



DBpedia Live Extraction

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UNIVERSITÄT LEIPZIG

Overview

- DBpedia is a community effort to extract structured information from Wikipedia and to make this information available on the Web.
- Accessible with SPARQL <http://dbpedia.org>
- The Semantic Web mirror of Wikipedia
- State-of-the-Art SW applications with DBpedia

<http://dbpedia.org/Applications>



Introduction and History

- 2006
 - First extraction by Auer and Lehmann, University Leipzig
 - FU Berlin (Bizer, Kobilarov)
 - OpenLink provides infrastructure (public service)
- 2007
 - First links to other knowledge bases
- Since 2007:
 - more links, better data quality
 - releases every 5-8 months based on Wikipedia dumps

Contributions

- Part 1:
 - collaboratively maintaining a DBpedia schema and property mapping
- Part 2:
 - a live extraction framework, which synchronizes DBpedia with Wikipedia

Structure in Wikipedia

- Title
- Abstract
- Infoboxes
- Geo-coordinates
- Categories
- Images
- Links
 - other language versions
 - other Wikipedia pages
 - To the Web
 - Redirects
 - Disambiguations

2009/11/04

DBpedia, AKSW, ODBase2009

The image shows a screenshot of the Wikipedia article for Busan. The page is in English and features a standard Wikipedia layout. At the top, there is a navigation bar with options like 'edit this page', 'history', and 'watch'. Below the navigation bar, the article title 'Busan' is prominently displayed, followed by a brief summary and a list of contents. The main body of the article is divided into several sections: 'History', 'Administrative divisions', 'Economy', 'Shopping and Commerce', 'Sister cities', and 'See also'. Each section contains detailed text and references. On the right side of the page, there is a 'Busan Metropolitan City' infobox, which includes a map of the city, a table of statistics (area, population, density), and a list of administrative divisions. The page also features a 'Wikimedia Commons' section at the bottom right, which contains a list of related images and media. The overall structure is clear and organized, typical of a Wikipedia article.

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Busan
From Wikipedia, the free encyclopedia

"Pusan" redirects here. For the Vedic Hindu god, see Pushan.

Coordinates: 35°06′N, 129°02′E


The screenshot shows the Wikipedia article for Busan. At the top, the title "Busan" is highlighted in a red box. Below it is the abstract: "From Wikipedia, the free encyclopedia" and a redirect notice: "Pusan" redirects here. For the Vedic Hindu god, see Pushan. The infobox contains the coordinates 35°06′N, 129°02′E. The main text of the article is visible, including sections on the city's history, administrative divisions, economy, and shopping. A sidebar on the right contains a table of Korean names and a location map of South Korea. At the bottom, there are sections for "Sister cities" and "See also".

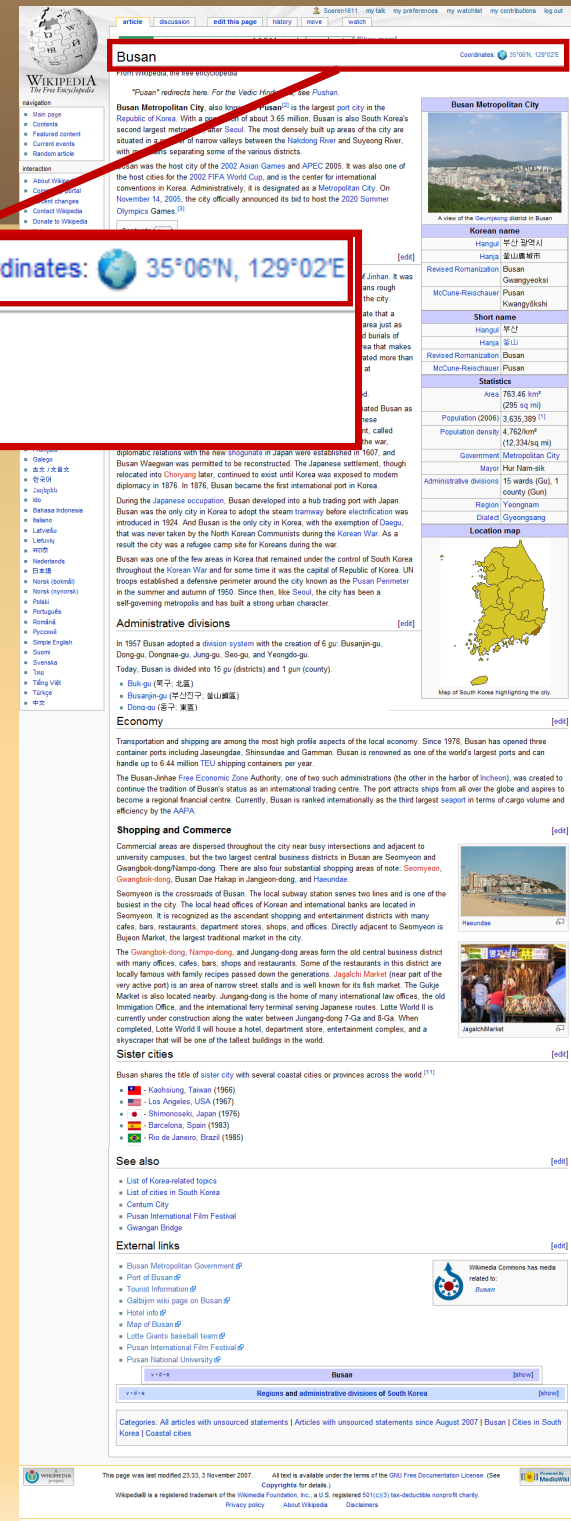
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Busan
From Wikipedia, the free encyclopedia

"Pusan" redirects here. For the Vedic Hindu god, see Pushan.

