

Creating Knowledge out of Interlinked Data

Sören Auer

UNIVERSITÄT LEIPZIG



Why the Semantic Web won't work (soon)

- 1. Reasoning does not scale on the Web
- IR / one dimensional indexing scales (Google)
- Next step conjunctive querying (OWL-QL?, dynamic scale-out / clustering)
- Web scalable DL reasoning is out-of-sight (maybe fragment, fuzzy reasoning has some chances)
- 2. If it would scale it would not be affordable
- "What is the only former Yugoslav republic in the European Union?"
- 2880 POWER7 cores, 16 Terabytes memory, 4 Terabytes clustered storage (IBM Watson) still can not answer this question

Sören Auer – WIMS: Creating Knowledge out of Linked Data

26.5.2011









If the Semantic Web does not happen soon...

What shall we do inbetween?

How can we make it happen faster?



Dayton BRANDFIELD (American) Old Hill Road, April 2, 1937, (historical depression)

26.5.2011

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We can do what works already now...

... and try to find an shallow migration path



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What works now? What has to be done?

- Web a global, distributed platform for data, information and knowledge integration
- exposing, sharing, and connecting pieces of data, information, and knowledge on the Semantic Web using URIs and RDF



Achievements

- 1. Extension of the Web with a data commons (25B facts
- 2. vibrant, global RTD community
- Industrial uptake begins (e.g. BBC, Thomson Reuters, Eli Lilly)
- 4. Emerging governmental adoption in sight
- Establishing Linked Data as a deployment path for the Semantic Web.

Challenges

- 1. Coherence: Relatively few, expensively maintained links
- 2. Quality: partly low quality data and inconsistencies
- **3. Performance:** Still substantial penalties compared to relational
- **4. Data consumption:** large-scale processing, schema mapping and data fusion still in its infancy
- Usability: Establishing direct end-user tools and *network effect*



Extraction







From **unstructured** sources

• NLP, text mining, annotation

From **semi-structured** sources

- DBpedia, LinkedGeoData, SCOVO/DataCube
- From **structured** sources
- RDB2RDF





Transforming Wikipedia into an Knowledge Base

extract structured information from Wikipedia

& make this information available on the Web as LOD:

- ask sophisticated queries against Wikipedia (e.g. universities in brandenburg, mayors of elevated towns, soccer players),
- link other data sets on the Web to Wikipedia data
- Represents a community consensus

Recently launched DBpedia Live transforms Wikipedia into a structured knowledge base



