Marseille, France - Avg: Hi 17°C / Lo 7°C

+ Add Plans



17:05

Amsterdam (AMS) to Marseille (MRS) ▾

Options ▾

CEST

KLM Royal Dutch Airlines 1409 - Conf # 43Z6TT

Aircraft Fokker 70

nonstop 1h, 55m 985 km - Get seating advice

Depart: Amsterdam (AMS), 17:05 CEST

Arrive: Marseille (MRS), 19:00 CEST

## Booking Information

Booked on 7/2/2012

Reference #: 43Z6TT

## People and sharing

Update

## People

Travelers: Ivan Herman

Non-travelers: None.

## Social networks

Triplt Contacts and LinkedIn

This trip is not private. Change

Advertisement

Sat, Apr 14

Marseille, France - Avg: Hi 17°C / Lo 7°C

+ Add Plans

Sun, Apr 15

Marseille, France - Avg: Hi 17°C / Lo 8°C

+ Add Plans



14:59

SNCF TGV from Aix-en-Provence to Lyon ▾

Options ▾

Yes, and it shows the power of  
accessing data directly!

# but...

---

- ▶ Mashup sites are forced to do very ad-hoc jobs
  - various data sources expose their data via Web Services, API-s
  - each with a different API, a different logic, different structure
  - mashup sites are forced to reinvent the wheel many times because there is no standard way getting to the data! ☹

# What would we like to have?

---

- ▶ The raw data should be available *in a standard way* on the Web
  - i.e., using URIs to access data
  - dereferencing that data should lead to something useful

# Why is that so important?

---

- ▶ What makes the current (document) Web work?
  - people create different documents
  - they give an address to it (i.e., a URI) and make it accessible to others on the Web





# The Internet Guide to Amsterdam

## Contents

[Introduction](#)  
[Time](#)  
[Weather](#)  
[Language](#)  
[Money](#)  
[Tipping](#)  
[Electricity](#)  
[Safety and Health](#)  
[Hotels](#)  
[Eating and Drinking](#)  
[Transport](#)  
[Shopping](#)  
[News](#)  
[Communications](#)  
[Places to See](#)  
[What's On](#)  
[The Amsterdam Year](#)  
[Maps](#)  
[Books](#)  
[Other Resources](#)

## Designed to be printed out and taken with you.

Written by [Steven Pemberton](#), CWI, Amsterdam, and Astrid Kerssens, Amsterdam.

Linked to by more than 450 other sites; more than **3,500,000** grunted readers!

*The top [Amsterdam travel guide](#) according to [Google](#). If you know [how Google works](#), you know that that says something about this site!*

See also [London](#).

## A Review of this Guide

**The Internet Guide To Amsterdam:**

[WebUser Gold Award](#)

Rating: ★★★★★

Reviewed By: Jane Hoskyn

**Sometimes, it's the simple things in life that make your heart skip a beat.**

This is especially true when you're abroad and you need a guide that loads really fast on your mobile phone or PDA (check), doesn't involve clicking from page to page to find what you want (check), isn't written in fluffy tourist-board-speak (check), has all the links you need and none of the ones you don't (check), and is put together by someone who loves your destination and knows it better than the insides of his own eyelids (check). Step forward Steven Pemberton, creator of this exemplary guide to having a damn good time in the 'Dam.

## Introduction

*Amsterdam is an unusual city in that it has all the advantages of a big city – culture, history, food, entertainment, good transport – with relatively few of the disadvantages: it is physically small, beautiful, relatively quiet, and largely thanks to the canals, has relatively little traffic.*

*This guide tells you something about Amsterdam in the hope that it will improve your enjoyment while here.*

## Time

Amsterdam time in the summer is two hours ahead of GMT, one hour in winter; when daylight saving time is in operation the sun is at its highest point at around 13:40 (which makes for long evenings: since Amsterdam is very far West in its time zone, in mid-Summer the sky is still light as late as 11 in the evening).

In the dead of winter, the sun rises at 8:40 and sets at 16:30; in the height of summer it rises at 5:20 and sets at 22:05

Amsterdam is a late city: many shops don't open until 10 in the morning, and bars and cafés stay open till 1 or 2 in the morning.

## Weather



# Then some magic happens...

---

- ▶ Others discover the site and they link to it
- ▶ The more they link to it, the more important and well known the page becomes
  - remember, this is what, eg, Google exploits!
- ▶ This is the “Network effect”: some pages become important, and others begin to rely on it even if the author did not expect it...

# WWW9 Organizers

May 15-19, 2000, Amsterdam

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## WWW9 Conference Committee

### Conference Co-Chairs:

- Ivan Herman, CWI, The Netherlands
- Albert Vezza, CNRI, USA

### Program Committee Chair:

- Dick Bulterman, Oratrix, The Netherlands

### Program Committee Vice Chair:

#### Practice and Experience

- [Ann Bassetti](#), Boeing, USA

#### Content and Coding

- [Stephan Fischer](#), Technical University, Darmstadt, Germany

#### Hypermedia

- [Lynda Hardman](#), CWI, The Netherlands


#### Performance

- [Arun Iyengar](#), IBM Research, USA


#### Browsers and Tools

- [Hannes Marais](#), AltaVista Company, USA

This could be expected...

See **Getting Around** below to get to the hotel, and read our  [Packing Tips for Amsterdam](#).

## Amsterdam Sights And Maps

An annotated  [Google Map around the Moevenpick](#) is available. NOTE: there has been significant construction since the Google satellite images were taken!

The comprehensive description of sights Amsterdam has to offer is available at Steven Pemberton's website  <http://homepages.cwi.nl/~steven/amsterdam.html>.



David Reid has hosted a  [Feathercast Podcast](#) about visiting Amsterdam for ApacheCon.

## Walking in Amsterdam

Reminder: bicycles and trams are major transportation options in Amsterdam. When walking on most streets, be sure to stay on the sidewalk. There will often be a narrow red roadway with a dashed line; this is only for bikes and mopeds. Then there will be one or more lanes for cars. Then there will also be a set of tram tracks. This makes for interesting sets of stoplights (cars, bikes, trams, and crosswalks).

## Getting Around / Getting to the Hotel

This may not be the best way to get from the airport to the hotel and back, but it'll do the job. We definitely recommend taking the train to Centraal, since a cab to the hotel is 37EUR.

- Get the train from Amsterdam Schiphol to Amsterdam Centraal. Don't get a return (unless you're going back the same day). A single should cost you c. 3.60EUR. Note there are various Train Ticket machines that may accept your credit/debit card. To pay with cash, go to the station entrance itself (at edge of airport) and go to a human teller; there is a .50EUR fee for this per ticket.
- (EITHER) When you get to Amsterdam Centraal, get a ticket for the local transport -  [mostly trams](#) by GVB. You can get day passes from the GVB Tickets & Info place in the station (or at the machines, as long as you don't want a 96h one) - 24h->7EUR; 48h->11.50EUR; 72h->14.50EUR; 96h->17.00EUR. If you don't think you'll use that much transport, get a "strippenkaart". Travelling with the strippenkaart "costs" one strip per journey, plus one strip per zone. So a 1-zone journey is 2 strips, a 2-zone journey is 3 strips etc. Costs are 2-strip->1.60EUR; 3-strip->2.40EUR; 8-strip->6.40EUR (this also works as a day ticket, but I'm not sure how); 15-strip->10.90EUR; 45-strip->20.40EUR
- That's the hard part over! Exit Centraal Station and walk all the way down to the end of the station (to your left, if your back is to the station). This is the side towards the buses and trams; if you are facing a "large" canal, you're on the wrong side of the station (there's a small canal right behind the bus/tram stops though - lots of cars!).
- The line for Tram 26 should be the one nearest to the station, at this end. If it's not, you've gone the wrong direction 😊
- Get on Tram 26 (it only goes one direction past here - IJburg), and stamp your card (2-strips, if it's a strippenkaart). Go one stop, to the [Musiekgebouw](#), and alight.
- Cross the tram lines, then the bike path, and walk down a bit to your right, until you find a  [black arched pedestrian bridge](#). Go over the bridge, down the steps to your left, and double back underneath the bridge - you're at the hotel!
- (OR) Walk! In this case, the easiest way is to go out of Centraal to the north, through the construction, and facing the large canal. Walk straight across the major street alongside the canal (wait for the light).
- Turn right, so you are heading east; keep the large canal on your left. Walk along the canal until you come to a very wide and long bridge sloping gently upwards.

