



Von offenen Daten zu einem Ökosystem vernetzten Wissens

Sören Auer

UNIVERSITÄT LEIPZIG

Starting Question

Two definitions of library:

1. Place to make books available (to the public).
2. Knowledge exchange facility.

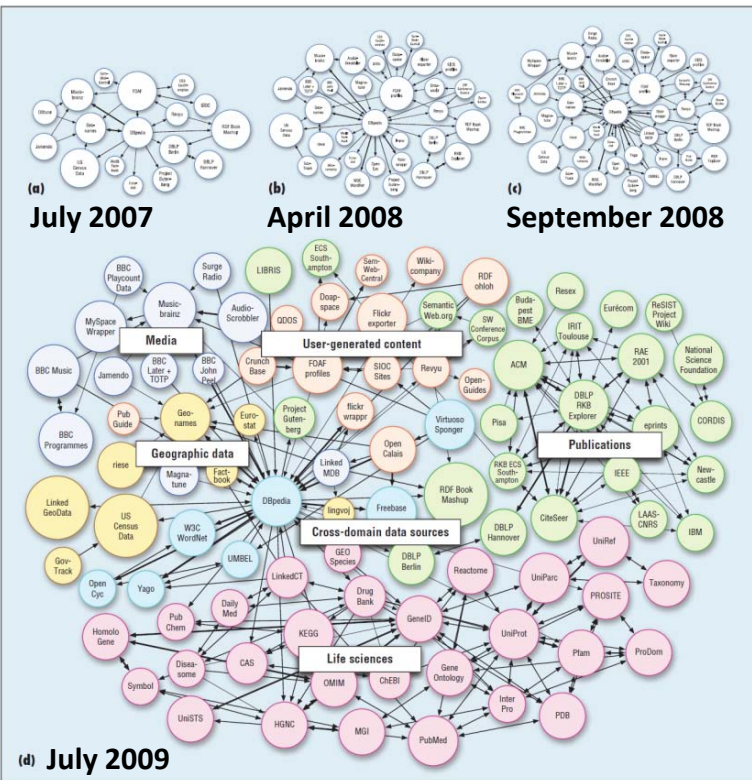
Which one would you choose? (until 20 years both definition probably coincided)

If books were the **substrate to exchange knowledge** (in the past) what will it be in the future?

- Maybe the Internet, the Web, structured information on the Web (i.e. Linked Data)?

LOD achievements and challenges

- 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



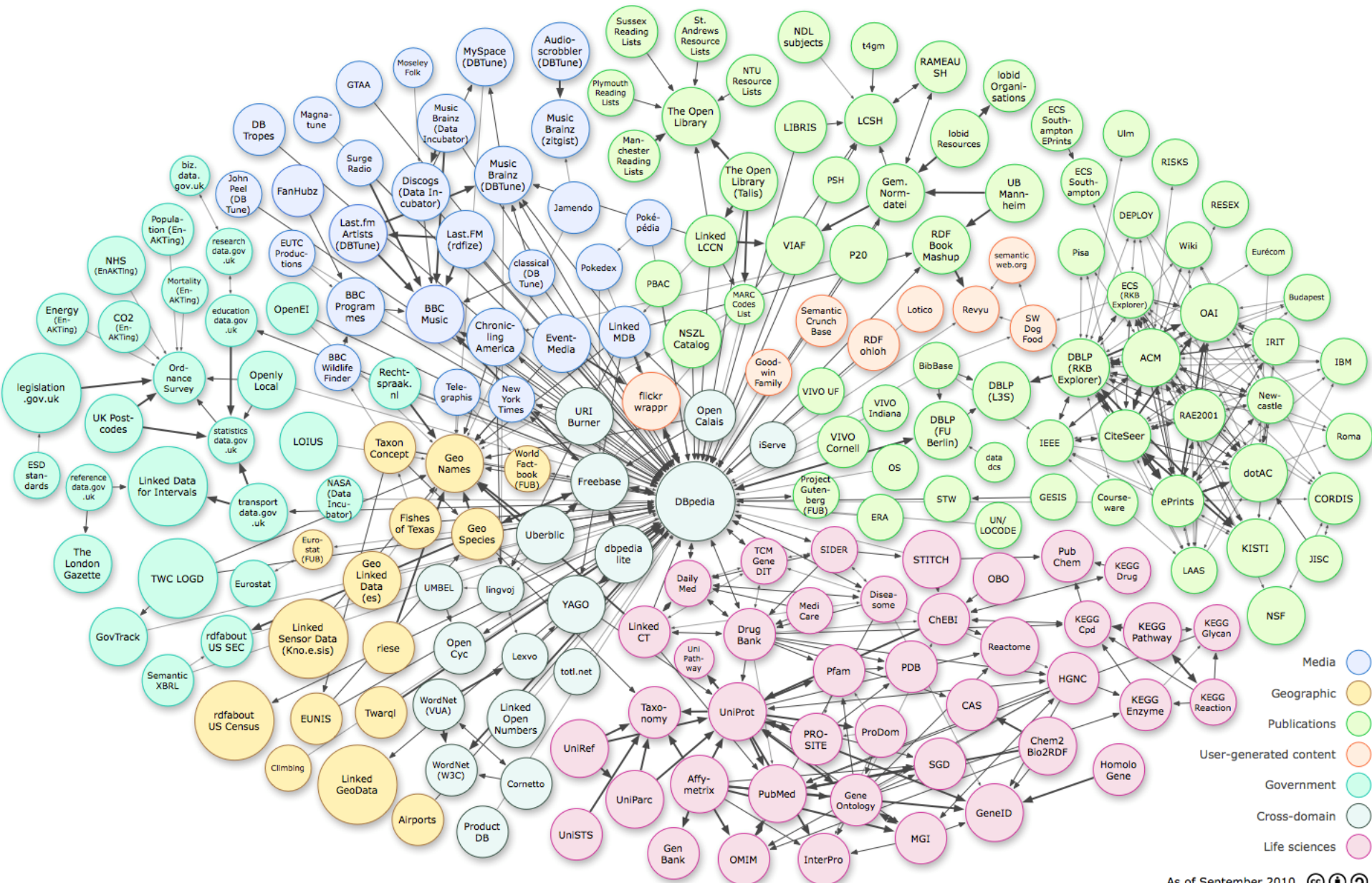
Achievements

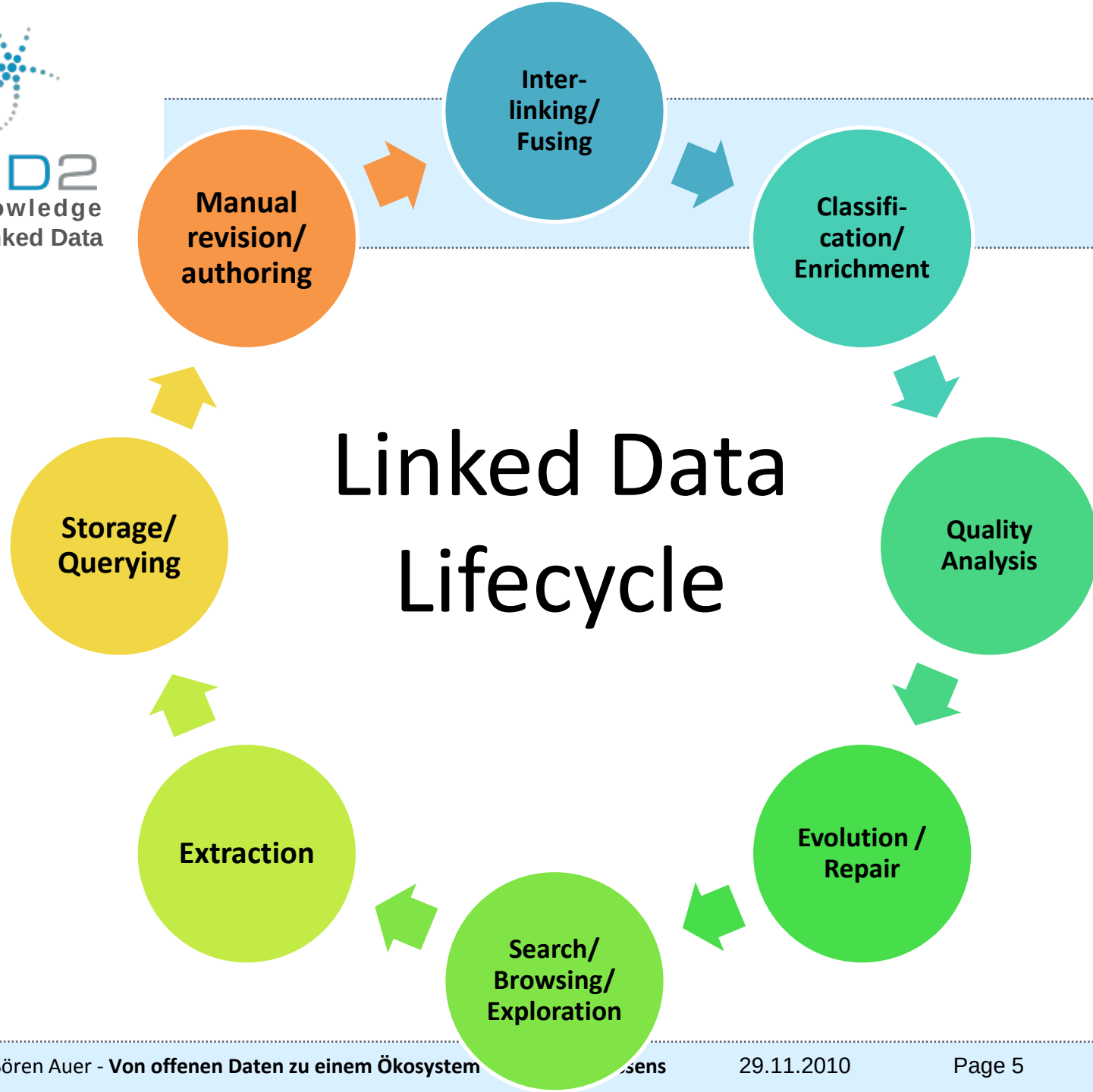
1. Extension of the Web with a **data commons** (13.1 B facts)
2. vibrant, global RTD **community**
3. **Industrial uptake** begins (e.g. BBC, Thomson Reuters, Eli Lilly)
4. Emerging **governmental adoption** in sight
5. Establishing Linked Data as a **deployment path** for the Semantic Web.