Coordinates:  **35°06'N, 129°02'E**



The screenshot shows the Wikipedia article for Busan. A red box highlights the title "Busan" and the abstract "From Wikipedia, the free encyclopedia". Another red box highlights the coordinates "Coordinates: 35°06'N, 129°02'E". A red arrow points from the "Geo-coordinates" item in the list to the coordinates box. The article content includes a description of Busan as a metropolitan city, its history, and administrative divisions. A sidebar on the right contains a table of information, including the Korean name, Romanization, and statistics. A map of South Korea highlights Busan's location.

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Coordinates: 35°06′N, 129°02′E

The screenshot shows the Wikipedia article for Busan. At the top, the title "Busan" is followed by the text "From Wikipedia, the free encyclopedia". Below this is a red-bordered box containing the text: *"Pusan" redirects here. For the Vedic Hindu god, see Pushan.* To the right of the title, the coordinates "Coordinates: 35°06′N, 129°02′E" are displayed. The article content includes a detailed infobox with Korean and English names, a short name, statistics (area, population), administrative divisions, and a location map. Below the infobox, the article text discusses the city's history, its role as a port, and its development. The "Economy" section highlights transportation and shipping. The "Shopping and Commerce" section describes commercial areas and markets. The "Sister cities" section lists international partnerships. The page also features a sidebar with navigation links and a footer with copyright information.

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2009/11/04

DBpedia, AKSW, ODB

The image shows a screenshot of the Wikipedia article for Busan. The article is in English and includes sections for History, Administrative divisions, and Economy. A red box highlights the 'in other languages' section, which lists various language versions of the article. The list includes: Български, Dansk, Deutsch, Eesti, Español, Esperanto, Français, Galego, 古文 / 文言文, 한국어, Հայերեն, Ido, Bahasa Indonesia, Italiano, Latviešu, Lietuvių, मराठी, Nederlands, 日本語, Norsk (bokmål), Norsk (nynorsk), Polski, Português, Română, Русский, Simple English, Suomi, Svenska, ไทย, Tiếng Việt, Türkçe, and 中文. A red arrow points from the 'other language versions' item in the list on the left to the 'in other languages' section in the screenshot.

in other languages

- Български
- Dansk
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- Esperanto
- Français
- Galego
- 古文 / 文言文
- 한국어
- Հայերեն
- Ido
- Bahasa Indonesia
- Italiano
- Latviešu
- Lietuvių
- मराठी
- Nederlands
- 日本語
- Norsk (bokmål)
- Norsk (nynorsk)
- Polski
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- Русский
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Categories: [Busan](#) | [Cities in South Korea](#) | [Coastal cities](#)

The screenshot shows the Wikipedia article for Busan. At the top, it says "14,544 people have donated" and "Coordinates: 35°10′N, 129°12′E". The infobox includes the Korean name "Busan Metropolitan City" and a map. The "History" section mentions the city's origins and its role as a trading port. The "Administrative divisions" section lists six districts: Dong-gu, Dongnae-gu, Jung-gu, Sae-gu, and Yeongdo-gu. The "Economy" section discusses transportation and shipping. The "Sister cities" section lists cities like Kaohsiung, Los Angeles, and Barcelona. The "See also" section lists related topics like Centum City and the Pusan International Film Festival. The "External links" section includes links to the Busan Metropolitan Government, Pusan National University, and other resources. At the bottom, there are navigation tabs for "Regions and administrative divisions of South Korea" and a category box for "Busan | Cities in South Korea | Coastal cities".

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Busan Metropolitan City



A view of the Geumjeong district in Busan

Korean name	
Hangul	부산 광역시
Hanja	釜山廣域市
Revised Romanization	Busan
McCune-Reischauer	Pusan
Short name	
Hangul	부산
Hanja	釜山
Revised Romanization	Busan
McCune-Reischauer	Pusan
Statistics	
Area	763.46 km ² (295 sq mi)
Population (2006)	3,635,389 ^[1]
Population density	4,762/km ² (12,334/sq mi)
Government	
Mayor	Hur Nam-sik
Administrative divisions	15 wards (Gu), 1 county (Gun)
Region	Yeongnam
Dialect	Gyeongsang

Busan

From Wikipedia, the free encyclopedia

"Busan" redirects here. For the Vedic Hindu god, see Pushan.

Busan Metropolitan City, also known as **Pusan** is the largest port city in the Republic of Korea. With a population of about 3.6 million, Busan is also South Korea's second largest metropolis, after Seoul. The majority built-up areas of the city are situated in a number of narrow valleys between the Nakdong River and Suyeong River, with mountains separating some of the various districts.