# Network effect on the data

---

- ▶ *The same network effect works on the raw data*
  - Many people link to the data, use it
  - Much more (and diverse) applications will be created than the “authors” would even dream of!

Is that it?

le: let's publish the data on the Web  
and we are done?

Not quite...





We do not want that!



# Imagine...

---

- ▶ A “Web” where
  - documents are available for download on the Internet
  - but there would be no hyperlinks among them
- ▶ This is certainly not what we want!

CoCoDat - Collation of Cortical Data - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.cocomac.org

CoCoMac DATABASES ORT EXAMPLES

## CoCoDat: Collation of Cortical [S] microcircuitry] Data

CoCoDat is a microcircuitry database that published experimental reports. The data and cellular compartment), as well as the

- Morphology
- Firing properties
- Ionic currents
- Ionic conductances
- Synaptic currents
- Connectivity

The database is available for download u data tables but also a Search Board with manual or automatic relaxation of the sea

- Brain region
- Layer
- Neuron type

http://www.cocomac.org/cocodat/catalyzer/inc

Cell Centered Database - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ccdb.ucsd.edu/sand/main?event=gallery&action=show&dpl=y

## Cell Centered Database™ Gallery

National Center for Microscopy and Imaging Research

Data | Search | Gallery | Dictionary | Publications | MyCCDB | Data Download | Contact us | Help

2D image Reconstruction Segmentation Animation

by 23  
D: 071202tjd  
e:  
D: P1188  
ct Brain Maps  
e:  
ct Tom Deerinck  
r:  
nt BioRad RTS 2000MP  
d: Multiphoton  
n: montage of cerebellar  
cortex triple labeled for  
Hoescht stain (blue), IP3  
receptor (green) and  
GFAP (red)

Z PIP logged out

NeuronDB = Thalamic relay neuron - Overview (A) () - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://senselab.med.yale.edu

## NeuronDB

### Thalamic relay neuron

Back

Mode: **Overview** Data/Search plus Connectivity plus Classical References/Notes Models

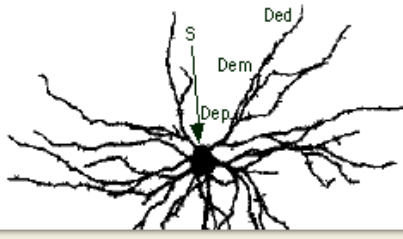
Region: Distal equivalent dendrite Middle equivalent dendrite Proximal equivalent dendrite Soma Axon hillock Axon fiber Axon terminal All Compartments

Properties: Receptors Channels Transmitters **All Properties**

Interoperation: Gene and Chromosome Experimental Data (neurodatabase.org) Microscopy Data (CCDB)

Neuron type: principal

Organism: Vertebrates



1. Equivalent dendrite
2. Distal equivalent dendrite
3. Middle equivalent dendrite
4. Proximal equivalent dendrite
5. Soma

Show other

Done

Z PIP logged out

# What would we like to have?

---

- ▶ The raw data should be available in a standard way on the Web
- ▶ *There should be links among datasets*

# Some relationships already exist among the datasets!

Aix-en-Provence – Wikipedia, the free encyclopedia

en.wikipedia.c

Delicious LocalData TR 2012 My Mercurial Validation

Aix-en-Provence – Wikipedia, t...

- 34. <sup>^</sup> "Association of twinnings and international relations of Aix-en-Provence". Aix-jumelages.com. Retrieved 15 April 2010.
- 35. <sup>^</sup> Mairie of Aix-en-Provence – Twinnings and partnerships <sup>[dead link]</sup>
- 36. <sup>^</sup> "Acordos de Geminção" (in Portuguese). © 2009 Câmara Municipal de Coimbra <sup>[dead link]</sup> – Praça 8 de Maio – 3000-300 Coimbra. Retrieved 25 June 2009.
- 37. <sup>^</sup> Perugia Official site – Relazioni Internazionali <sup>[dead link]</sup> (Italian)
- 38. <sup>^</sup> Jessula, Georges (2003). "Darius Milhaud, Compositeur de Musique" <sup>[dead link]</sup>. *Revue Juive*: 140–144 Since their marriage in 1892, Milhaud's parents lived in the *Bras d'Or* in Aix-en-Provence, where their son grew up; however he was delivered at the home of his maternal grandparents in Marseille.
- 39. <sup>^</sup> Milhaud, Darius (1998). *Ma Vie heureuse*. Zurich. ISBN 2-87750-083-7
- 40. <sup>^</sup> FullSIX (22 December 1972). "Franck Cammas – Profile" <sup>[dead link]</sup>. Cammas-groupama.com. Retrieved 22 May 2009.

- Busquet, Raoul (1954). *Histoire de la Provence: des origines à la révolution française*. Editions Jeanne Lafitte. ISBN 2-86276-319-5
- <sup>[c]</sup> This article incorporates text from a publication now in the **public domain**: Chisholm, Hugh, ed. (1911). *Encyclopædia Britannica* (11th ed.). Cambridge University Press.
- INSEE <sup>[dead link]</sup>

External links <sup>[edit]</sup>

- Aix en

Wikimedia Commons has media related to: Aix-en-Provence

Provence Tourist office website <sup>[dead link]</sup> (English)

- One sheet foldable city guide <sup>[dead link]</sup> (English) available from the Tourist Office
- Festival website <sup>[dead link]</sup>
- Official site of the town Aix-en-Provence <sup>[dead link]</sup> (French)
- Information and photos from ProvenceBeyond website <sup>[dead link]</sup>

V · T · E Communes of the Bouches-du-Rhône department <sup>[show]</sup>

Aix-en-Provence visit, photos, travel info and hotels, by Provence Beyond

Delicious LocalData TR 2012 My Mercurial Validation

Aix-en-Provence visit, photos, t...

  **Aix-en-Provence**  
Ville d'Art  
Villages > Aix-en-Provence

Villages Sites Maps Travel Hotels Gast

 Aix-en-Provence is the city of art, and a city of light and activ also a home of art schools and several universities, including American, attracting a youthful population that sparks the at

Aix is also ancient: a Celtic-Ligurian capital from the 3rd cent pushed aside for the founding of Aix in 122 BC, as *Aquae Sex Aix-History*].

More: | Aix-en-Provence History | Aix-en-Provence Museums |

Also: | Aix-en-Provence Itineraries |

Nearby: | Arles 76 km | Avignon 82 km | Cadenet 28 km | Cannes 152 km | Lourmarin 37 km | M... km (1hr30) | Pertuis 20 km | Saint Maximin 35 km | Salon-de-Provence 32 km | Sisteron 102 km | Vauvenargues 14 km |

**Hotels near Aix-en-Provence:** | Aix-en-Provence | 20 km Pertuis | 28 km Cadenet | 31 km Marse Saint Maximin | 37 km Lourmarin |

For **pronunciation**, you pronounce the "x", so Aix sounds like ex, as in "X marks the spot". O Aix-en-Pce.