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
5. **Usability:** Missing direct end-user tools and **network effect**

These issues are closely related and should ultimately lead to an ecosystem of interlinked knowledge!







Extraction

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

Structure in Wikipedia

Title

Abstract

Infoboxes

Geo-coordinates

Categories

Images

Links

other language versions

other Wikipedia pages

To the Web

Redirects

Disambiguations

Busan

From Wikipedia, the free encyclopedia

"Pusan" redirects here. For the Vedic Hindu

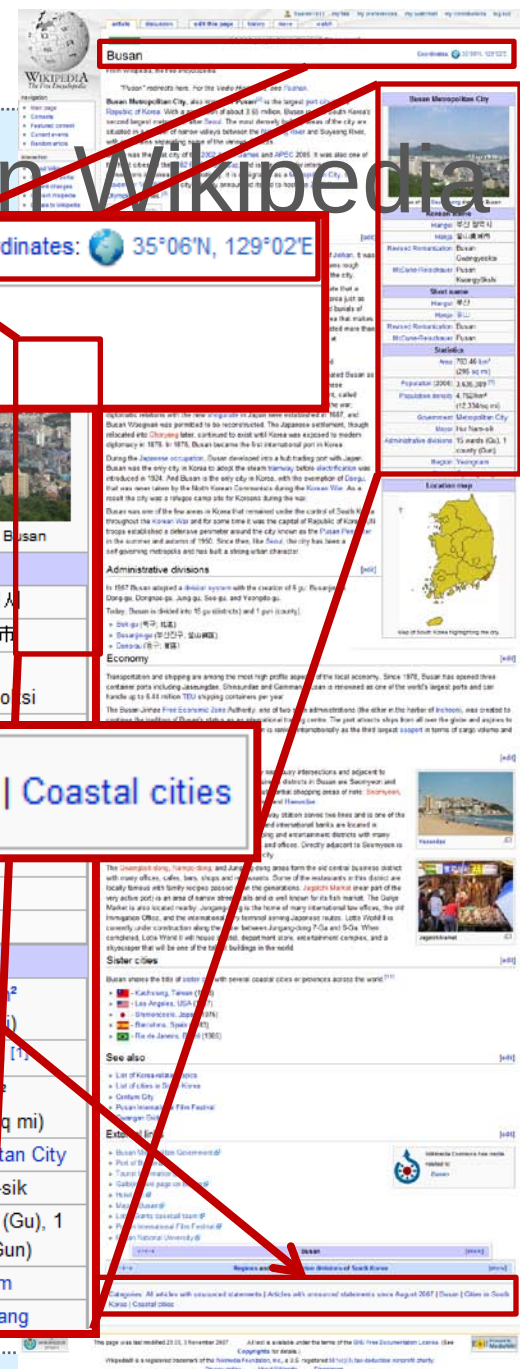
Coordinates:  **35°06'N, 129°02'E**

in other languages

- Български
- Dansk
- Deutsch
- Eesti
- Español
- Esperanto
- Français
- Galego
- 古文 / 文言文
- 한국어
- Հայերեն
- Ido

Categories: Busan | Cities in South Korea | Coastal cities

- Nederlands
- 日本語
- Norsk (bokmål)
- Norsk (nynorsk)
- Polski
- Português
- Română
- Русский
- Simple English
- Suomi
- Svenska
- ไทย
- Tiếng Việt
- Türkçe
- 中文



Wikitext-Syntax

```

{{Infobox Korean settlement
|title           = Busan Metropolitan City
|img             = Busan.jpg
|imgcaption      = A view of the [[Geumjeong]] district in Bu
|hangeul         = 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:hangeul    "부산 광역시"@Hang
dbp:Busan      dbpp:area_km2   "763.46"^xsd:float
dbp:Busan      dbpp:pop        "3635389"^xsd:int
dbp:Busan      dbpp:region     dbp:Yeongnam
dbp:Busan      dbpp:dialect    dbp:Gyeongsang
...
  
```

Busan Metropolitan City



A view of the **Geumjeong** district in Busan

Korean name

Hangeul	부산 광역시
Hanja	釜山廣域市
Revised Romanization	Busan Gwangyeoksi
McCune-Reischauer	Pusan Kwangyŏkshi

Short name

Hangeul	부산
Hanja	釜山
Revised Romanization	Busan
McCune-Reischauer	Pusan

Statistics

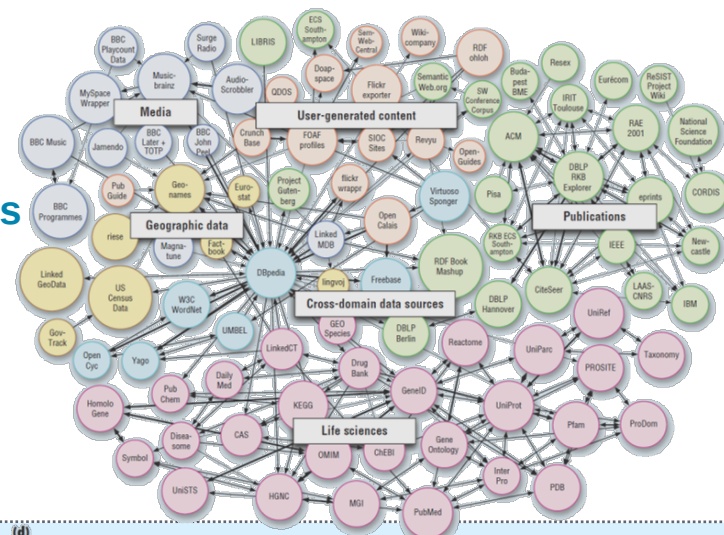
Area	763.46 km ² (295 sq mi)
Population (2006)	3,635,389 ^[1]
Population density	4,762/km ² (12,334/sq mi)
Government	Metropolitan City
Mayor	Hur Nam-sik
Administrative divisions	15 wards (Gu), 1 county (Gun)
Region	Yeongnam
Dialect	Gyeongsang



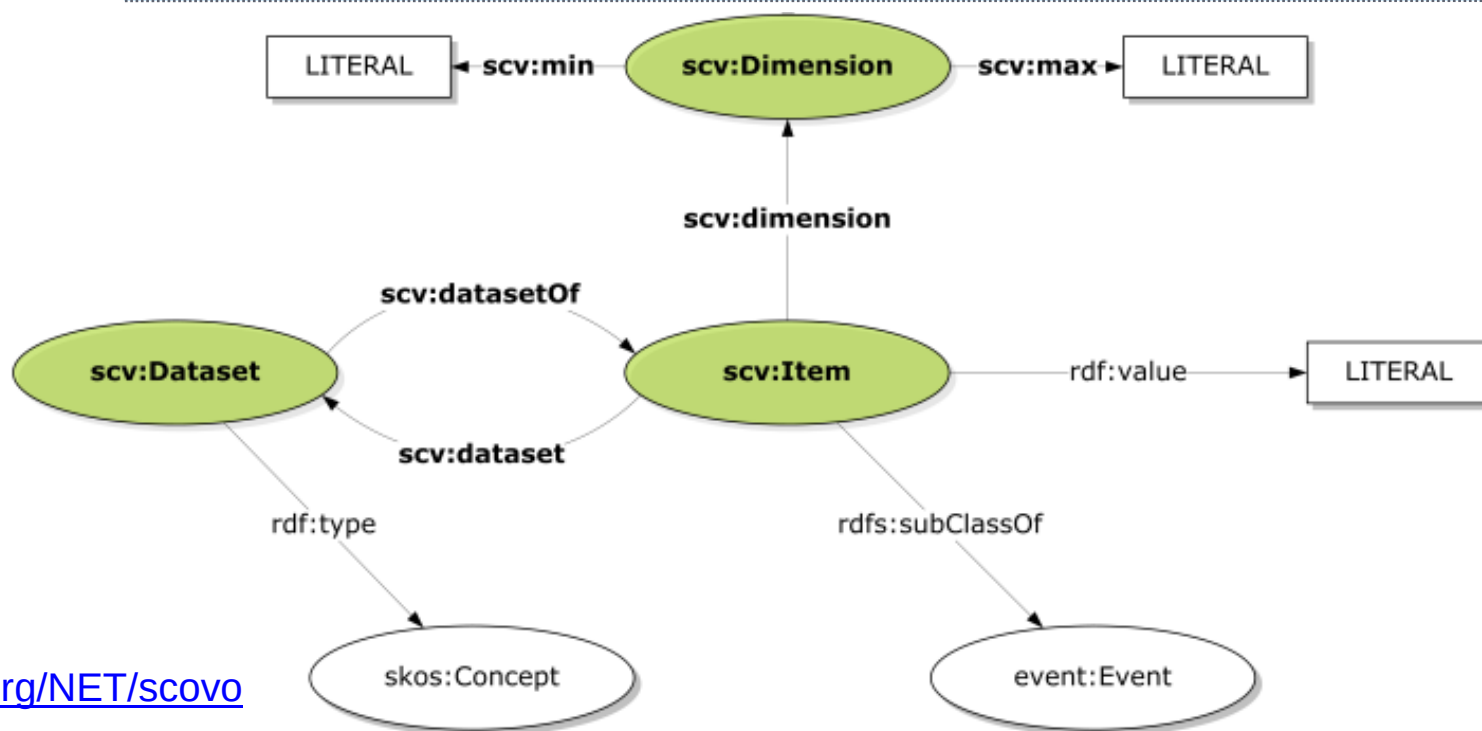
A vast multi-lingual, multi-domain knowledge base