Busan was the host city of the 2002 Asian Games and APEC 2005. It was also one of the host cities for the 2002 FIFA World Cup, and is the center for international competition in Korea. Administratively, it is designated as a Metropolitan City. On October 14, 2005, the city officially announced its bid to host the 2020 Summer Olympics Games.

History

Gaehwajang-gak existed in the second and third centuries as a subdivision of Jinhan. It was absorbed by Silla and renamed Geochilsan-gun. The word Geochilsan means rugged mountain, probably referring to *Haengryeongsan*, located at the center of the city. The grave goods excavated from mounded burials at *Bolcheon-dong* indicate that a complex chiefdom ruled by powerful individuals was present in the Busan area just as the Three Kingdoms of Korea were forming, c. A.D. 300-400. The mounded burials of *Bolcheon-dong* were built along the top of a ridge that overlooks a wide area that make up parts of modern-day Dongnae-gu and Yeongju-gu. Archaeologists excavated more than 250 iron weapons and ingots from Burial No. 39, a wooden chamber tomb at *Bolcheon-dong*.

In 757, Geochilsan-gun was again renamed Dongnae, which it is still called. From the beginning of the fifteenth century, the Korean government designated Busan as a trading port with the Japanese and allowed their settlement. Other Japanese settlements in Ulsan and Jinhae diminished later, but the Busan settlement, called *Waegwan* at the time, continued until Japan invaded Korea in 1592. After the war, diplomatic relations with the new shogunate in Japan were established in 1607, and Busan Waegwan was permitted to be reconstructed. The Japanese settlement, though relocated into Choryang later, continued to exist until Korea was exposed to modern diplomacy in 1876. In 1876, Busan became the first international port in Korea.

During the Japanese occupation, Busan developed into a hub trading port with Japan. Busan was the only city in Korea to adopt the steam railway before colonization was introduced in 1924. And Busan is the only city in Korea, with the exemption of Daejeu, that was never taken by the North Korean Communists during the Korean War. As a result the city was a refuge camp site for Koreans during the war.

Busan was one of the few areas in Korea that remained under the control of South Korea throughout the Korean War and for some time it was the capital of Republic of Korea. UN troops established a defensive perimeter around the city known as the Pusan Perimeter in the summer and autumn of 1950. Since then, like Seoul, the city has been a self-governing metropolis and has built a strong urban character.

Administrative divisions

In 1957 Busan adopted a division system with the creation of 6 gu: Busanjinjeon, Dong-gu, Dongnae-gu, Jung-gu, Seogu, and Yeongju-gu. Today, Busan is divided into 15 gu (districts) and 1 gun (county).

- Buk-gu (북구, 北區)
- Busanjinjeon-gu (부산진구, 釜山鎮區)
- Dono-gu (동구, 東區)

Economy

Transportation and shipping are among the most high profile aspects of the local economy. Since 1978, Busan has opened three container ports including Jassungbae, Shinusanda and Gammam. Busan is renowned as one of the world's largest ports and can handle up to 6.4 million TEU shipping containers per year.

The Busan-Jinhae Free Economic Zone Authority, one of two such administrations (the other in the harbor of Incheon), was created to continue the tradition of Busan's status as an international trading centre. The port attracts ships from all over the globe and aspires to become a regional financial centre. Currently, Busan is ranked internationally as the third largest seaport in terms of cargo volume and efficiency by the UNCTAD.

Shopping and Commerce

Commercial areas are dispersed throughout the city in major intersections and adjacent to university campuses, but the two largest central business districts in Busan are Seomyeon and Gwangbok-dong/Nampo-dong. There are also four substantial shopping areas of note: Seomyeon, Gwangbok-dong, Busan Dae Haeap in Jangjeon-dong and Haeundae.

Seomyeon is the crossroads of Busan. The local subway station serves two lines and is one of the busiest in the city. The local head offices of Korean and international banks are located in Seomyeon. It is recognized as the ascendant shopping and entertainment districts with many cafes, bars, restaurants, department stores, jewelry and offices. Directly adjacent to Seomyeon is Sujeong Market, the largest traditional market in the city.

The Gwangbok-dong, Nampo-dong, and Jung-gu-dong areas form the old central business district with many offices, cafes, bars, shops and restaurants. Some of the restaurants in this district are locally famous with family recipes passed on through the generations. Jagalchi Market (near part of the very active port) is an area of narrow streets and is well known for its fish market. The Gulje Market is also located nearby. Jungang-dong is the home of many international law offices, the old Immigration Office, and the international ferry terminal serving Japanese routes. Lotte World II is currently under construction along the coast between Jangjeong-dong 7-Che and 8-Che. When completed, Lotte World II will house a hotel, department store, entertainment complex, and a skyscraper that will be one of the tallest buildings in the world.