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

24.11.2011

Sören Ai	uer - The	emerging	Web of	Linked	Data

and the second se	Busan	Coordinates: 🔘 35'06%, 129'02'E
WIKIPEDIA	Fram Wispedia, the free encyclopedia	
The Free Encyclopedia navogation	"Pusan" redirects here. For the Vedic Hindu god, see Pushan.	Busan Metropolitan City
Main page Contents	Republic of Korea. With a population of about 3.65 million, Busan is also South Korea's	
Featured content Ourrent events	second largest metropolis, after Seoul. The most densely built up areas of the city are situated in a number of narrow valleys between the Nakdong River and Suyeong River,	and the second second
Random article	with mountains separating some of the various districts. Busen was the host city of the 2002 Asian Games and APEC 2005. It was also one of	
About Waterda	the host cities for the 2002 FFA World Cup, and is the center for international	and the second s
 Community pertail Recent changes 	conventions in Korea. Administratively, it is designated as a Metropolitan City. On November 14, 2005, the city officially announced its bid to host the 2020 Summer	States and a second
 Contact Wikipedia Donate to Wikipedia 	Olympics Games ⁽³⁾	A view of the Geumpeong district in Busen
+ Help	Contents (mail	Korean name Hannul 부산 판약시
search	History [edk]	Hanja 釜山廣地市
Go Search	Geochisan-guk existed in the second and third centuries as a chiefdom of Jinhan. It was	Revised Romanization Busan Gwangyeoksi
What links here	absorbed by Sila and renamed Geochilsan-gun. The word Geochilsan means rough mountain, probably referring to Hwangnyeongsan, located at the center of the city.	NcCune-Reischauer Pusan Kaongolikshi
 Related changes Uplead file 	The grave goods excavated from mounded bunals at Bokcheon-dong indicate that a complex chaldren used by presently indicate loss present in the Busen area just as	Short name
Special pages Printable version	the Three Kingdoms of Korea were forming, c. A.D. 300-400. The mounded burials of	Hangul 부산 Hanga 왕대
Permanent los Cite this article	up parts of modern-day Dongrae gu and Yeonje-gu. Archaeologists excavated more than	Revised Romanization Busan
in other kingungen	250 iron weapons and ingots from Burial No. 38, a wooden chamber tomb at Bokcheon-dong.	NcCune-Reischauer Pusan Statistics
 Estraposi Datsk 	In 757, Geochilsan-gun was again renamed Dongnae, which it is still called.	Area 763.46 km²
Deutsch Eesti	From the beginning of the filteenth century, the Korean government designated Busan as a trading port with the Japanese and allowed their settlement. Other Japanese	Population (2006) 3,635,389 [1]
 Espatoi Esparante 	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.	Population density 4,762/km² (12.334/sg mi)
 Français Galege 	diplomatic relations with the new shogunate in Japan were established in 1607, and Busen Warrown was permitted to be reconstructed. The Japanese suffament through	Government Metropolitan City
* 80 / 282	relocated into Choryang later, continued to exist until Korea was exposed for modern distances in 1875 to 1875. Busen bacama the fact intermittend wat to Korea	Mayor Hur Nam-sik Administrative divisions 15 wards (Gu), 1
 Implyth Ho	During the Japanese occupation, Busan developed into a hub trading port with Japan.	county (Gun)
 Bahasa Internala Balano 	Busan was the only city in Korea to adopt the steam transay before electrification was introduced in 1924. And Busan is the only city in Korea, with the examption of Daona	Dialect Gyeorgsang
 Latviešu Lietuvką 	that was never taken by the North Korean Communists during the Korean War. As a neutrino the city was a refuse came size for Korean when the way	Location map
· Reda	Busan was one of the few areas in Korea that remained under the control of South Korea	1
 B×ili Norsk (bokmål) 	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	El-
 Norsk (tynorsk) Polski 	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.	230
Pertuguês Románă	Administrative divisions	her
 Pyccosii Simple English 	In 1957 Busan adopted a dision system with the creation of 6 or Busanin-au	130 0000
• Suora	Dong-gu, Dongnae-gu, Jung-gu, Seo-gu, and Yeongdo-gu.	Sold Bar
 Terra Vill 	Today, Busan is divided into 15 gu (districts) and 1 gun (county). a Buken (W→ 12 K)	0
· Tarkpe	- Busanjin-gu (부산진구, 釜山綿葉)	Map of South Korea highlighting the oby
10000	 Done-du (百子: 玄変) 	
	Economy	Ind
	Economy Transportation and shipping are among the most high prefile aspects of the local economy contrainer ports including Jassungtan, Binnundea and Gamman. Busan is mecenited as on handle up to 6.44 million TEU shipping containers per year. The Busan-Inhae Free Economic Zoor Authority, and it hos such administrations (the oth contraine the tradem of Busan's attos as an intensitival realized are. The post attactors	(ed Since 1978, Busan has opened three ne of the world's largest ports and can ser in the harbor of Inchson), was created to ships from all over the globe and aspires to
	Economy Transportation and display an animal the most high paths separts of the local accommy container points industry Jakasengkas, Bhoundhas and Gamman. Butan is resourced as an andre up to 4.4 mBn ECU Jakagos containers part years. The Butan-share First Economic Control, Duant is transition to the direct actions the balance Council, Duants is transition tanding centry. Bit Departs and Council Council , Duants is transition tanding centry. Bit Departs and Council , Duants is transition tanding centry actions and transformatic Council. Duants is transition tanding centry actions and transformatic Council. Duants is transition tanding centry actions and transformatic Council. Bit Departs and Council , Duants is transition tanding centry and the council in the city. These Departs and action action tanding the set of the council in the city. These Departs and action action tanding the parts action action of the council of the council of the city one to be action based in the city. These Departs and approaching and the action and the council council in the city. These Departs and action actions action tands are located in the council of the city. These Departs and action actions the location action based in the city. These Departs and approaching and the action action based in the city. These Departs and approaching actions actions to be located based in the city. These Departs and approaching action actions in the di- based in the city. Langue departs taised, shares the action action action action action based in the city. Langue departs action action action action action action action action based in the city. Langue departs action action action. Shares the located based parts the action action. The share is adapproaching action action. Shares the located based based in the internation action action action action action. Shares the located based based based in the located based based based parts action. Control action action with action action. Action action action action action act	in the share has parted and the share has parted to any out to any o
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Busan Metropolitan City in located at the center of the city ded burials at Bokch ulart hu novartul individuals was present in the Russen area in ing. c. A.D. 300-400. The mounded burial taks a wide area that A view of the Geumjeong district in Busan Korean name Hangul 부산 광역시 ae-gu, Jung-gu, Seo-gu, and Yeongd day. Busan is divided into 15 ou (districts) and 1 our (r Buk-gu (복구:北區) Hanja 釜山廣域市 Busanin-ou (부산전구, 쓸山總算 187 FEI 100 Revised Romanization Busan Gwangyeoksi of Busan's status as an McCune-Reischauer Pusan Kwangyŏkshi Short name Hanoul 부산 Hanja 釜山 Revised Romanization Busan McCune-Reischauer Pusan Statistics Sister cities Area 763.46 km² (295 sq mi) Population (2006) 3,635,389 [1] See also Population density 4,762/km² (12,334/sq mi) Government Metropolitan City Mayor Hur Nam-sik Administrative divisions 15 wards (Gu), 1 county (Gun) Region Yeongnam Dialect Gyeongsang Sören Auer - The emerging Web of Linked Data