descriptions of ca. 3.4 million things (1.5 million classified in a consistent ontology, including 312K *persons*, 413K *places*, 94K *music albums*, 49K *films*, 15K *video games*, 140K *organizations*, 146K *species*, 5K *diseases* labels & abstracts in up to 92 different languages; 1.5M links to images; 5.5M links to external web pages; 5M links to other RDF data, 565K Wikipedia categories, 75K YAGO categories altogether **>1 billion pieces of information** (i.e. RDF triples): 257M from English edition, 766M from other language editions

- **substantial impact** in science, technology and society
- became a **central interlinking hub** on the Data Web
- Scientific publications attracted more than **500 citations**
- More than 15.000 monthly visits on DBpedia.org, numerous press articles, blog posts ...
- Ecosystem of commercial and community applications: ThomsonReuters, BBC, Neofonie, Openlink, Faviki ...



SCOVO – Statistical Core Vocabulary



<http://purl.org/NET/scovo>

Successor: Data Cube Vocabulary

<http://publishing-statistical-data.googlecode.com/svn/trunk/specs/src/main/html/cube.html>

SCOVO Importer – Linked Statistical Data

Import CSV Data

Configurations

Data Range: (5,3) to (16,16)

Buttons: Add Dimension, Select Data Range, Extract Triples, Cancel

		Countries Dimension													
		Afghanistan	Albania	Algeria	Andorra	Angola	Antigua and Barbuda	Argentina	Armenia	Australia	Austria	Azerbaijan	Bahamas	Bahrain	Bangladesh
WHO Country code		3010	4005	1010	4008	1020	2010	2020	4007	5020	4010	4012	2030	3020	3025
GBD cause (b)															
Tuberculosis		127	0	7	0	40	0	6	2	0	-	-	0	0	672
STDs excluding HIV		52	1	75	0	44	0	29	2	3	1	7	0	0	256
a.	Syphilis			6	0	12	0	2	0	0	0	0	0	0	24
b.	Chlamydia			38	0	16	0	17	2	3	1	5	0	0	146
c.	Gonorrhoea	15	0	30	0	15	0	9	0	0	0	1	0	0	85
HIV/AIDS		0	0	5	0	163	0	16	0	0	1	0	2	0	1
Diarrhoeal diseases		1,206	3	97	0	866	0	23	3	3	1	33	0	0	1,117
Childhood-cluster diseases		170	0	19	0	108	0	1	0	0	0	0	0	0	365
a.	Pertussis	110	0	16	0	77	0	1	0	0	0	0	0	0	62
b.	Polio	0	-	0	-	0	-	0	-	0	0	-	-	-	-
c.	Diphtheria	2	0	0	-	2	0	0	0	-	-	-	0	0	2
d.	Measles	6	0	2	0	16	0	0	0	0	0	0	-	0	236

Country Codes Dimension

Diseases Dimension

Data Range

OntoWiki

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

Tool	Triplify	D2RQ	Virtuoso RDF Views
Technology	Scripting languages (PHP)	Java	Whole middleware solution
SPARQL endpoint	-	X	X
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

Library opportunity



Extract and publish structured (meta-)data for
the high-quality library content on the Data
Web



ando omnes passim deliberant et loquuntur, optimum à mutis
certis consilium est: Hominas quoq; si tardant, vocem inveniat,
et quæ nemo dicit, prudens antiquitas suggerit.

ing se:

Storage and Querying

RDF Data Management

Still by a factor 5-50 slower than relational data management

Performance increases steadily

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

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

Storage and Querying Challenges

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

Library opportunity



Provide storage facilities for hosting Linked Data for their users

Authoring



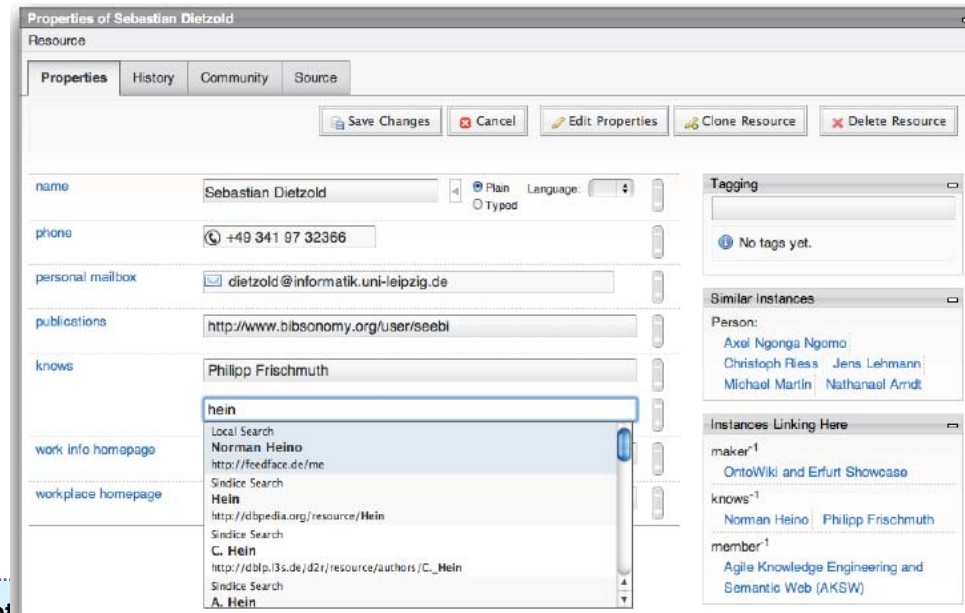
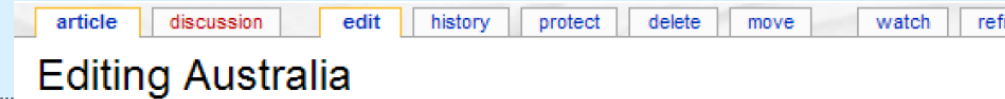
Two Kinds of Semantic Wikis

1. Semantic (Text) Wikis

- Authoring of semantically annotated texts

2. Semantic Data Wikis

- Direct authoring of structured information (i.e. RDF, RDF-Schema, OWL)



OntoWiki (Sebastian Tramp) [-]

User Extras Help Debug

Search for Resources

POWERED BY VIRTUOSO

Knowledge Bases [-]

Edit View

OntoWiki System Configuration

Caucasus Spiders

Navigation: CheckList [-]

Edit View Type

Search in Navigation

Caucasus Spiders

Ukraine ▶

Russia ▶

Turkey ▶

Iran ▶

Moldavia ▶

Resource List

View

Instances History Community Source

	published in	location
1. 33167: Harpactea golovatchi Original Record	Dunin (1992)	Shvanidzor
2. 33169: Harpactea eskovi Original Record	Dunin (1992)	Shnokh
3. 33168: Harpactea eskovi Original Record	Dunin (1992)	Ozun
rdf:type Original Record label 33168: Harpactea eskovi comment type series 92 location Ozun species name Harpactea eskovi published in Dunin (1992)		
4. 33172: Harpactea eskovi Original Record	Dunin (1992)	Savarlo
5. 33173: Harpactea nenilini Original Record	Dunin (1992)	Kuris
6. 33170: Harpactea eskovi Original Record	Dunin (1992)	Vanadzor
7. 33175: Harpactea deelemanae Original Record	Dunin (1992)	Kajaran
8. 33174: Harpactea nenilini Original Record	Dunin (1992)	Shishkert
9. 40155: Macarokeris nidicolens Original Record	Logunov & Rakov (1998)	Mukhtadir
10. 33178: Harpactea azerbaijdhanica Original Record	Dunin (1992)	Aurora