Sister cities

Busan shares the title of sister city with several coastal cities or provinces across the world:^[11]

- Kaohsiung, Taiwan (1978)
- Los Angeles, USA (1978)
- Shimonoseki, Japan (1978)
- Barcelona, Spain (1983)
- Rio de Janeiro, Brazil (1985)

See also

- List of Korea-related topics
- List of cities in South Korea
- Centum City
- Pusan International Film Festival
- Gwangsan District

External links

- Busan Metropolitan Government
- Port of Busan
- Tourist information
- GaBjira's page on Busan
- Hotel
- Map
- Los Angeles baseball team
- Pusan International Film Festival
- Pusan National University

Regions and administrative divisions of South Korea

Categories: All articles with unsourced statements | Articles with unsourced statements since August 2007 | Busan | Cities in South Korea | Coastal cities

Infobox Templates

```

{{Infobox Korean settlement
| title           = Busan Metropolitan City
| img             = Busan.jpg
| imgcaption     = A view of the [[Geumjeong]] district in Busan
| hangul         = 부산광역시
| . . .
| area_km2       = 763.46
| pop            = 3635389
| popyear        = 2006
| mayor          = Hur Nam-sik
| divs           = 15 wards (Gu), 1 county (Gun)
| region         = [[Yeongnam]]
| dialect        = [[Gyeongsang]]
}}

```

Wikitext-Syntax



RDF representation

```

dbp:Busan      dbp:title      "Busan Metropolitan City"
dbp:Busan      dbp:hangul     "부산광역시" @Hang
dbp:Busan      dbp:area_km2  "763.46"^^xsd:float
dbp:Busan      dbp:pop       "3635389"^^xsd:int
dbp:Busan      dbp:region    dbp:Yeongnam
dbp:Busan      dbp:dialect   dbp:Gyeongsang
. . .

```

Busan Metropolitan City



A view of the [Geumjeong](#) district in Busan

Korean name

Hangul	부산광역시
Hanja	釜山廣域市
Revised Romanization	Busan Gwangyeoksi
McCune-Reischauer	Pusan Kwangyŏkshi

Short name

Hangul	부산
Hanja	釜山
Revised Romanization	Busan
McCune-Reischauer	Pusan

Statistics

Area	763.46 km ² (295 sq mi)
Population (2006)	3,635,389 ^[1]
Population density	4,762/km ² (12,334/sq mi)
Government	Metropolitan City
Mayor	Hur Nam-sik
Administrative divisions	15 wards (Gu), 1 county (Gun)
Region	Yeongnam
Dialect	Gyeongsang

A closer look at infoboxes

George A. Romero



Romero in Venice, 2009

Born George Andrew Romero
February 4, 1940 (age 69)
New York, NY, U.S.

Occupation film director
screenwriter
editor
actor

Spouse(s) Christine Forrest (1981-present)

Björk



Björk performance at Rock en Seine, Paris 2007

Background information

Birth name Björk Guðmundsdóttir

Born 21 November 1965
(age 43)
Reykjavík, Iceland

Genres Electronica, alternative rock, trip hop, IDM

Occupations Musician, songwriter, producer, actress,

The Right Honourable Gordon Brown MP



Prime Minister of the United Kingdom

Incumbent

Assumed office

27 June 2007

Monarch Elizabeth II

Preceded by Tony Blair

Chancellor of the Exchequer

In office

2 May 1997 – 27 June 2007

Prime Minister Tony Blair

A closer look at infoboxes

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27 June 2007

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Preceded by Tony Blair

Chancellor of the Exchequer

In office

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Prime Minister Tony Blair

```

{{Infobox musical artist
| Name           = Björk
| Img           = Björk Rock en Seine 2007 (2).jpg
| Img_capt     = Björk performance at Rock en Seine
| Img_size     =
| Landscape      =
| Background     = solo_singer
| Birth_name   = Björk Guðmundsdóttir
| Alias        =
| Born ←      = {{birth date and age|df=yes|1965|12|21}}
| Died        =
| Origin      =
| Instrument  = [[Singer|Vocals]], [[Keyboard instrument|Keyboard instrument]], [[harp]]
| Voice_type  = [[Soprano]]<ref>http://www.spirit.com.au/artist/bjork.html</ref>
| Genre       = [[Electronical]], [[alternative rock]]
| Occupation  = [[Musician]], [[songwriter]], [[record producer|producer]], [[actor|actress]], [[fashion model]]
| Years_active = 1977–present
| Label      = [[One Little Indian]], [[Elektra Records|Elektra]], [[Atlantic Records Group|Atlantic]], [[Polydor Records|Polydor]], [[Mother Re
| [[Smekkleysa]]
| Associated_acts = [[The Sugarcubes]], [[Thom Yorke]], [[Tappi Tíkarrass]], [[KUKL (group)|KUKL]]
| URL        = [http://www.bjork.com/ www.bjork.com]
}}

```

Björk (Musician)
 Occupation = Musician, Actor
 Born = 21.12.1965, Reykjavík

```

{{Infobox Prime Minister
| honorific-prefix = <small>
| name             = Gordon B
| honorific-suffix = <br /><
| image            = Gordon B
| imagesize       = 200px
| alt              = Gordon B
| office ←        = [[Prime
| monarch         = [[Elizab
| term_start      = 27 June
| term_end        =
| predecessor     = [[Tony Blair]]
| successor       =
| office2         = [[Chancellor of the Exchequer]]
| term_start2     = 2 May 1997
| term_end2       = 27 June 2007
| primeminister2  = [[Tony Blair]]
| predecessor2    = [[Kenneth Clarke]]
| successor2      = [[Alistair Darling]]

