



LOD2

Creating Knowledge out of Interlinked Data

LOD2 Stack Tutorial

A tutorial by

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Tutorial Contents

09:30 - 09:45 Introduction

09:45 - 10:30 Virtuoso Universal Server

10:30 - 11:00 Coffee Break

11:00 - 11:20 The Semantic Data Wiki Ontowiki

11:20 - 11:45 LOD2 Toolstack - its Usage in an
Industrial Environment

11:45 - 12:15 Linking with the Silk Workbench

12:15 - 12:30 Discussion and Buffer

12:30 - 14:00 Lunch Break

How to use the USB flash drive

1. Copy the complete content to your harddisk
2. Install the VirtualBox software
3. Import the Open Virtual Appliance (LOD2.ova)
4. Make a snapshot (to revert changes later)
5. Start the Virtual Machine

LOD2 STACK INTRODUCTION

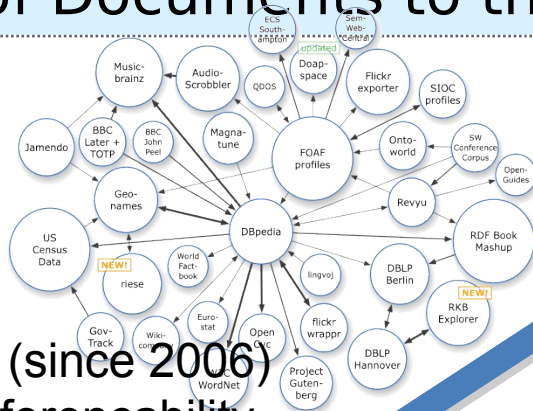
Table Of Contents

- LOD2 – Why, What & When
- LOD2 stack – easy access to Linked Data software
- LOD2 stack walk through demonstration

LOD2

Why, What & When

From the Web of Documents to the Semantic Data Web



Data Web (since 2006)

- URI de-referencability
- Web Data integration
- RDF serializations

Semantic Web

(Vision 1998, starting ???)

- Reasoning
- Logic, Rules
- Trust

Social Web (since 2003)

- Folksonomies/Tagging
- Reputation, sharing
- Groups, relationships



Web (since 1992)

- HTTP
- HTML/CSS/JavaScript



What works now? What has to be done?

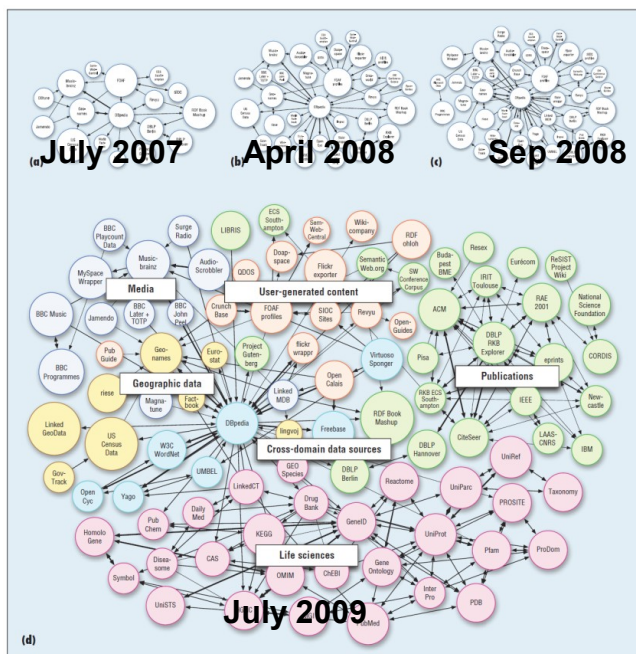
- Web - a global, distributed platform for data, information and knowledge integration
- exposing, sharing, and connecting pieces of data, information, and knowledge on the Semantic Web using URIs and RDF

Achievements

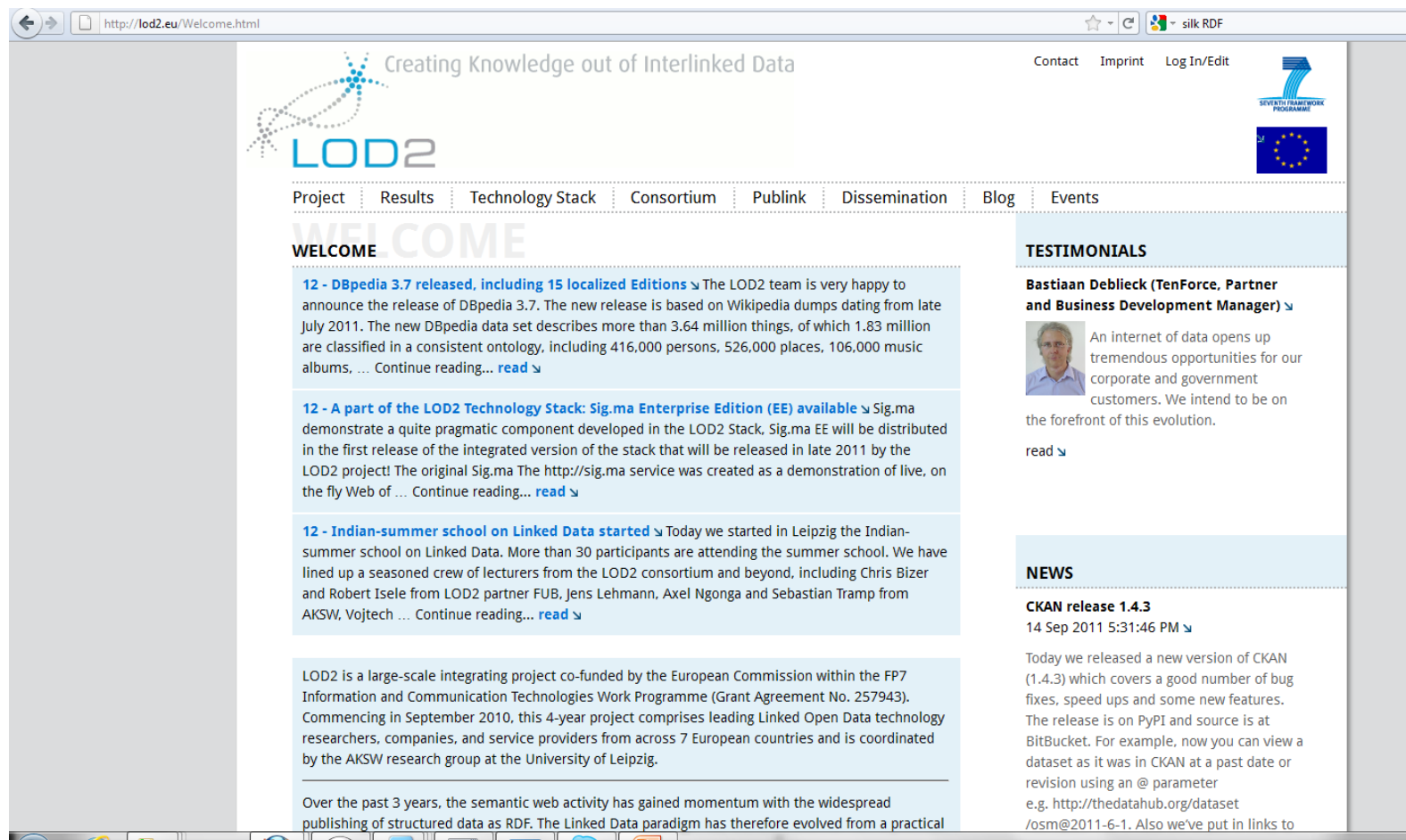
1. Extension of the Web with a **data commons** (50B facts)
2. vibrant, global RTD **community**
3. **Industrial uptake** begins (e.g. BBC, Thomson Reuters, Eli Lilly, WKD)
4. Emerging **governmental adoption** in sight (e.g. EC Open Data Portal)
5. Establishing Linked Data as a **deployment path** for 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**: Establishing direct end-user tools and network effect



LOD2, a FP7 EU funded project



The screenshot shows the LOD2 website interface. At the top, there is a navigation bar with links: Project, Results, Technology Stack, Consortium, Publink, Dissemination, Blog, and Events. Below this is a 'WELCOME' section with three main news items, each with a 'read' link. To the right, there is a 'TESTIMONIALS' section featuring a quote from Bastiaan Deblieck (TenForce, Partner and Business Development Manager) and a 'NEWS' section with a 'CKAN release 1.4.3' announcement. The website also features the LOD2 logo, the text 'Creating Knowledge out of Interlinked Data', and the European Union flag.

Creating Knowledge out of Interlinked Data

LOD2

Project Results Technology Stack Consortium Publink Dissemination Blog Events

WELCOME

12 - DBpedia 3.7 released, including 15 localized Editions The LOD2 team is very happy to announce the release of DBpedia 3.7. The new release is based on Wikipedia dumps dating from late July 2011. The new DBpedia data set describes more than 3.64 million things, of which 1.83 million are classified in a consistent ontology, including 416,000 persons, 526,000 places, 106,000 music albums, ... Continue reading... [read](#)

12 - A part of the LOD2 Technology Stack: Sig.ma Enterprise Edition (EE) available Sig.ma demonstrate a quite pragmatic component developed in the LOD2 Stack. Sig.ma EE will be distributed in the first release of the integrated version of the stack that will be released in late 2011 by the LOD2 project! The original Sig.ma The <http://sig.ma> service was created as a demonstration of live, on the fly Web of ... Continue reading... [read](#)

12 - Indian-summer school on Linked Data started Today we started in Leipzig the Indian-summer school on Linked Data. More than 30 participants are attending the summer school. We have lined up a seasoned crew of lecturers from the LOD2 consortium and beyond, including Chris Bizer and Robert Isele from LOD2 partner FUB, Jens Lehmann, Axel Ngonga and Sebastian Tramp from AKSW, Vojtech ... Continue reading... [read](#)

LOD2 is a large-scale integrating project co-funded by the European Commission within the FP7 Information and Communication Technologies Work Programme (Grant Agreement No. 257943). Commencing in September 2010, this 4-year project comprises leading Linked Open Data technology researchers, companies, and service providers from across 7 European countries and is coordinated by the AKSW research group at the University of Leipzig.

Over the past 3 years, the semantic web activity has gained momentum with the widespread publishing of structured data as RDF. The Linked Data paradigm has therefore evolved from a practical

TESTIMONIALS

Bastiaan Deblieck (TenForce, Partner and Business Development Manager)

An internet of data opens up tremendous opportunities for our corporate and government customers. We intend to be on the forefront of this evolution.