Explore Tags [-]

View

within

[Temirgoe](#) · [Rossk.](#) · [Evdokimovsk](#) · [Kergez Mt.](#) · [Bazardyuzu Mts.](#)

Minimap [-]

Edit View Zoom

Search for location

Data CC-BY-SA by OpenStreetMap

Show Properties [-]

[rdf:type](#) · [label](#) · [comment](#) · [location](#) · [species name](#) · [published in](#) · [within](#)

Filter [-]

Search in list

Add complex Filter Clear

Active Filters:

- [rdf:type](#) equals [Original Record](#)

<http://philipp.frischmuth24.de/id/me>[View Resource](#)

Properties

History

Community

Source

✓ Data was found for the given URI. 28 statements were added.

ns1:to <http://philipp.frischmuth24.de/pingback/ping/>

type [Person](#)

seeAlso <http://feeds.delicious.com/rss/pfrischmuth>

sameAs [5562](#)

[id490bd762-0352-40e8-8559-3726c31bbd8a](#)

birthday 1984-10-09

current project <http://pingback.aksw.org/>

depiction



firstName Philipp

gender male

holds account [pfrischmuth](#)

[pfrischmuth](#)

homepage <http://www.frischmuth24.de>

knows [me](#)

[Sebastian Tramp](#)

personal mailbox <mailto:frischmuth@informatik.uni-leipzig.de>

<mailto:philipp@frischmuth24.de>

name Philipp Frischmuth

nickname Phil

Tagging

[AKSW](#)[OntoWiki](#)

[Tag removed](#)

Similar Instances

Person

[Norman Heino](#) • [me](#) • [Sebastian Tramp](#) • [AxelCNgongaNgomo](#) • [ChristophRiess](#) • ...

Instances Linking Here

knows⁻¹

[Norman Heino](#) • [Sebastian Tramp](#)

maker⁻¹

[OntoWiki and Erfurt Showcase](#) • [Erfurt API](#) • [OntoWiki](#) • [Semantic Pingback](#) • [Triplify](#)

member⁻¹

[Agile Knowledge Engineering and Semantic Web \(AKSW\)](#)

RDFauthor in OntoWiki

Properties of Sebastian Dietzold

Resource

Properties

History

Community

Source

Save Changes

Cancel

Edit Properties

Clone Resource

Delete Resource

name

Sebastian Dietzold

Plain

Language:

Typod

phone

+49 341 97 32366

personal mailbox

dietzold@informatik.uni-leipzig.de

publications

http://www.bibsonomy.org/user/seebl

knows

Philipp Frischmuth

hein

Local Search

Norman Heino

http://feedface.de/me

Sindice Search

Hein

http://dbpedia.org/resource/Hein

Sindice Search

C. Hein

http://dblp.l3s.de/d2r/resource/authors/C_Hein

Sindice Search

A. Hein

work info homepage

workplace homepage

Tagging

No tags yet.

Similar Instances

Person:

Axel Ngonga Ngomo

Christoph Fliess

Jens Lehmann

Michael Martin

Nathanael Arndt

Instances Linking Here

maker¹

OntoWiki and Erfurt Showcase

knows¹

Norman Heino

Philipp Frischmuth

member¹

Agile Knowledge Engineering and Semantic Web (AKSW)

Library opportunity



Libraries can serve as **support facilities** (experts, consultants, educators best-practice disseminators) **for knowledge based authoring & collaboration** in many different (science) domains (humanities, life sciences...).

Linking



LOD Linking

Automatic Semi-automatic

- **SILK**
- **LIMES**

Manual

- **Sindice integration into UIs**
- **Semantic Pingback**

Examples (toggle)
[Drugbank](#)
[Diseases](#)
[SimCities](#)



LIMES

Download:
[Manual](#) | [Distribution](#)

Source:	Target:
Endpoint: http://mesh.bio2rdf.org/sparql	Endpoint: http://data.linkedct.org/sparql
Var: ?y	Var: ?x
Pagesize: 1000	Pagesize: 1000
Restriction: ?y rdf:type meshr:Concept	Restriction: ?x rdf:type linkedct:condition
Property: dc:title	Property: linkedct:condition_name

Metric:

Exemplars:

Acceptance: Threshold: 0.98 Relation: owl:sameAs	Review: Threshold: 0.95 Relation: owl:sameAs
---	---

Detected prefixes:

rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> (-)

rdfs: <http://www.w3.org/2000/01/rdf-schema#> (-)

owl: <http://www.w3.org/2002/07/owl#> (-)

linkedct: <http://data.linkedct.org/resource/linkedct/> (-)

dc: <http://purl.org/dc/terms/> (-)

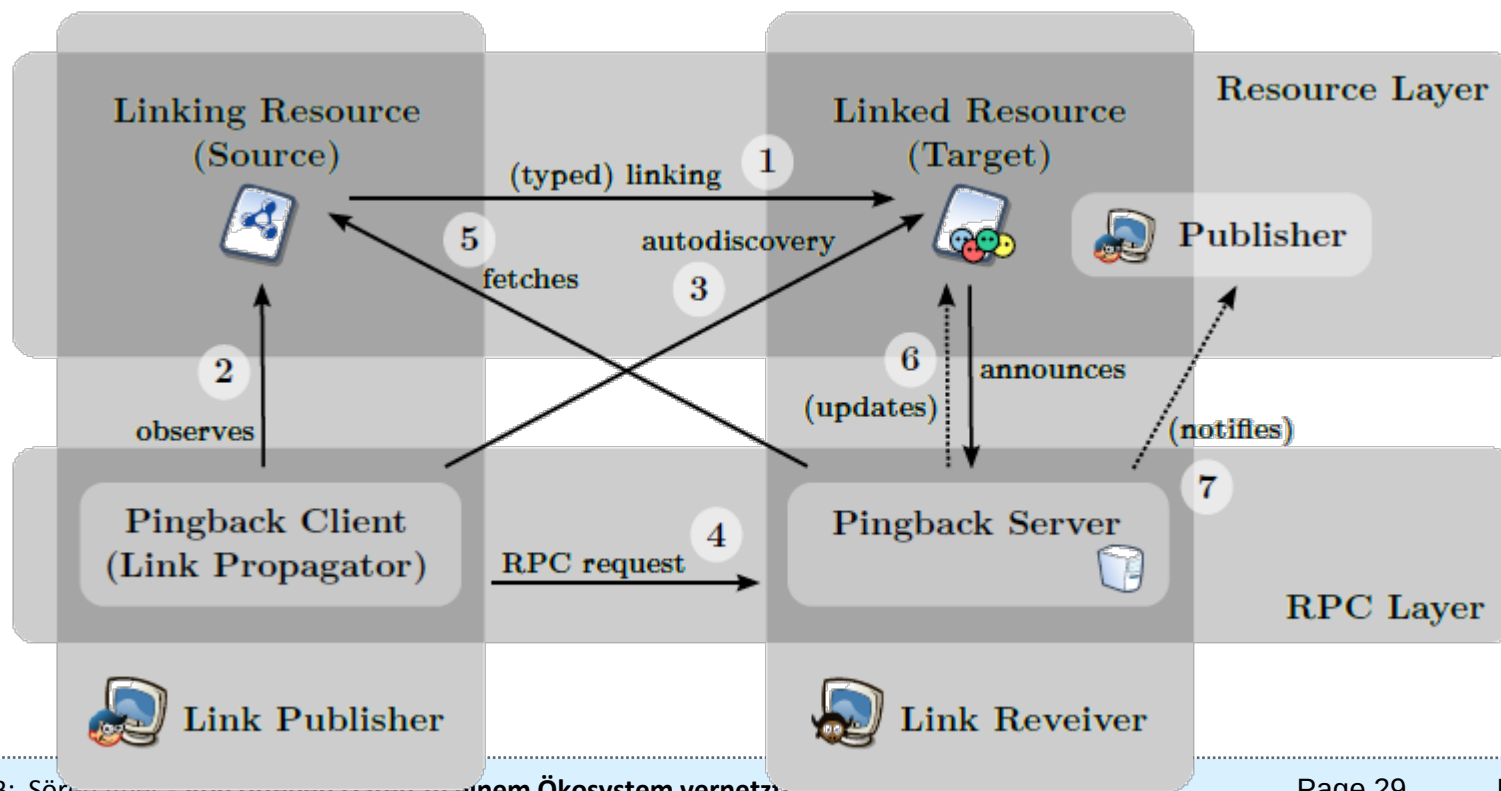
meshr: <http://bio2rdf.org/ns/mesh#> (-)

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](http://aksw.org/Projects/SemanticPingBack)



Visualizing Pingbacks in OntoWiki

Properties of Michael Martin

Resource

Properties

History

Community

Source

seeAlso

<http://del.icio.us/rss/xyres>
<http://michael-martin.info/comments/feed/>
<http://michael-martin.info/feed/>

depiction



family_name

Martin

Given name

Michael

name

Michael Martin

nickname

Samael

phone

<tel:+49-341-9732273>

publications

<http://www.michael-martin.info/references/>

Tagging

Similar Instances

Person:

[Philipp Frischmuth](#) •
[Steffan Berger](#) • [Danny Otto](#) •
[Annette Bouvain](#) •
[Michael Haschke](#)

Instances Linking Here

member⁻¹

[AKSW](#)

links_to⁻¹

<http://aksw.org/MichaelMartin>

works with⁻¹

[Sebastian Dietzold](#)

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 (LATC-project.eu)



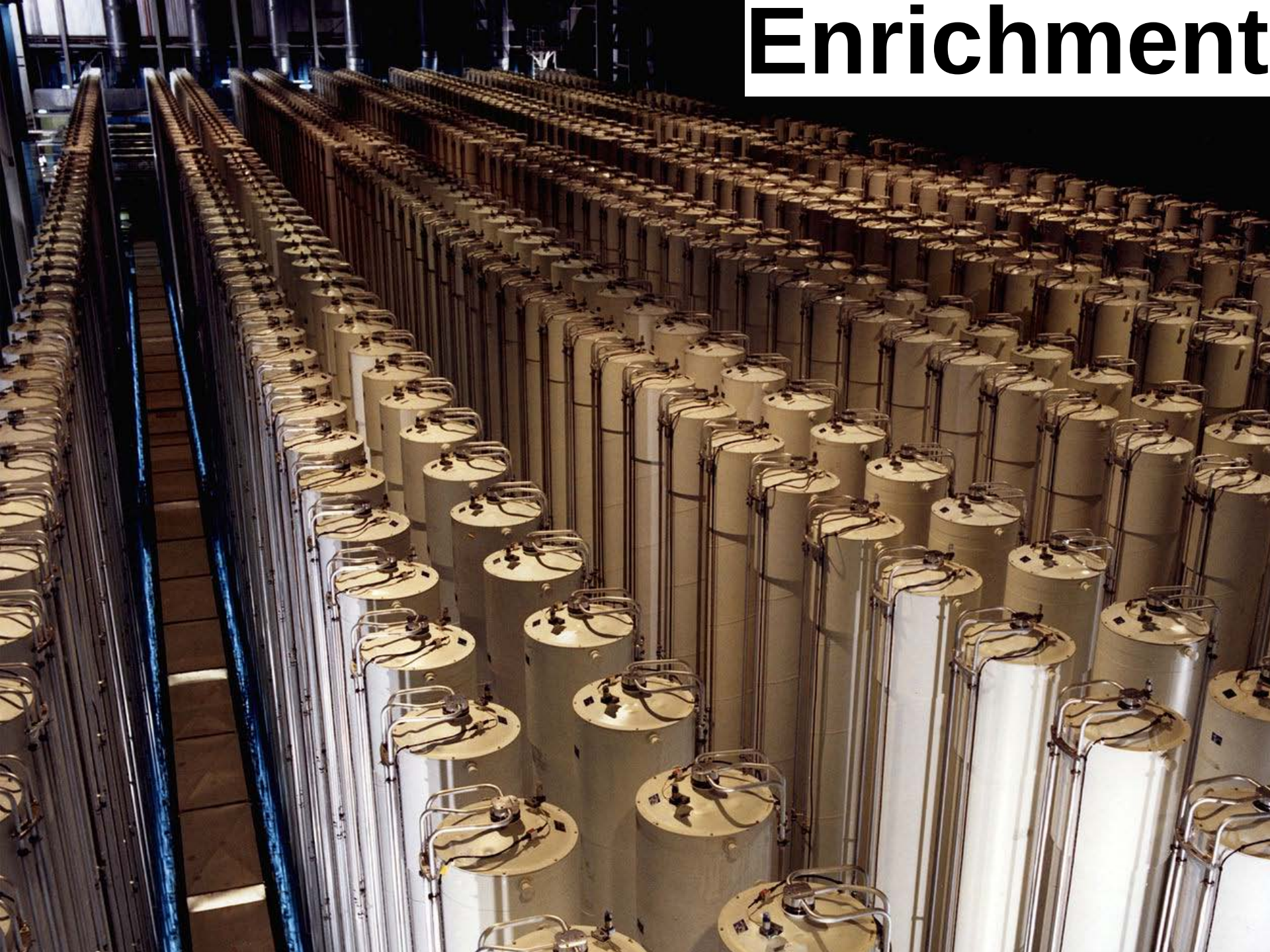
Library opportunity



Library content, metadata and metadata structuring taxonomies can becoming linking hubs for the Data Web

- Example: Personennamendatei (PND)

Enrichment



Enrichment & Repair

Linked Data is mainly instance data and !!!



ORE (**O**ntology **R**epair and **E**nrichment) 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>

Library opportunity



Library content, metadata and metadata structuring taxonomies can becoming very valuable background knowledge for knowledge base enrichment.

Quality Analysis



Linked Data Quality Analysis

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)

Library opportunity

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



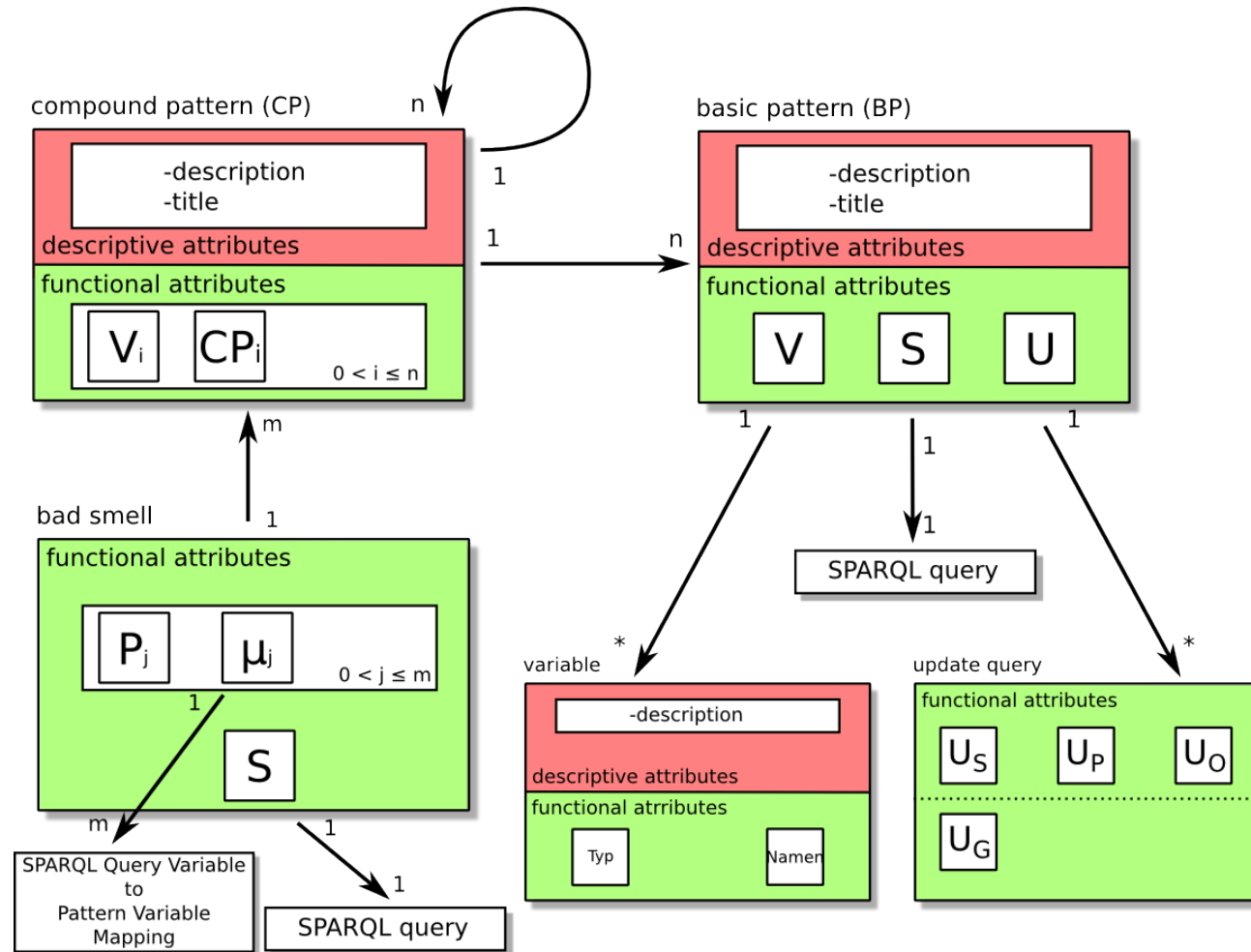


Evolution

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



OntoWiki (Admin)

Benutzer Extras Hilfe Debug

Suche nach Ressourcen

Wissensbasen

Bearbeiten Ansicht

OntoWiki System Configuration

Philosopher's Ontology

Catalogus Professorum Modell (CPM)

Professorenkatalog Leipzig

Conference Model

Navigation: Classes

Bearbeiten Ansicht Typ

Search in Navigation

Person

Körperschaft

Vorname

Lebensabschnitt

Veröffentlichung

Familie

Query

Institution

Organisation

Beziehung zu einer Institution

Show Me More

OntoWiki Evolution Pattern Engine

savepattern

dtProp birth

objProp

execution took: 0.503 s

PROPERTY

PROPERTY

http://catalogus-professorum.org/cpm/birthDate

http://catalogus-professorum.org/cpm/birthState

http://catalogus-professorum.org/cpm/birthCity

http://catalogus-professorum.org/cpm/birthCountry

http://catalogus-professorum.org/cpm/birthPlace

OntoWiki

Benutzer Extras Hilfe Debug

Suche nach Ressourcen

Wissensbasen

Ansicht

Professorenkatalog Leipzig

Navigation: Classes

Bearbeiten Ansicht Typ

Search in Navigation

Nothing to navigate here.