```

Brown (Prime Minister)
 office = Prime Minister of the UK
 birth_date = 20.4.1951
 birth_place = Govan

```

{{Infobox actor
| image = George Romero, 66
| imagesize = 200px
| caption = Romero in Venic
| birthname = George Andrew
| birthdate = {{birth date
| birthplace = [[New York,
| spouse = Christine Forrest
| occupation = [[film direc
}}

```

Romero (Actor)
 occupation = Actor, Editor
 birthdate = 4.2.1940
 birthplace = New York


```

{{Infobox musical artist
| Name           = Björk
| Img          = Björk Rock en Seine 2007 (2).jpg
| Img_capt     = Björk performance at Rock en Seine
| Img_size     =
| Landscape     =
| Background    = solo_singer
| Birth_name   = Björk Guðmundsdóttir
| Alias        =
| Born         ← = {{birth date and age|df=yes|1965|12|21}}
| Died        =
| Origin      =
| Instrument = [[Singer|Vocals]], [[Keyboard instrument|Keyboard instrument]], [[harp]]
| Voice_type  = [[Soprano]]<ref>http://www.spirit.com.au/artist/bjork.html</ref>
| Genre       = [[Electronical]], [[alternative rock]]
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| office         ← = [[Prime Minister of the United Kingdom]]
| monarch        = [[Elizabeth II]]
| term_start     = 27 June 2005
| term_end       =
| predecessor    = [[Tony Blair]]
| successor      =
| office2        = [[Chancellor of the Exchequer]]
| term_start2    = 2 May 1997
| term_end2      = 27 June 2007
| primeminister2 = [[Tony Blair]]
| predecessor2   = [[Kenneth Clarke]]
| successor2     = [[Alistair Darling]]

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Brown (Prime Minister)

office = Prime Minister of the UK

birth_date = 20.4.1951

birth_place = Govan

```

{{Infobox actor
| image = George Romero, 66
| imagesize = 200px
| caption = Romero in Venice
| birthname = George Andrew Romero
| birthdate = {{birth date and age|df=yes|1940|02|04}}
| birthplace = {{birth place and age|df=yes|New York, New York}}
| spouse = Christine Forbes
| occupation = [[film director]]
}}

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occupation = Actor, Editor

birthdate = 4.2.1940

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| spouse = Christine Forrest
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| Name           = Björk
| Img          = Björk Rock en Seine 2007 (2).jpg
| Img_capt     = Björk performance at Rock en Seine
| Img_size     =
| Landscape      =
| Background     = solo_singer
| Birth_name   = Björk Guðmundsdóttir
| Alias        =
| Born ←      = {{birth date and age|df=yes|1965|12|21}}
| Died        =
| Origin      =
| Instrument  = [[Singer|Vocals]], [[Keyboard instrument|Keyboard instrument]], [[harp]]
| Voice_type  = [[Soprano]]<ref>http://www.spirit.com.au/artist/bjork.html</ref>
| Genre       = [[Electronical]], [[alternative rock]]
| Occupation  = [[Musician]], [[songwriter]], [[record producer|producer]], [[actor|actress]], [[fashion model]]
| Years_active = 1977–present
| Label      = [[One Little Indian]], [[Elektra Records|Elektra]], [[Atlantic Records Group|Atlantic]], [[Polydor Records|Polydor]], [[Mother Re
| [[Smekkleysa]]
| Associated_acts = [[The Sugarcubes]], [[Thom Yorke]], [[Tappi Tíkarrass]], [[KUKL (group)|KUKL]]
| URL        = [http://www.bjork.com/ www.bjork.com]
}}

```

Björk (Musician)

Occupation = Musician, Actor

Born = 21.12.1965, Reykjavík

```

{{Infobox Prime Minister
| honorific-prefix = <small>
| name            = Gordon B
| honorific-suffix = <br /><
| image          = Gordon B
| imagesize     = 200px
| alt           = Gordon B
| office ←      = [[Prime
| monarch       = [[Elizab
| term_start    = 27 June
| term_end      =
| predecessor   = [[Tony Blair]]
| successor     =
| office2       = [[Chancellor of the Exchequer]]
| term_start2   = 2 May 1997
| term_end2     = 27 June 2007
| primeminister2 = [[Tony Blair]]
| predecessor2  = [[Kenneth Clarke]]
| successor2    = [[Alistair Darling]]

```

Brown (Prime Minister)

office = Prime Minister of the UK

birth_date = 20.4.1951

birth_place = Govan

```

{{Infobox actor
| image = George Romero, 66
| imagesize = 200px
| caption = Romero in Venic
| birthname = George Andrew
| birthdate = {{birth date
| birthplace = ← [[New York,
| spouse = Christine Forrest
| occupation = [[film direc
}}
```

Romero (Actor)

occupation = Actor, Editor

birthdate = 4.2.1940

birthplace = New York