[read](#)

NEWS

CKAN release 1.4.3
14 Sep 2011 5:31:46 PM

Today we released a new version of CKAN (1.4.3) which covers a good number of bug fixes, speed ups and some new features. The release is on PyPI and source is at BitBucket. For example, now you can view a dataset as it was in CKAN at a past date or revision using an @ parameter e.g. <http://thedatahub.org/dataset/osm@2011-6-1>. Also we've put in links to

Objectives of LOD2

- LOD2 project objectives:
 - Increase visibility of Linked Data activities
 - Improve the software technology which support it
 - Support deployment Linked Data components
 - Improve information sharing between Linked Data components so that publishing Linked Data is eased.
 - Improve access to the content: the online Linked Open Data.
- Core enabler and end-user accessible result: the LOD2 stack

A strong partnership



UNIVERSITÄT LEIPZIG



Freie Universität Berlin



INSTYTUT INFORMATYKI GOSPODARCZEJ /
BUSINESS INFORMATION SYSTEMS INSTITUTE



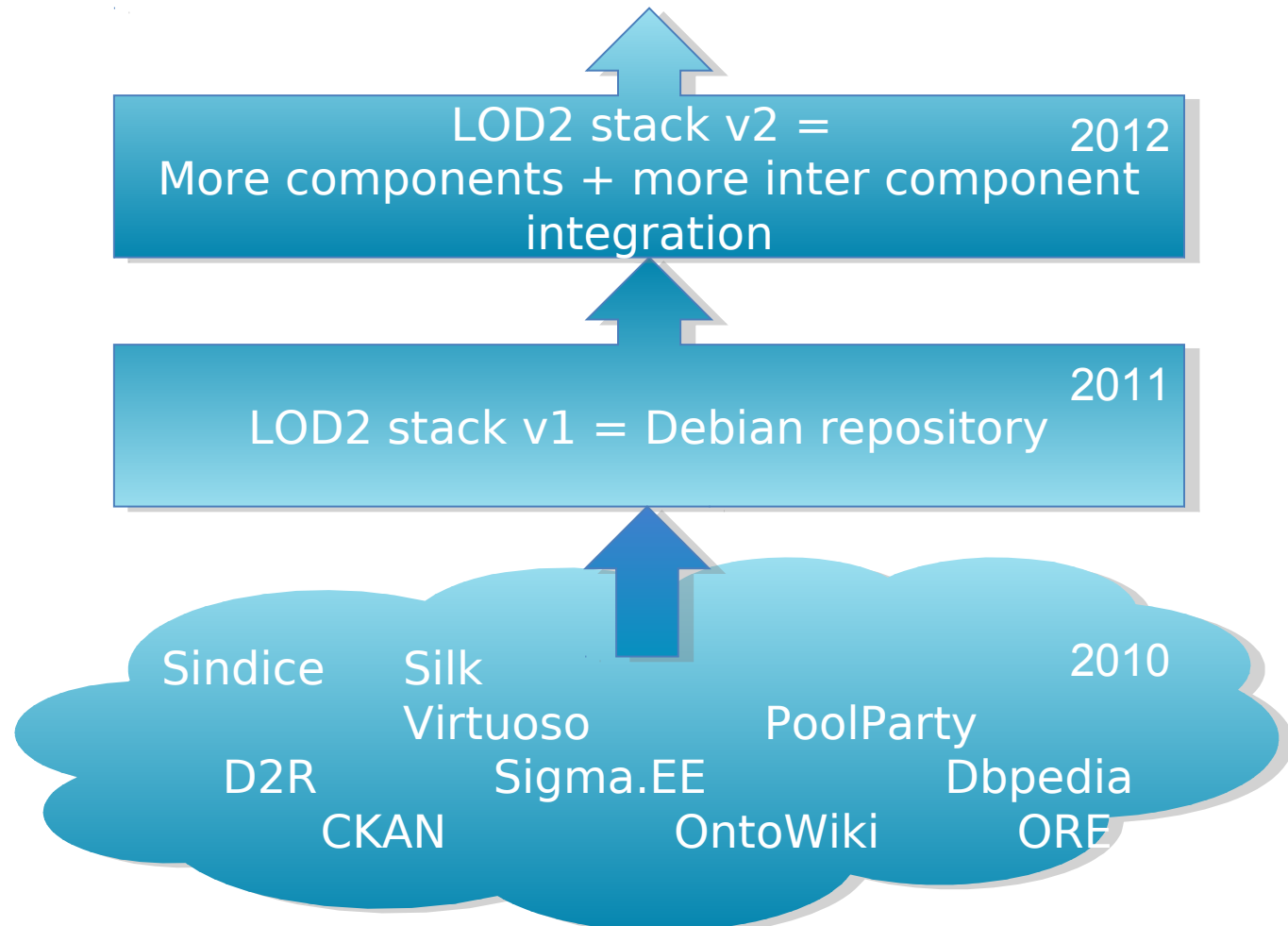
LOD2 STACK

EASY ACCESS TO LINKED DATA SOFTWARE

The Linked Open Data Life Cycle



LOD2 stack anno 2011: easing deployment



Installing the LOD2 stack – system requirements

We standardize on Ubuntu 12.04

- Most components are ubuntu release independent.

or a Linux distribution which supports Debian packages

the software in the stack is open-source

- although individual licenses differ
- Some components are also available as commercial product
- The source itself is not (yet) distributed through the LOD2 stack repository.

Installing the LOD2 stack – software installation

http://code.google.com/p/ontowiki/wiki/InstallFromMercurial

Project Home Downloads Wiki Issues Source

Search Current pages for Search

List of all wiki pages

Welcome

Dev-Documentation

- General
 - Installation from Mercurial**
 - Using OntoWiki with Virtuoso
 - Recommended PHP Settings
 - Setup OntoWiki Test Environment
 - Working With OntoWiki Test Environment
- Extensions
- Erfurt

Dev-Policies

- Coding Standard
- CSS Development
- Repository Layout

Usage-Documentation

- Deployment Recommendations
- Tools for OntoWiki Interaction
- Command Line Interface (CLI)
- Web Services

Useful Script Collection

- Backup Onto Wiki

InstallFromMercurial

This wiki page documents the installation from the google code mercurial repository on a ubuntu linux box. You have to adapt it for other distributions or operating systems.
Phase-Deploy, Featured
Updated Jun 9, 2011 by yamali...@gmail.com

Requirements

In order to install OntoWiki from the tip (the most recently added changeset in the distributed revision control tool Mercurial) you need:

Mercurial

Distributed version control system **version 1.6 or higher**; version 1.7 or greater highly recommended.

For **Ubuntu 10.04** (Lucid Lynx):

- Add new PPA and *install* Mercurial:

```
sudo apt-add-repository ppa:mercurial-ppa/releases && sudo apt-get update && sudo apt-get install mercurial
```

- Add new PPA and *update* an existing Mercurial:

```
sudo apt-add-repository ppa:mercurial-ppa/releases && sudo apt-get update && sudo apt-get upgrade
```

Note: If you do not have apt-add-repository, you should install it with

```
sudo apt-get install python-software-properties
```

For **Mac OS X 10.4** and higher:

- Install [MacPorts](#)
- Depending on your preferred shell, issue one of the following commands in Terminal.app:

```
sudo port install mercurial +zsh_completion
```

or

```
sudo port install mercurial +bash_completion
```

Note: Mercurial depends on python26 which depends on tk which in turn depends on X11. If you do not want to build X11, install python26 with the no_tkinter variant before installing Mercurial:

```
sudo port install python26 +no_tkinter
```

Linked Data publishing capabilities currently offered

- Covers most of the LOD publishing cycle
- Combination of
 - locally installed software,
 - online available software, and
 - online available data sources as well as data packages
- about page in the LOD demonstrator (<http://demo.lod2.eu/lod2demo>)

Disclaimer. No harmonized user interface.

Current list of Components

Locally installed component	Online component
Virtuoso (RDFstore, isparql, faceted browsing, sponger, ...)	PoolParty
Ontowiki	PoolParty Extractor
owcli, LibErfurt	CKAN (publicdata.eu)
Silk	Sindice
Limes & Colanut	Sigma
Valiant	Spotlight
Semantic Spatial Browser	LODstat
Sigma.EE	
D2R (with CORDIS example)	
ORE	
DLlearner	

Components foreseen to be added

- SPARQL editor
- General Statistical data visualizer
- R2R mapping tool (Rdf to Rdf)
- Linking environment
- Link Data statistics
- Link Data manager: an ETL tool

We are open for new components and willing to support the integration into the stack!



LOD2

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LOD2 Stack – Virtuoso Universal Server

The Data Storage Layer by Hugh Williams, OpenLink Software



<http://lod2.eu>



Topics Covered

- OpenLink Software
 - About OpenLink Software
 - Core Platform behind Linked Open Data (LOD) Cloud
 - Linked Data projects snapshot
- Product Overview & Features
 - Why is Virtuoso Important to LOD2
 - Data Virtualization Middleware
 - Pluggable Linked Data Cartridges
 - Sophisticated Content Crawler
 - Insight Discovery & Exploration
 - Powerful SPARQL Query Service
 - Powerful SPARQL Query Builder
- Demonstration – Loading and Querying CKAN Datasets
- Performance Tuning
- Future Enhancements
- Questions & Answers



OpenLink Software

- Is a 19 year old leading provider of high-performance, scalable, and secure technology covering:
 - Data access middleware drivers/providers
 - Data virtualization middleware
 - Native database management (combined RDBMS or Graph Store)
 - Enterprise collaboration.
- Respective product portfolio offerings include:
 - UDA High-Performance drivers/providers for ODBC, JDBC, ADO.NET, XMLA
 - Virtuoso Universal Server
 - OpenLink Data Spaces for socially enhanced personal and/or enterprise collaboration.

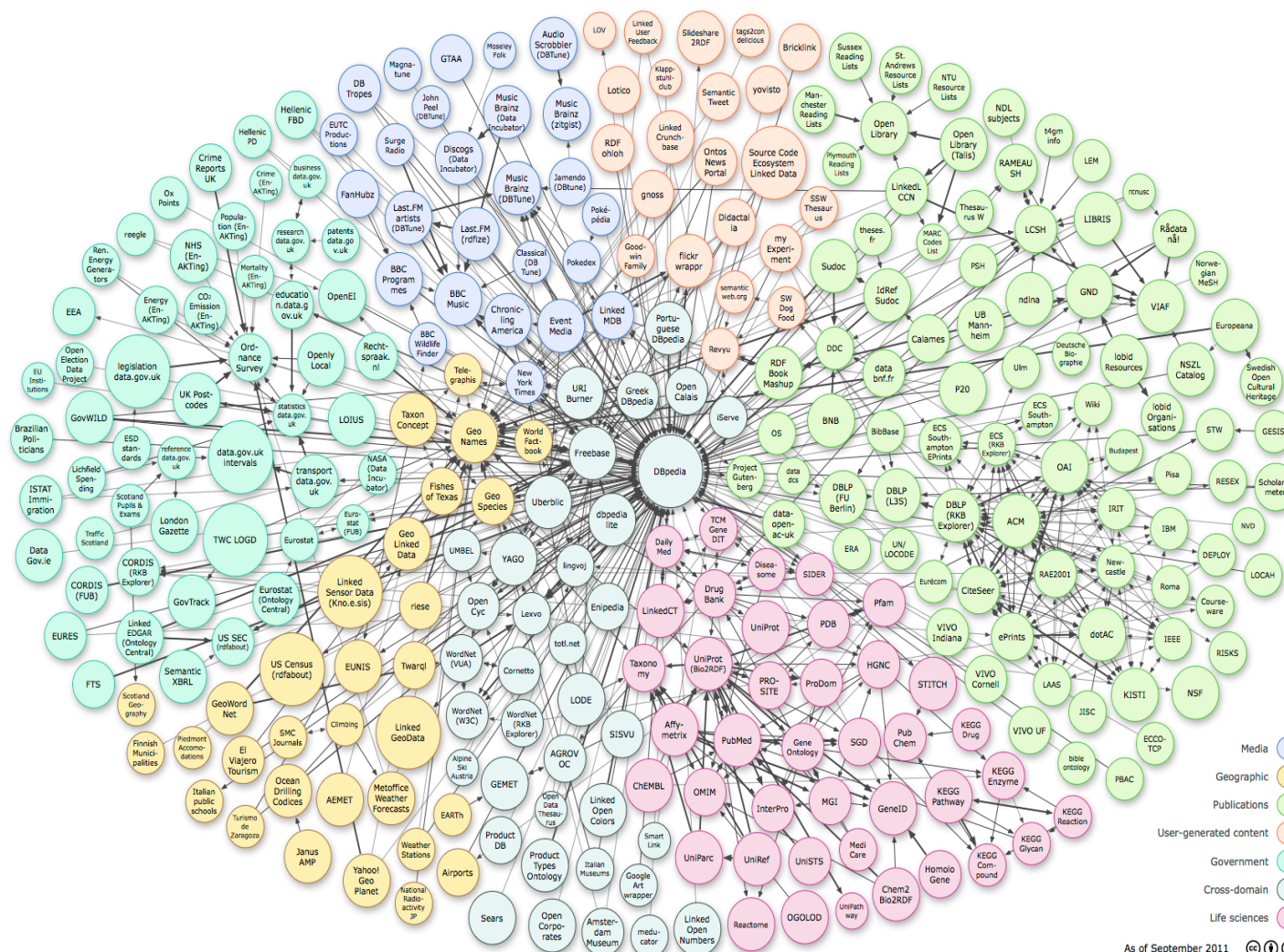


Cont'd OpenLink Software

- A W3C Member and participant in Semantic Web Related work groups (SPARQL 1.1 & RDB2RDF etc)
- Leading supporter and participant of the original Linked Open Data (LOD) project
- One of the founding members of the DBpedia project along with Free University of Berlin & Leipzig University
- A LOD2 project consortium member

Core Platform behind Linked Open Data (LOD) Cloud

Core Platform
(Graph DBMS and
Linked Data
Deployment)
behind DBpedia,
many bubbles in
the LOD Cloud,
and the LOD
Cloud cache itself.