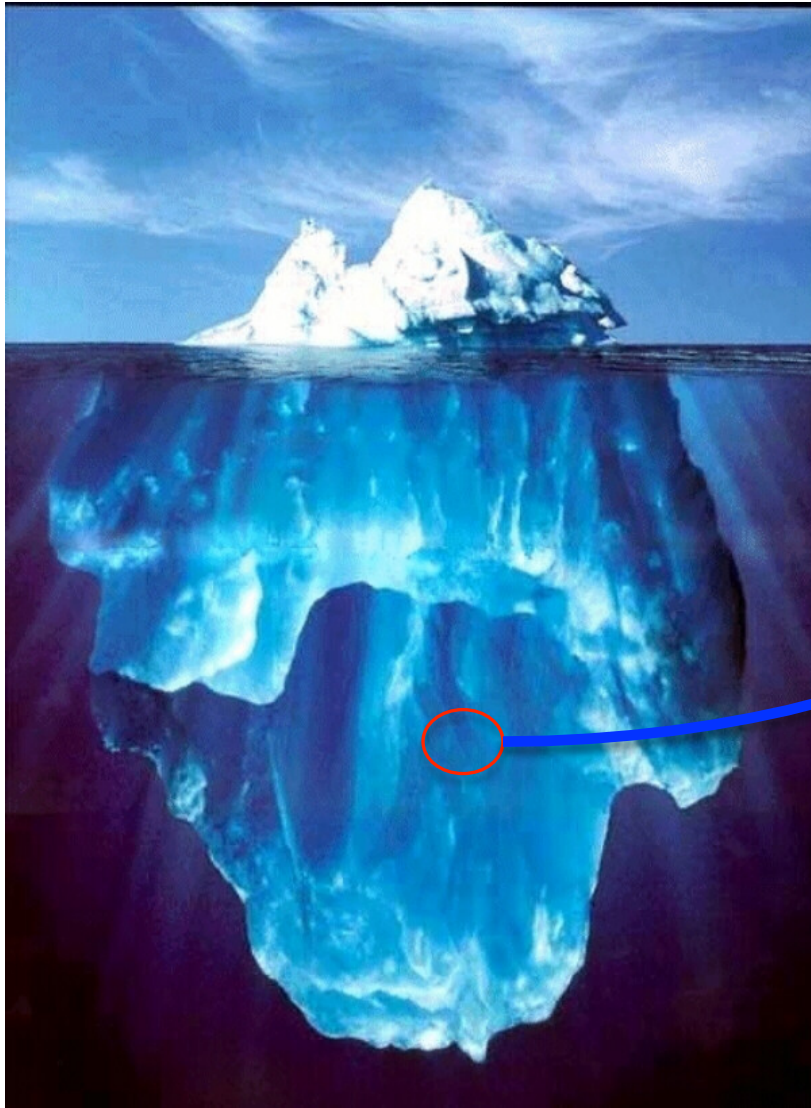
The center of Aix is the old town (vieille ville), ringed by a circle of boulevards and squares. It' but there's way too much to see in one or two days. The medieval Aix was protected by a wall century "Tourreluquo" tower remains, at the northwest corner of the town.

 **Cours Mirabeau** is the center of the center, and the heart tree-lined avenue, with one side lined with wonderful terrac one French sidewalk café outside of Paris, it should be here, and the sidewalk alive. Large plane trees overhang the leng

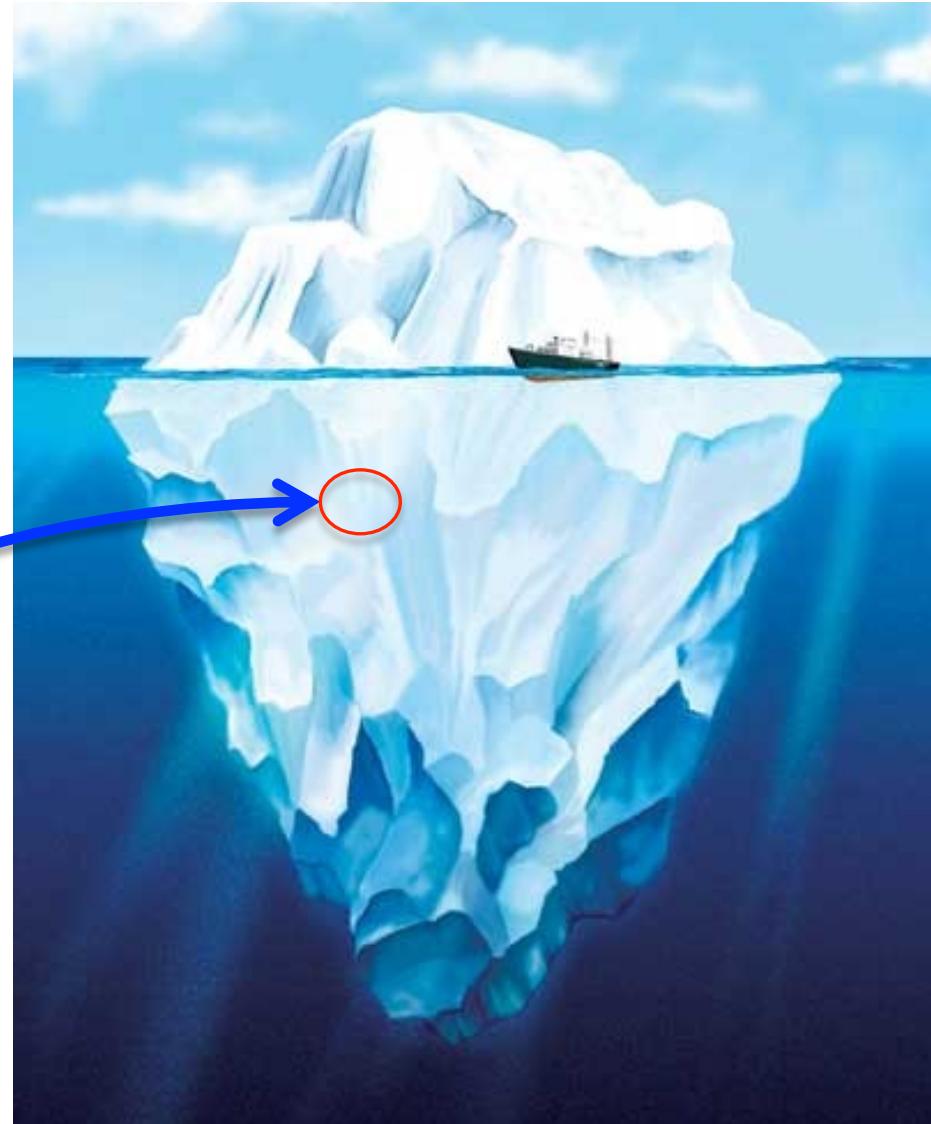


# Some relationships already exist among the datasets!

Aix-en-Provence on Wikipedia



Aix-en-Provence on "Provence and Beyond"



Those relationships should be exposed, too!





*We want to link the silos!*

Is that it?

le: let's publish the data on the Web,  
add HTML-like hyperlinks and we are  
done?



Not quite... but almost!

# It is indeed a little bit more complicated

---

- ▶ On the traditional Web, humans are implicitly taken into account
- ▶ A Web link has a “context” that a user implicitly uses ☹️



## Ivan Herman

[My Work at W3C](#) | [Contact information](#) | [Short CV](#) | [Upcoming trips](#) | [Public presentations](#)

### My Work at W3C

I am [Semantic Web Activity](#) Lead; that is my main work at [W3C](#). I am member of [IW3C2 \(International World Wide Web Conference Committee\)](#) (the committee coordinating the yearly WWW conference series), serving as a liaison for W3C, and of [SWSA \(Semantic Web Science Association\)](#), the committee responsible for the International Semantic Web Conferences series.



As part of my work, I also participate in lots of outreach activities, and I regularly make presentations, tutorials, etc. You can consult my [list of presentations](#) for further details.

### Contact information

#### Email:

[ivan@w3.org](mailto:ivan@w3.org)

(sha1sum: 5ac8032d5f6012aa1775ea2f63e1676bafd5e80b)

#### Postal address:

C/o Centre for Mathematics and Computer Sciences (CWI)  
Science Park 123, P.O. Box 94079, 1090 GB Amsterdam, The Netherlands ([see map](#)).