```

{{Infobox musical artist
| Name           = Björk
| Img           = Björk Rock en Seine 2007 (2).jpg
| Img_capt      = Björk performance at Rock en Seine
| Img_size      =
| Landscape      =
| Background     = solo_singer
| Birth_name    = Björk Guðmundsdóttir
| Alias         =
| Born ←       = {{birth date and age|df=yes|1965|12|21}}
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| Origin       =
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| Genre        = [[Electronical]], [[alternative rock]]
| Occupation  = [[Musician]], [[songwriter]], [[record producer|producer]], [[actor|actress]], [[fashion model]]
| Years_active = 1977–present
| Label       = [[One Little Indian]], [[Elektra Records|Elektra]], [[Atlantic Records Group|Atlantic]], [[Polydor Records|Polydor]], [[Mother Re
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| term_start2      = 2 May 1997
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| predecessor2     = [[Kenneth Clarke]]
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| birthplace = ← [[New York,
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| occupation = [[film direc
}}
```

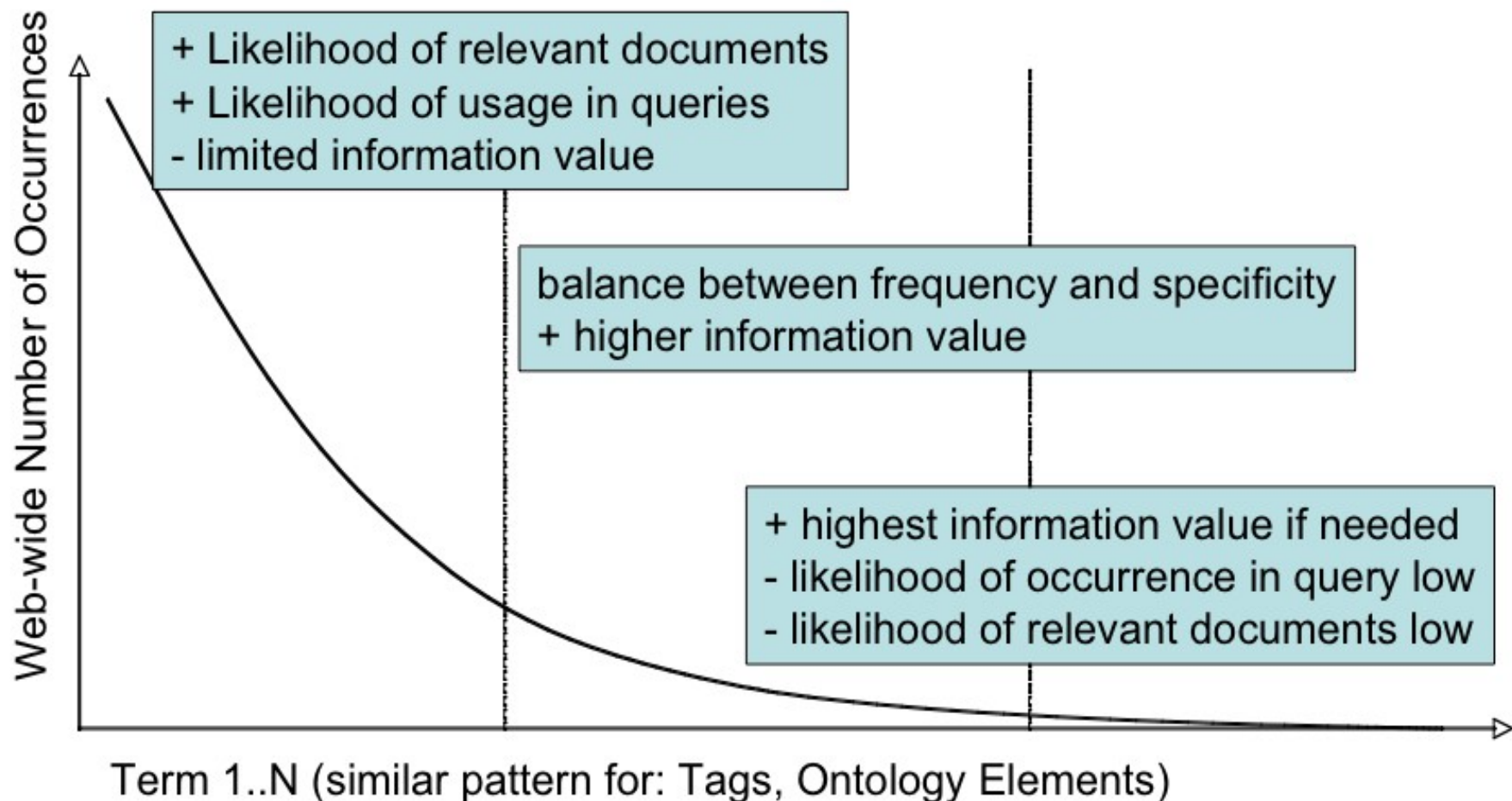
Romero (Actor)

occupation = Actor, Editor

birthdate = 4.2.1940

birthplace = New York

Building Vocabularies: Which Terms Are Most Valuable - The Most Popular, the Frequent, or the Rare?



Mapping and DBpedia Ontology

- automatic approach not accurate enough
 - birth_place => birthplace possible
 - office => occupation
- former Mapping maintained by a group from FUBerlin
 - template-class mappings (~370)
 - classes (~150)
 - properties (~1000)
- domains that are covered very well in Wikipedia are not reflected in DBpedia (Medicine and Pharmacy)
- no community consensus

Wiki based approach


- Wikipages on Wikipedia to create a granular and correct mapping
- Wikipages to create Classes and a class hierarchy
- Wikipages to create Property definitions
- Changes directly affect DBpedia (Live Extraction)

DBpedia Template Annotation

The information in this section used by [DBpedia](#) which is a community project for extracting structured data from Wikipedia. See [this](#) for an overview of the DBpedia ontology.

Related class: [MusicalArtist](#)

argument	property	parseHint
Born	birthdate	date
Born	birthplace	place
Died	deathplace	date
Birth_name	birthname	
Background	background	
Origin	origin	
Img_capt	imagecaption	text

The logo for DBpedia, featuring a stylized tree with orange and yellow nodes above the text "DBpedia" in a bold, blue, sans-serif font.

The table above lists all mappings to DBpedia properties which are defined for this template.

DBpedia Class "MusicalArtist"

The information within the table below is used by [DBpedia](#), a community project for extracting structured [DBpedia/ontology](#) for an overview of the DBpedia ontology. The information you enter is parsed by an ap

property	value
rdfs:label	Music Artist
rdfs:label@de	Musiker
rdfs:label@en	Music Artist
rdfs:label@fr	Musicien
rdfs:comment	A musician is a person who plays or writes music.
rdfs:subClassOf	Person
owl:equivalentClass	yago:Musician110340312
owl:disjointWith	
rdfs:seeAlso	

The logo for DBpedia, featuring a stylized tree-like structure with orange and yellow nodes above the word "DBpedia" in a bold, blue, sans-serif font.

Advantages

- agile Wiki process
 - easy and fast to edit
 - editable and reviewable by everyone
 - history is kept , changes can be reverted
 - Engineers and Domain experts can collaborate directly
- Template and Infoboxes are user-friendly
 - 4.4 million usages on Wikipedia
 - easy to copy and adapt
 - tools can be easily written

Live Extraction

- Wikipedia provided DBpedia with an Update Stream
- Data is extracted, transformed and loaded into a Virtuoso Triple Store maintained by OpenLink
- about 120.000 updates daily (user edits)
- maximum of 0.83 seconds per Article page
- delay of 5 minutes
- see <http://stats.dbpedia.org>
- weekly DBpedia releases planed

Live Extraction

- Data in DBpedia is up-to-date
- Not dependant on Wikipedia Dumps any more
- Errors can be corrected immediately by editing Wikipedia
- Edit links are included in DBpedia directly
- Integration of the Wikipedia and DBpedia community



Lessons Learned - Updates

- DBpedia has currently a static part, including
 - Yago class hierarchy
 - Links to other knowledge bases
 - other language versions of comments and abstracts
- Difficult update strategy, SPARUL not suitable
- SQL was necessary for recurring and fixed process
- All non-static triples are additionally kept in a SQL table
- SPARUL reduced to atomic operations

OWL2 Axiom Annotations

Example 1 (OWL 2 Annotations).