As of September 2011



Virtuoso Linked Data projects snapshot

- [DBpedia](#) - public SPARQL endpoint over the DBpedia data (and [international Chapters](#))
- [LOD Cloud Cache](#) - public server hosting [LOD cloud](#) datasets
- [URIBurner](#) - [Linked Data](#) generation & transformation service
- [Linked Geo Data](#) - OpenStreetMap Spatial data as [Linked Data](#)
- [Sindice](#) - SPARQL endpoint behind its Semantic Web Index
- [Data.gov](#) - US Government [Linked Data](#)
- [Health.data.gov](#) - Clinical Quality [Linked Data](#) on [health.data.gov](#)
- [Seevl](#) - [Linked Data](#) *music discovery service*
- [Bio2RDF](#) - Life science data mapped to [Linked Data](#)
- [Neurocommons](#) - Life science data mapped to [Linked Data](#)
- [Musicbrainz](#) - MusicBrainz database published as [Linked Data](#)
- [Others](#) - Many others ...



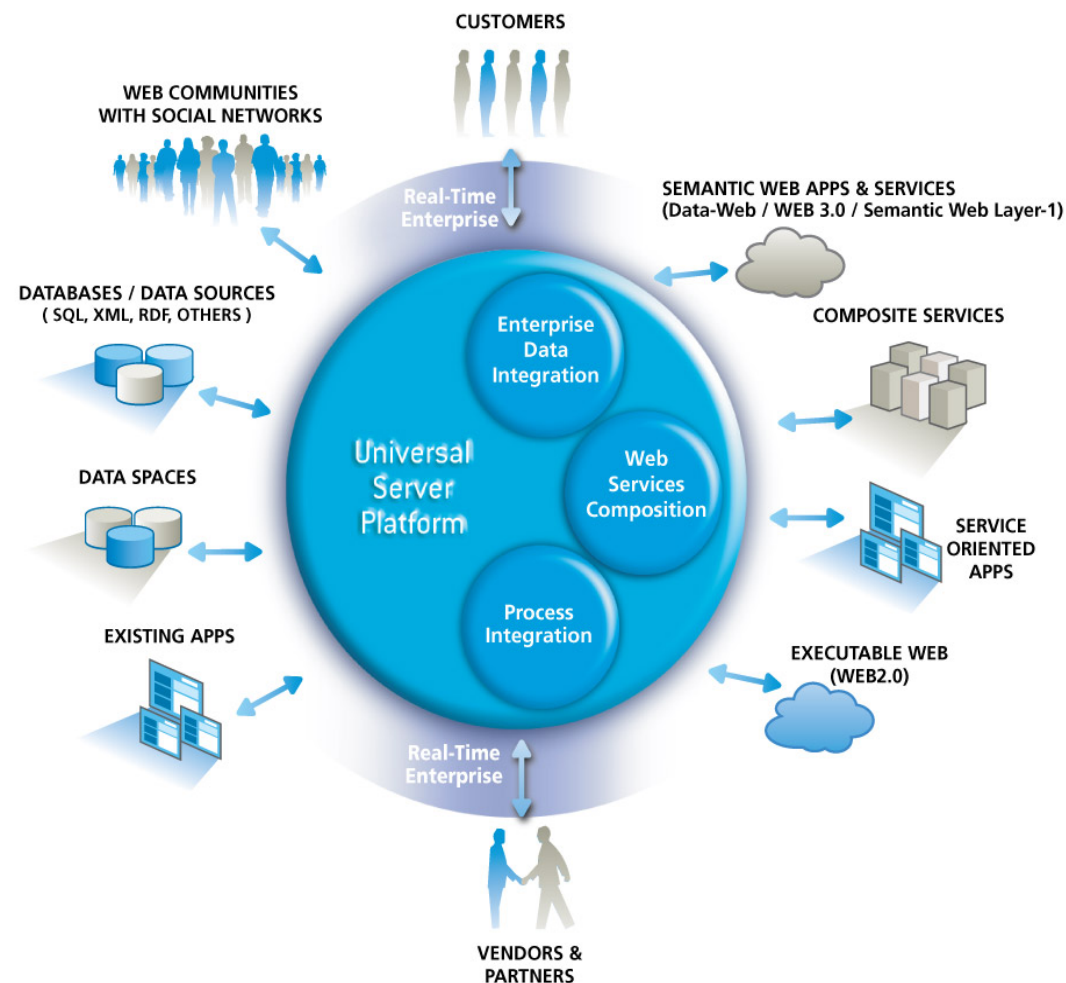
Virtuoso Universal Server

(Product Overview & Features)



Product Value Proposition

Enterprise and Individual
Agility via Data Virtualization,
without compromising
performance, scalability, and
security.



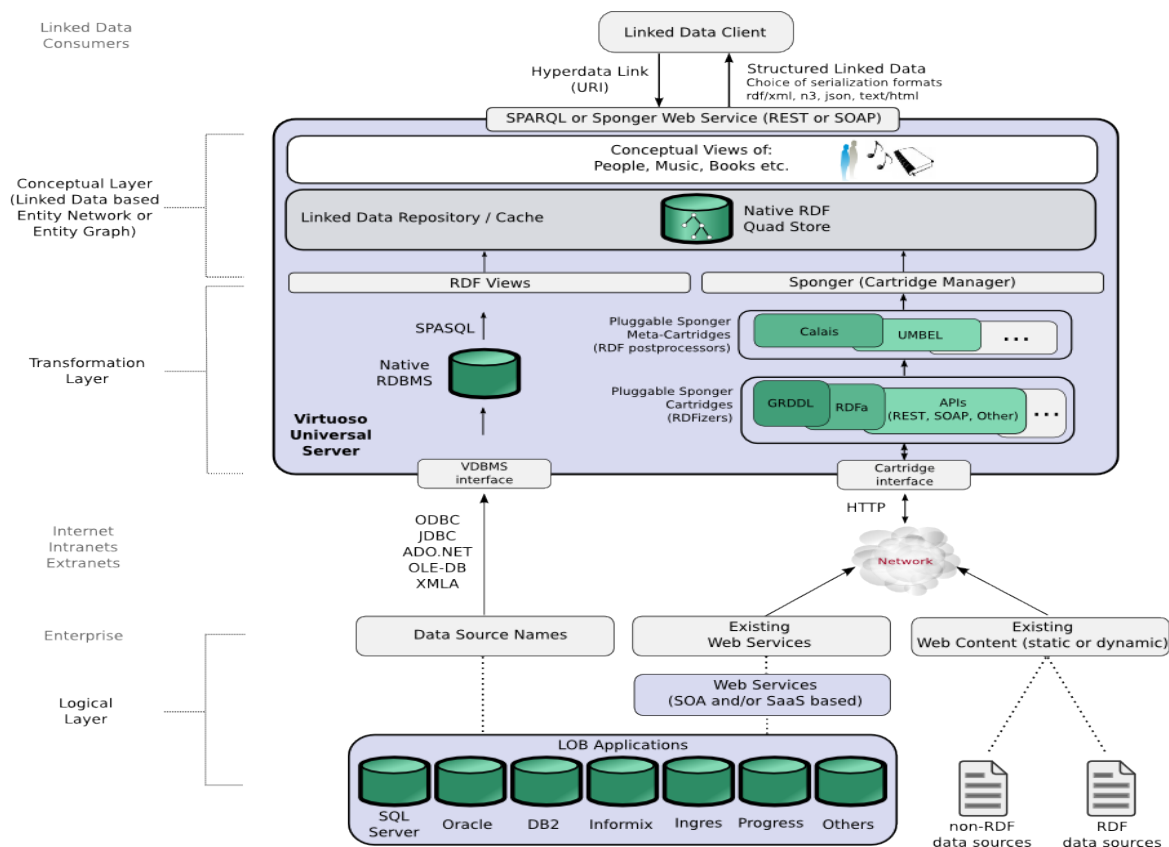


Why is Virtuoso Important to LOD2

- Linked Data Deployment modulo the following challenges
 - De-referencable URI complexities
 - URI style (hash or slash) distractions
 - Loose Coupling of Information and Data
 - SPARQL endpoint commissioning
 - Linked Data Views over Relational Data (incl. R2RML support)
 - Faceted Browsing
 - Proven Performance & Scalability.

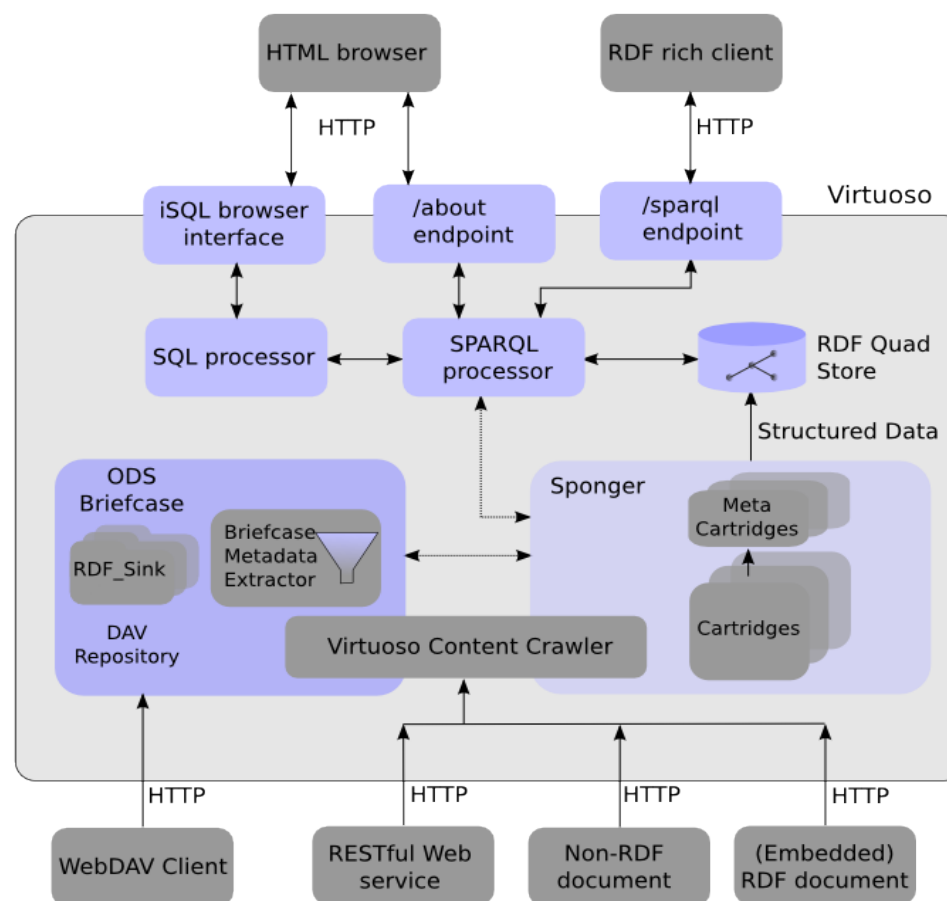
Data Virtualization Middleware

An in-built middleware layer
 (“Sponger”) for creating
 Transient & Persistent
 Views over Heterogeneous
 Data Sources.



