

Information Extraction

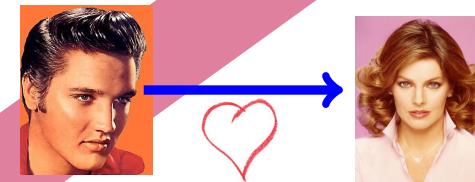
Lecture 5: The Semantic Web

Fabian M. Suchanek

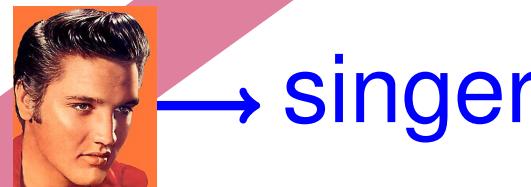
Semantic IE



Fact Extraction



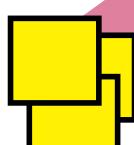
Is-A Extraction



Entity Disambiguation

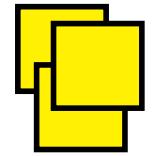


Entity Recognition



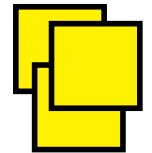
Source Selection and Preparation

Great, and now?

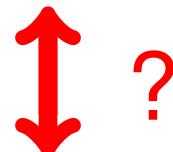


Person	Job
Elvis	singer

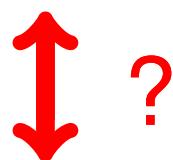
Data formats are incompatible



Person	Job
Elvis	singer



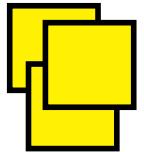
Person	Occupation
Elvis P.	singer



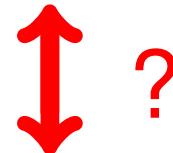
<person>

<occupation>

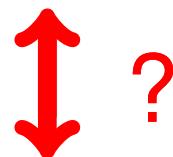
Devices are often incompatible



Person	Job
Elvis	singer



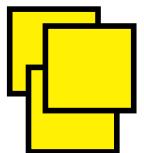
Person	Occupation
Elvis P.	singer



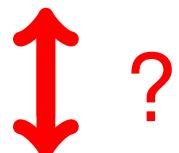
<person>
<occupation>



Companies are often incompatible



Person	Job
Elvis	singer



Person	Occupation
Elvis P.	singer



<person>
<occupation>



Where do we need interaction?

- Booking a flight

Interaction between office computer, flight company, travel agency, shuttle services, hotel, my calendar

- Finding a restaurant

Interaction between mobile device, map service, recommendation service, restaurant reservation

- Buying stuff in a supermarket

Netto App, iPhone, bank account, mail account
Netto homepage

Where do we need interaction?

- Web service composition

Interaction between client and Web services
and Web services themselves

- Intelligent home

Fridge knows my calendar, orders food if
I am planning a dinner

- Intelligent cars

Car knows my schedule, where and when
to get gas, how not to hit other cars, what
are the legal regulations

Where do we need interaction?

- Adding data to a database
 - From XML files, from other databases
- Merging data after company mergers
 - (e.g. Apple buys Microsoft)
 - Different terminology has to be bridged,
 - accounts to be merged
- Merging data in research
 - e.g. biochemical, genetic , pharmaceutical research data

We need an infrastructure

Idea: We need an infrastructure that allows computers to “understand” their data.

This infrastructure shall

- allow machines to process data from others
- ensure interoperability between schemas, devices and organizations
- allow data to describe data
- allow machines to reason on the data
- allow machines to answer semantic queries

This is what the Semantic Web aims at

Def: Semantic Web

The Semantic Web is an evolving extension of the World Wide Web, in which data is made available in one standardized semantic format.

The Semantic Web standards
(and everything we see here)

are developed by the W3C.

See their site

The Semantic Web

- Knowledge Representation
- URLs
- Standard Vocabularies
- Linked Data
- RDFa
- Applications

Def: RDF

RDF (Resource Description Framework)
is a knowledge representation based on

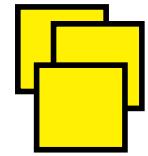
- entities
- classes
- binary relations
- labels

Def: RDF

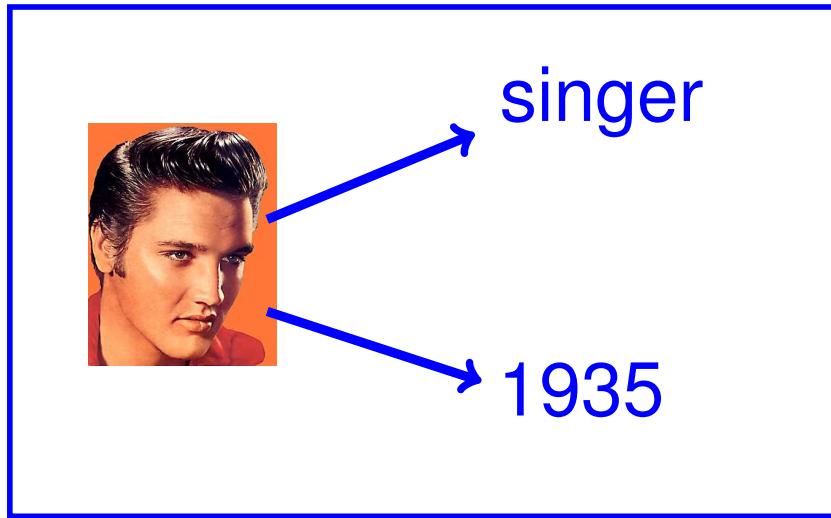
RDF (Resource Description Framework) is a knowledge representation based on

- entities
 - classes
 - binary relations
 - labels
- ... which is coincidentally the representation that we have been using throughout this lecture. See Lectures 2 & 3.