· 新山市107

3,635,385



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- 14 544 members donated (Show more Busan Coordinates: () 35'06%, 129'02 "Puisas" redirects have For the Vedic Hindu and see Pushan Busan Metropolitan City, also known as Pusan²⁰ is the largest port city in the Republic of Korea. With a population of about 3.65 million, Busan is also South Korea econd largest metropolis, after Secul. The most densely built up areas of the city are uated in a number of narrow valleys between the Nakdong River and Suyeong I 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 FFA World Cup, and is the center for international tions in Korea. Administratively, it is designated as a Metropolitan City. On per 14, 2005, the city officially annunced its bid to host the 2020 Summer mber 14, 2005, the city officially a Han(a 釜山廣地市 eochilsan-ouk existed in the second and third centuries as a chiefdom of Jinhan. It wa bsorbed by Sila and renamed Geochilsan-gun. The word Geochilsan means rough auer Pusar nountain, probably referring to Hwangryeongsan, located at the center of the city Kappaväck The grave goods excavated from mounded bunals at Bokcheon-dong indicate that a nplex chiefdom ruled by powerful individuals was present in the Busan area just a Hangul 부산 the Three Kingdoms of Korea were forming, c. A.D. 300-400. The mounded burials of ong were built along the top of a ridge that overlooks a wide area that make nets of modem-day Don tation Busa Archaerlooists evenueted r in other languages Area 763.46 km Български n the beginning of the fifteenth century, the Korean government designated Busa (295 sq mi 6) 3,635,389 iding port with the Japanese and allowed their settlement. Other Japanese ents in Ulsan and Jinhae diminished later, but the Busan settlement, caller equilation density 4 752/km Dansk an at the time, continued until Japan invaded Korea in 1592. After the war (12.334/sam relations with the new shopunate in Japan were established in 1607, and was permitted to be reconstructed. The Jacanese settl Deutsch unation. Rusan devaloped into a hub trading port with Jac Eesti an was the only city in Kona to adopt the steam (canacy been duced in 1524. And Busan is the only city in Kona, with the ex-was never taken by the Horth Konean Communists during the K it the city was a refugee camp site for Konans during the war. Location map Español n was one of the few areas in Korea that remained under the coverol of Sa apital of Rep Esperanto Français Galego 1957 Busan adopted a division system with the creation of 6 gu: Busanjinong-gu, Dongnae-gu, Jung-gu, Seo-gu, and Yeongdo-gu oday. Busan is divided into 15 ou (districts) and 1 our (court 古文 / 文言文 Buk-gu (복구:北區) Busanjin-gu (부산친구, 釜山總氣) Dono-mi (동구: 東高) 한국어 Economy Հայերեն ortation and shipping are among the most high profile aspects of the local economy. Since 1978, Busan has opened three tainer ports including Jaseungdae, Shinsundae and Gamman. Busan is renowned as one of the world's largest ports and car handle up to 6.44 million TEU shipping containers per year The Busin-Johae Free Economic Zone Authority, one of two such administrations (the other in the harbor of Inchaon), 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 ldo ecome a regional financial centre. Currently, Busan is ranked internationally as the third largest seaport in terms of cargo v Bahasa Indonesia efficiency by the AAPA Shopping and Commerce Italiano ecial areas are dispersed throughout the city near busy intersections and adjacent to by compuses, but the two largest central business districts in Busan are Seomyeon and bolk-dong/Nampo-dong. There are also four substantial shopping areas of note. Seomyeon Latviešu dong, Busan Dae Hakap in Jangjeon-dong, and Haeundae demonstration to be a constrained on the second sec Lietuvių मराठी angbok-dong, Nampo-dong, and Jungang-dong areas form the old central business district any offices, cafes, bars, shops and reataurants. Some of the restaurants in this district an ally famous with family recipes passed down the generations. Jagaichi Market (near part of th Nederlands ry active port) is an area of narrow street stalls and is well known for its fish market. The Gukje farket is also located nearby. Jungang-dong is the home of many international law offices, the i 日本語 nmigation Office, and the international feny terminal serving Japanese routes. Lotte World II is action along the water between Jungang dong 7-Ga and 8-Ga. When omoleted. Lotte World II will house a hotel, department store, enter aper that will be one of the tallest buildings in the world Norsk (bokmål) Sister cities Busan shares the title of sister city with several coastal cities or provinces across the world Norsk (nynorsk) Kaohsiung, Taiwan (1966)
 Los Angeles, USA (1967) Polski - Shimonoseki, Japan (1976 Barcelona, Spain (1983) Rio de Janeiro, Brazil (1985 Português See also Română . List of Korea-related topic . List of cities in South Korea Centum City
 Pusan Internation
 Gwangan Bridge Русский Simple English External links · Busan Metropolitan Suomi · Port of Busand related to · Tourist Information # Galbjim wiki page
 Hotel info dP Svenska . Map of Busan # Lotte Gants hasehall tea ไทย Tiếng Việt Türkçe ■ 中文 Alfset is available under the terms of the Gil loggrights for details.) (Foundation, No., a U.S. registered Silf(c)(3) to About Wileyedia Disclamers WIRASSON II . I Machine Sören Auer - The emerging Web of Linked Data Vikinedia® is a resistened trademark of the Wik

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Infobox templates

Wikitext-Syntax

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{{Infobox Korean settlement	
title = Busan Metropolitan City	
img = Busan.jpg	
imgcaption = A view of the [[Geumjeong]] district in Busa	an
hangul = 부산 광역시	
•••	
$ area_km2 = 763.46$	
pop = 3635389	
popyear = 2006	
mayor = Hur Nam-sik	
divs = 15 wards (Gu), 1 county (Gun)	
region = [[Yeongnam]]	
dialect = [[Gyeongsang]]	
}}	
http://dbpedia.org/resource/Busan RDF representation	
dbp:Busan dbpp:title "Busan Metropolitan City"	

dbp:Busan dbpp:title dbp:Busan dbpp:hangul dbp:Busan dbpp:area_km2 dbp:Busan dbpp:pop dbp:Busan dbpp:region dbp:Busan dbpp:dialect ...24.11.2011

"Busan Metropolitan City" "부산 광역시"@Hang "763.46"^xsd:float "3635389"^xsd:int dbp:Yeongnam dbp:Gyeongsang