#### Phone numbers:

phone: +31-20-5924163

mobile: +31-64-1044153

#### PGP/GPG:

My [GnuPGP key and signature](#) is available on-line.

#### FOAF:

You can either extract a short [FOAF information from this page](#), or consult [my more complete, public FOAF file](#).

#### vCard

A [vCard](#) file, containing my contact data, is also available.

#### Misc:

I am (of course...) present on a number of online accounts and services, like: [facebook](#) (acc. name ivan.herman), [LinkedIn](#) (acc. number 2352277), [Triplt](#) (acc. name ivan\_herman), [Twitter](#) (acc. name ivan\_herman), [Flickr](#) (acc. ivan\_herman), or [Mendeley](#) (acc. name ivan-herman),

My URI (as a real person): <http://www.ivan-herman.net/foaf#me>.

**CWI**

Centrum Wiskunde &amp; Informatica

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## RESEARCH

### THEMES



Centrum Wiskunde & Informatica (CWI) is a scientific research institute specialized in mathematics and computer science, and is located in Amsterdam, The Netherlands. To give focus to our efforts, we concentrate on five broad, societally-relevant themes that align with NWO's strategy:

- Earth sciences and energy
- Life sciences
- The data explosion
- Societal logistics
- Software as service

[read more...](#)

### RESEARCH AT CWI

Research within CWI is organised into the

## NEWS & EVENTS

### NEWS

**Veni awarded to Ross Kang for revealing network information**

02-02-2012



Ross Kang, researcher at the Centrum Wiskunde & Informatica (CWI) in Amsterdam, received a Veni award from...

[read more...](#)

### EVENTS

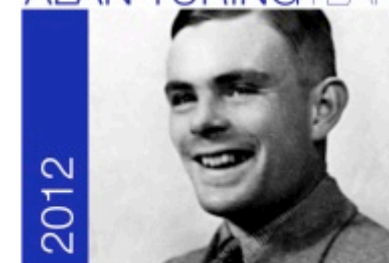
- **REVERIE Steering Meeting ICT**  
26.03.2012 - 13:00
- **Third Workshop on Graphs and Matroids**  
29.07.2012 - 00:00

## ABOUT CWI

### HIGHLIGHT

**2012 Alan Turing Year**

ALAN TURING YEAR



2012 is the centenary of Alan Turing's birth. Turing made an unique impact on mathematics and computer science. He was the founding father of the computer and of artificial intelligence, and played an essential role in cracking the Enigma code in World War II. CWI will contribute to the Alan Turing Year through a number of events.

### CWI NEEDS TALENT!

- **Postdoc in the area of Life Sciences**  
Life Sciences
- **2 PhD Students on Interface design**

- ▶ A human understands that this is where my office is, i.e., the institution's home page
- ▶ He/she knows what it means
  - realizes that it is a research institute in Amsterdam
- ▶ But, when handling data, something is missing;  
*machines can't make sense of the link alone*



## ► New lesson learned:

- extra information (“label”) must be added to a link: “this links to my institution, which is a research institute”
- this information should be machine readable
- this is a characterization (or “classification”) of both the link and its target
- in some cases, the classification should allow for some limited “reasoning”

Let us put it all together!

# What would we like to have?

---

- ▶ The raw data should be available in a standard way on the Web
- ▶ Datasets should be linked
- ▶ Links, data, sites, should be characterized, classified, etc.
- ▶ In future: possibility to write and change data...
  - but that is still further down the line
- ▶ The result is a Web of Data

So what is the Semantic Web?

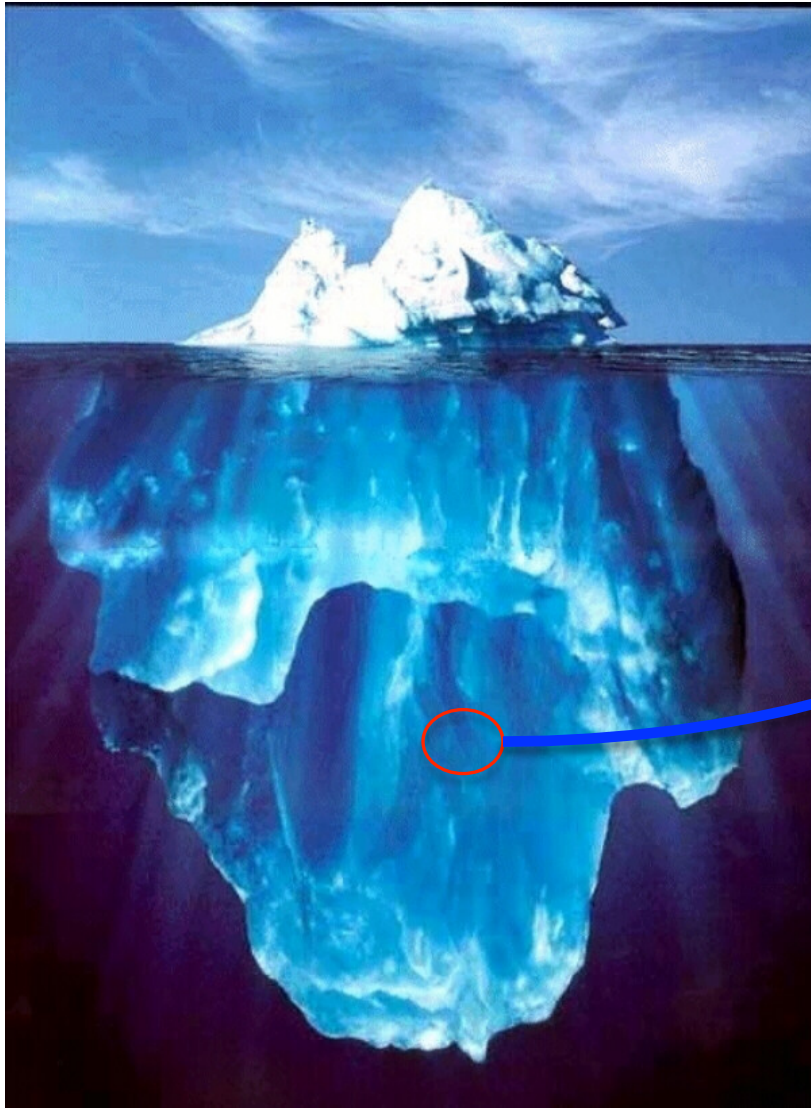
It is a collection of standard technologies to realize a Web of Data