Knowledge Representation in SW

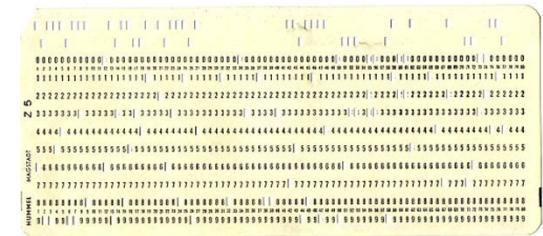


Person	Job	Birth
Elvis	singer	1935

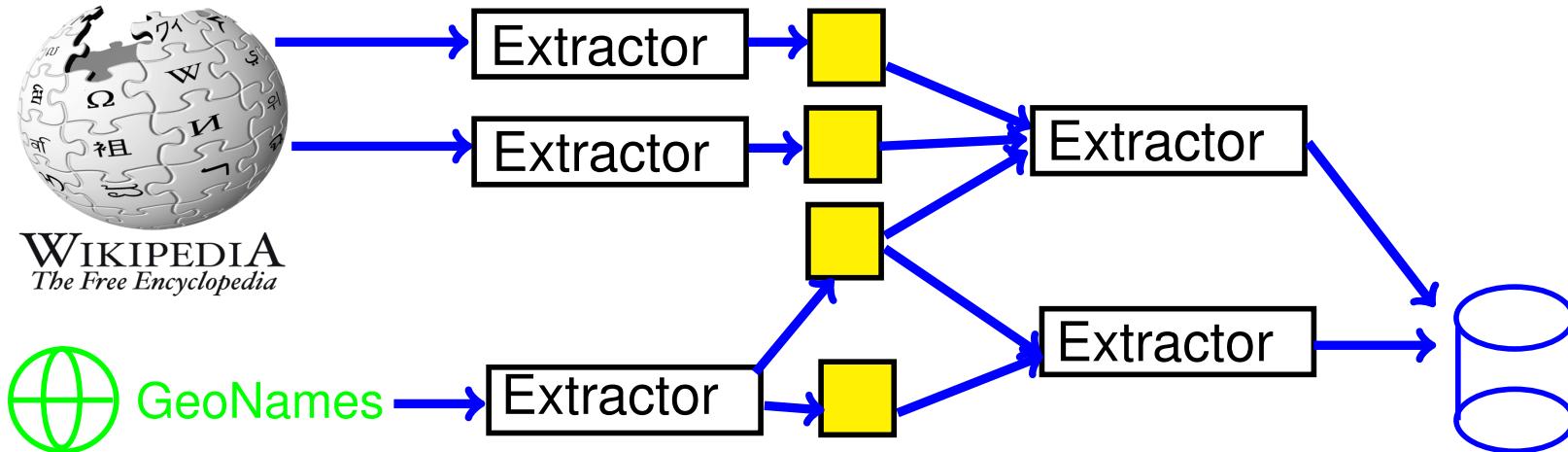


<person>

<occupation>



YAGO is a KB from Wikipedia



10m entities, 100m facts

95% accuracy

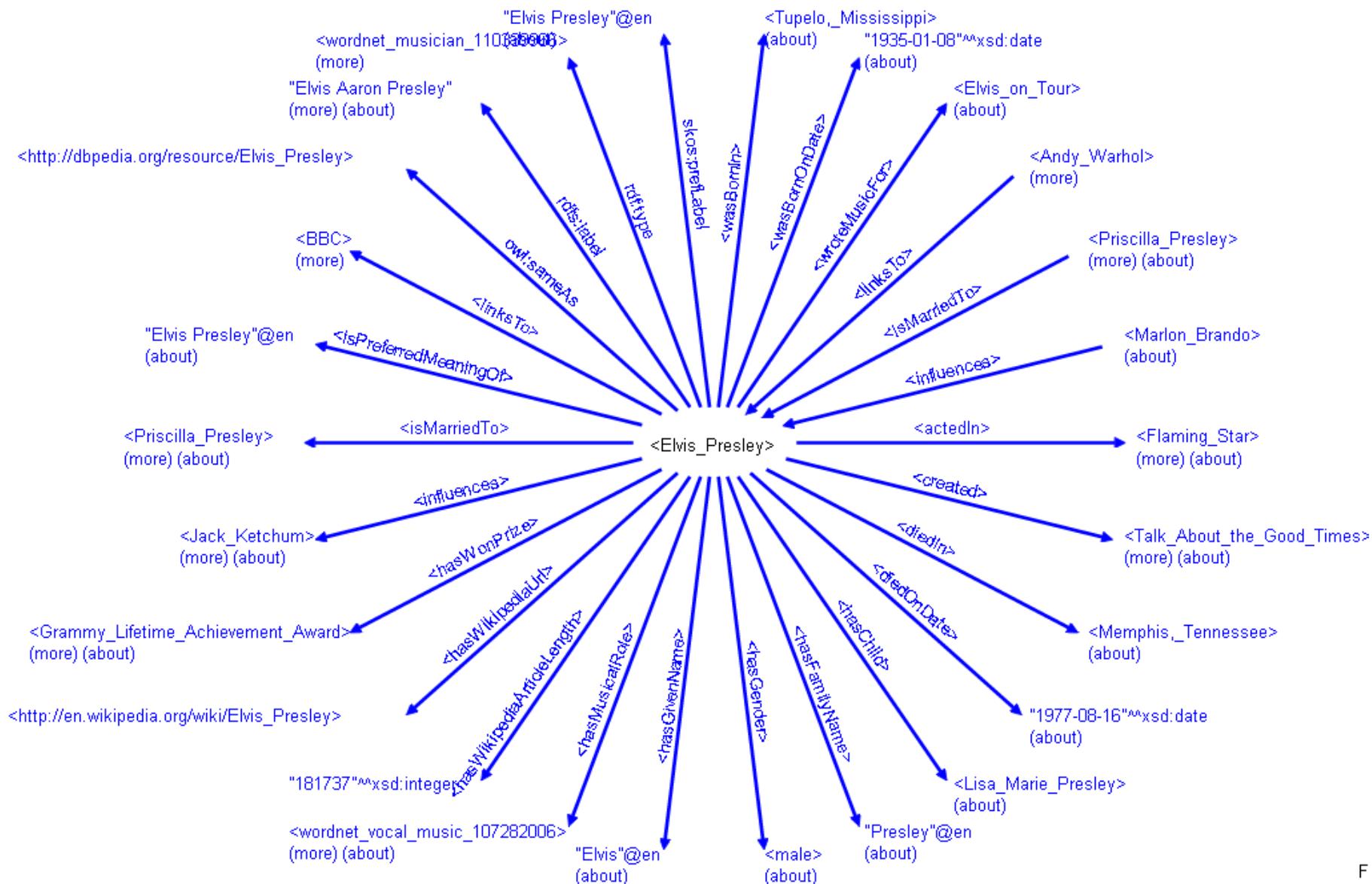
1000+ citations on WWW 2007 paper

used by IBM Watson, Bloomberg, DBpedia,...



<http://yago-knowledge.org>

Example: YAGO about Elvis

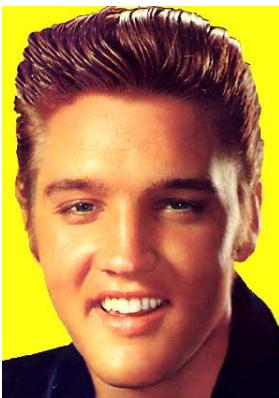


The Semantic Web

- Knowledge Representation
 - URIs
- Standard Vocabularies
- Linked Data
- RDFa
- Applications

Globally identifying entities

KB1



Elvis

KB2



Elvis

KB4



Elvis

KB3



Elvis

>

Def: Namespace

A namespace is a named set of
(so-called local) names.

[Wikipedia/Namespace](#)

namespace: KB1

contains local names: Elvis, Priscilla, Lisa

namespace: KB2

contains local names: Elvis, Michael

Def: Qualified name

A qualified name consists of a namespace name and a local name.

KB1:Elvis

KB1:Priscilla

KB2:Elvis

Examples

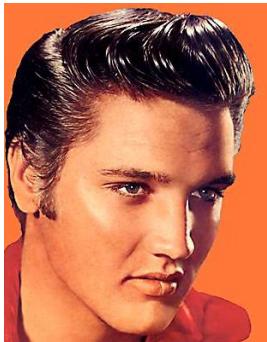
What if KBs have the same name?

ElvisKB



Elvis

ElvisKB



Elvis

ElviPedia



Elvis

ElviPedia



Elvis

Def: URI

A URI (Uniform Resource Identifier) is a string that follows the syntax

<scheme name> : <hierarchical part> [? <query>] [# <fragment>]

Example: URLs are URIs

<http://elvis.com/biography.html#Birth>

Example: URIs

- URLs

`http://elvis.com/biography.html#Birth`

- File identifiers

`file:///c:/users/elvis/tripToMoon.txt`

- FTP

`ftp://elvis@nsa.gov`

- MailTo

`mailto:him@elvis.com?subject=Where%20`

Not all URIs are dereferenceable

A URI per se is just a string. It is not necessarily connected to a Web page.

<http://elvis.is/dead>

Not all URIs are dereferenceable

A URI per se is just a string. It is not necessarily connected to a Web page.

<http://elvis.is/dead>



Error 404

Sorry - this URL could not be found

You probably typed nonsense.

We assign a URI to each KB

ElviPedia: <http://elvis-alive.org/>

ElviPedia': <http://elvipedia.com/>

ElvisKB: <http://elvis.org/kb/>

YAGO: <http://yago-knowledge.org/>

Each of them forms a namespace.

URIs form name spaces

URI of ElviPedia:

<http://elvis.org/kb/>

Name in that namespace:

[Priscilla](#)

Qualified name:

<http://elvis.org/kb/Priscilla>

[\(again a URI\)](#)

Namespaces

<http://elvis.is/king/of/sing>

World-wide unique
mapping to domain
owner

in the responsibility
of the domain owner

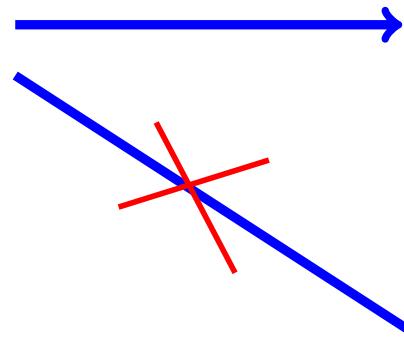
=> There should be no overlap

- a company can create URIs to identify its products
- an organization can assign sub-domains and each sub-domain can define URIs
- individual people can create URIs from their homepage
- people can create URIs from any URL for which they have exclusive rights to create URIs

URIs are never ambiguous

A URI always refers to one entity,
never to more entities.

<http://kb.org/Priscilla>



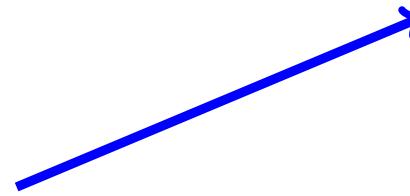
URIs can be synonymous

Two URIs can refer to the same entity.

<http://kb.org/Priscilla>



<http://onto.org/Priscilla>



Def: Namespace prefix&CURIE

A namespace prefix is an abbreviation for the first part of a URI. A prefix with a local name yields a CURIE (also:Qname).

@prefix y: <<http://yago-knowledge.org/>>

y:Elvis



CURIE (Compact URI)
or Qname (qualified name)

=

<http://yago-knowledge.org/Elvis>

Def: Turtle

Turtle (Terse RDF Triple Language) is a syntax for writing RDF facts.

```
@prefix y: <http://yago-knowledge.org/>  
y:Elvis y:loves y:Priscilla .
```

Turtle

Turtle can declare namespace prefixes:

`@prefix P: <URI>`

A simple Turtle fact has the form

`URI|Curie URI|Curie URI|Curie|literal .`

`@prefix y: <http://yago-knowledge.org/>`

`y:Elvis y:loves y:Priscilla .`

`y:Priscilla y:loves <http://kb.org/cake>.`

`y:Elvis y:isCalled “The King” .`

Turtle

Each line is a triple of 3 URIs. Each URI identifies an entity.

The URI in the middle identifies a relation entity.

Each URI can be given explicitly or as a Curie.

see Example

```
@prefix y: <http://yago-knowledge.org/>
y:Elvis y:loves y:Priscilla .
y:Priscilla y:loves <http://kb.org/cake>.
y:Elvis y:isCalled "The King".
```

The object can also be a literal (string).

Summary: URIs & Turtle

- URIs are identifiers, often look like URLs

`http://sing.it/elvis`

- Curies abbreviate URIs

`y:Elvis`

- Turtle is a syntax for RDF facts

`<http://kb.org/Elvis> y:sings y:AllShookUp .`

The Semantic Web

- Knowledge Representation
- URIs
- Standard Vocabularies
- Linked Data
- RDFa
- Applications

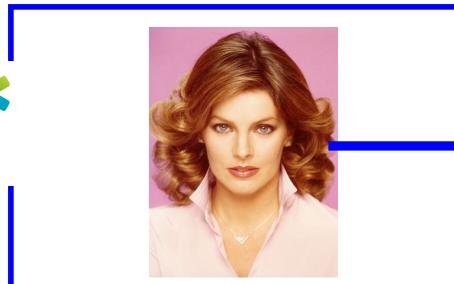
Cross-referencing

A KB can make statements about entities defined in other KBs.

@prefix y: <<http://yago-knowledge.org/>>

@prefix d: <<http://dbpedia.org/>>

y:Priscilla y:loves d:MikeStone .



Standard vocabulary

A KB can define vocabulary that is used by other KBs.



y:Singer

- subclasses
- superclasses
- label
- ...

BohlenKB

y:Singer



type



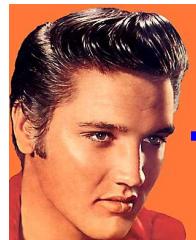
Def: RDF Vocabulary

RDF is also a vocabulary (=KB) that defines basic notions of KB representation.

@prefix rdf: <<http://www.w3.org/.../rdf/>>
rdf:type, rdf:Property, rdf:Statement ...

see this KB

We can use notions from this KB:



→ **rdf:type** → y:Singer

Def: RDFS Vocabulary

RDFS is a vocabulary (=KB) that defines basic notions for class representation.