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Busan Metropolitan City



Korean r	name
Hangul	부산 광역시
Hanja	釜山廣域市
Revised Romanization	Busan
	Gwangyeoksi
McCune-Reischauer	Pusan
	Kwangyŏkshi
Short n	ame
Hangul	부산
Hanja	釜山
Revised Romanization	Busan
McCune-Reischauer	Pusan
Statist	ics
Area	763.46 km²
	(295 sq mi)
Population (2006)	3,635,389 [1]
Population density	4,762/km²
	(12,334/sq mi)
Government	Metropolitan City
Mayor	Hur Nam-sik
Administrative divisions	15 wards (Gu), 1
	county (Gun)
Region	Yeongnam



A vast multi-lingual, multi-domain knowledge base

DBpedia extraction results in:

- descriptions of ca. 3.4 million things (1.5 million classified in a consistent ontology, including 312,000 persons, 413,000 places, 94,000 music albums, 49,000 films, 15,000 video games, 140,000 organizations, 146,000 species, 4,600 diseases
- labels and abstracts for these 3.2 million things in up to 92 different languages; 1,460,000 links to images and 5,543,000 links to external web pages; 4,887,000 external links into other RDF datasets, 565,000 Wikipedia categories, and 75,000 YAGO categories
- altogether over 1 billion pieces of information (i.e. RDF triples): 257M from English edition, 766M from other language editions
- DBpedia Live (http://live.dbpedia.org/sparql/) & Mappings Wiki (http://mappings.dbpedia.org) integrate the community into a refinement cycle
- Upcomming DBpedia inline





LinkedGeoData – revealing the data behind OpenStreetMaps

OpenStreetMaps

- Wikipedia for GeoData
- Outperformes commercial map providers in many regions
- Extremly rich source of data (shop hours, trash bins, excavations, ...)



Category	June 2009	April 2010	May 2011	Growth (past two years)
Users (Thousands)	127	261	397	+ 213%
Uploaded GPS points (Millions)	915	1500	2298	+ 151%
Nodes (Millions)	374	600	1073	+ 187%
Ways (Millions)	30	48	92	+ 207%

LinkedGeoData Architecture

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This faceted Linked Geo Data browser is based on data obtained from the <u>OpenStreetMap project</u> (released under <u>CC-BY-SA</u>) and was developed by <u>AKSW research group</u>.

Linked**GeoData**.org



26.5.2011

Exh	ibitY	ourVi	cinity	1

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- what		
Interests:		
Pub, FastFood, Bakery		
description: a comma-separeted i.e. Pub, FastFood, Bakery	list of class names from the <u>http://linkedgeodata.</u>	<u>ora/ontoloay</u>
- where		
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51.310228	12.372966	1.5
i.e. 51.310228	i.e. 12.372966	i.e. 1.5
- Options		
Google Maps Key:		Language:
		en

Generator: Preview



Choose

5-5-2010 Stevie http://tiny.cc/stevie10

LinkedGeoData Apps

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BeAware http://beaware.at/







LOD2 Creating Knowledge out of Interlinked Data

DataCube – Publishing Statistical Data





DataCube Importer – Linked Statistical Data

Import CSV Data															
Configurations															
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STDs excluding		52	1	75	0	44	0	29	2	3	1	7	0	0	258
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с.	Diphtheria	2	0	0	-	2	0	0	0	-	-	KI (Poto	Wi	2
d.	Measles	6	0	2	0	16	0	0	0	0	0	0	21100	0	236
4															





Extraction Relational Data

Many different approaches (D2R, Virtuoso RDF Views, Triplify, ...)

No agreement on a formal semantics of RDF2RDF mapping

 LOD readiness, SPARQL-SQL translation
 W3C RDB2RDF WG

ТооІ	Triplify	D2RQ	Virtuoso RDF Views
Technology	Scripting languages (PHP)	Java	Whole middleware solution
SPARQL endpoint	-	Х	х
Mapping language	SQL	RDF based	RDF based
Mapping generation	Manual	Semi- automatic	Manual
Scalability	Medium-high (but no SPARQL)	Medium	High





Extraction Challenges

From unstructured sources

- Deploy existing NLP approaches (OpenCalais, Ontos API)
- Develop standardized, LOD enabled interfaces between NLP tools (NLP2RDF)

From semi-structured sources

• Efficient bi-directional synchronization

From **structured** sources

 Declarative syntax and semantics of data model transformations (W3C WG RDB2RDF)

Orthogonal challenges

- Using LOD as background knowledge
- Provenance



Storage and Querying





RDF Data Management

Still by a factor 5-50 slower than relational data management (BSBM, DBpedia Benchmark)

Performance increases steadily

Comprehensive, well-supported open-soure and commercial implementations are available:

- OpenLink's Virtuoso (os+commercial)
- Big OWLIM (commercial), Swift OWLIM (os)
- 4store (os)
- Talis (hosted)
- Bigdata (distributed)
- Allegrograph (commercial)
- Mulgara (os)





DBpedia Benchmark

- Uses DBpedia as data and a selection of 25 frequently executed queries
- Can generate fractions and multiples of DBpedia's size
- Does not resemble relational data

Performance differences, observed with other benchmarks are amplified





26.5.2011





- Reduce the performance gap between relational and RDF data management
- SPARQL Query extensions
 - Spatial/semantic/temporal data management
- More advanced query result caching
- View maintenance / adaptive reorganization based on common access patterns
- More realistic benchmarks