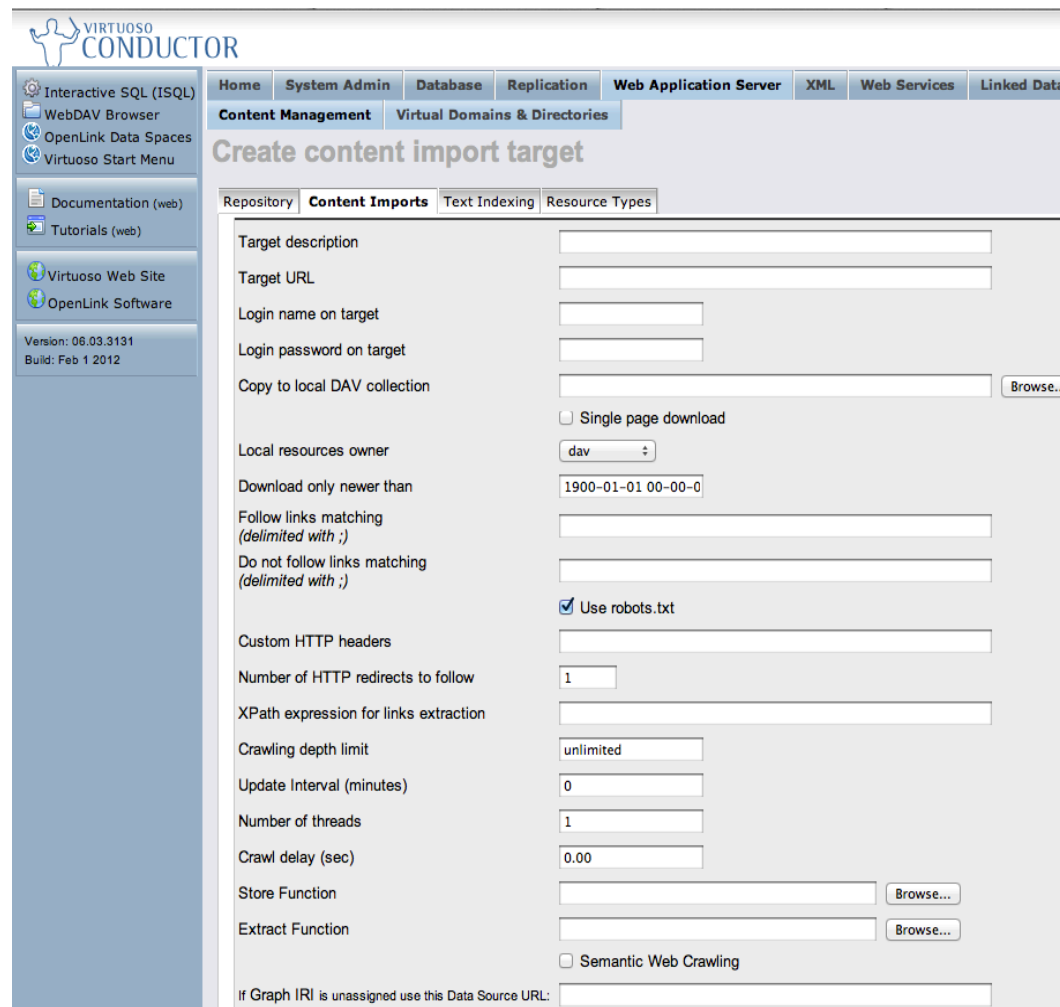
Pluggable Linked Data Cartridges

A collection of prefabricated and customizable Data Extraction, Transformation, and Lookup cartridges (drivers) covering a vast ranges of data formats and data access protocols.



Sophisticated Content Crawler

DBMS hosted Content Crawler that's leverages loosely coupled binding to the Sponger Middleware component for transformation of unstructured and semi-structured data into Linked Data.



The screenshot shows the Virtuoso Conductor web interface. The left sidebar contains links to Interactive SQL (ISQL), WebDAV Browser, OpenLink Data Spaces, Virtuoso Start Menu, Documentation (web), Tutorials (web), Virtuoso Web Site, and OpenLink Software. The main content area is titled 'Create content import target' and includes a 'Repository' tab. The form contains various input fields and checkboxes for configuring a content import target, such as Target description, Target URL, Login name on target, Login password on target, Copy to local DAV collection, Local resources owner, Download only newer than, Follow links matching, Do not follow links matching, Custom HTTP headers, Number of HTTP redirects to follow, XPath expression for links extraction, Crawling depth limit, Update Interval (minutes), Number of threads, Crawl delay (sec), Store Function, Extract Function, and Semantic Web Crawling.

Insight Discovery & Exploration

Native Faceted Browsing that enables multi-dimensional drill-downs via any browser

List of e1 where:

Entity1 is a **oplli:JobPosting** . Drop

Entity1 **oplli:job_function** **Entity2** . Drop **Entity2**

Entity2 == ""Consulting"" Drop

Entity1 **oplli:salary** **Entity3** . Drop **Entity3**

Entity1 **oplli:job_type** **Entity4** . Drop **Entity4**

Entity4 == ""Full-time"" Drop

Entity1 **oplli:industry** **Entity5** . Drop **Entity5**

Entity5 is IN:

- ""Internet""
- ""Computer Software""
- ""Information Services""
- ""Information Technology and Services""

Drop

View query as SPARQL Facet permalink

Make Pivot collection (Page size 75) with QRcodes ☐ Subject link behavior External resource link Facet link behavior Local faceted navigation link

Go to: Show 20 | 20 of 52 total

Entities found

- [Recruitment Product Consultant Manager: LinkedIn](#)
- [French Sales Executive - Consulting Services: SAP](#)
- [SMB Account Manager \(Dutch\): LinkedIn](#)
- [SMB Account Executive \(Trilingual\) - Italian & Spanish: LinkedIn](#)
- [Senior Organization Consultant: Intel Corporation](#)
- [Cleared Oracle Talent : Oracle](#)
- [Human Capital Management Functional Consultant – PeopleSoft HR/TAM: Oracle](#)
- [Solution Architect - Security Solutions: Oracle](#)
- [Senior/Principal Pre-Sales Database Consultant - Oracle/MySQL, Italy: Oracle](#)
- [Senior/Principal Pre-Sales Database Consultant - Oracle/MySQL, UK: Oracle](#)
- [Professional Service Sales \(Consulting Sales\) – Hyperion \(EPM\) – US Nationwide – Resume to mc.didone@oracle.com: Oracle](#)
- [Business Intelligence & Data Integration Solution Architect: Oracle](#)
- [Consultant Frankfurt /Munich: VMware](#)
- [Cloud Business Solution Architect - German Speaker: VMware](#)

Entity Relations Navigation

Text Set

Types

Attributes

Referencing Attributes

Distinct values (Aggregated)

Places Any location

Options

Save

Featured Queries

New Search



Powerful SPARQL Query Service

Basic SPARQL Endpoint for Creating [Query Definitions](#) & Sharing [Query Results](#).

Virtuoso SPARQL Query Editor

[About](#) | [Namespace Prefixes](#) | [Inference rules](#)

Default Data Set Name (Graph IRI)

Query Text

```
PREFIX oplli: <http://www.openlinksw.com/schemas/linkedin#>

SELECT DISTINCT ?s1 as ?job_id ?provided_by ?location_name ?industry ?country_code ?company_name
               ?position_summary ?experience_level ?job_type
               ?job_salary ?label as ?name ?job_function
               ( <LONG::IRI_RANK> ( ?s1 ) ) as ?entity_rank

WHERE {
    ?s1 a oplli:JobPosting;
        opl:providedBy ?provided_by;
        oplli:location_name ?location_name;
        oplli:industry ?industry;
        oplli:country_code ?country_code;
        oplli:company_name ?company_name;
        oplli:position_summary ?position_summary;
        oplli:experience_level ?experience_level;
        oplli:job_type ?job_type;
        oplli:salary ?job_salary;
        rdfs:label ?label;
        oplli:job_function ?job_function.
    filter ( ?job_function = ""Consulting"" ) .
    filter ( ?job_type = ""Full-time"" ) .
    filter ( ?industry in ( ""Internet"", ""Computer Software"", ""Information Services"", ""Information Technology and Services"" ) ) .
}
```

Sponging:

Results Format:

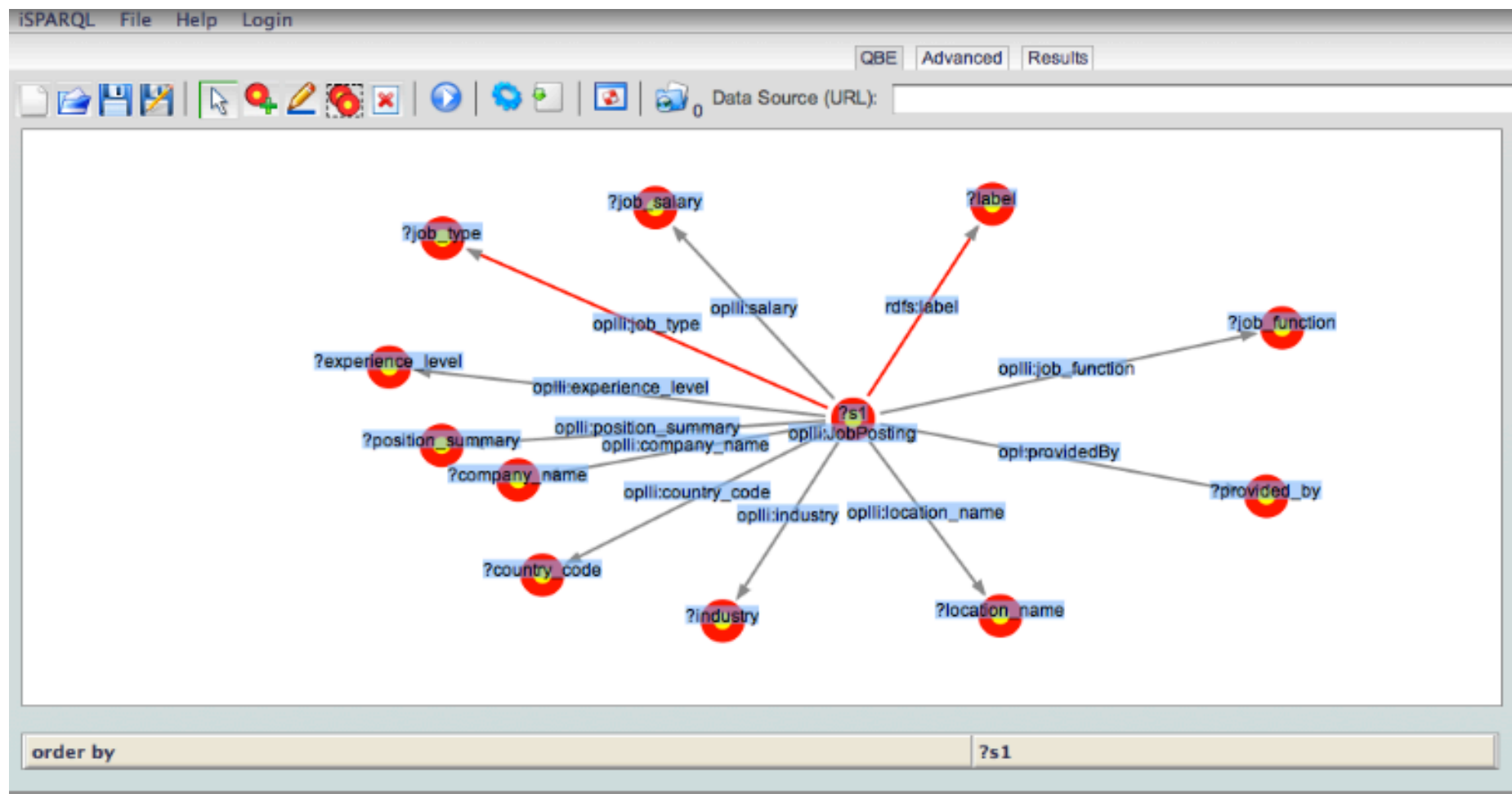
Execution timeout: milliseconds (values less than 1000 are ignored)

Options:

- ☒ Strict checking of void variables
- ☐ Save resultset to WebDAV folder on the server

Powerful SPARQL Query Builder

Use Query By Example (QBE) Patterns to [Construct](#) & [Share](#) Query Results.





Demonstration

Loading CKAN LOD Datasets into Virtuoso and query as Linked Data

- This demonstration shows how the LOD2 Stack can be used for Loading CKAN Linked Open Data datasets which are part of the LOD2 Stack into the Virtuoso Quad Store resulting in the automatic deployment of the loaded datasets as Linked Data by Virtuoso enabling them to be discovered, traversed and navigated using Linked Data tools.
- Requires [Virtuoso Faceted Browser](#) VAD installation



Demonstration - Loading CKAN Datasets into Virtuoso

Applications Places System

LOD2 Prototype - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ubuntu:8080/lod2demo

Most Visited Getting Started Latest Headlines

LOD2 Prototype About: Payment number 9... Virtuoso Open-Source Wik... About: Politics and Law - T...