@prefix rdfs: <<http://www.w3.org/.../rdfs/>>

rdfs:label, rdfs:subClassOf,

rdfs:domain, rdfs:range,

see this KB

rdfs:Class, rdfs:Resource

← “entity”

Example



Sharing vocabularies

Shared vocabularies mean

- shared work in defining entities
- inter-operability of KBs

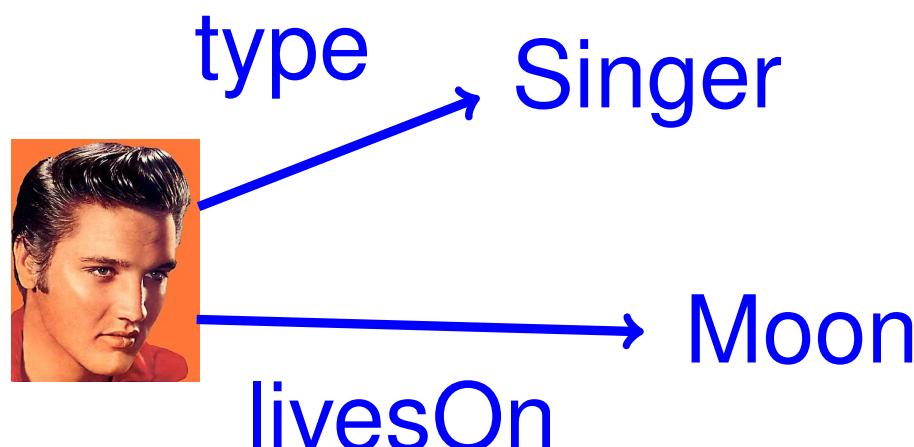
Some shared vocabularies have become standards on the Semantic Web. They have a standard namespace prefix. However, nothing prescribes the use of these vocabularies or prefixes.

```
@prefix rdf: <http://really.dumb.fellow.org/>  
rdf:TheKing rdf:type rdf:monarch .
```

Task: Turtle & RDF

Write the following facts in Turtle,
using RDF vocabulary where possible.

URI of KB: <<http://whatyoushouldknow.org/>>



Start with

@prefix rdf: <<http://www.w3.org/1999/02/22-rdf-syntax-ns>>

More vocabularies

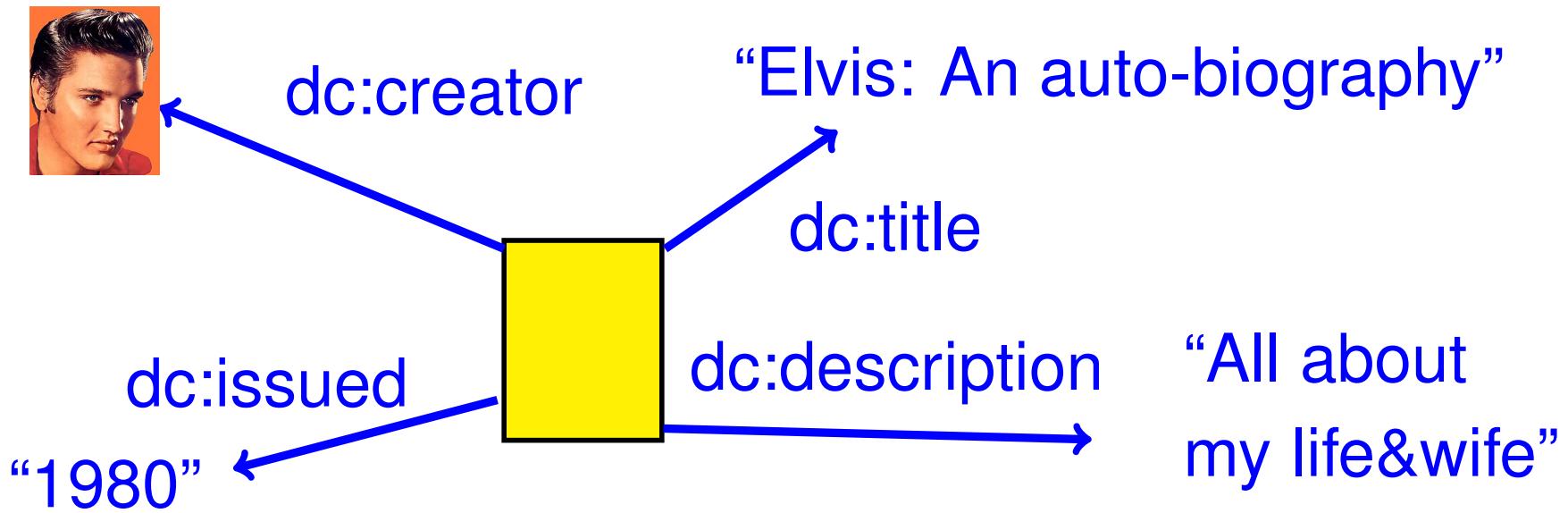
- Dublin Core (for describing documents)
<http://purl.org/dc/elements/1.1/>
- Schema.org (for Web content)
<http://schema.org>
- Creative Commons (types of licences)
<http://creativecommons.org/ns#>
- Facebook Open Graph (for Web content)
<http://ogp.me/>

Dublin Core

Dublin Core is a vocabulary (=KB) of terms (=entities) for describing documents.

dc:creator, dc:title, dc:format,
dc:MediaType, dc:language...

see this KB



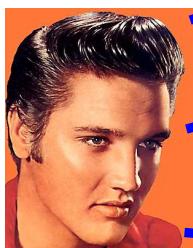
Schema.org

Schema.org is a KB by Google, Yahoo & Microsoft for describing Web content.

s:Person, s:Movie, s:address,

s:follows, s:worksFor, ...

see this KB



s:birthDate → “1935-01-08”

s:worksFor → NSA

s:children →



Open Graph

Open Graph is a KB by Facebook for describing Web content.

[video:actor](#), [video:duration](#),
[book:author](#), [profile:gender](#), ...

[see this KB](#)

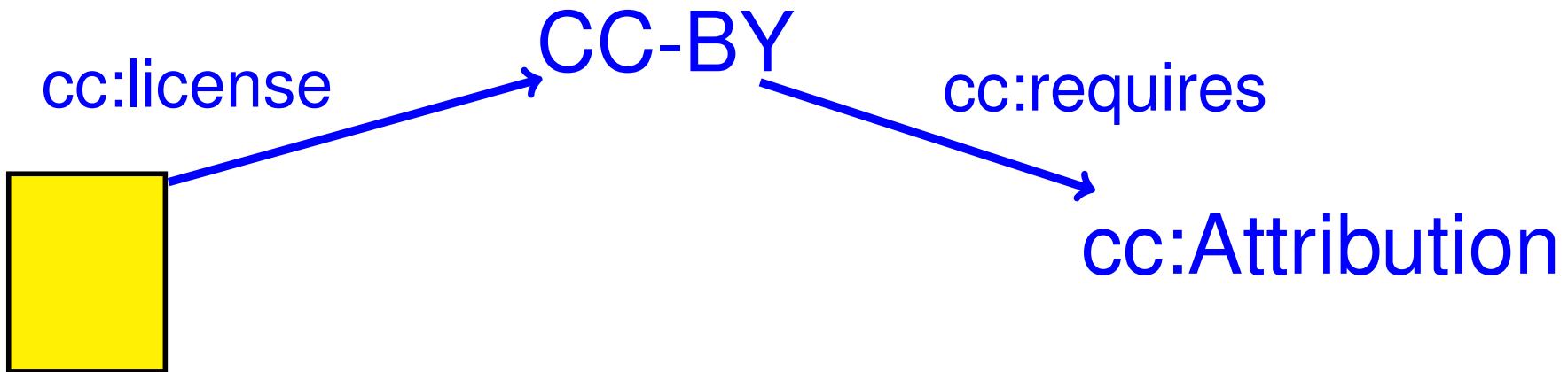
Creative Commons

Creative Commons provides their vocabulary in RDF.

cc:license, cc:attributionName,

cc:permits, cc:Reproduction, ...

see this KB



Summary: Standard Vocabulary

- Vocabulary can be re-used across KBs
- This brings advantages such as less design effort, interoperability
- Some standard vocabularies have evolved

RDF, RDFS, schema.org

The Semantic Web

- Knowledge Representation
- URIs
- Standard Vocabularies
- Linked Data
- RDFa
- Applications

Def: Dereferenceable/Cool URI

A dereferenceable URI (also: Cool URI) is a URI that returns an RDF snippet if accessed on the Internet by an RDF client.

[W3C/Cool URIs](#)

<http://elvispedia.org/Elvis>



```
@prefix e: <http://elvispedia.org/>
```

```
e:Elvis e:sings e:aSong .
```

```
e:Elvis e:born e:Tupelo .
```

```
...
```

For this to work, the data has to be stored at the domain of the URI

Cool URIs can be traversed

```
@prefix e: <http://elvispedia.org/>
```

```
@prefix e: <http://dbpedia.org/>
```

```
e:Priscilla e:loves d:MikeStone
```

```
...
```



<http://dbpedia.org/MikeStone>



```
@prefix e: <http://dbpedia.org/>
```

```
@prefix rdf: <http://w3c.org/.../rdf>
```

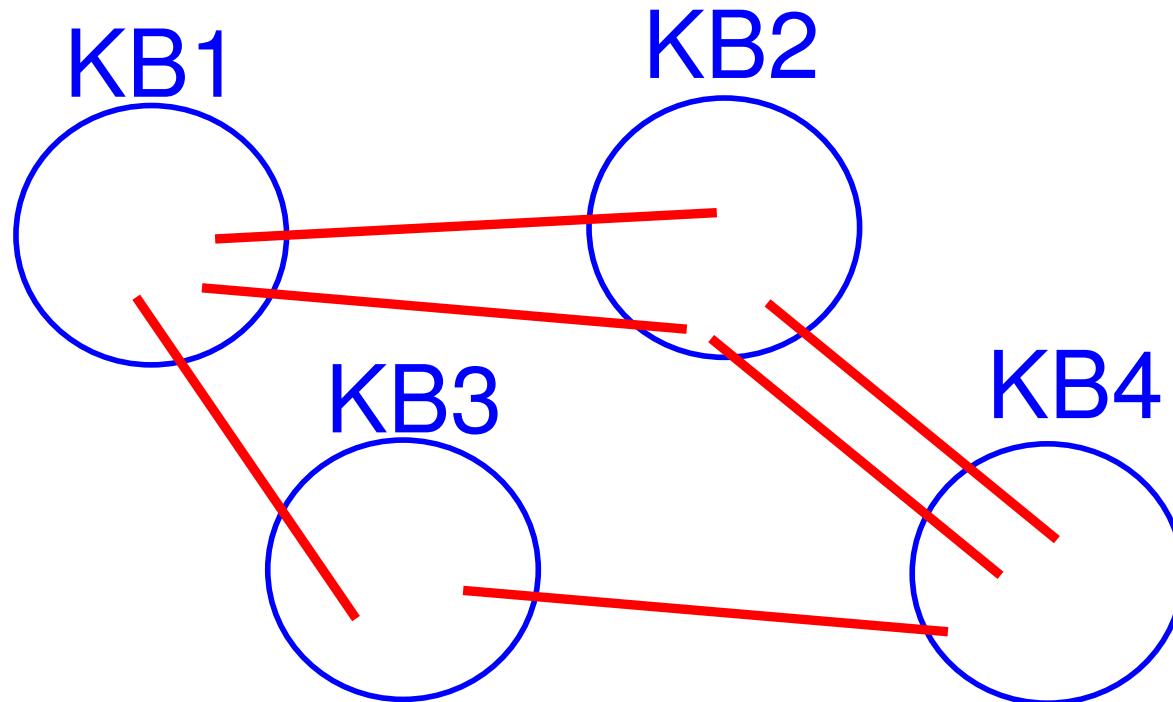
```
d:MikeStone rdf:type d:KarateClown
```

```
d:MikeStone d:livesIn d:LosAngeles
```

```
...
```