Authoring

In Cool



watch

delete

protect

move



Two Kinds of Semantic Wikis

article

1. Semantic (Text) Wikis

- Authoring of semantically annotated texts
- 2. Semantic Data Wikis
- Direct authoring of structured information (i.e. RDF, RDF-Schema, OWL)

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edit

history



OntoWiki – a semantic data wiki

Versatile domain-independent tool

Serves as Linked Data / SPARQL endpoint on the Data Web

Open-source project hosted at Google code Not just a Wiki UI, but a whole framework for the development of Semantic Web applications Developed in PHP based on the Zend framework Very active developer and user community More than 500 downloads monthly Large number of use cases







Professorenkatalog Leipzig Person > Professor > Levin Ludwig Schücking User View Extras Help Resource Edit View Eigenschaften Karte Kalender Versionen Bearbeiten Kommentare und Bewertungen Suchtext Properties for Levin Ludwig Schücking Alle Wissensbasen durchsuchen Autoren Nachname Schücking 0 Erstellt vor ca. 530 Tagen durch Suchen D voller Prof. Dr. phil. Admin akademischer Titel Letzte Änderung vor ca. 253 Tagen • Wissensbasen durch ChristianAugustin Levin eine Person hat D Vornamen Ludwig Weitere Autoren: Modell des Professorenkatalogs FriederikeBulka 144 Ø Professorenkatalog der Universität Person ID ReginaSteiner Leipzig Geburtstag 1878-05-29 ChristianRau Geburtsstadt Burgsteinfurt Sprachen (ausgezeichnete Ähnliche Instanzen Labels Geburtsland Preußen **RDF-Triple auf** Professor de en keine 1964-10-12 Ø Todestag **Resourcen-**Georg Hermann Schnedermann Ø Todesstadt Farchant Carl Friedrich Heinrich Schaffstein • Klassen Detailseite Bild 0 Wolfgang Otto Bernhard Vorname (693) Schadewaldt Fritz Adolf Albert Person (1534) Prinzhorn Ludwig Weickmann Professor (1312) Show all 1312 in Main Tab » Veröffentlichung (1262) Hierher verweisende Instanzen Lebensabschnitt (10299) ist Betreuer Beziehung zu einer Institution Lorenz Morsbach (8840) Show in Main Tab » Karriere (4367) Amt (803) Auftreten als Wert Qualifikationsschrift (2385) Studium (1285) Bildherkunft Privatbesitz Keine Entsprechungen. gesellschaftliche Funktion (1412) Links http://de.wikipedia.org/wiki/Levin Ludwig Sch%C3%BCcking (e.g.Wikipedia) Verwandschaftsbeziehungen (1) Geschwister (1) Brude2(4.11.2011 Abitur Stadt Abitur Sadren Auer - The emerging Web of Linked 32 Körperschaft (423)

I897-1901 Studium: Neuere Sprachen und Kunstgeschichte in Freiburg,

Professor pat a





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Data



Catalogus Professorum Lipsiensis





Professorenkatalog der Universität Leipzig | catalogus professorum lipsiensis

Startseite

Epochen

Fakultäten

Professoren des Tages

Rektoren und Dekane

gesamtes Verzeichnis

Volltextsuche

Hintergrund

Information in English

Epochen > 1919-1932 und 1933-1945

Fakultäten > Philosophische Fakultät I der Universität Leipzig - Philologisch-Historische Abteilung (1920-1951)

Prof. Dr. phil. *Levin* Ludwig Schücking

Lebensdaten

geb. 29.05.1878 in Burgsteinfurt gest. 12.10.1964 in Farchant

Lebenslauf

Studium

 1897-1901 Studium: Neuere Sprachen und Kunstgeschichte in Freiburg, Göttingen, Berlin und München

Qualifikation

- 1904 Habilitation f
 ür Englische Philologie an der Universit
 ät G
 öttingen Titel der Arbeit: Grundzüge der Satzverknüpfung im Beowulf.
- 1901 Promotion zum Dr. phil. in Englischer Philologie an der Universität Göttingen Titel der Arbeit: Stoffliche Beziehungen der englischen Komödie zur italienischen bis Lilly.



Bildquelle: Privatbesitz



OntoWiki: Caucasian Spiders







RDFauthor in OntoWiki

Properties of Sebastian Resource	Dietzold	
Properties History	Community Source	
	🔒 Save Changes 🛛 🔀 Cancel 🥜 Edit Properties	≪ Clone Resource × Delete Resource
name	Sebastian Dietzold	Tagging -
phone	© +49 341 97 32366	(1) No tags yet.
personal mailbox	ietzold@informatik.uni-leipzig.de	Similar Instances
publications	http://www.bibsonomy.org/user/seebi	Person: Axel Ngonga Ngomo
knows	Philipp Frischmuth	Christoph Riess Jens Lehmann Michael Martin Nathanael Amdt
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	Sindice Search	Semantic Web (AKSW)





OntoWiki: Supporting Requirements engineering

SoftWiki Integrator Window	Sonstiges > Comment	
Softwiki Main Selection	Zurück Comment To each lab in the repository users can write comments. To accomplish that a simple text field is required and a function which saves the comments related to the specific resource. This functionality provides a communication channel between users and developers as well as among users. It allows them to give hints for improvements, to criticize, to leave compliments for the authors. To avoid spam it is necessary to implement methods like Captcha or math story problems.	
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Semantic Portal with OntoWiki: Vakantieland









about typeof

property/rel

Linking

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- SILK
- LIMES

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rdfs: http://www.w3.org/2000/01/rdf-schema# (-)						
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linkedct. http://data.linkedct.org/resource/linkedct/ (-)						