```
db:Leipzig    dbp-ont:population    "514492"^^xsd:integer .
db-meta:a2819 rdf:type                owl:Axiom .
db-meta:a2819 owl:annotatedSource  db:Leipzig .
db-meta:a2819 owl:annotatedProperty db-ont:population .
db-meta:a2819 owl:annotatedTarget  "514,492"^^xsd:integer .
db-meta:a2819 db-meta:origin          db-meta:LiveInfoboxExtractor .
db-meta:a2819 db-meta:extractedFromTemplate
                                     db-meta:CityTemplate .
dbp-meta:a2819 dc:modified
                                     "2009-06-10T04:00:00-05:00"^^xsd:dateTime .
```

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db:Leipzig    dbp-ont:population    "514492"^^xsd:integer .
db-meta:a2819 rdfs:type              owl:Axiom .
db-meta:a2819 owl:annotatedSource  db:Leipzig .
db-meta:a2819 owl:annotatedProperty db-ont:population .
db-meta:a2819 owl:annotatedTarget  "514,492"^^xsd:integer .
db-meta:a2819 db-meta:origin         db-meta:LiveInfoboxExtractor .
db-meta:a2819 db-meta:extractedFromTemplate
db-meta:CityTemplate .
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"2009-06-10T04:00:00-05:00"^^xsd:dateTime .
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"2009-06-10T04:00:00-05:00"^^xsd:dateTime .
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db:Leipzig    dbp-ont:population    "514492"^^xsd:integer .
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db-meta:a2819 owl:annotatedSource   db:Leipzig .
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db-meta:a2819 db-meta:origin          db-meta:LiveInfoboxExtractor .
db-meta:a2819 db-meta:extractedFromTemplate
                                     db-meta:CityTemplate .
dbp-meta:a2819 dc:modified
                                     "2009-06-10T04:00:00-05:00"^^xsd:dateTime .
```