Anmeldung

Local OpenID FOAF+SSL

Benutzername

Kennwort

Remember me

Anmeldung Register

OntoWiki Evolution Pattern Engine

savepattern

add

Name for ComplexPattern:

Convert datatype to object property - full

Description for ComplexPattern:

Deletes old property and all its assignments are transformed to new resources with old data value as label and creates new object property

hide show del

Name for SubPattern:

Move axioms from datatype to object property

Description for SubPattern:

Moves all axioms except for range axioms and type axioms

Variable name	Variable type	Variable description	
dtProp	PROPERTY	datatype property	add del
o	TEMP	temp object	del
objProp	PROPERTY	object property	del
p	TEMP	temp pred	del

Select query

{ %dtProp% %p% %o% . FILTER (!sameTerm(%p%,<http://www.w3.org/2000/01/rdf-schema#range>) && !sameTerm(%p%,<http://www

Insert triples

%objProp% %p% %o%

Delete triples

%dtProp% %p% %o%

hide show del

Name for SubPattern:

Delete property

Description for SubPattern:

Deletes all statements for given property dtProp

Variable name	Variable type	Variable description	
dtProp	PROPERTY		del
o	TEMP	temp object	del
p	TEMP	temp pred	del

Select query

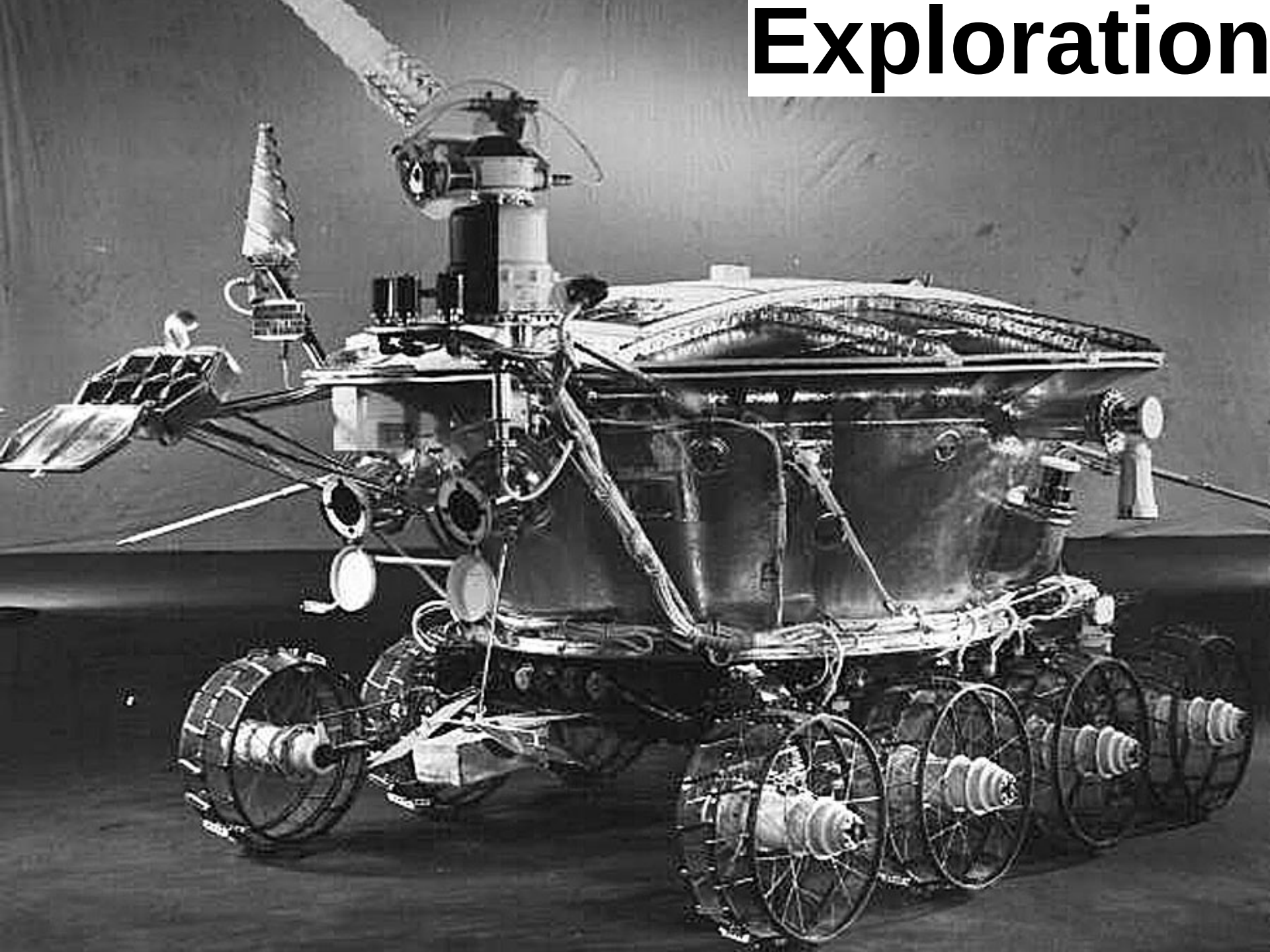
{ %dtProp% %p% %o% }

Library opportunity



Be the “lighthouse” for the ocean of dynamically changing Linked Data.

Exploration



Catalogus Professorum Lipsiensis



Professorenkatalog der Universität Leipzig | catalogus professorum lipsiensis

[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

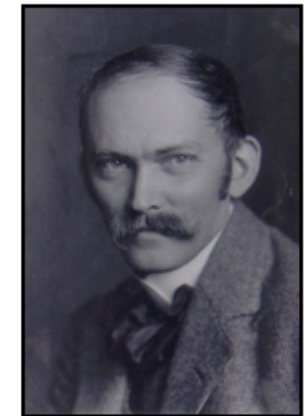
Lebenslauf

Studium

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

Qualifikation

- 1904 Habilitation für Englische Philologie an der Universität Göttingen
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

[Startseite](#)

[Epochen](#)

[Fakultäten](#)

[Professoren
des Tages](#)

[Rektoren und
Dekane](#)

[gesamtes
Verzeichnis](#)

[Hintergrund](#)

[Information in
English](#)

Professorenkatalog Leipzig

User View Extras Help

Suchtext

☐ Alle Wissensbasen durchsuchen

Suchen

Wissensbasen

Modell des Professorenkatalogs

Professorenkatalog der Universität Leipzig

Sprachen (ausgezeichnete Labels)

de

en

keine

Klassen

Vorname (693)

Person (1534)

Professor (1312)

Veröffentlichung (1262)

Lebensabschnitt (10299)

Beziehung zu einer Institution (8840)

Karriere (4367)

Amt (803)

Qualifikationsschrift (2385)

Studium (1285)

gesellschaftliche Funktion (1412)

Verwandschaftsbeziehungen (1)

Geschwister (1)

Bruder (1)

Körperschaft (423)

Person > Professor > Levin Ludwig Schücking

Resource Edit View

Eigenschaften

Karte

Kalender

Versionen

Bearbeiten

Kommentare und Bewertungen

Properties for Levin Ludwig Schücking

Nachname

Schücking

voller

Prof. Dr. phil.

akademischer Titel

eine Person hat

Levin

Vornamen

Ludwig

Person ID

144

Geburtstag

1878-05-29

Geburtsstadt

Burgsteinfurt

Geburtsland

Preußen

Todestag

1964-10-12

Todesstadt

Farchant

Bild



Bildherkunft

Privatbesitz

Links

http://de.wikipedia.org/wiki/Levin_Ludwig_Sch%C3%BCcking

(e.g.Wikipedia)

Abitur Stadt

Münster

Abitur Land

Preußen

Professor hat

1897-1901 Studium: Neuere Sprachen und Kunstgeschichte in Freiburg.