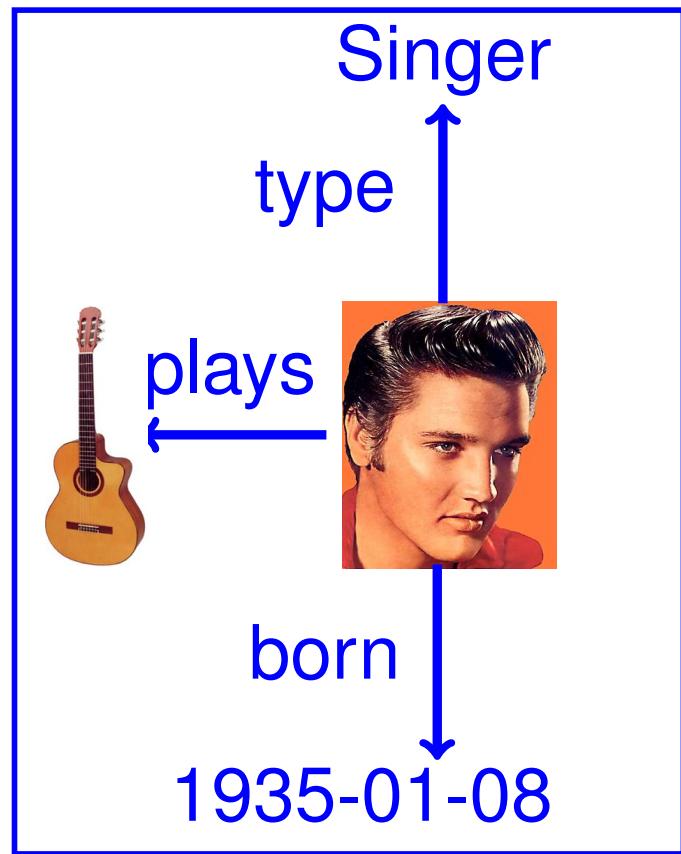
Cool URIs can be traversed



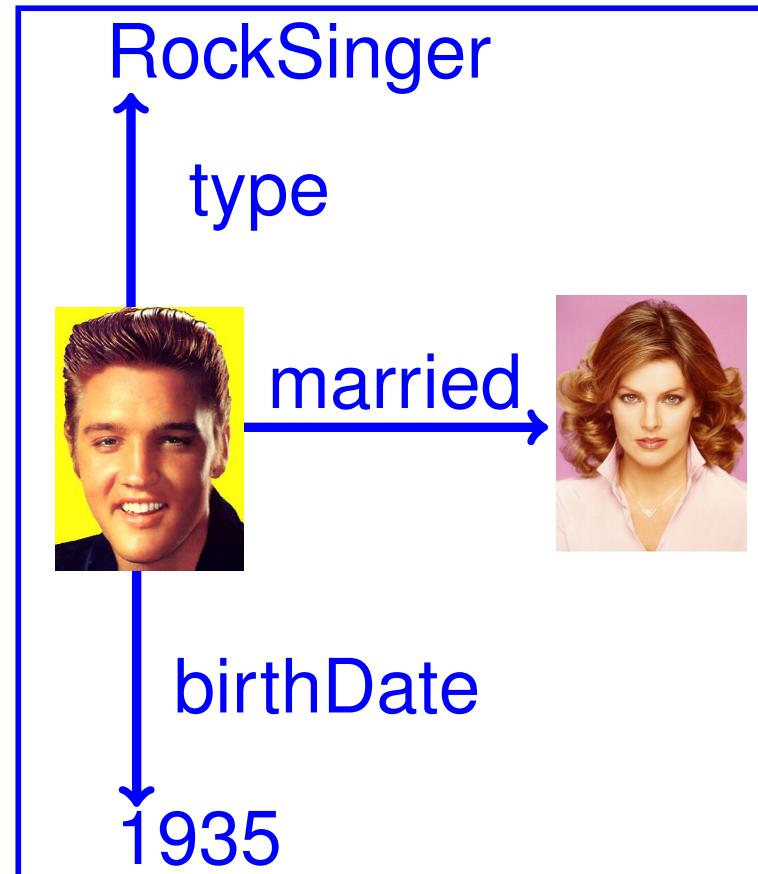
The standard vocabularies (RDF, RDFS, schema.org, Creative Commons, etc.) all provide dereferenceable URIs, as do many KBs.

[try it out](#)

Everybody can create KBs & URIs



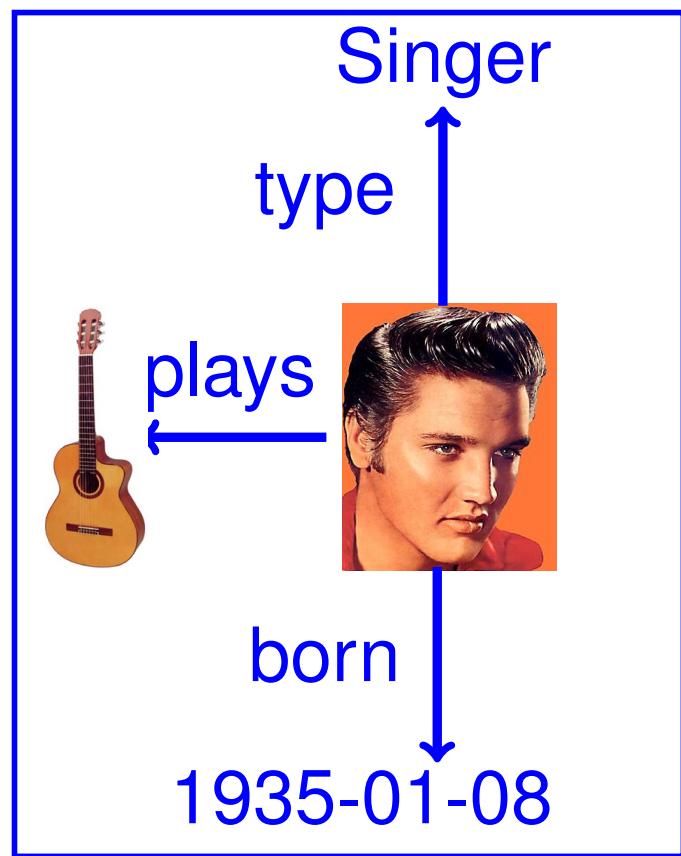
YAGO



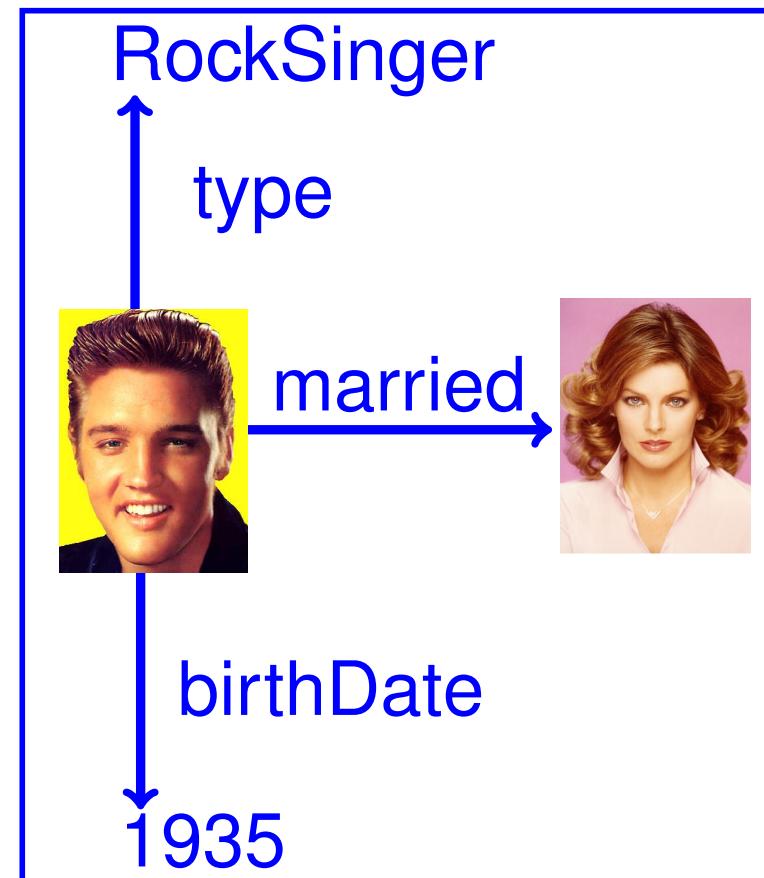
ElvisPedia

Distinct URIs => No use

Who is the spouse of the guitar player?