OWL2 Axiom Annotations

Storage of Meta-Data about triples

OWL2 Axiom Annotations

- do not change the truth value of a triple
- only annotations
- ignored by reasoner
- 4 triples overhead

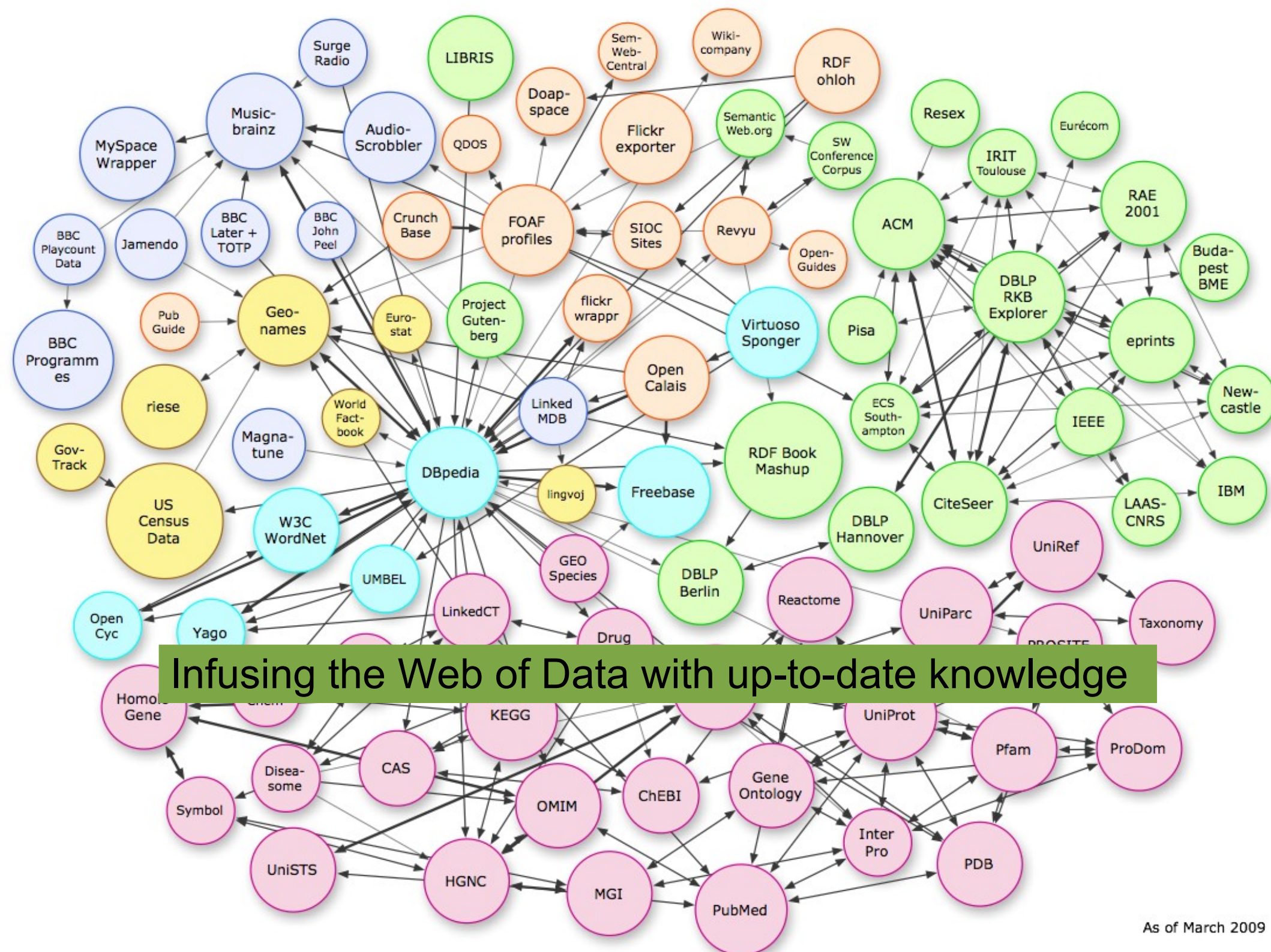
RDF Reification

- statements about statements
- the reified triple is not necessarily true
- 4 triples overhead

OWL2 Axiom Annotations

- Allow expressive queries over triple meta data:
 - Last updated triples
 - Provenance information (user, origin, licence)
- Allows to extract detailed information from the Ontology:
 - All axioms of the Ontology
 - All axioms for classes
 - All axioms for one class
 - EquivalentClass Axioms for one class

$A = B \text{ or } C$



Future Work

- More expressive templates and mappings
- Creation of interfaces for template editing
- Suggestions for Wikipedians based on DBpedia
- DBpedia editors wanted (Community work)
- Language specific DBpedia Editions, currently Korean and German in development

The End

Thanks for your attention!

<http://aksw.org>
<http://dbpedia.org>

Acknowledgments:

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LOD cloud graphic from <http://planet.linkeddata.org>