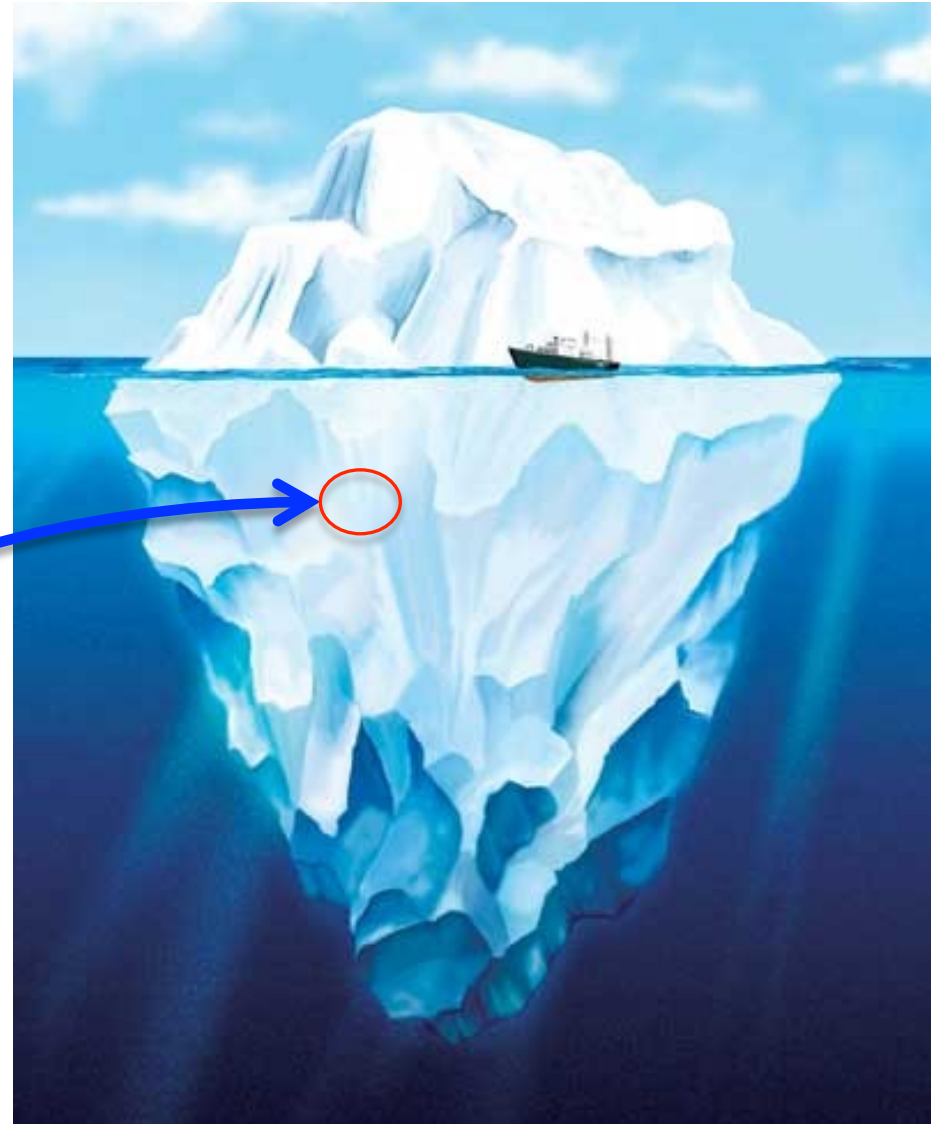
Let us see some technology...

# Remember this?

Aix-en-Provence on  
Wikipedia

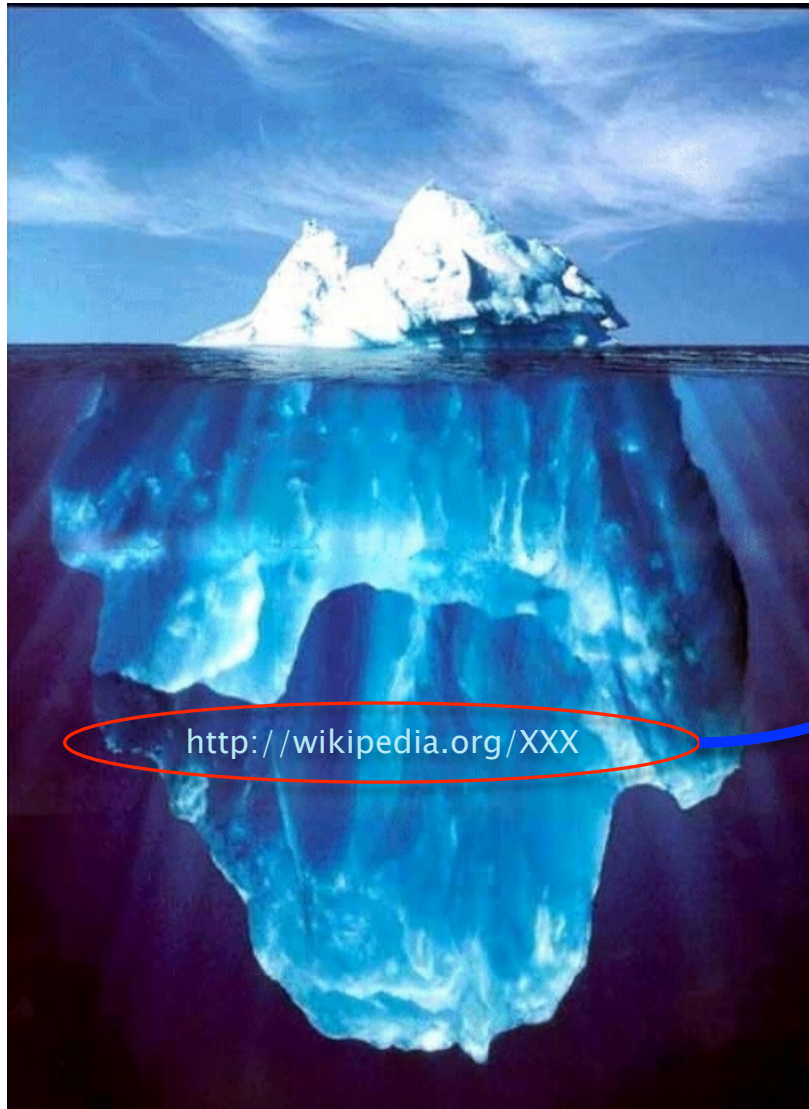


Aix-en-Provence on  
“Provence and Beyond”