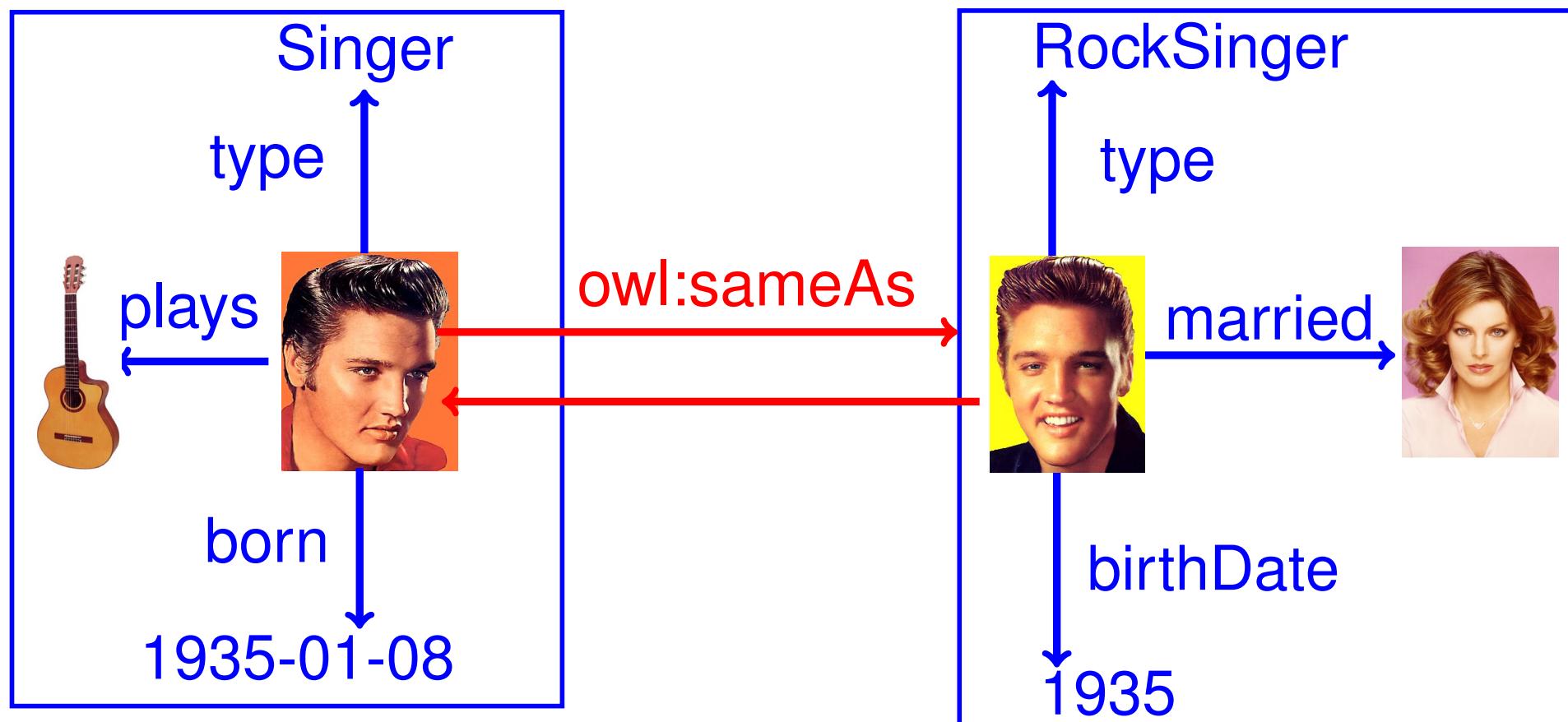
YAGO



ElvisPedia

owl:sameAs links equivalent URIs

OWL is a standard vocabulary that provides (inter alia) owl:sameAs.



YAGO

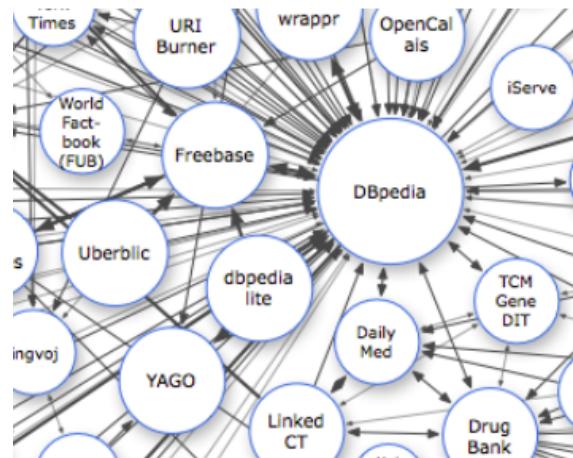
See example

It is also possible to link the classes and relations

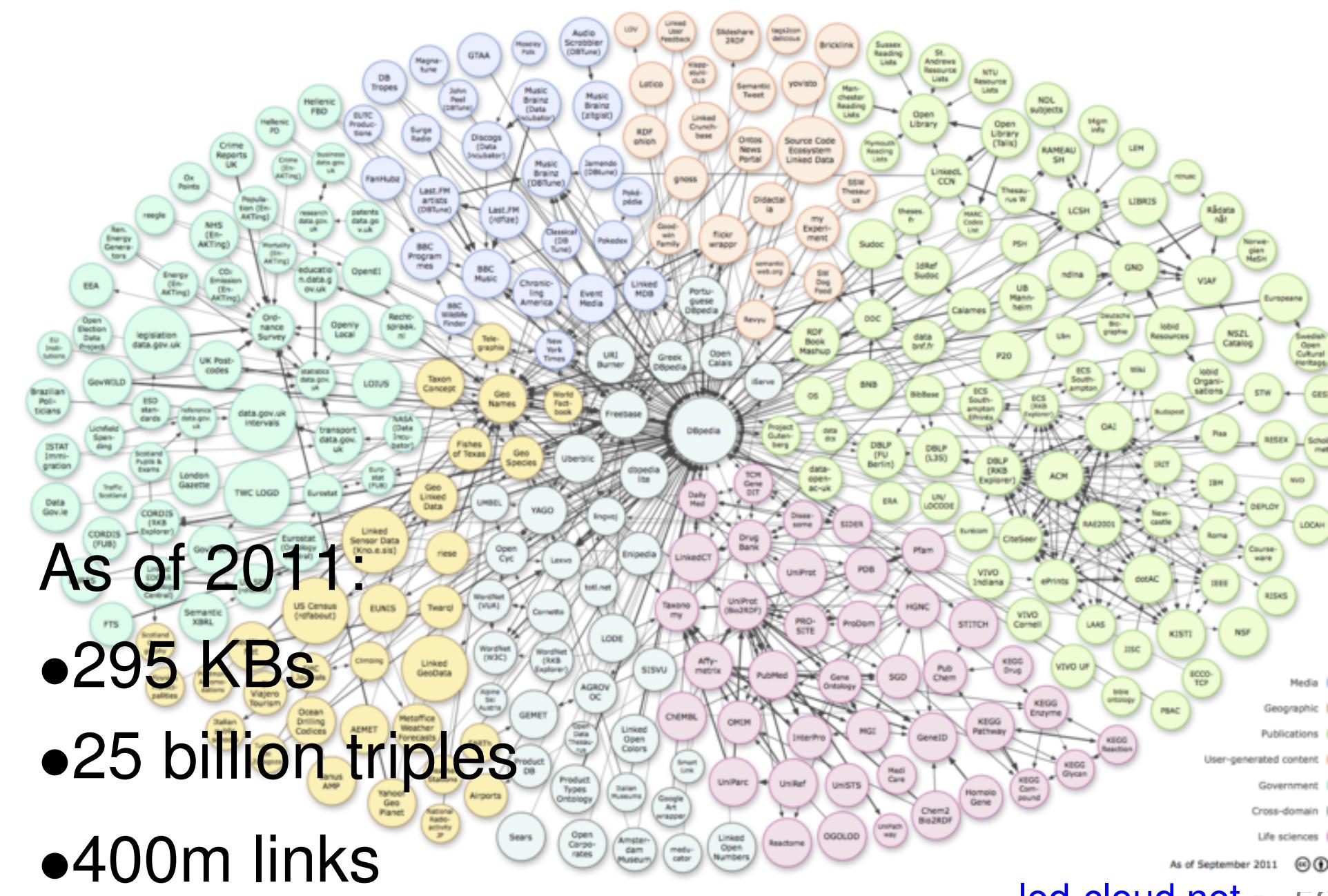
ElvisPedia

Def: Linked Open Data Project

The goal of W3C's Linked Open Data Project is to publish and link open KBs.



The Linked Open Data Project



As of 2011:

- 295 KBs
- 25 billion triples
- 400m links

The Linked Open Data Project

Existing KBs include

- US census data
 - BBC music database
 - Gene ontologies
 - DBpedia general knowledge, + YAGO, + Cyc etc.
 - UK government data
 - geographical data in abundance
 - national library catalogs (USA, Germany etc.)
 - publications (DBLP)
 - commercial products
 - all Pokemons
- ...and many more

DataHub lists public KBS

[Datasets](#)[Groups](#)[About](#)[Home](#) / Datasets [Add Dataset](#)[▼ Groups](#)[Clear All](#)

Senegal (548)

Canada (520)

Linking Open Data C... (337)

bioportal (244)

Economics Datasets (159)

OpenSpending (155)

Linguistic Resource... (96)

International Food ... (91)

Bibliographic Data (90)

International Budge... (86)

[Show More Groups](#)**6,548 datasets found**Order by: [Relevance](#)**Begroting Gemeente Rotterdam 2013 Lasten***This dataset has no description*[application/vnd.ms-excel](#) [CSV](#)**Hotline SOS Démocratie**

Liste des appels reçus par la Hotline SOS Démocratie/Jokkolabs, avec les informations concernant les réponses effectuées par les volontaires.

[CSV](#)

LOD Stats shows KB Statistics

URI	Overall	Datasets
http://www.w3.org/1999/02/22-rdf-syntax-ns	278,646,233	671
http://www.loc.gov/mads/rdf/v1	130,050,422	4
http://purl.org/dc/terms/	127,880,537	225
http://d-nb.info/standards/elementset/gnd	91,503,251	1
http://purl.org/dc/terms	60,043,900	153
http://www.w3.org/2000/01/rdf-schema	58,329,356	533
http://id.loc.gov/ontologies/RecordInfo	50,627,982	2
http://www.w3.org/2004/02/skos/core	45,773,412	174
http://purl.org/linked-data/sdmx/2009/dimension	44,216,750	11
http://worldbank.270a.info/property/	43,930,812	2

Summary: Linked Data

The Linked Data project aims to make KBs machine-accessible though

- Public RDF KBs on the Internet
- Dereferenceable/Cool URIs
- Links between the KBs



The Semantic Web

- Knowledge Representation
- URIs
- Standard Vocabularies
- Linked Data
- RDFa
- Applications

How do we get HTML pages to RDF?