Creating Knowledge out of Interlinked Data

no current graph selected

Extraction & Loading Querying Authoring Linking Enrichment Online Tools and Services Configuration

This is Version 1.0 of the LOD2 Stack, which comprises a number of tools for managing the life-cycle of Linked Data. The life-cycle comprises in particular the stages

- Extraction of RDF from text, XML and SQL
- Querying and Exploration using SPARQL
- Authoring of Linked Data using a Semantic Wiki
- Semi-automatic link discovery between Linked Data sources
- Knowledge-base Enrichment and Repair

You can access tools for each of these stages using the menu on top.

The LOD2 Stack is developed by the LOD2 project consortium comprising 15 research groups and companies. The LOD2 project is co-funded by the European Commission within the 7th Framework Programme (GA no. 257934).

You can find further information about the LOD2 Stack and the LOD2 project at <http://lod2.eu>.

Find: Previous Next Highlight all Match case

Done

[lod2@ubuntu: ~/src/... LOD2 Prototype - Mo... lod2@ubuntu: /var/lib...



Demonstration - Loading CKAN Datasets into Virtuoso

Applications Places System

LOD2 Prototype - Mozilla Firefox

File Edit View History Bookmarks Tools Help

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Creating Knowledge out of Interlinked Data

no current graph selected

Extraction & Loading Querying Authoring Linking Enrichment Online Tools and Services Configuration

Upload RDF file
Load RDF data from CKAN
Extract RDF from XML
Extract RDF from SQL
Extract RDF from text w.r.t. DBpedia
Extract RDF from text w.r.t. a controlled vocabulary

Manual revision/authoring

Classification/Enrichment

Quality Analysis

Evolution/Repair

Search/Browsing/Exploration

Extraction

Storage/Querying

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Find: Previous Next Highlight all Match case

Done

[lod2@ubuntu: ~/src/... LOD2 Prototype - Mo... lod2@ubuntu: /var/lib...



Demonstration - Loading CKAN Datasets into Virtuoso

Applications Places System

LOD2 Prototype - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ubuntu:8080/lod2demo

install openssl on ubuntu

Most Visited Getting Started Latest Headlines

LOD2 Prototype About: Payment number 9... Virtuoso Open-Source Wik... About: Politics and Law - T...

Creating Knowledge out of Interlinked Data

no current graph selected

Extraction & Loading Querying Authoring Linking Enrichment Online Tools and Services Configuration

The LOD2 stack includes downloadable datasets as debian packages. These packages are extracted from [CKAN](#). If you select one of the links below the system will invoke the corresponding debian package update procedure. Therefore they can only be installed when the lod2 demonstrator is used on the machine itself as it requires administration rights.

- [ckan-dataset-museums-in-italy](#)
- [ckan-dataset-mondial](#)
- [ckan-dataset-linked-open-senate](#)
- [ckan-dataset-lichfield-spending](#)
- [ckan-dataset-italian-public-schools-linkedopendata-it](#)
- [ckan-dataset-iso-3166-2-data](#)
- [ckan-dataset-grrt](#)
- [ckan-dataset-chronicling-america](#)
- [ckan-dataset-cablegate](#)

Find: Previous Next Highlight all Match case

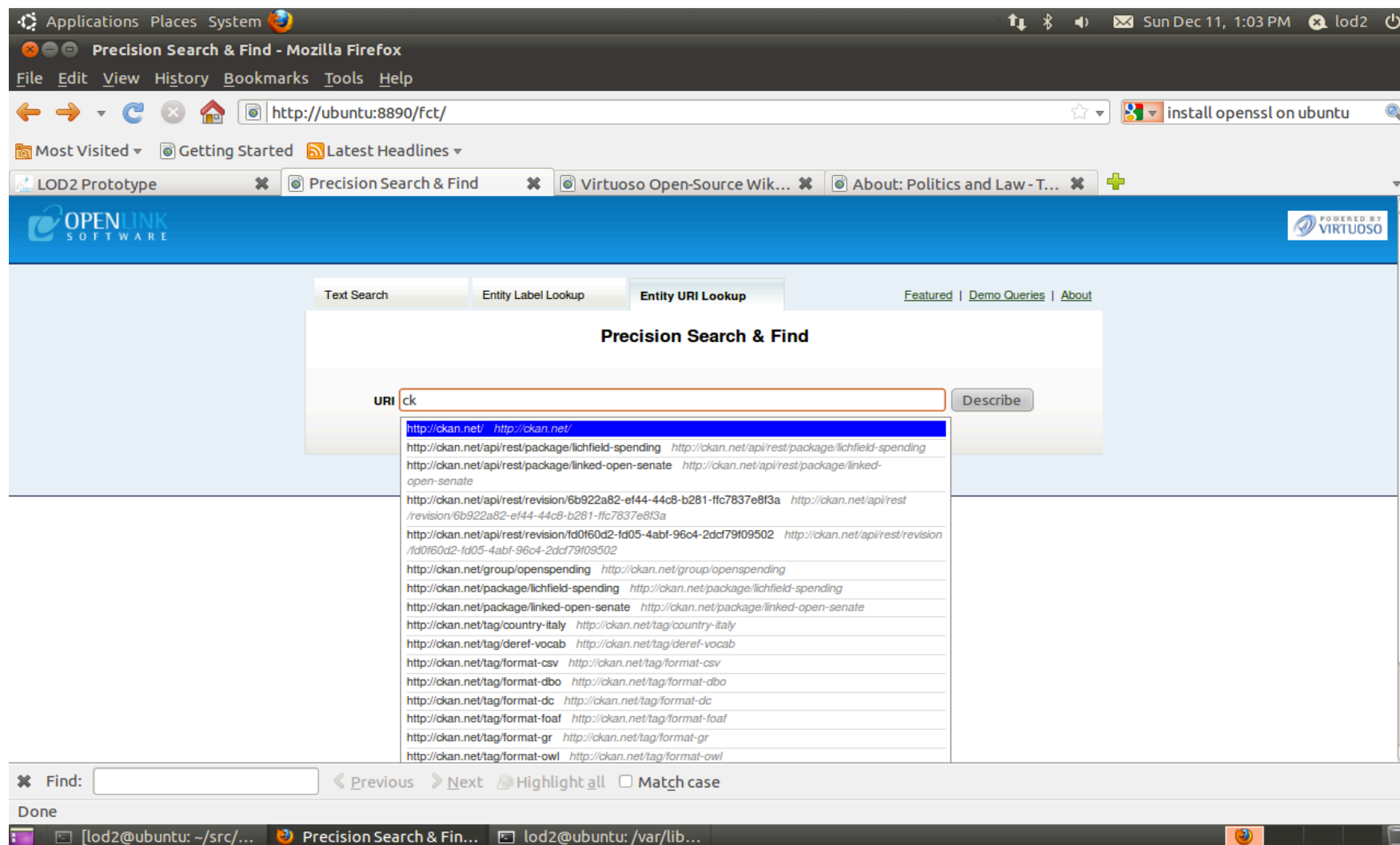
apt:ckan-dataset-lichfield-spending

[lod2@ubuntu: ~/src/... LOD2 Prototype - Mo... lod2@ubuntu: /var/lib...



Demonstration - Loading CKAN Datasets into Virtuoso

Demonstration - Loading CKAN Datasets into Virtuoso



Applications Places System

Precision Search & Find - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ubuntu:8890/fct/

Most Visited Getting Started Latest Headlines

LOD2 Prototype Precision Search & Find Virtuoso Open-Source Wik... About: Politics and Law - T...

OPENLINK SOFTWARE

POWERED BY VIRTUOSO

Text Search Entity Label Lookup Entity URI Lookup

Featured Demo Queries About

Precision Search & Find

URI ck

Describe

- http://ckan.net/ http://ckan.net/
- http://ckan.net/api/rest/package/lichfield-spending http://ckan.net/api/rest/package/lichfield-spending
- http://ckan.net/api/rest/package/linked-open-senate http://ckan.net/api/rest/package/linked-open-senate
- http://ckan.net/api/rest/revision/6b922a82-ef44-44c8-b281-f1c7837e8f3a http://ckan.net/api/rest/revision/6b922a82-ef44-44c8-b281-f1c7837e8f3a
- http://ckan.net/api/rest/revision/fd0f60d2-fd05-4abf-96c4-2dcf79f09502 http://ckan.net/api/rest/revision/fd0f60d2-fd05-4abf-96c4-2dcf79f09502
- http://ckan.net/group/openspending http://ckan.net/group/openspending
- http://ckan.net/package/lichfield-spending http://ckan.net/package/lichfield-spending
- http://ckan.net/package/linked-open-senate http://ckan.net/package/linked-open-senate
- http://ckan.net/tag/country-italy http://ckan.net/tag/country-italy
- http://ckan.net/tag/deref-vocab http://ckan.net/tag/deref-vocab
- http://ckan.net/tag/format-csv http://ckan.net/tag/format-csv
- http://ckan.net/tag/format-dbo http://ckan.net/tag/format-dbo
- http://ckan.net/tag/format-dc http://ckan.net/tag/format-dc
- http://ckan.net/tag/format-foaf http://ckan.net/tag/format-foaf
- http://ckan.net/tag/format-gr http://ckan.net/tag/format-gr
- http://ckan.net/tag/format-owl http://ckan.net/tag/format-owl

Find: Previous Next Highlight all Match case

Done

[lod2@ubuntu: ~/src/... Precision Search & Fin... lod2@ubuntu: /var/lib...



Demonstration - Loading CKAN Datasets into Virtuoso

Browse and run installed applications

About: Lichfield District Council - Spending - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ubuntu:8890/describe/?url=http%3A%2F%2Fckan.net%2Fpackage%2Flichfield-spending&sid=2&ui

install openssl on ubuntu

Most Visited Getting Started Latest Headlines

LOD2 Prototype About: Lichfield District C... Virtuoso Open-Source Wik... About: Politics and Law - T...

OPENLINK SOFTWARE

Facets Description Metadata Settings

POWERED BY VIRTUOSO

About: Lichfield District Council - Spending

An Entity of Type : [Model](#), within Data Space : [ubuntu:8890](#)
[Constrain facet on this type](#)