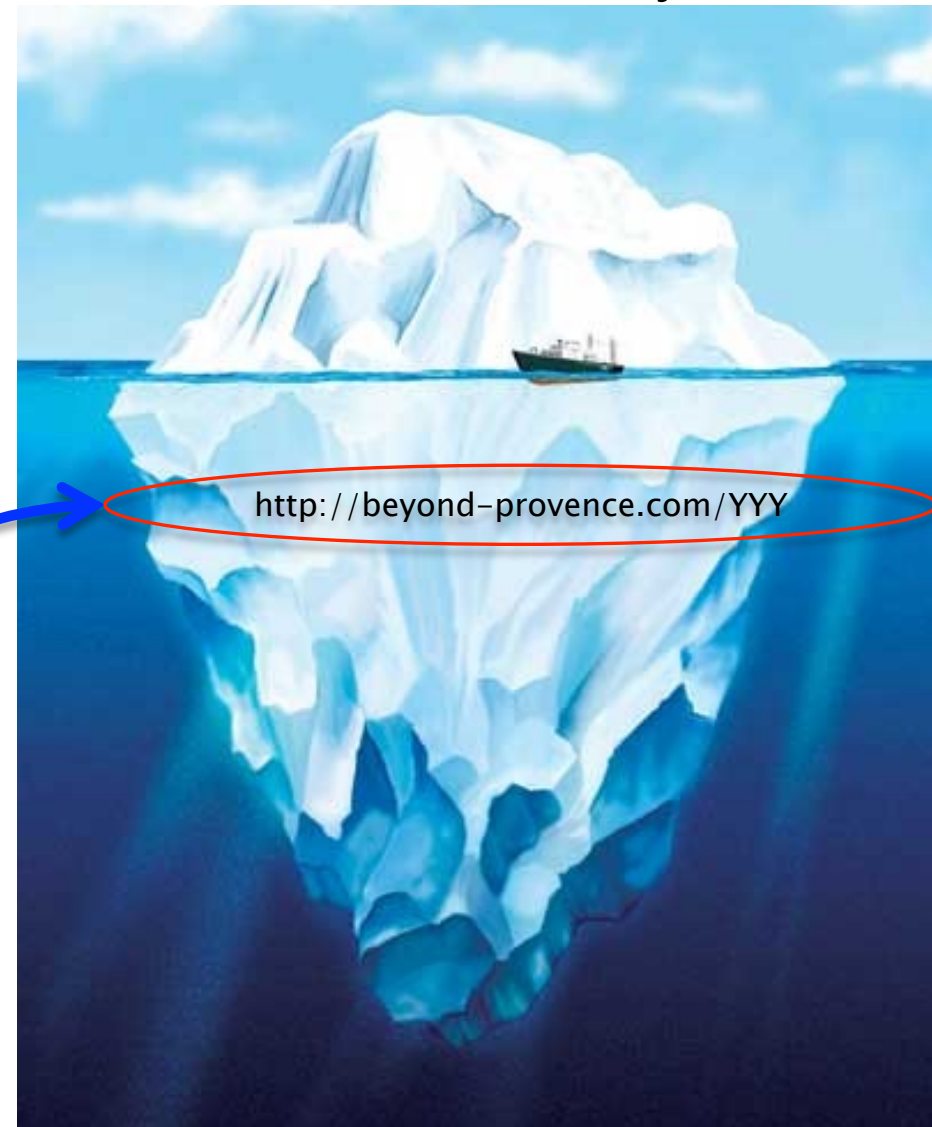


# Give URI-s to data points

Aix-en-Provence on  
Wikipedia



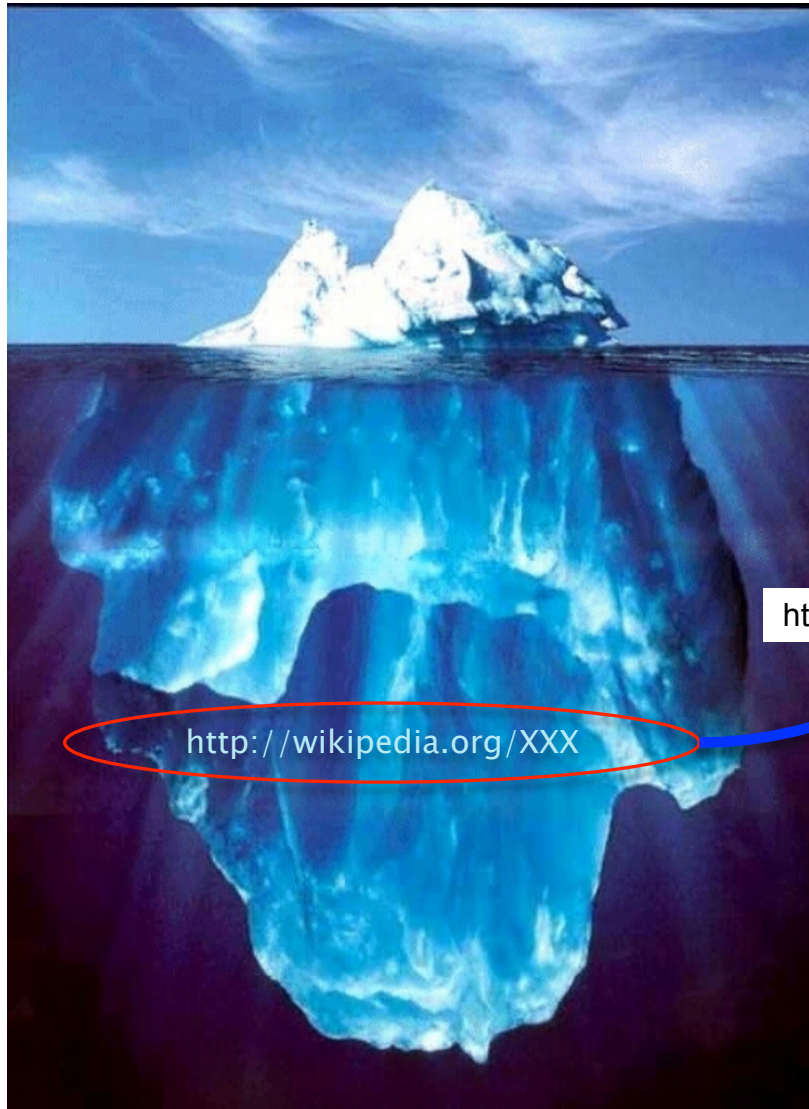
Aix-en-Provence on  
“Provence and Beyond”





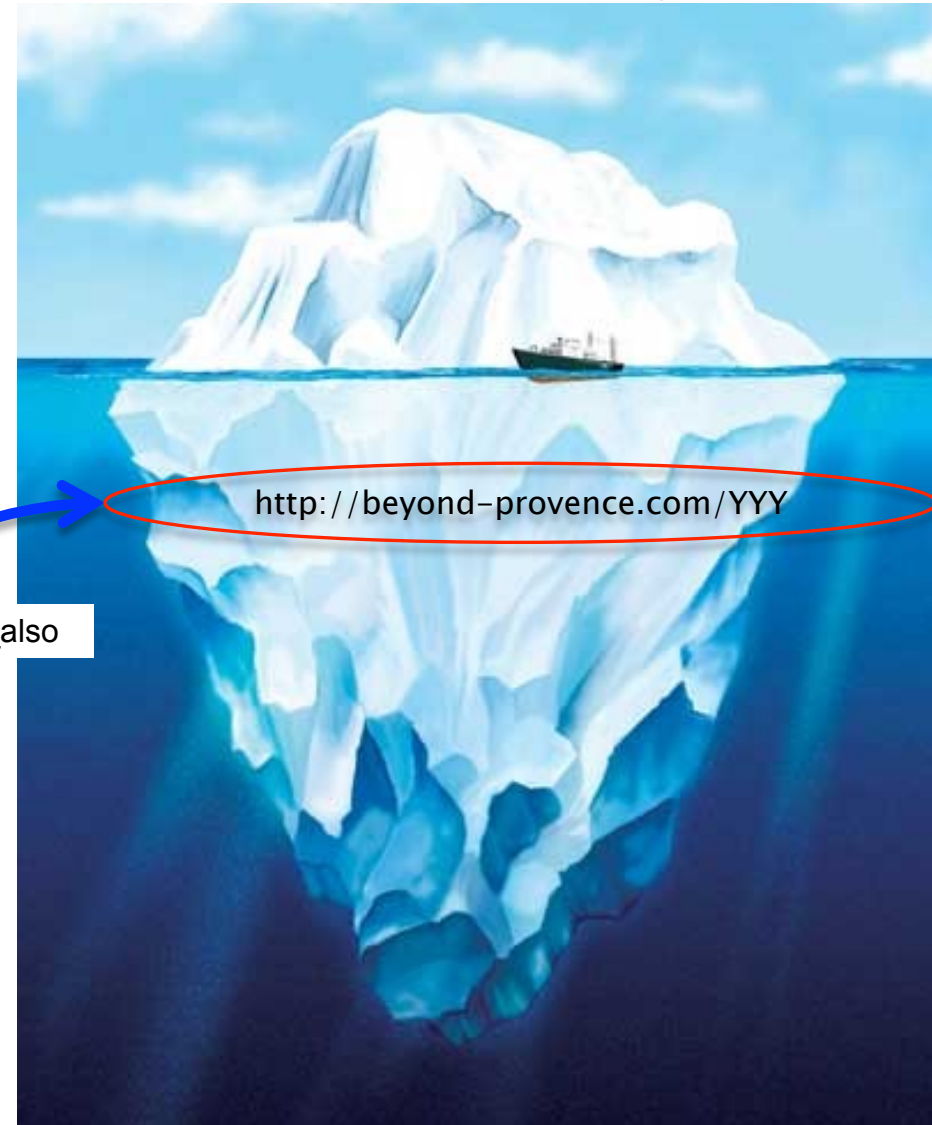
# “Label” the link

Aix-en-Provence on  
Wikipedia



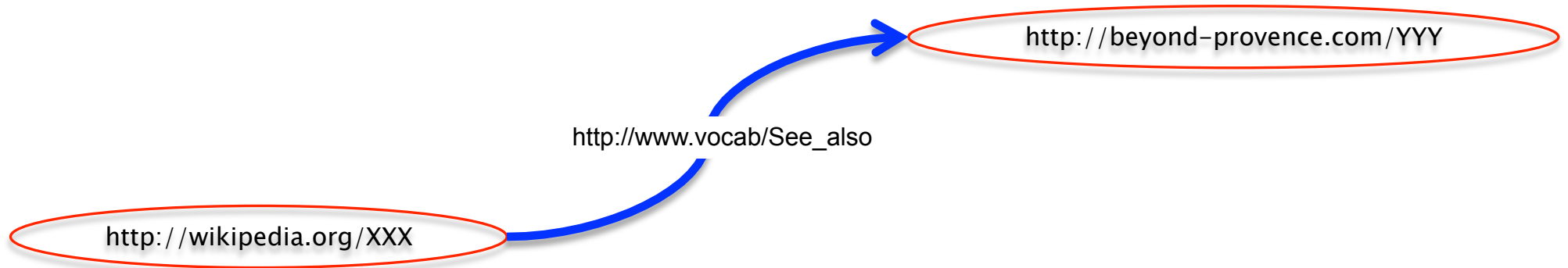
[http://www.vocab/See\\_also](http://www.vocab/See_also)