Start Linking

• Sindice integration into UIs

LOD Linking

Semantic Pingback

26.5.2011

dc: http://purl.org/dc/terms/ (-) meshr: http://bio2rdf.org/ns/mesh# (-)



Creating a **network effect around Linking Data**: Semantic Pingback

update and notification services for LOD Downward compatible with Pingback (blogosphere) http://aksw.org/Projects/SemanticPingBack









Visualizing Pingbacks in OntoWiki

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phone	∎ tel	:+49-341-97322	73		links_to ⁻¹ http://aksw.org/Michaell	Martin
publications	□ htt	p://www.michael·	-martin.ir	p/references/	works with ⁻¹ Sebastian Dietzold	

26.5.2011





Interlinking Challenges

Only 5% of the information on the Data Web is actually linked

- Make sense of work in the de-duplication/record linkage literature
- Consider the open world nature of Linked Data
- Use LOD background knowledge
- Zero-configuration linking
- Explore active learning approaches, which integrate users in a feedback loop
- Maintain a 24/7 linking service: Linked Open Data Around-The-Clock project (<u>LATC-project.eu</u>)



Enrichment



Enrichment & Repair

Linked Data is mainly instance data and !!!



ORE (Ontology Repair and Enrichment) tool allows to improve an OWL ontology by fixing inconsistencies & making suggestions for adding further axioms.

- Ontology Debugging: OWL reasoning to detect inconsistencies and satisfiable classes + detect the most likely sources for the problems. user can create a repair plan, while maintaining full control.
- Ontology Enrichment: uses the DL-Learner framework to suggest definitions & super classes for existing classes in the KB. works if instance data is available for harmonising schema and data.

http://aksw.org/Projects/ORE

Quality Analysis

Kinde

DEUTS



http://lod2.eu



Quality on the Data Web is varying a lot

 Hand crafted or expensively curated knowledge base (e.g. DBLP, UMLS) vs. extracted from text or Web 2.0 sources (DBpedia)

Research Challenge

• Establish measures for assessing the authority, provenance, reliability of Data Web resources







EvoPat – Pattern based KB Evolution

- unified method, for both data evolution and ontology refactoring.
- modularized, declarative definition of evolution patterns is relatively simple compared to an imperative description of evolution
 - allows domain experts and knowledge engineers to amend the ontology structure and modify data with just a few clicks
- Combined with RDF representation of evolution patterns and their exposure on the Linked Data Web, EvoPat facilitates the development of an evolution pattern ecosystem
 - patterns can be shared and reused on the Data Web.
- declarative definition of bad smells and corresponding evolution patterns promotes the (semi-)automatic improvement of information quality.





Evolution Patterns



26.5.2011

Page 51

OntoWiki (Admin) –	OntoWiki Evolution Patterr	n Engine				-	
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Exploration

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	SEMANTIC INFORMATION	Pending 5 sources 🔹
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E S	comment: Songkick has upcoming and past concerts and listings for Sogndal Kulturhus Sogndal with details of artists and tickets. Get venue information, address, map, tickets, read venue reviews, and see photos and videos. [4]	8 <u>Sogndal</u> 10 facts 2009-09-19 http://dbpedia.org/resource/Category:Sogndal
	Songkick has upcoming and past concerts and listings for Stedje Kyrkje, Sogndal Sogndal with details of artists and tickets. Get venue information, address, map, tickets, read venue reviews, and see photos and videos. [5]	9 Norlandia Vesterland Res 6 facts 2011-04-22 http://www.tripwolf.com/en/guide/show/473759/Norway
	Tickets and information for Martin E Holm's upcoming concert at Stedje Kyrkje, Sogndal in Sogndal on 01 December 2010. [6]	10 Sogndal, Rogaland 15 facts 2009-09-21
	Comprehensive listings and tickets for upcoming concerts, live music, and gigs in Sogndal for November 2010 on Songkick. Get email alerts when your favourite bands come to Sogndal! [11]	http://dbpedia.org/re: solo @ approve reject × ×
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	Firik Rakke [2]	



Creating Knowledge out of Interlinked Data

Visual Query Builder







Relationship Finder in CPL



26.5.2011

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MUSIC GENRES REVIEWS NEWS BLOG NEW SHOWCASE

The Black Eyed Peas

Formed 1995.



Biography

The Black Eyed Peas are an American hip hop group, formed in Los Angeles, California in 1995. The group is composed of rapper and multi-instrumentalist will i am, rappers aplide ap and Taboo, and singer-rapper Fergie. Since the release of their third album, Elephunk, in 2003, the group has sold an estimated 27 million albums worldwide, 20 million singles and 47 million copies with both sales combined.