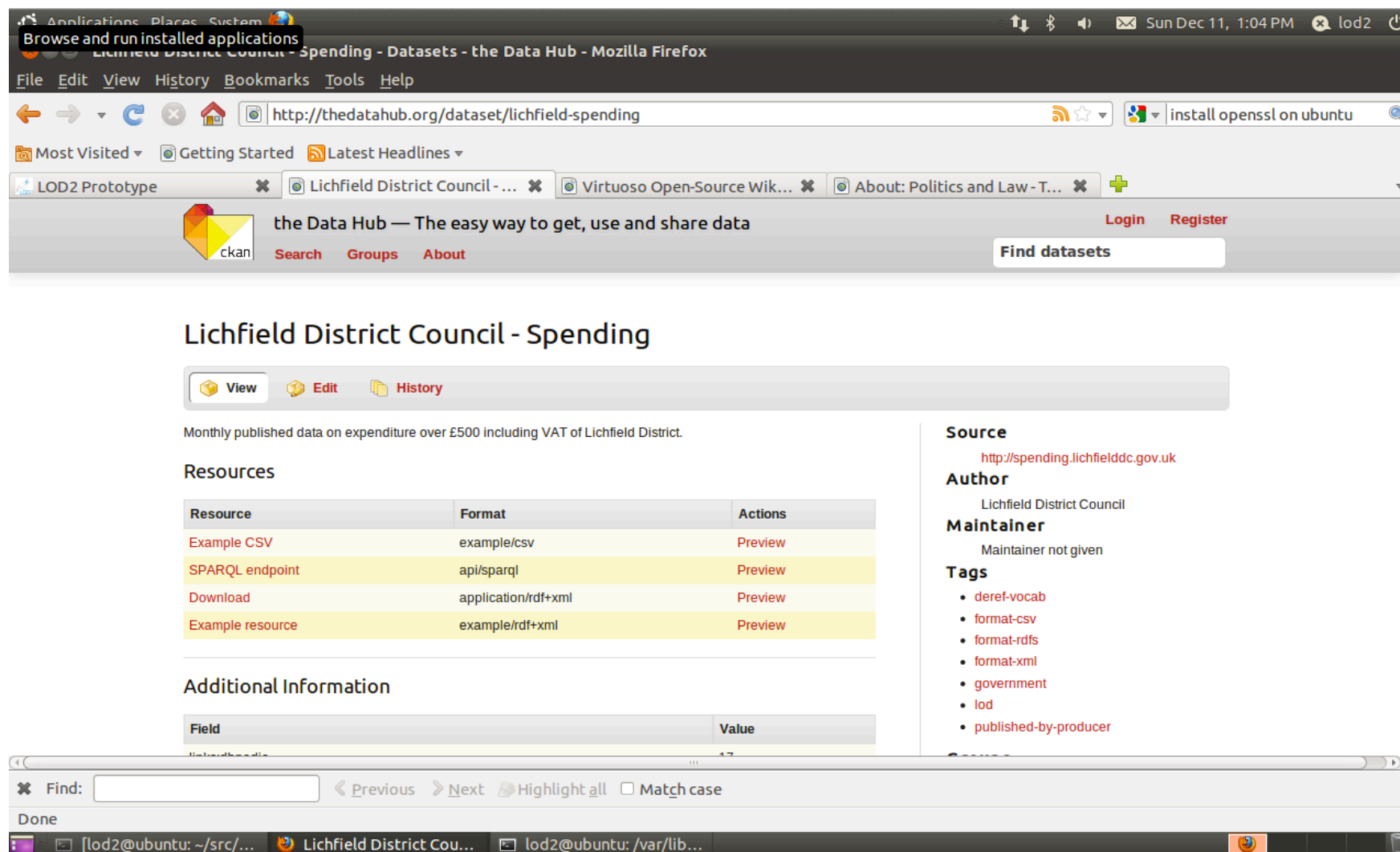
Attributes	Values
type	Model http://www.w3.org/ns/dcat#Dataset
Date Created	2007-04-10 21:19:38(xsd:date)
Date Modified	2011-08-10 12:54:12(xsd:date)
used prefix	foaf= http://xmlns.com/foaf/0.1/ rdf= http://www.w3.org/1999/02/22-rdf-syntax-ns# rdfs= http://www.w3.org/2000/01/rdf-schema# dct= http://purl.org/dc/terms/ ns0= http://moat-project.org/ns# »more«
Title	Lichfield District Council - Spending
moat.taggedWithTag	http://ckan.net/tag/deref-vocab http://ckan.net/tag/government http://ckan.net/tag/loj http://ckan.net/tag/lojcloud.candidate http://ckan.net/tag/lojcloud.nolinks »more«

Find: Previous Next Highlight all Match case

Done

[lod2@ubuntu: ~/src/... About: Lichfield Distr... lod2@ubuntu: /var/lib...

Demonstration - Loading CKAN Datasets into Virtuoso



The screenshot shows a Mozilla Firefox browser window with the address bar displaying `http://thedatahub.org/dataset/lichfield-spending`. The page title is "Lichfield District Council - Spending". The page content includes a "View" button, a description "Monthly published data on expenditure over £500 including VAT of Lichfield District.", and a "Resources" table.

Resource	Format	Actions
Example CSV	example/csv	Preview
SPARQL endpoint	api/sparql	Preview
Download	application/rdf+xml	Preview
Example resource	example/rdf+xml	Preview

Additional information is provided on the right side of the page, including the source (`http://spending.lichfielddc.gov.uk`), author (Lichfield District Council), and tags (`deref-vocab`, `format-csv`, `format-rdfs`, `format-xml`, `government`, `lod`, `published-by-producer`).



Demonstration - Loading CKAN Datasets into Virtuoso

Applications Places System 58754 - Mozilla Firefox

Browse and run installed applications

File Edit View History Bookmarks Tools Help

http://ubuntu:8890/describe?url=http%3A%2F%2Fspending.lichfielddc.gov.uk%2Fspend%2F9058754&s install openssl on ubuntu

Most Visited Getting Started Latest Headlines

LOD2 Prototype About: Payment number 9... Virtuoso Open-Source Wik... About: Politics and Law - T...

Facets Description Metadata **Settings**

About: Payment number 9058754

An Entity of Type : [ExpenditureLine](#), within Data Space : [ubuntu:8890](#)
[Constrain facet on this type](#)

Attributes	Values
type	http://reference.data.gov.uk/def/payment#ExpenditureLine
label	Payment number 9058754
http://purl.org/linked-data/cube#dataSet	Lichfield District Council spend for October 2010
http://reference.d...penditureCategory	Closed Circuit Television Grants & Contributions Supplies & Services
http://reference.d...payment#netAmount	8315.21 (xsd:double)
http://reference.d...f/payment#payment	Invoice 12941
is http://reference.d...t#expenditureLine of Invoice 12941	

Alternative Linked Data Views: [Sponger](#) | [ISPARQL](#) | [ODE](#) Raw Data in: [CXML](#) | [CSV](#) | [RDF \(N-Triples N3/Turtle JSON XML \)](#) | [OData \(Atom JSON \)](#) | [Microdata \(JSON HTML \)](#) | [JSON-LD](#) | [About](#)

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OpenLink Virtuoso version 06.01.3127 on Linux (i686-pc-linux-gnu) Standard Edition

Find: Previous Next Highlight all ☐ Match case

Done

[lod2@ubuntu: ~/src/... About: Payment num... lod2@ubuntu: /var/lib...

Performance Tuning

- Memory Allocation & Disk configuration
 - NumberOf Buffers
 - MaxDirtyBuffers
 - MaxCheckpointRemap
 - Disk Striping
 - Linux “swappiness”
- ServerThreads
 - HTTP allocated on Server startup
 - SQL allocated on demand for both external and internal use
- Indexes
 - Default 2 full indices over RDF quads plus 3 partial indices should suffice for most use cases
 - Custom Indexes can be created
- **Status{“}** command for server status and **explain()** function for query plans
- Performance [tuning](#) and [diagnostics](#) documentation



Future Enhancements

- Column Store Edition
 - Column wise indexing and data compression
 - More suitable for RDF work loads providing major performance improvements
 - Dynamic Query optimization
 - Adaptive Caching of Joins
- Faceted Browser
- RDF Sponger Cartridges
- WebID
 - User creation and X.509 certificate generation
 - Authentication & authorisation (ACLs)



Questions & Answers



Thank you for your attention!

OpenLink Software Contact Information:

Web Site: <http://www.openlinksw.com>
Virtuoso: <http://virtuoso.openlinksw.com>
Support: <http://support.openlinksw.com>
Weblog: <http://www.openlinksw.com/blog>
LinkedIn: <http://www.linkedin.com/company/openlink-software>
Twitter: <http://twitter.com/OpenLink>
Google+: <http://plus.google.com/100570109519069333827/>
Facebook: <http://facebook.com/OpenLinkSoftware>



LODD2

Creating Knowledge out of Interlinked Data



Creating Knowledge out of Interlinked Data

LOD2 is a large-scale integrating project co-funded by the European Commission within the FP7 Information and Communication Technologies Work Programme. This 4-year project comprises leading Linked Open Data technology researchers, companies, and service providers. Coming from across 12 countries the partners are coordinated by the Agile Knowledge Engineering and Semantic Web Research Group at the University of Leipzig, Germany. LOD2 will integrate and syndicate Linked Data with existing large-scale applications. The project shows the benefits in the scenarios of Media and Publishing, Corporate Data intranets and eGovernment.

Universität Leipzig

- One of the oldest (founded 1409) and
- largest (30.000 students) universities in Germany
- Institute for Applied Computer Science (InfAI)



UNIVERSITÄT LEIPZIG

AKSW

- Agile Knowledge Engineering and Semantic Web
- Founded in 2006
- AKSW aims:
 - Contributing to the advancement of science in Semantic Web, Knowledge Engineering, Software Engineering
 - Cost efficient, high-impact R&D, which proves usefulness at an early stage
 - Bridge the gap between research results and applications
- 25+ researchers
- Subgroups:

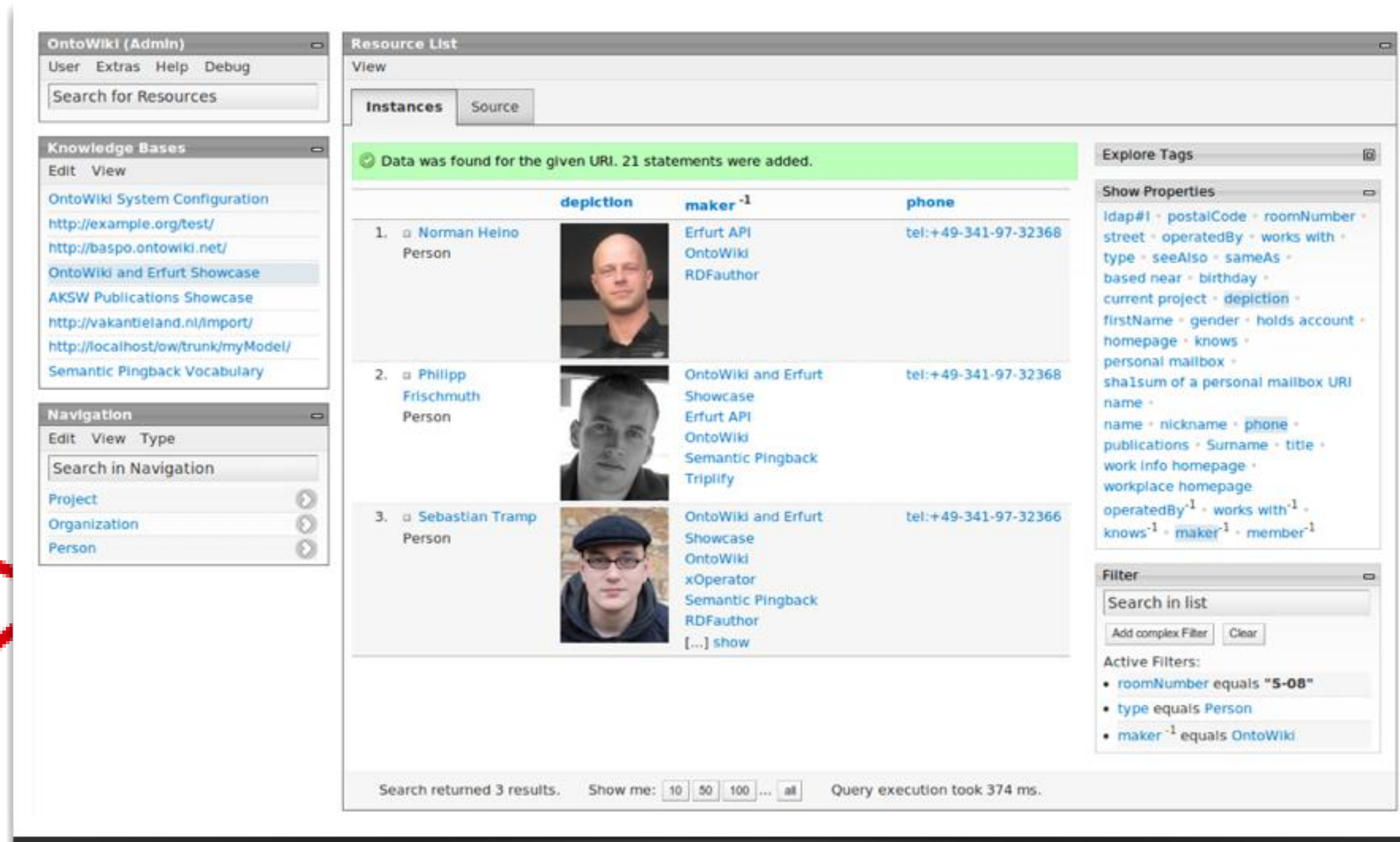


OntoWiki as part of the the LOD2 Stack - the idea, the power & benefits

- Collection of tools to support Linked Data publication
- OntoWiki:
- Extraction
- Storage / Querying
- Manual revision / authoring
- Search / Browsing / Exploration
- (Evolution)