Aix-en-Provence on  
“Provence and Beyond”



# What we get

---



- ▶ We have a “triple”:

- a subject (referring to the wikipedia data point)
- an object (referring to the “Provence and Beyond” data point)
- a labeled, directed link between the two

- ▶ We can also create:

- a graph, i.e., a collection of all these triples
- a “triple store”, i.e., a physical storage of these triples on the Web

# RDF: Resource Description Framework

---







- ▶ RDF is a standard describing these triples formally
- ▶ There are some details to settle
  - using simple literals as objects (some sort of a property-value pairs)
  - how to serialize these triples
- ▶ But the fundamentals are just that: a collection of (subject,property,object) triples





# Some other technologies are also needed

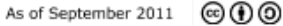
---

- ▶ What are the “terms” that can be used for those labels
  - separate documents (“vocabularies” or “ontologies”) describe those  
- ▶ How can I query into a triple
  - an “SQL for Triples” 
- ▶ How do I access other types of data (RDB Databases, XML, etc.)   
- ▶ Etc.



It is that simple!  
(of course, the devil is in the details...)





# Linked Data: a seed for a Web of Data

---



- ▶ “Linked Data” is also a set of principles:
  - put things on the Web through URI-s
    - use HTTP URI-s so that things could be dereferenced
  - use machine readable, non-proprietary formats
  - provide useful information (using standards) when a URI is dereferenced
  - *include links* to other URI-s

Any other examples in the wild?



# Eric Clapton

Born 30 March 1945.

MOST PLAYED ON **BBC**  
RADIO



David Redfern/Redferns

## Biography

Eric Patrick Clapton, CBE (born 30 March 1945) is an English blues-rock guitarist, singer, songwriter and composer. Clapton has been inducted into the Rock and Roll Hall of Fame as a solo performer, as a member of rock bands; the Yardbirds and Cream. Clapton is the only person ever to be inducted three times. Often viewed by critics and fans alike as one of the most important and influential guitarists of all time, Clapton was ranked fourth in Rolling Stone magazine's list of the "100 Greatest Guitarists of All Time" and #53 on their list of the Immortals: 100 Greatest Artists of All Time.

## Latest Tracks Played On The BBC

### Promises

BBC Radio 2 | [Ken Bruce](#) 22/02/2010

### Bad Love

BBC Radio 2 | [Alex Lester](#) 22/02/2010

### Lay Down Sally

BBC Radio 2 | [Chris Evans](#) Breakfast 18/02/2010

### I Ain't Gonna Stand For It

BBC Radio 2 | [Alex Lester](#) 15/02/2010

### Wonderful Tonight

BBC Radio 2 | [Ken Bruce](#) 10/02/2010

## Audio Previews From Latest Album Review



### Me And Mr Johnson

8 Milkcow's Calf Blues

10 Come on in My Kitchen



this focus, he is credited as an innovator in a wide variety of genres. These include blues-rock (with John Mayall & the Bluesbreakers and The Yardbirds) and psychedelic rock (with Cream). Clapton's chart success was not limited to the blues, with chart-toppers in Delta Blues (Me and Mr. Johnson), pop ("Change the World") and reggae (Bob Marley's "I Shot the Sheriff") (He is often credited for bringing reggae and Bob Marley to the mainstream.) Two of his most successful recordings were the hit love song "Layla", which he played with the band Derek and the Dominos, and Robert Johnson's "Crossroads", which has been his staple song since his days with Cream.

[Read more at Wikipedia...](#)

**WIKIPEDIA** This entry is from **Wikipedia**, the user-contributed encyclopedia. It may not have been reviewed by professional editors and is licensed under the **GNU Free Documentation License**. If you find the biography content factually incorrect, defamatory or highly offensive you can [edit this article at Wikipedia](#). Find out more about our use of this data .

## Links & Information

### LINKS

Official homepage at [ericclapton.com](http://ericclapton.com)

Fanpage at [whereseric.com](http://whereseric.com)

Wikipedia article on [Eric Clapton](#)

MySpace at [myspace.com/ericclapton](http://myspace.com/ericclapton)

Last.fm page on [Eric Clapton](#)

MusicBrainz entry on [Eric Clapton](#)

**MEMBER OF** [Derek and the Dominos](#), [Blind Faith](#) (1968-1969), [Cream](#) (1966-1968), [John Mayall & The Bluesbreakers](#) (1965-1966), [The Yardbirds](#) (1963-1965)

**COLLABORATED ON** [J.J. Cale & Eric Clapton](#), [Eric Clapton & The Immediate All Stars](#), [Eric Clapton & The Impressions](#), [Eric Clapton & Jimmy Page](#), [Eric Clapton & David Sanborn](#), [Eric Clapton & Stan Webb's Chicken Shack](#), [Eric Clapton & The Powerhouse](#), [Eric Clapton & Stevie Ray Vaughan](#), [Eric Clapton & Marc Shaiman](#), [The Dirty Mac](#), [Bob Dylan, Roger McGuinn, Tom Petty, Neil Young, Eric Clapton & George Harrison](#), [Jimmie Vaughan](#), [Eric Clapton, Bonnie Raitt, Robert Cray, B.B. King, Buddy Guy, Dr. John & Art Neville](#), [Eton John & Eric Clapton](#), [Michael Kamen](#), [Eric Clapton and David Sanborn](#), [B.B. King & Eric Clapton](#), [Mark Knopfler & Eric Clapton](#), [Paul McCartney & Eric Clapton](#), [Sting with Eric Clapton](#), [Steve Winwood & Eric Clapton](#)

Links & information come from [MusicBrainz](#). You can add or edit information about [Eric Clapton](#) at [musicbrainz.org](http://musicbrainz.org). Find out more about our use of this data. The BBC is not responsible for the content of external sites

## Latest News Stories

Courtesy of the BBC

## Played By

Since December 2008



Alex Lester

2 BBC Radio 2



Steve Wright in the Afternoon

2 BBC Radio 2



Sarah Kennedy

2 BBC Radio 2



Wake Up to Wogan

2 BBC Radio 2



Ken Bruce

2 BBC Radio 2



Steve Wright's Sunday Love Songs

2 BBC Radio 2



Jeremy Vine

2 BBC Radio 2

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Type or select a Country ...