The group scored their first worldwide hit with "Where Is the Love?" in 2003, which topped over ten charts worldwide. Another single was the European hit "Shut Up", Their next album, Monkey Business was also a worldwide hit, certified 4+ Platinum in the U.S., and spawning two hit singles. "My Humps" and "Don't Phunk with My Heart".

in 2009, the group became one of only 11 artists to have ever simultaneously held the #1 and #2 spots on the Billboard Hot 100, with their singles "Boom Boom Pow" and "I Gotta Feeling", with the next single "Meet Me Halfway" achieving similar success, from the album The E.N.D. Combined, these three singles also topped the chart for an unprecedented 30 consecutive weeks in 2009. The album later produced a third Hot 100 number-one placement with "Imma-Be", making the group one of few to ever place three number one singles on the chart from the same album before being followed with "Rock That Body" which managed to peak in the Top 10 of Hot 100. "I Gotta Feeling" has become the first single to sell more than 1 million downloads in the United Kingdom.

Before becoming part of the Black Eyed Peas, will Lam and apl de.ap were in a group called Attan Klann, signed to Eazy E's Ruthless Records. The Black Eyed Peas were ranked 12th at the Billboard's Decade-End Chart Artist of the Decade, and 7th in the Hol 100 Artists of the Decade. The group has been nominated for 'Most Popular International Artist' in the ARIA Music Awards

In November 2010, they released their album The Beginning. The first single of the album was The Time (Dirty Bit). The song topped the charts in many countries. In February 2011, the group performed at the Super Bowl XLV halftime show The album's second single was Just Can't Get Enough and It was released in February 2011. The music video was filmed in Japan one week. before the 2011 Tohoku earthquake and tsunami. The song was dedicated to Japanese livends. On March 17, the group appeared on the American Idol elimination show singing their new single.

Read more at Wikipedia.

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Links & Information



Just Can't Get Enough 88C Radio 1 | The Chris Moyles Show 07/04/2011

Boom Boom Pow BBC Radio 11 Tom Deacon Jodie Connor brings in some buge cakes

My Humps BBC 1Xtra I Charlie Sloth Prince William's dilemma - To commit or stay free and single

Audio Previews From Latest Album Review













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Vicki

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Links & Information	Played On
LINKS	Since December 2008
Official homepage at blackeyedpeas.com	O and noted
Fanpage at portalbep.com	BBC Radio 1
Wikipedia article on The Black Eyed Peaa	C BBC 1Xtra
MDb at Imdb.com/name/rm0272334	C doc 1/dia
MySpace at myspace com/blackeyedpeas	BBC Rudio 2
Twitter at twitter.com/bep	-
Facebook page at facebook.com/blackeyedpeas	BBC Asian Network
Lastim page on The Black Eyed Peas	
MusicBrainz entry on The Black Eyed Peas	BBC Radio Scotland
MEMBERS Forgle, Taboo, aplide.ap, william, Kim Hill (1995-2000)	Pi BBC Radio Ulster
COLLABORATED ON Not Curd vs. Black Eyed Peas	BBC Switch
Livity & information come from MusicBrainz. You can add or add information about The Black Eyed Peak at musicbraniz on; Find out none about our use of this date. The BBC is not responsible for the context of external sites.	BBC Radio nan Gaidheal
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Will.am: Britney duet is 'edgy' Thu 10 Feb 2011 06:53 Black Eyed Peas singer says he's working on an 'edgy' track for Britney's new album	THE BBC TWO
Pees to play Wirebess Restrual Mon 7 Feb 2011 08:00 Will.i.am and co will headline this year's Wireless festival alongside Plan B and	BBC 6 Music
Black Eyed Peas to play Wineless Mon 7 Feb 2011 08:36 US pop act Black Eyed Peas will be the Friday night headiners at this year's Winelesa.	• Scotland
More The Black Eyed Peas News s	biformation displayed about a
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BLOGS FROM THE BBC	
Black Eyed Peas - 'Rock That Body' El Sun 14 Mar 2010 10: 17 Will Am and I have a lot in common. We're both veny clever, but also a bit stupid, Fraser Modiphe	
Canada enjoys a good eight at the hockey III: Thu 25 Feb 2010 06:01 The organisers here in Vancouver have seemingly adopted a song to pump up the local Matthew Pinsent	
Block Eyed Peas - 'Meet Me Hatfway'	

More The Black Eyed Peas Blogs » **BBC Reviews**



The Beginning 2010 REVIEWED BY GARRY MULHOLLARD 44.99 Proof that hanging out with Cheryl and Simon can seriously damage your talent.

Truth be told, right now, I'm feeling a bit empty inside. This might be due to the

The E.N.D. 2009

about entites played on BBC radio netwo Find out more about this artist play cour





Some Benefits of Linked Open Gov't Data

Enables applications that allow for

- getting a 360 ° view on an issue
- rapid fact-checking
- cross-referencing and checking of statistical claims ("how to lie with statistics")
- increased transparency in public debate
- release of the creative potential of "the crowd"

Help citizens in their daily life

- to understand their governments better
- find good places to live (little pollution, good schools, close to protected natural sites...)
- locate public services (administrative offices, public toilets...)

Brings citizens and government closer together





PublicData.eu



Search



publicdata.eu – europe's public data.