Paris fête le 14 juillet

SOMMAIRE

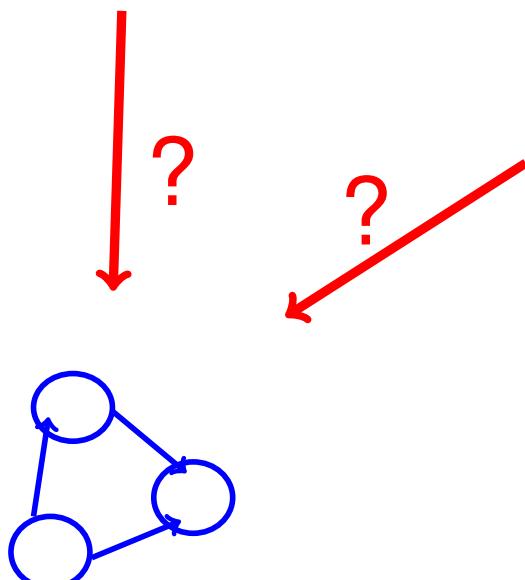
BALS DANS LES CASERNES DE POMPIERS

DÉFILÉ MILITAIRE SUR L'AVENUE DES CHAMPS-ELYSÉES

FEU D'ARTIFICE DU 14 JUILLET

LES FRANCIENS ACCUEILLENT LEURS SOLDATS

LES BONS PLANS DE LA JOURNÉE DE FÊTE NATIONALE



Homepage

Gerhard Weikum

Max-Planck-Institut für Informatik
Department 5: Databases and Information Systems
Building E1.4, Room 402
Campus E1.4
66123 Saarbrücken
Germany

Email: weikum@mpi-inf.mpg.de
Phone: +49 681 9325 500
Fax: +49 681 9325 599

Def: RDFa

RDFa is a syntax to annotate HTML pages
with RDF.

RDFa Lite

```
<div>
    Martin Thunderbird<br>
    Researcher in Rock'N'Roll Music of 1935-1977<br>
    Memphis, Tennessee
</div>
```

Defining the vocabulary

All local names in an HTML node live in the namespace given by 'vocab'.

```
<div vocab="http://schema.org/">  
    Martin Thunderbird<br>  
    Researcher in Rock'N'Roll Music of 1935-1977<br>  
    Memphis, Tennessee  
</div>
```

Defining the subject

All properties in the HTML node take as subject the entity given by 'resource'.

```
<div vocab="http://schema.org/"
```

```
  resource="http://martin.org/me">
```

```
    Martin Thunderbird<br>
```

```
    Researcher in Rock'N'Roll Music of 1935-1977<br>
```

```
    Memphis, Tennessee
```

```
</div>
```

Defining a type

The type of the subject is given by 'typeOf'.

```
<div vocab="http://schema.org/"  
resource="http://martin.org/me" typeOf="Person">  
    Martin Thunderbird<br>  
    Researcher in Rock'N'Roll Music of 1935-1977<br>  
    Memphis, Tennessee  
</div>  
  
<http://martin.org/me> rdf:type <http://schema.org/Person> .
```

Defining a fact with a literal object

A tag with 'property' defines a fact between subject and that tag's text value.

```
<div vocab="http://schema.org/"  
      resource="http://martin.org/me" typeOf="Person">  
    <span property="name">Martin</span><br>  
    Researcher in Rock'N'Roll Music of 1935-1977<br>  
    Memphis, Tennessee  
</div>  
  
<http://martin.org/me> <http://schema.org/name> "Martin" .
```

Defining a fact with an entity object

A tag with 'property' and 'resource'
defines a fact between subject and URI.

```
<div vocab="http://schema.org/"  
      resource="http://martin.org/me" typeOf="Person">  
    <span property="name">Martin Th</span><br>  
    <span property="homeLocation" resource=  
          "http://yago.org/Memphis">Memphis</span>  
</div>  
  
<http://martin.org/me> <http://schema.org/homeLocation>  
  <http://yago.org/Memphis> .
```

Nested facts

A tag with 'property' and 'typeof'
creates a new entity.

...

```
<span property="address" typeof="postalAddress">
  <span property=streetAddress>42 Elvis Rd</span>
  <span property=postalCode>12345</span>
</span>
```

```
<http://martin.org/me> <http://schema.org/address> ADR .
ADR rdf:type <http://schema.org/postalAddress> .
ADR <http://schema.org/streetAddress> "42 Elvis Rd" .
ADR <http://schema.org/postalCode> "12345" .
```

RDFa friends/foes

Standards that are similar to RDFa are

- Microformats
- Microdata

RDFa embeds facts into HTML

Advantages:

- Grass root appeal
(everybody can start annotating pages)
- No data duplication
(all data in one file)
- Publisher independence
(everybody can use his own attributes)

RDFa Example

Kontakt

[Fabian M. Suchanek](#)

[Max-Planck Institut für Informatik](#)

Otto Hahn Research Group "[Ontologies](#)", office 414

Campus E1.4

66123 Saarbrücken

Germany

E-Mail: Vorname.Nachname.name

URL: <http://suchanek.name>



RDFa Validator

Try it out



```
@prefix og: <http://ogp.me/ns#> .  
@prefix rdfa: <http://www.w3.org/ns/rdfa#> .  
@prefix schema: <http://schema.org/> .  
  
<http://suchanek.name/about/index\_e.php> rdfa:usesVocabulary schema: .  
  
<http://suchanek.name/fabian> a schema:Person;  
  og:description "leader of the Otto Hahn Research Group";  
  og:image <http://suchanek.name/about/fabian.jpg>;  
  og:title "Fabian M. Suchanek";  
  schema:address [ a schema:PostalAddress;  
    schema:addressCountry <http://yago-knowledge.org/resource/Germany>;  
    schema:addressLocality "Saarbrücken";  
    schema:postalCode "66123";  
    schema:streetAddress "Campus E1.4" ];  
  schema:image <http://suchanek.name/about/fabian.jpg>;  
  schema:jobTitle "leader of the Otto Hahn Research Group";  
  schema:name "Fabian M. Suchanek";  
  schema:url <http://suchanek.name>;  
  schema:worksFor <http://mpii.de> .
```

The Semantic Web

- Knowledge Representation
- URIs
- Standard Vocabularies
- Linked Data
- OWL
- RDFa
- Applications

Search engines scrape RDFa

[Sony Cyber-shot DSC-T100 review - Digital Camera - Trusted ...](#)

[www.trustedreviews.com](#) › Cameras › Digital Camera ▾

 Rating: 8/10 - Review by Cliff Smith

Feb 5, 2011 - Sony Cyber-shot **DSC-T100** Digital Camera review: Is Sony's flagship compact camera worth the asking price?

Search engines scrape RDFa

[Sony Cyber-shot DSC-T100 review - Digital Camera - Trusted ...](#)

[www.trustedreviews.com](#) › Cameras › Digital Camera ▾

★★★★★ Rating: 8/10 - Review by Cliff Smith

Feb 5, 2011 - Sony Cyber-shot **DSC-T100** Digital Camera review: Is Sony's flagship compact camera worth the asking price?

RDFa embedded in Web page:

@prefix v: <<http://rdf.data-vocabulary.org/#>> .

[] a v:Review;

v:dtreviewed "2011-02-05"@en;

v:itemreviewed "Sony Cyber-shot DSC-T100 review"@en;

v:rating [v:best "10"@en;

v:rating "8"@en;

v:worst "1"@en];

v:reviewer "Cliff Smith"@en .

Search engines read licenses

Google Lisa Marie Presley

Web **Images** Maps Shopping More ▾ Search tools

Size ▾ Color ▾ Type ▾ Time ▾ **labeled for reuse ▾** More tools ▾ Clear

not filtered by license

labeled for reuse

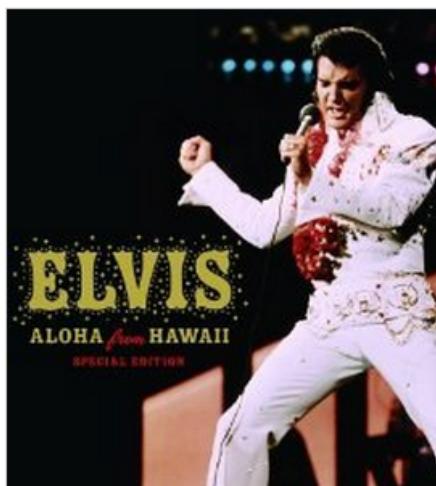
labeled for commercial reuse

labeled for reuse with modification

labeled for commercial reuse with modification

Elvis 20

Facebook Like Button uses RDFa



Elvis: Aloha from Hawaii

(1973)

TV Special - 87 min - Documentary | Music

More at
IMDbPro »



Your rating: ★★★★★★★★★★ 7,7 /10

Ratings: 7,7/10 from 690 users

Reviews: 30 user | 3 critic

A 1973 concert by Elvis Presley taped at the Convention Center in Honolulu, Hawaii. This was the first program to ever be beamed around the world by satellite.

Quick Links

[Full Cast and Crew](#)

[Trivia](#)

[Quotes](#)

[Awards](#)

[Message Board](#)

[Plot Summary](#)

[Parents Guide](#)

[User Reviews](#)

[Release Dates](#)

[Company Credits](#)

[Explore More](#)

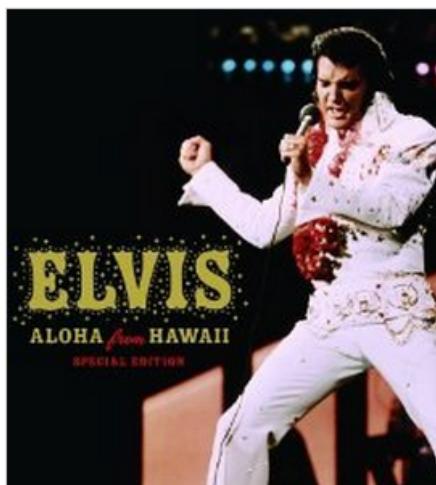


Gefällt mir



52 Personen gefällt das.

Facebook Like Button uses RDFa



Elvis: Aloha from Hawaii

(1973)

TV Special - 87 min - Documentary | Music

More at
IMDbPro »



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[Parents Guide](#)

[User Reviews](#)

[Release Dates](#)

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[Explore More](#)



Gefällt mir



52 Personen gefällt das.

@prefix og: <<http://ogp.me/ns#>> .