Autoren

Erstellt vor ca. 530 Tagen durch Admin

Letzte Änderung vor ca. 253 Tagen durch ChristianAugustin

Weitere Autoren:

FriederikeBulka

ReginaSteiner

ChristianRau

Ähnliche Instanzen

Professor

Georg Hermann Schnedermann

Carl Friedrich Heinrich Schaffstein

Wolfgang Otto Bernhard

Schadewaldt

Fritz Adolf Albert

Prinzhorn

Ludwig Weickmann

Show all 1312 in Main Tab »

Hierher verweisende Instanzen

ist Betreuer

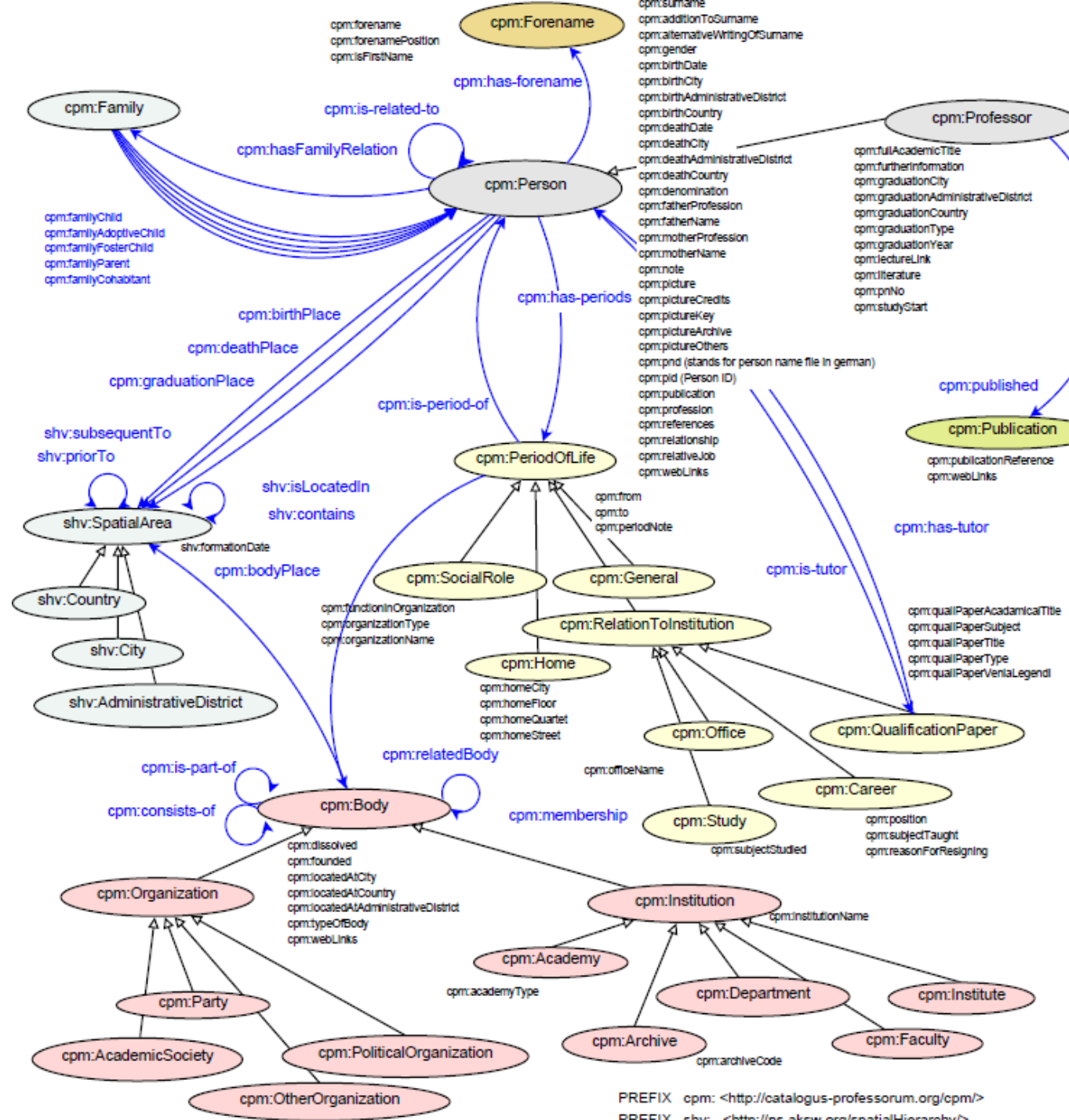
Lorenz Morsbach

Show in Main Tab »

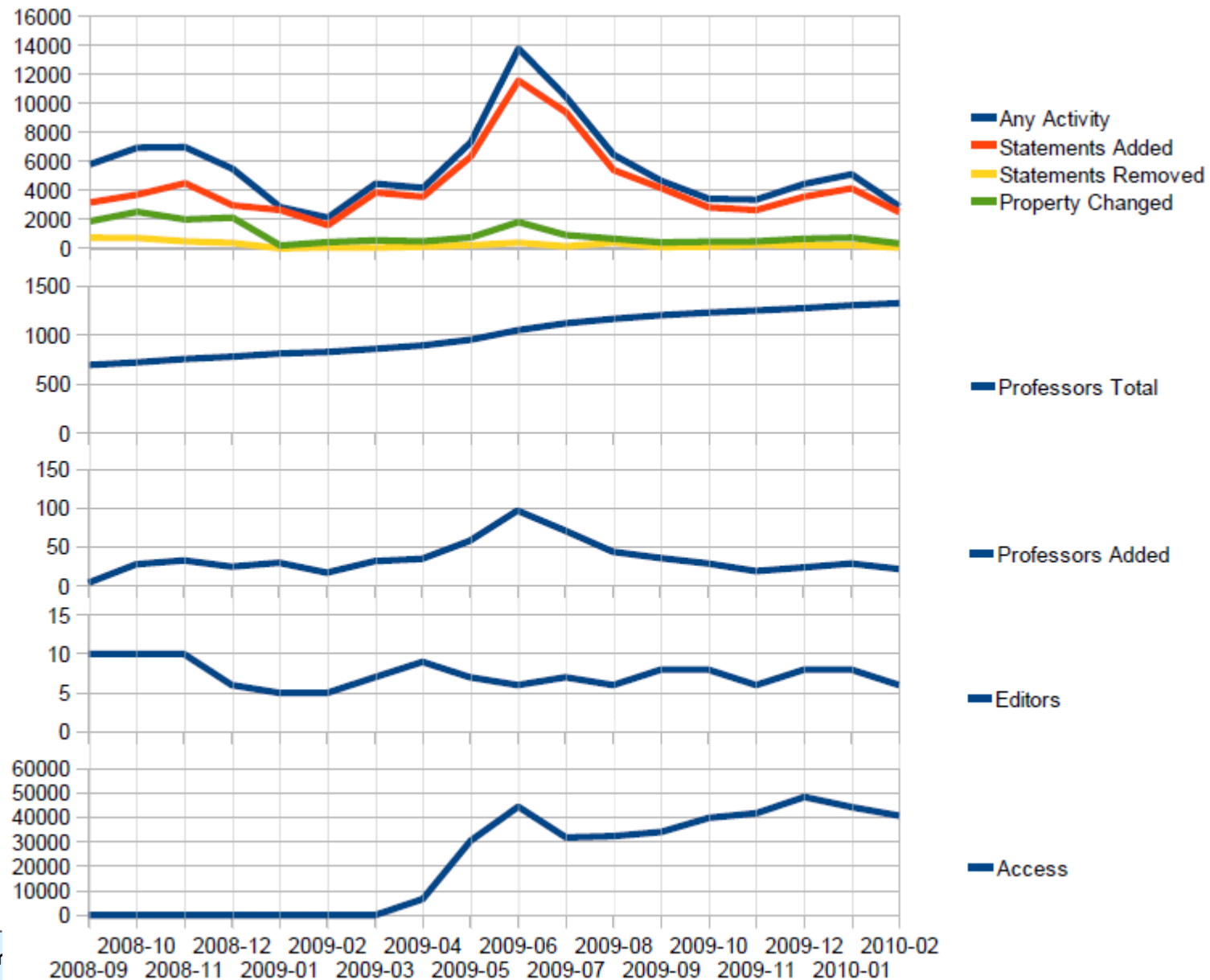
Auftreten als Wert

Keine Entsprechungen.