Places

- United Kingdom (5956)
- England (4413)
- Wales (2116)
- Scotland (1682)
- International (1665)
- Northern Ireland (1288)

Creators

- Helsingin kaupungin tietokeskus (957)
- Tim McNamara (320)
- NHS Information Centre for health and social care, 1 Trevelyan Square, Boar Lane, Leeds, LS1 6AE (264)
- UK Statistics Authority (247)
- Neighbourhood Statistics (227)
- Welsh Assembly Government (227)

File types

- CSV (1642)
- Excel (1181)
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- XML (651)
- RDF/XML (554)
- JSON (426)



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View	type 🛛 Beneficiary	Country / Territory
Beneficiaries of the European Commission	label EUROPEAN INVESTMENT BANK BANQUE EUROPEENNE D'INVESTISSEMENT	Coordinator ¹ • beneficiary ⁻¹ • distributed amount to beneficiary ⁻¹
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Login Register		
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http://energy.publicdata.eu

2008

Greenhouse Gas Emissions per Capita

In tonnes of CO2 equivalent per person



http://scoreboard.lod2.eu

PUBLINK DG INFSO

DG INFSO wants to publish electronically their data in a user accessible fashion. Up to now, this is done on paper, and some excel and access files. This target is part of a bigger goal: the digital agenda of the European Commission which goes public early june 2011.

Please Select one of the available scenarios:



Scenario 1. : Bar Chart

Description Description

Visit: Bar chart



Scenario 2. : Time-line chart

Description Description

Visit: Time-line chart



Scenario 3. : Scatter-plot

Description Description

Visit: Scatter-plot

Indicator	Value in 1st quartile	Value in 2nd quartile	Value in 3rd quartile	Value abo 3rd quarti
DSL lines share in fixed broadband		53 (58)		
Fixed broadband lines		2175679 (2214166)		
New entrants' share in fixed broadband lines		54 (54)		
Fixed breadband penetration	0.2 (0.21)			
share of fixed broadband lines equal to or above 10 Mbps				73 (55)
Share of fixed broadband lines equal to or above 2 Mbps			97 (17.5)	
% of enterprises having a fixed broadband connection		#3 (85)		
te of households having a broadband connection		50 (27)		
% of household with access to the Internet at home	54 (59)			

Scenario 4. : Country Profile

Description Description

Visit: Country profile

1. Bar Chart, to analyze one indicator and compare countries

This chart allows you to select one indicator, one year, and thus to see how European countries compare over it. You can also check if the ranking of countries was different during the last years. Countries are always ordered according to their score. You can select or de-select countries so to visualize only those you are interested in.

Solost one Indigator: During online content (%/ internet users)	Export CSV
Select one indicator. Buying online content (% internet users)	Export RDF
Select the Year: 2010 2009 2008 	Definitions and scopes
	Eurther Exploration





3. Scatter-plot, to compare two indicators

Scatter-plot is a kind of chart that compare two indicators, represented respectively on the x (horizontal) and y (vertical) axis. Each country appears as a point whose coordinates are its values on the two selected indicators. If all the country points are near a diagonal line, thus there is a correlation between the two indicators and those countries performing well on one indicator are good also on the other (or the contrary). In case of a more irregular cloud of points, no specific conclusions could be drawn about the relation between the two indicators. It could be of interest to explore if this relation has changed over the recent years.

Select one Indicator (X-Axis):	Use of eGovernement services (% pop)	•	Export CSV
Select one Indicator (Y-Axis):	Reading online newspapers/magazines (% pop)	•	Export RDF
Select the Vear:			Definitions and scopes
Select the real.	€ 2010 € 2009 € 2008		Further Exploration







Linked Enterprise Data

- 1. Linked Enterprise Intra Data Webs can fill the gap between Intra-/Extranets and EIS/ERP
- 2. Facilitates **data integration** along value-chains within and across enterprises
- 3. The pragmatic, incremental, vocabulary based Linked Data approach **reduces data integration costs** significantly
- The wealth of knowledge available as Linked Open
 Data can be leveraged as background knowledge
 for Enterprise applications





Thanks for your attention!

Sören Auer <u>http://www.informatik.uni-leipzig.de/~auer/</u> | <u>http://aksw.org</u> | <u>http://lod2.org</u> auer@uni-leipzig.de

UNIVERSITÄT LEIPZIG



Sören Auer – WIMS: Creating Knowledge out of Linked Data

^{26.5.2011}



Research focus

- Very large RDF data management
- Enrichment & Interlinking
- Fusion & Information Quality
- Adaptive UI interfaces

Use Cases

- Media & Publishing
- Enterprise Data Webs
- Open Gov Data

Partners

Uni Leipzig, DERI Galway, FU Berlin, Semantic Web Company, OpenLink, Tenforce, Exalead, Wolters Kluwer, OKFN

LOD2 in a Nutshell





http://lod2.eu



Open Governmental Data – and ideal testbed for Linked Data?



- European registry & collaboration platform for open governmental data
- Outreach & involve original data providers local, regional, national and European

Dataset	Usage	Data Provider
Eurostat Public Opinion	Interlink with DBpedia and UK eGov data	Statistical Office DG Communication
CORDIS	Interlinked with projects, publications and researchers	Publication Office
Job Mobility Portal / European Career	Interlinked with UK eGov data	EURES, EPSO
TED – Tenders electronic Daily	Interlink with national company registries	Publication Office
National datasets	Road traffic usage, edubase, national statistics	Data.gov.uk

- Close cooperation with W3C eGov IG, OKFN's OpenEUdata, PSI & grassroots efforts
- CKAN.org | OKFN's EuOpenData group | ICT2010 Networking Session
- Uls and Personalization
 - $\circ\,$ individual mashups of data $\,$ with other sources $\,$
 - \circ Notification/subscription service based on personal prefs
 - $\,\circ\,$ Transparency wishlists, upload revisions, derivates
 - o create and publish queries, reports and visualizations



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