## Energy Profile France

France, officially the French Republic, is a unitary semi-presidential republic in Western Europe with several overseas territories and islands located on other continents and in the Indian, Pacific, and Atlantic oceans. Metropolitan France extends from the Mediterranean Sea to the English Channel and the North Sea, and from the Rhine to the Atlantic Ocean. It is often referred to as l'Hexagone because of the geometric shape of its territory. It is bordered (clockwise starting from the northeast) by Belgium, Luxembourg, Germany, Switzerland, Italy and Monaco; with Spain and Andorra to the south. France is linked to the United Kingdom by the Channel Tunnel, which passes underneath the English Channel. In addition to these borders on the European continent France has land borders with Suriname and Brazil through French Guiana, as well as with the Netherlands through the Collectivity of Saint Martin. It is the largest west-European country and it possesses the second-largest Exclusive Economic Zone in the world, covering 11,035,000 km (4,260,000 sq mi), just behind that of the United ... [read more](#)

Source: [dbpedia](#)

### Capital

Paris

### Language

French language

### ISO Code

FR, FRA

### Area

674.843 km<sup>2</sup>

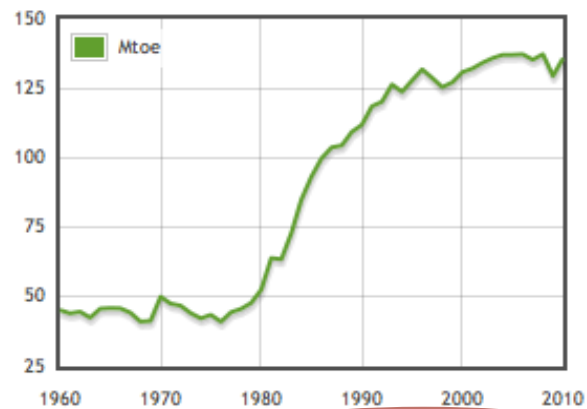
### GDP, PPP

## Key Statistic Charts (10)

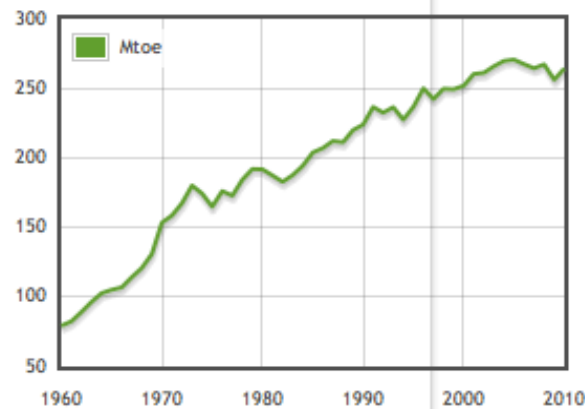
2.194.118.373.100,-  
current international \$  
(2010)

## Energy production and use

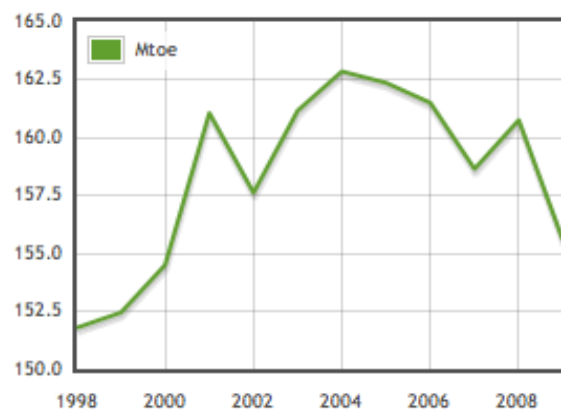
## Energy production

Source: Worldbank Data

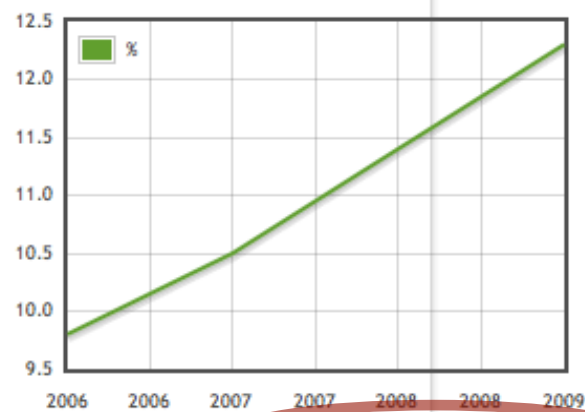
## Energy use

Source: Worldbank Data

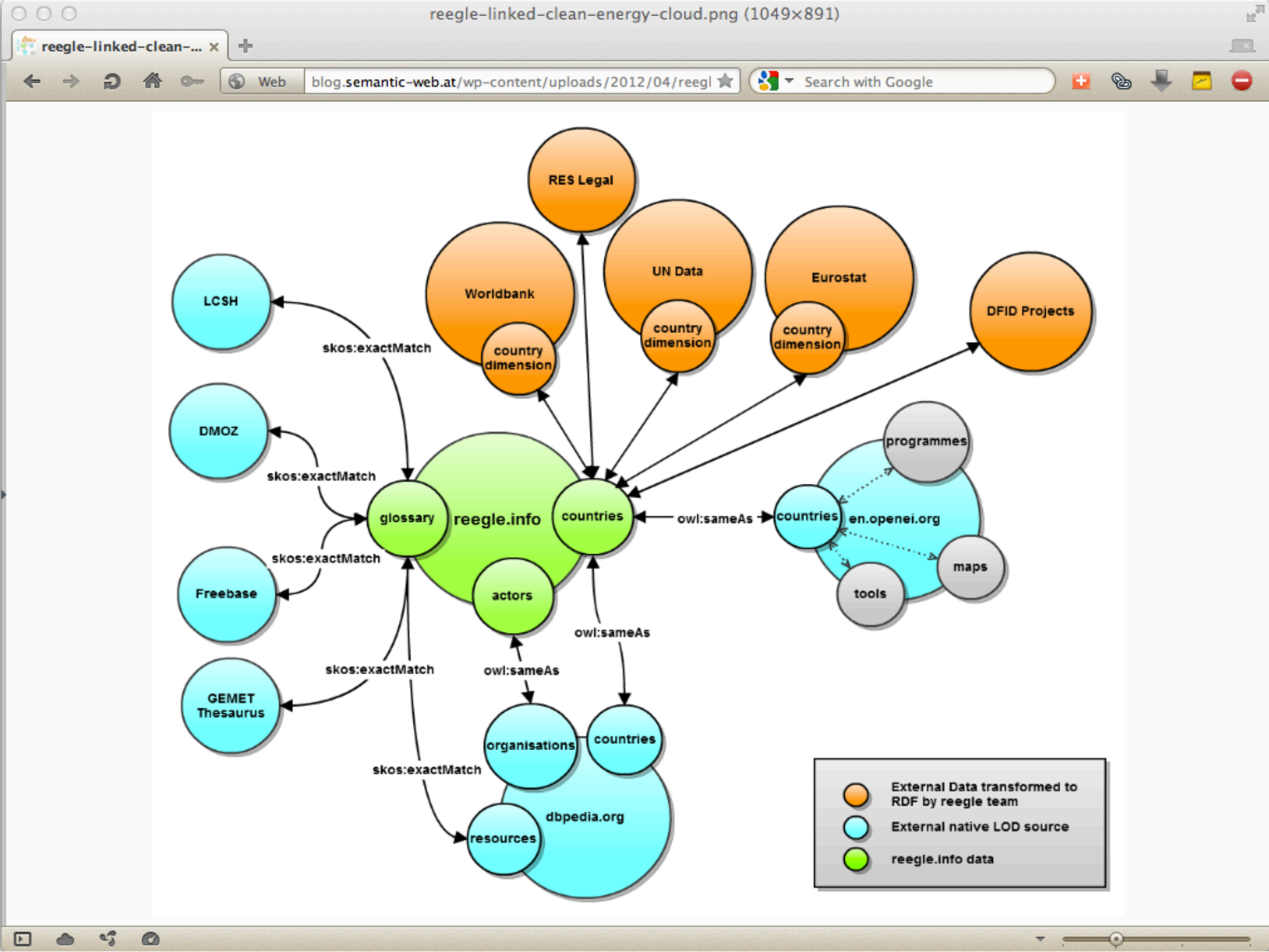
## Final energy consumption

Source: Eurostat Data

## Share of renewable energy in gross final energy consumption

Source: Eurostat Data

## Primary production of renewable energy



So much for the theory...  
Let us see the practice now!