The CPL Model



CPL Authoring Activity



▼ Levin Ludwig Schücking

Geburtsstadt Burgsteinfurt

Geburtsort 1878-05-29

birthState Preußen

Todesstadt Farchant

Todestag 1964-10-12

Sterbeort Prof. Dr. phil.

voller akademischer Titel

weiter Informationen 1946-1952 Lehrstuhlvertretung an der Universität Erlangen

Abitur Stadt Münster

Ort des Abiturs 1878-05-29

graduationState Preußen

eine Person hat Vornamen

Person hat Lebensabschnitte

- ▶ <http://catalogus-professorum.org/place/Burgsteinfurt>
- ▶ <http://catalogus-professorum.org/place/Farchant>
- ▶ <http://catalogus-professorum.org/lipsiensis/Levin-1-1>
- ▶ <http://catalogus-professorum.org/lipsiensis/Ludwig-2-0>
- ▶ <http://catalogus-professorum.org/lipsiensis/1904HabilitationinEnglischerPhilologieanderUniversittGttingen86>
- ▶ http://catalogus-professorum.org/lipsiensis/Karriere_594
- ▶ [1925-1944 oProf für Anglistik an der Philologisch-Historischen Abteilung der Philosophischen Fakultät der Universität Leipzig](http://catalogus-professorum.org/lipsiensis/1925-1944oProf_fur_Anglistik_an_der_Philologisch-Historischen_Abteilung_der_Philosophischen_Fakultat_der_Universitat_Leipzig)
- ▶ [1910-1916 aoProf für Englische Sprache und Literatur an der Universität Jena](http://catalogus-professorum.org/lipsiensis/1910-1916aoProf_fur_Englische_Sprache_und_Literatur_an_der_Universitat_Jena)
- ▶ [1916-1925 oProf für Englische Sprache und Literatur an der Universität Breslau](http://catalogus-professorum.org/lipsiensis/1916-1925oProf_fur_Englische_Sprache_und_Literatur_an_der_Universitat_Breslau)
- ▶ [1952 oProf für Englische Sprache und Literatur an der Universität München](http://catalogus-professorum.org/lipsiensis/1952oProf_fur_Englische_Sprache_und_Literatur_an_der_Universitat_Munchen)
- ▶ [Mitglied der American Academy of Arts and Sciences](http://catalogus-professorum.org/lipsiensis/Mitglied_der_American_Academy_of_Arts_and_Sciences)

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

von 1897

Mitgliedschaft Universität München

Fach Kunstgeschichte

bis 1901-01-01

mentions Studium

▶ Data Creation

▶ Data Item

▶ Data Creating Service

request Request for <http://catalogus-professorum.org/lipsiensis/Study_110>

type Studium

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

is-period-of Levin Ludwig Schücking

requested Studium

▶ Fach

is used by This Session

Find all

Table Map Calendar Timeline SPARQL New...

Select queries to display:



Visual Query Builder

CPL Navigation

OntoWiki (Admin)

Navigation

Edit View Type

Search in Navigation

Root

- professor
- archive
- forename
- qualification paper
- person
- study
- career
- social role
- faculty
- academy

Show Me More

Knowledge Bases

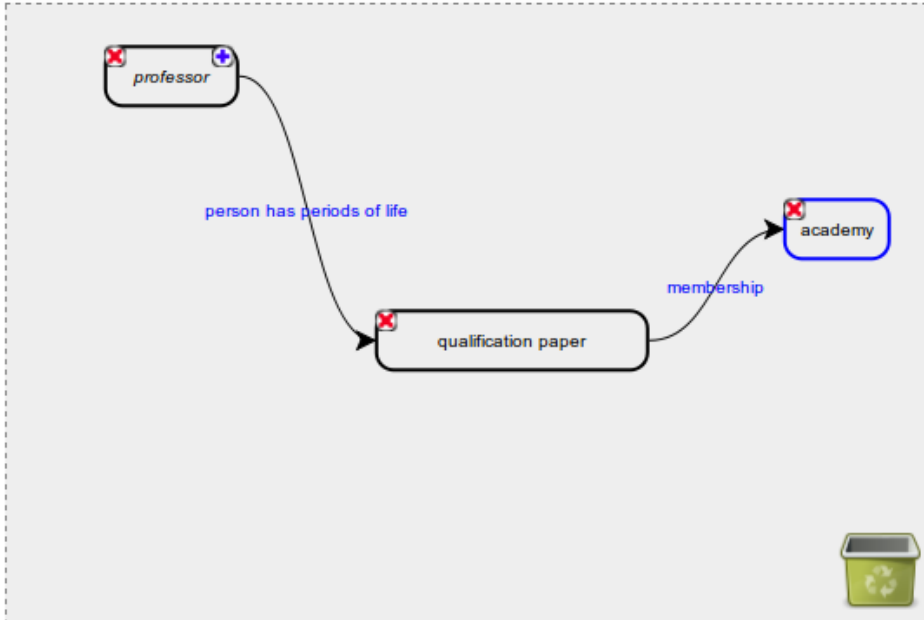
Edit View

- Catalogus Professorum Model (CPM)
- professors catalogue Leipzig
- Professors born in Dresden and related (subset of CPL)

Visual Query Builder

Saved Queries | Query Editor | **Graphical Query Builder**

Display results | Show Query | en | de



#	professor1	qualificationpaper1	academy1
1.	cpl:Anger_1210	cpl:Promotion_1477	cpl:Hochschule-1
2.	cpl:Anger_1210	cpl:Promotion_1476	cpl:Hochschule-1

Save Query

Properties

- ☐ is located at City
- ☐ is located at Country
- ☐ related body
- ☐ type of body
- ☐ is located at State

Restrictions:

AND

name of the institution contains "Leipzig"

available links:

- institution consists of (body)
- an institution is part of (body)
- body place (not found)

selected links:

- none

Relationship Finder in CPL

RelFinder 

URL   

between **examples**

(1)

(2)

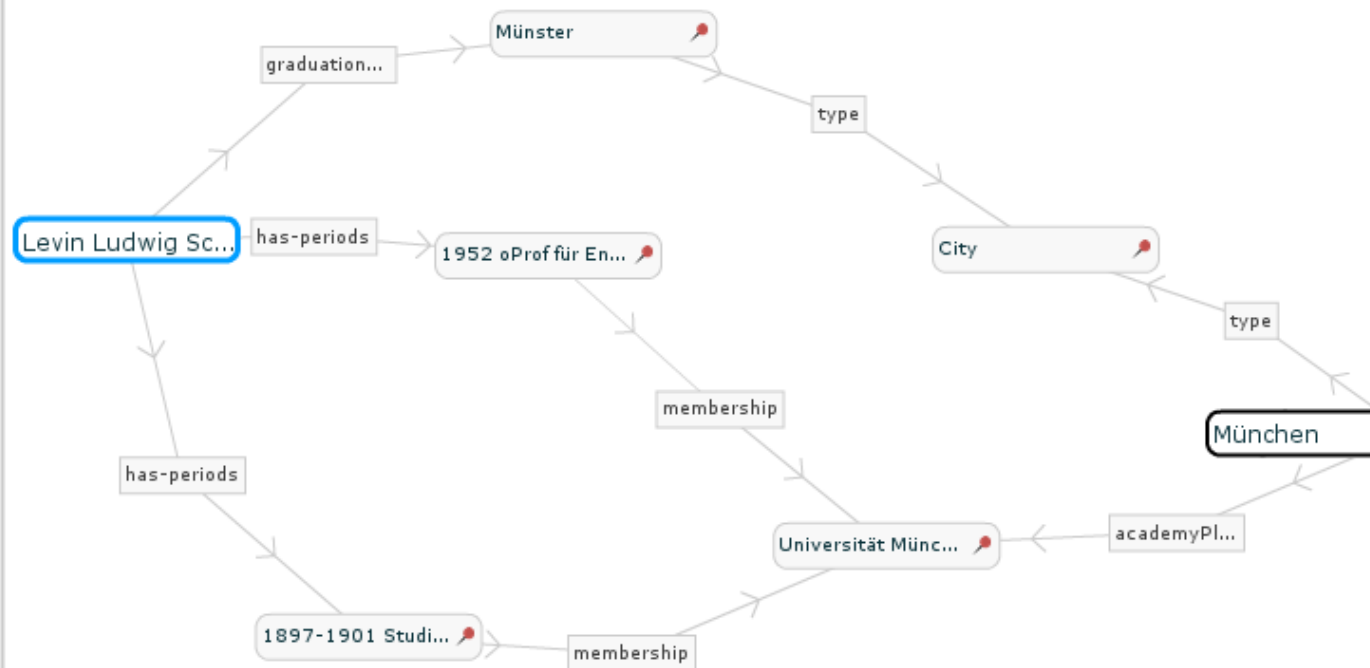
Filter by: relations: (3/3)

☒ length ☐ class ☐ link ☐ conne...

number of objects	num	vi
2	3/3	

Levin Ludwig Schü...

More Infos: catalogus-professorum.org
de.wikipedia.org

Library opportunity



Hosting and maintenance of exploration tools
for the Data Web

becoming
linking hubs for
the Data Web

Library data is valuable
background knowledge for
KB enrichment & repair.

support facilities
for knowledge
based authoring
& collaboration

**Manual
revision/
authoring**

**Inter-
linking/
Fusing**

**Classifi-
cation/
Enrichment**

Authoritative
Linked Data for
quality
assessment

Provide storage
facilities for
Linked Data

**Storage/
Querying**

Libraries in the Linked Data Lifecycle

**Quality
Analysis**

Extract and publish
structured (meta-)
data for library
content

Extraction

**Evolution /
Repair**

Be the
“lighthouse”
for the LOD
ocean.

**Search/
Browsing/
Exploration**

Hosting &
maintenance of
exploration tools

Make the Web a Linked Data Washing Machine



Take home messages

- Bibliographic information is one of the important information domains on the Web of Data
- Libraries can play a crucial role in the evolution of Linked Data towards an ecosystem of interlinked knowledge
- Different LOD aspects such as extraction, authoring, coherence/linking, evolution, browsing & exploration have to be deployed and further developed
- Libraries can position themselves as knowledge exchange facilities in the (Data) Web age.



Thanks for your attention!

Sören Auer

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

auer@uni-leipzig.de

UNIVERSITÄT LEIPZIG

PUBLINK - Linked Open Data Consultancy

Apply till Dec 20th at:

<http://lod2.eu/Article/Publink.html>