OntoWiki Overview




OntoWiki (Admin)
User Extras Help Debug
Search for Resources

Knowledge Bases
Edit View
OntoWiki System Configuration
<http://example.org/test/>
<http://baspo.ontowiki.net/>
OntoWiki and Erfurt Showcase
AKSW Publications Showcase
<http://vakantieland.nl/import/>
<http://localhost/ow/trunk/myModel/>
Semantic Pingback Vocabulary

Navigation
Edit View Type
Search in Navigation
Project
Organization
Person

Resource List
View
Instances Source

✓ Data was found for the given URI. 21 statements were added.

	depiction	maker ⁻¹	phone
1. Norman Helino Person		Erfurt API OntoWiki RDFauthor	tel:+49-341-97-32368
2. Philipp Frischmuth Person		OntoWiki and Erfurt Showcase Erfurt API OntoWiki Semantic Pingback Triplify	tel:+49-341-97-32368
3. Sebastian Tramp Person		OntoWiki and Erfurt Showcase OntoWiki xOperator Semantic Pingback RDFauthor [...] show	tel:+49-341-97-32368

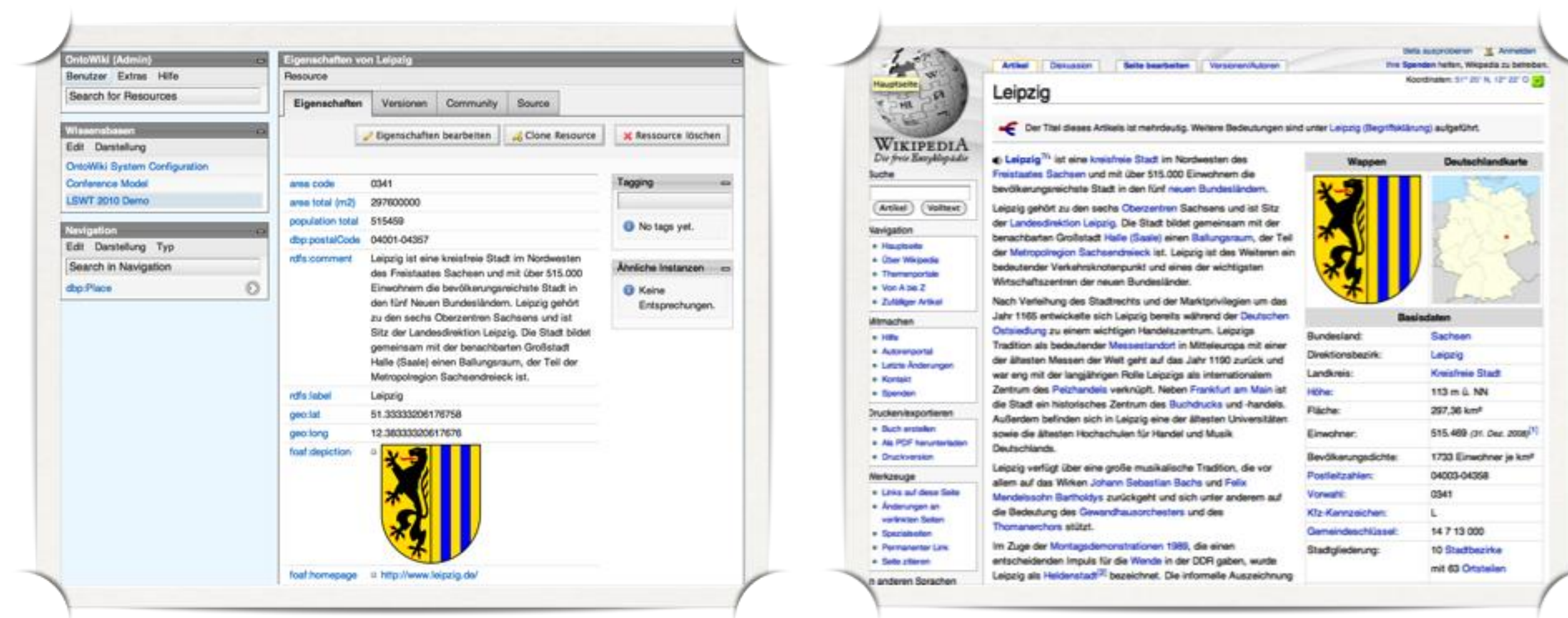
Explore Tags
Show Properties
Idap#I · postalCode · roomNumber · street · operatedBy · works with · type · seeAlso · sameAs · based near · birthday · current project · depiction · firstName · gender · holds account · homepage · knows · personal mailbox · sha1sum of a personal mailbox URI name · name · nickname · phone · publications · Surname · title · work info homepage · workplace homepage · operatedBy⁻¹ · works with⁻¹ · knows⁻¹ · maker⁻¹ · member⁻¹

Filter
Search in list
Add complex Filter Clear
Active Filters:
• roomNumber equals "5-08"
• type equals Person
• maker⁻¹ equals OntoWiki

Search returned 3 results. Show me: 10 50 100 ... all Query execution took 374 ms.

Semantic Data Wiki

OntoWiki Overview contd.

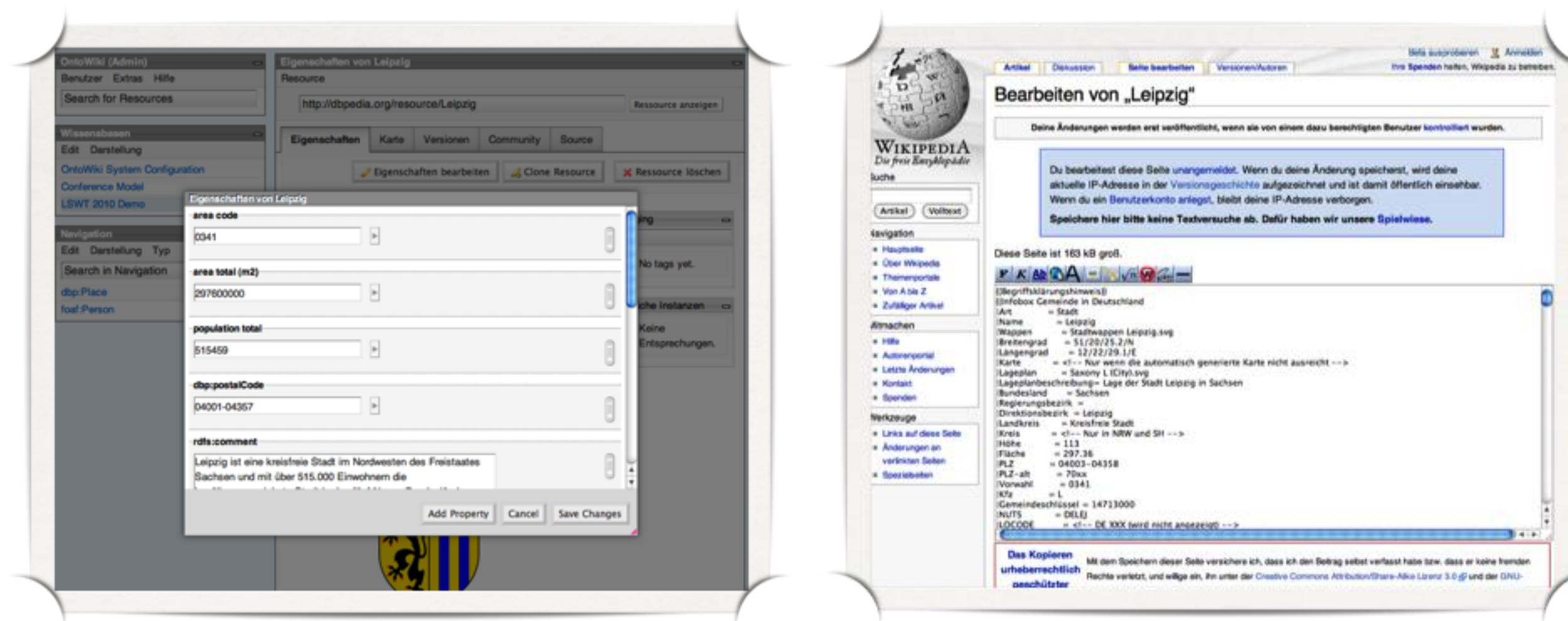


The left screenshot displays the 'Eigenschaften von Leipzig' (Properties of Leipzig) page in OntoWiki. It shows a list of RDF properties and their values, such as 'area code' (0341), 'population total' (515459), and 'dbp:postalCode' (04001-04367). The right screenshot shows the 'Leipzig' article page, which includes a title, a brief introduction, and a table of basic data.

Basisdaten	
Bundesland:	Sachsen
Direktionsbezirk:	Leipzig
Landkreis:	Kreisfreie Stadt
Höhe:	113 m ü. NN
Fläche:	297,36 km²
Einwohner:	515.469 (31. Dez. 2008) ^[1]
Bevölkerungsdichte:	1733 Einwohner je km²
Postleitzahlen:	04003-04368
Vorwahl:	0341
Kfz-Kennzeichen:	L
Gemeinschaftskey:	14 7 13 000
Stadtgliederung:	10 Stadtbezirke mit 63 Ortsteilen

Resources over articles

OntoWiki Overview contd.



Forms over markup

OntoWiki Vision

1. Generic data wiki for RDF models

- No data model mismatch (structured vs. unstructured)

2. Application framework:

- Knowledge-intensive applications,
- Agile processes,
- Distributed user groups

OntoWiki Features

- Knowledge Bases (aka. graphs)
 - Linked Data enabled or not
- Generic list and resource views
- Versioning
- Commenting on arbitrary resources
- User management + access control
- Inline editing
- Navigation hierarchies (e.g. Class hierarchies)

OntoWiki Features contd.

- Search
- Linked Data Server
- Linked Data Client
- Import/export of RDF/XML, Turtle, RDF/JSON
- View/import arbitrary resources
- Filtering
- SPARQL editor

OntoWiki Interfaces

- SPARQL Endpoint
- Linked Data Endpoint
- REST API
- Command Line Interface

OntoWiki Architecture

RDFauthor

Extensions

OntoWiki Application Framework

Erfurt API

Zend Framework

OntoWiki Extensibility

- Components, Plugins, Modules, Wrapper
- Views/Templates
- Themes
- Localizations



LOD2

Creating Knowledge out of Interlinked Data

LOD2 Tool Stack – its Usage in an Industrial Environment

By Katja Eck, Wolters Kluwer Germany

Agenda

- Wolters Kluwer Germany Company Profile & Content Supply Chain
- Use Case Description
- Demo Application: LOD2 Stack in Use