<http://www.imdb.com/title/tt0167923/?ref_=fn_al_tt_2> og:description

“A 1973 concert by Elvis Presley taped in Honolulu, Hawaii”;

og:site_name “IMDb”;

og:title “Elvis: Aloha from Hawaii (1973)”;

og:type “video.tv_show”;

og:url “<http://www.imdb.com/title/tt0167923/>”;

ns1:fbmlapp_id “115109575169727” .

Facebook public pages have RDFa



E-Mail oder Telefon

Passwort

Anmelden

Angemeldet bleiben

Passwort vergessen?



@prefix og: <<http://ogp.me/ns#>> .

<<https://www.facebook.com/elvis>> og:description "Elvis Aaron Presley"@en
og:image "<https://fbcdn-profile-a.akamaihd.net/.../elvis.jpg>"@en;
og:site_name "Facebook"@en;
og:title "ELVIS PRESLEY"@en;
og:type "band"@en;
og:url "<https://www.facebook.com/elvis>"@en .

UK and US govts publish RDF



DATA.GOV.UK^(beta)

Opening up Government

Home

Data

Participate

Data requests

Apps

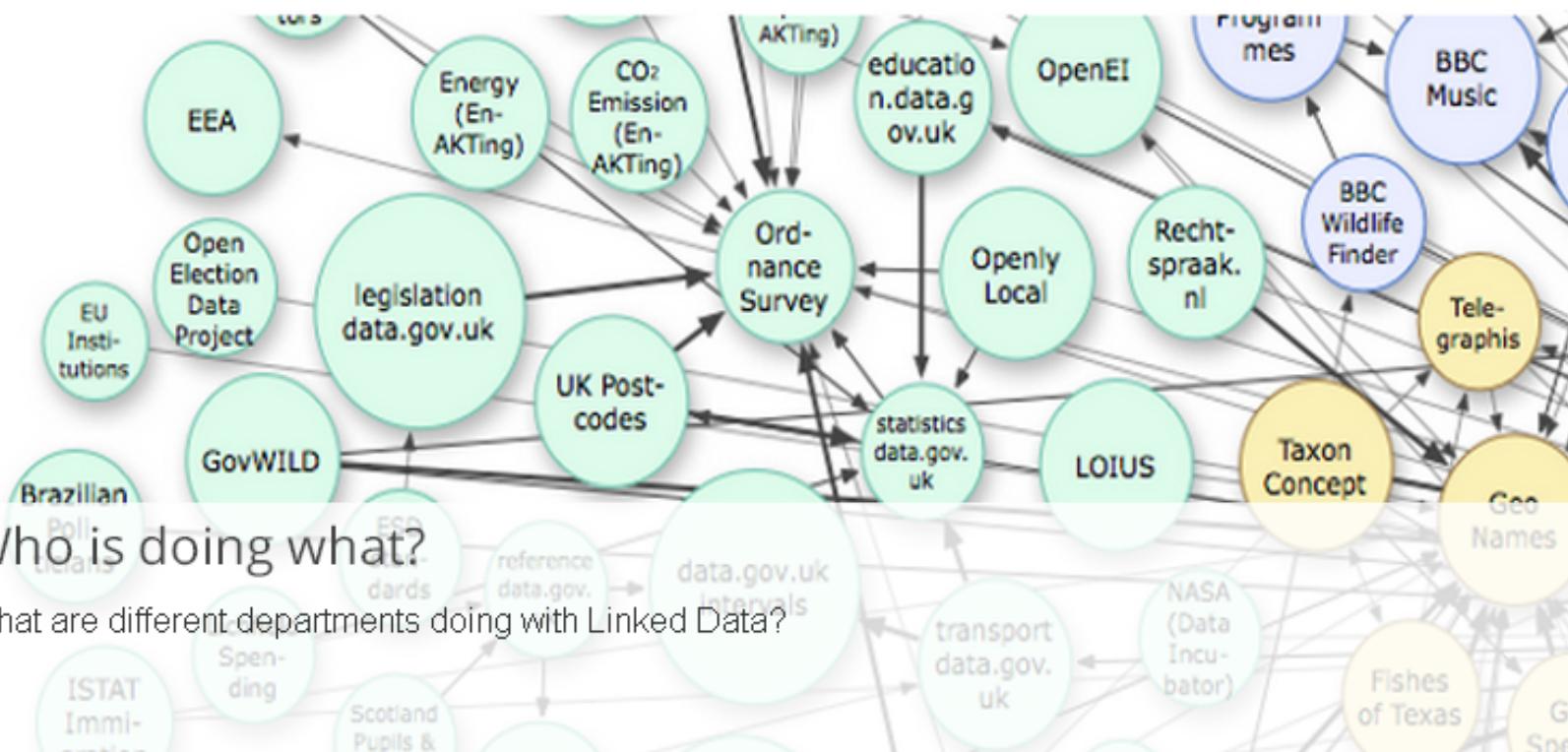
Location

Linked

Linked data

1

2



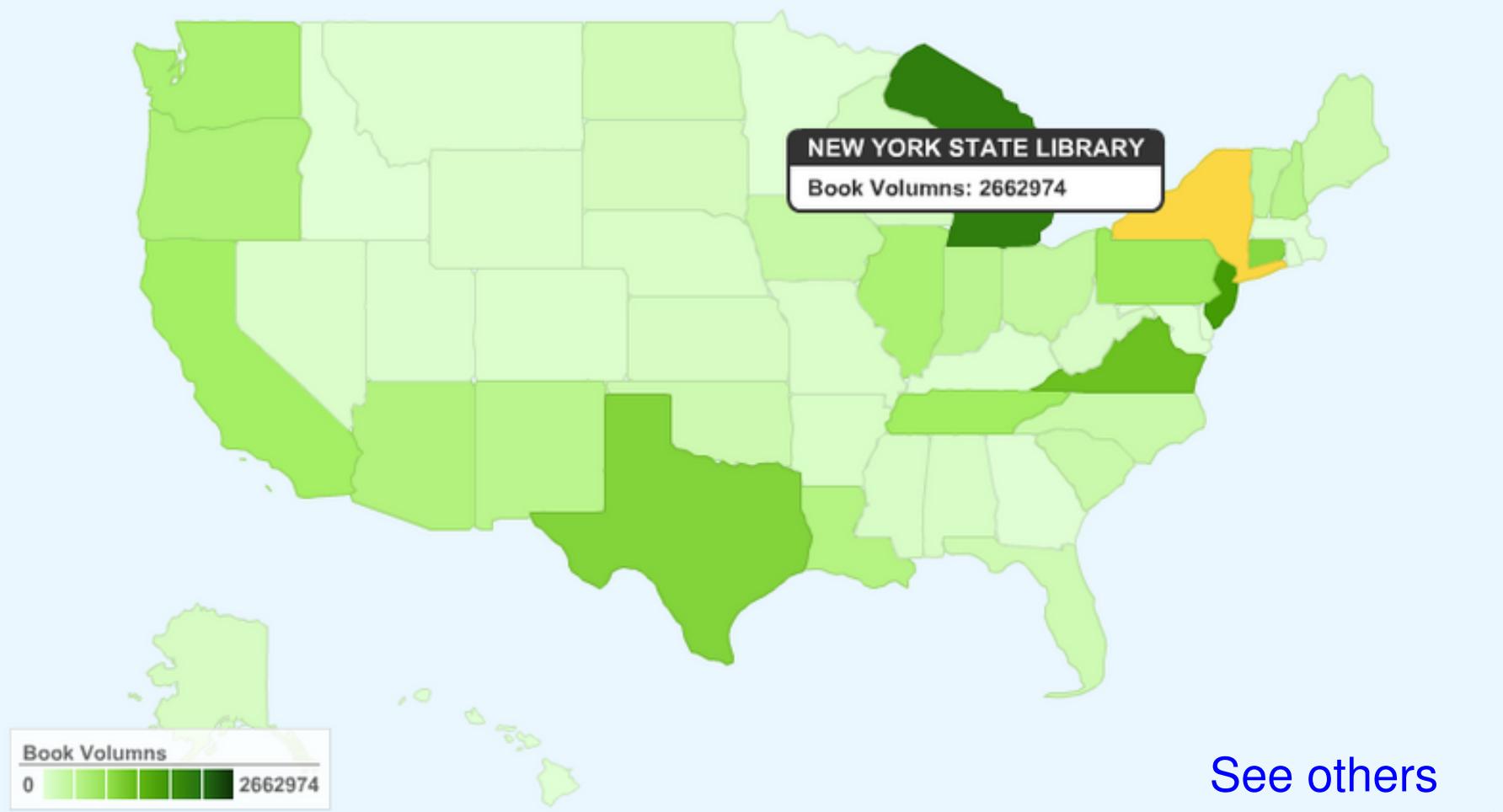
Example of public data use



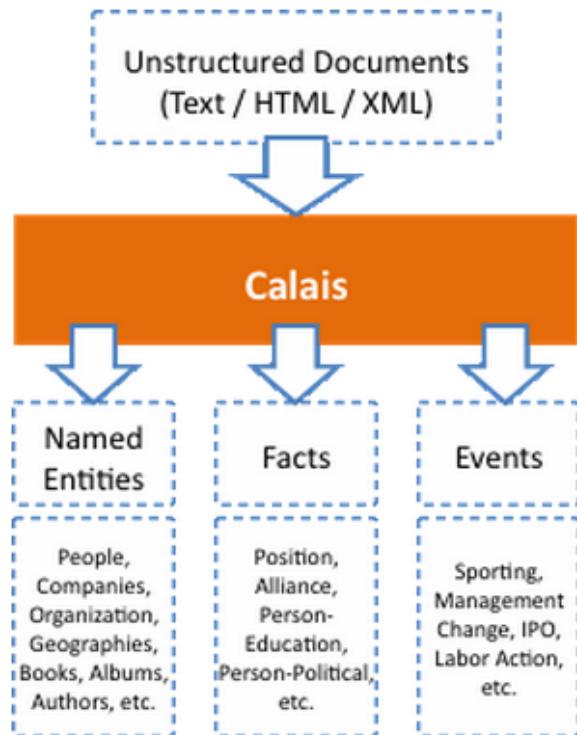
How Knowledgeable is Your State?



library books / # inhabitants, per state

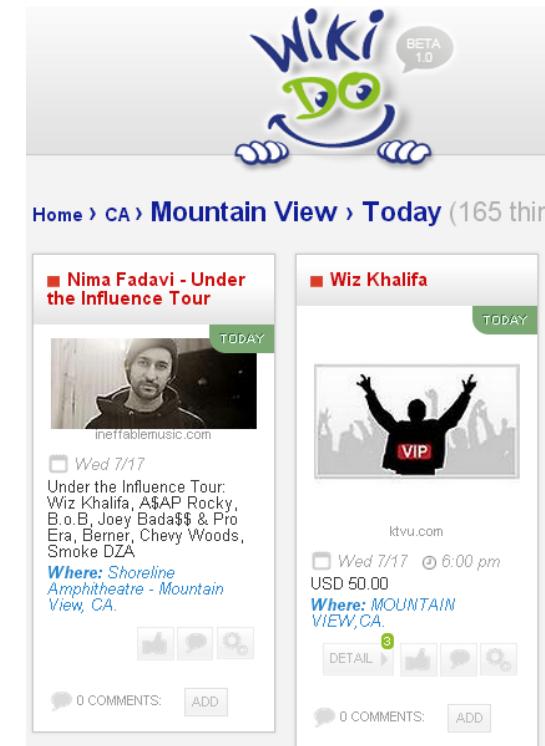


Reuters' Calais uses RDF



RDF
and LOD
identifiers

OpenCalais

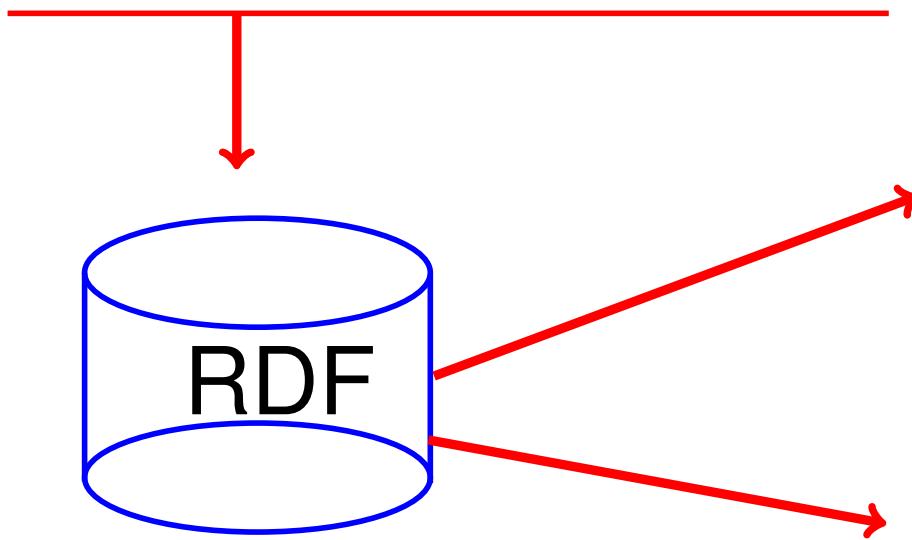


The BBC uses RDF

Structured data

Artist:	<input type="text" value="Bat for Lashes"/>
Release:	<input type="text"/>
Track:	<input type="text"/> 1
Track:	<input type="text"/> 2

- + Peer Review
- + User community
- + Wikipedia
- + MusicBrainz



```
@prefix bbc: <...>
bbc:Elvis rdf:type bbc:King .
```

...

BestBuy uses RDFa

Search by Keyword, SKU # or Item #

PRODUCTS SERVICES SHOPS & DEALS GIFTS

We've improved shipping times to APO/FPO/DOMESTIC

Best Buy > Movies & Music > Movies & TV Shows > Product Info



This Is Elvis (Enhanced TV) (DVD) 1981

SKU: 8416252 Release Date: 8/7/2012

Rating: PG

Customer Reviews: ★★★★★ 4

Search by Keyword, SKU # or Item #

PRODUCTS SERVICES SHOPS & DEALS GIFTS

BestBuy.com > Store Locator > Best Buy - Mountain View

Best Buy - Mountain View



2460 E Charleston Rd
Mountain View, CA 94043

Phone: 650-903-0591

GEO: 37.423073, -122.09568

[Map & Directions](#)

[See full store details](#)

[Weekly Ad](#)

CUSTOMER FEEDBACK & REVIEWS

★★★★★ 4.1 of 5

[Read reviews \(79\)](#) or [Write a Review](#)

<http://stores.bestbuy.com/1045/#store_1045> a gr:LocationOfSalesOrServiceProvisioning;

geo:lat_long "37.423073, -122.09568";

vcard:adr [a vcard:Address,

vcard:Work;

vcard:geo [vcard:latitude "37.423073";

vcard:longitude "-122.09568"];

vcard:locality "Mountain View, ";

vcard:postal-code "94043";

vcard:region "CA";

vcard:street-address "2460 E Charleston Rd";

vcard:tel "650-903-0591"],

<<http://deals.bestbuy.com/>>,

<<http://stores.bestbuy.com/1045/details/>>,

<<http://www.bestbuy.com/site/olspage.jsp?id=cat12091&type=page&allstores=no&mode=fromResult&storeId=1045>>;

foaf:depiction <<http://stores.bestbuy.com/wp-content/store-images/1045/medium.jpg>> .

<http://stores.bestbuy.com/1045/#storehours_fri> a gr:OpeningHoursSpecification;

gr:closes "21:00:00"^^xsd:time;

BestBuy

The Semantic Web is full of Elvis!



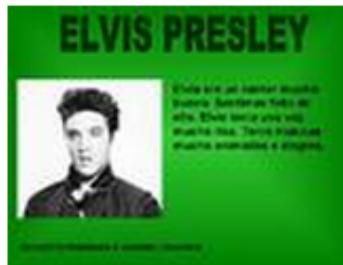
Elvis Presley

Add More Info

Star

Elvis presley

picture:



[6]

given name: Elvis Aaron Presley [6]

Elvis Aaron [6]

family name: Presley [6]

Sig.Ma

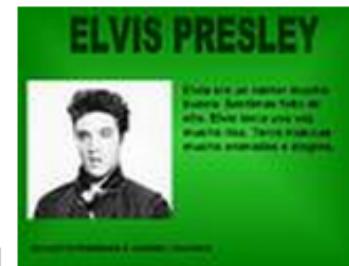
The Semantic Web is full of Elvis!



Elvis Presley Add More Info Star

Elvis presley

picture:



[6]

given name: Elvis Aaron Presley [6]

Elvis Aaron [6]

family name: Presley [6]

death year:

hide value

just this value

which sources

reject sources

date of death: 1977-08-16 [6]

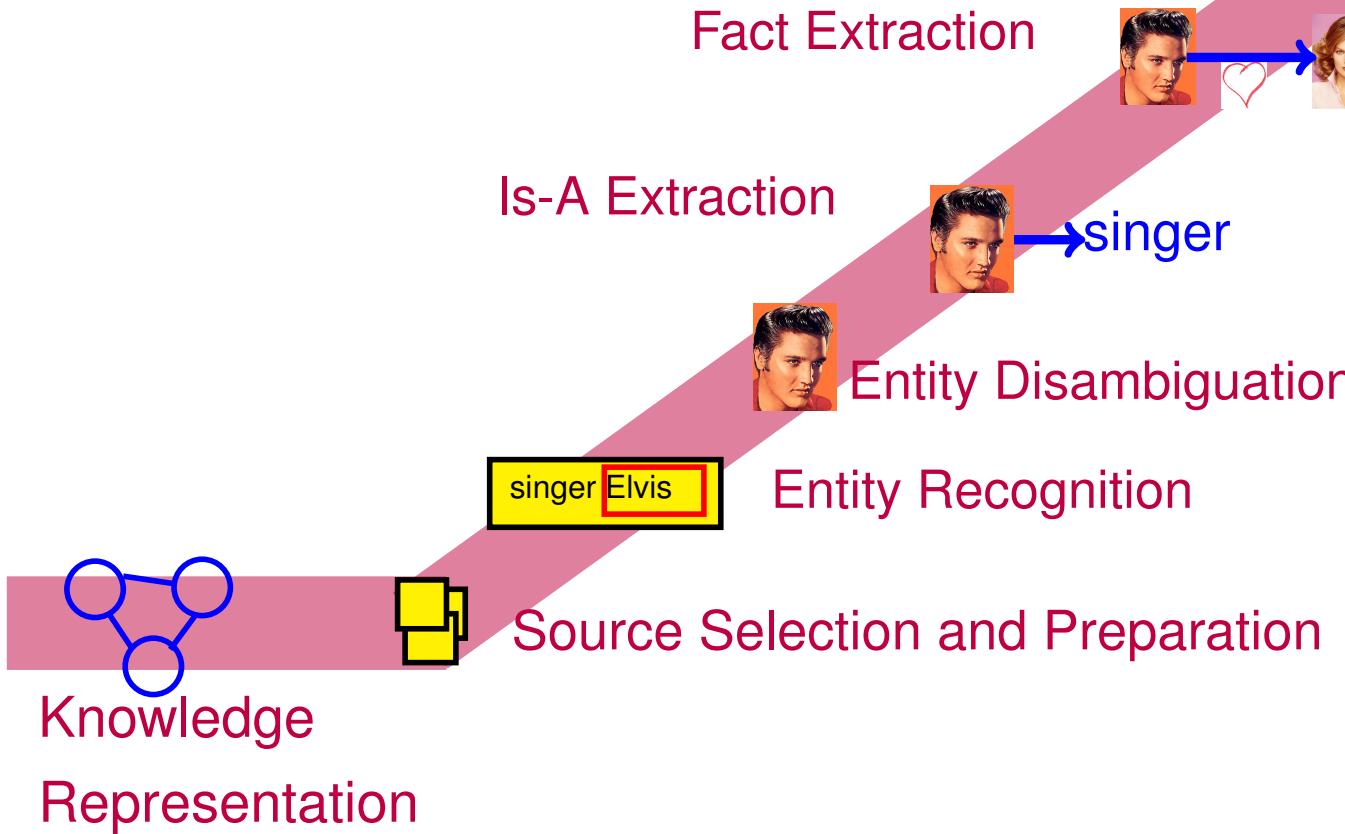
Everybody
can participate!



Sig.Ma

IE and the Semantic Web

Semantic
Web



References

W3C: RDF

W3C: RDFS

W3C: Semantic Web

W3C: RDFa lite

Linked Data