Wolters Kluwer Germany Company Profile

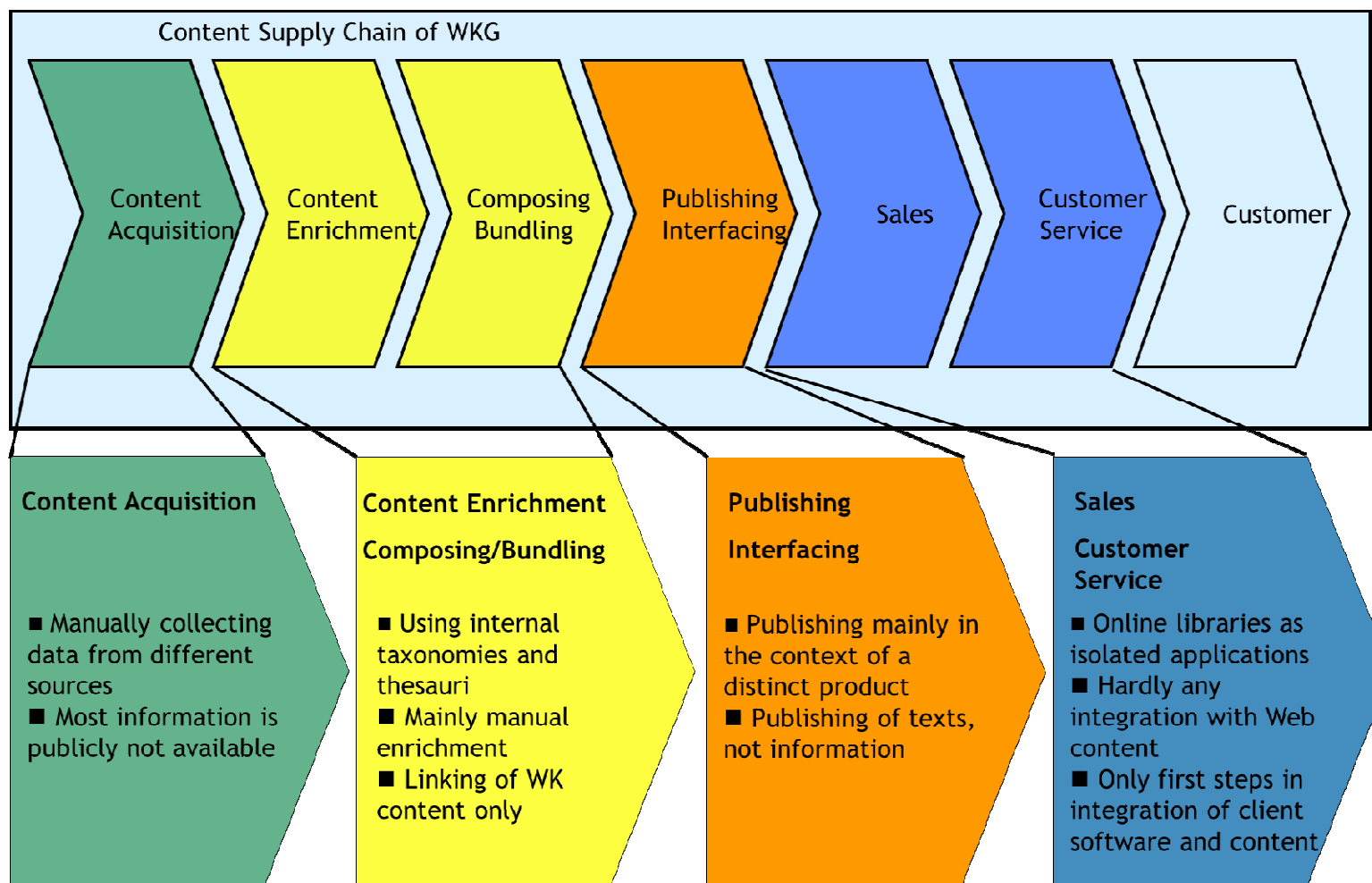
Wolters Kluwer Germany (WKG):

“Semantic Technologies and Standards are an enabler for the media and publishing industry to create added-value for their customers with reasonable costs.”

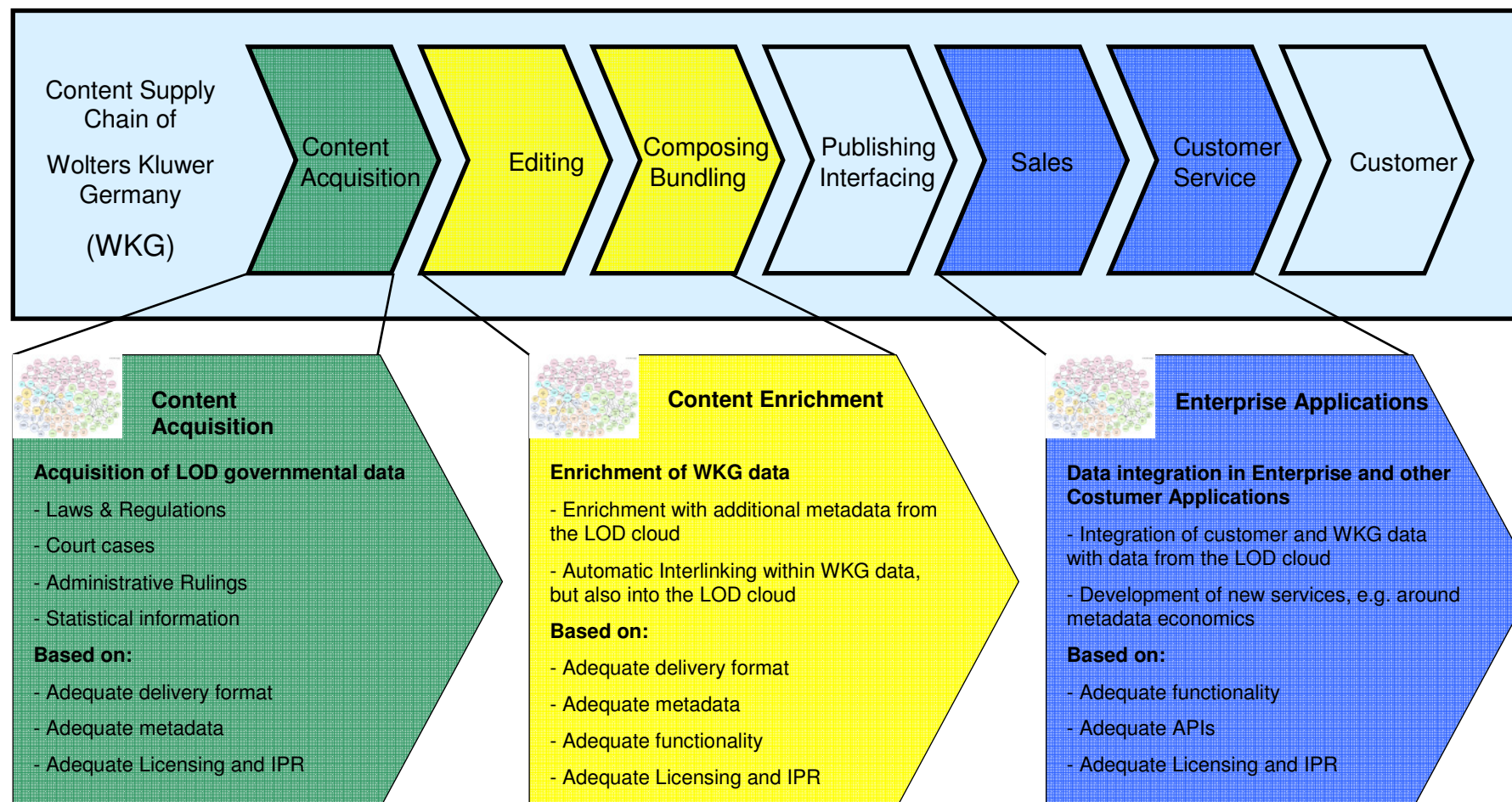
WKG Legal & Regulatory	
Companies/Brands <ul style="list-style-type: none"> - Carl Heymanns Verlag - Luchterhand - Werner Verlag - Carl Link - CW Haarfeld - Deutscher Wirtschaftsdienst - AnNoText - Jurion 	Products (Examples) <ul style="list-style-type: none"> - IP, Administrative Law - Civil, Family, Labor Law - Construction Law - Publications for Schools/KiTas - Public Health Insurance - Magazin „Personalwirtschaft“ (HR Management) - SW for Lawyers and Notaries
WKG Tax & Accounting	
Companies/Brands <ul style="list-style-type: none"> - Akademische Arbeitsgemeinschaft Verlag - Addison Group - Tsenit CS Plus 	Products (Examples) <ul style="list-style-type: none"> - Tax SW for Consumers - SW for Tax Accountants - SW for SMEs with focus Controlling and Accounting

WKG is part of Wolters Kluwer B.V.	
Customer orientation <ul style="list-style-type: none"> - Lawyers - Tax Accountants - Corporations and SMEs - Financial institutions - Health Providers - Public Sector 	Worldwide reach <ul style="list-style-type: none"> - Europe - North America - Asia/Pacific
	Economic success <ul style="list-style-type: none"> - Revenue 2011 EUR 3,3 bln. - 19.000 Employees - Listed Amsterdam SE

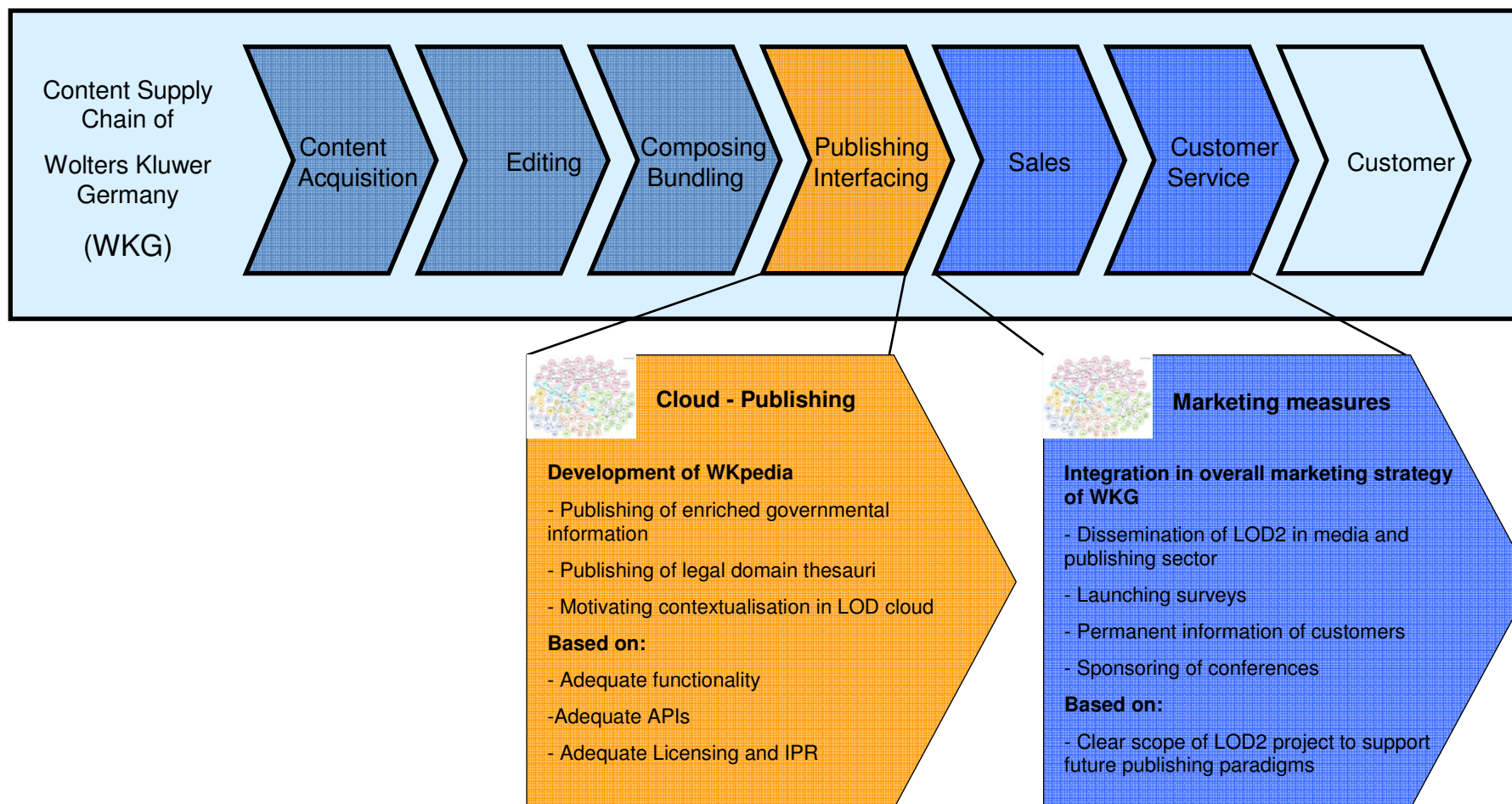
Current Content Supply Chain



WKG as a Consumer of LOD Data



WKG as a Publisher of LOD Data



Use Case Description - Tasks of the Media & Publishing Use Case

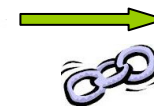
- Adopting and deploying the LOD2 stack to the data sets of Wolters Kluwer
- Automatic interlinking and semantic enrichment of the Wolters Kluwer data sets
- Developing crucial functionality for publishing, searching, browsing and exploring interlinked legal information
- IPR management (licensing and management of usage rights) of interoperable metadata
- Investigation of „good characteristics“ of interoperable metadata



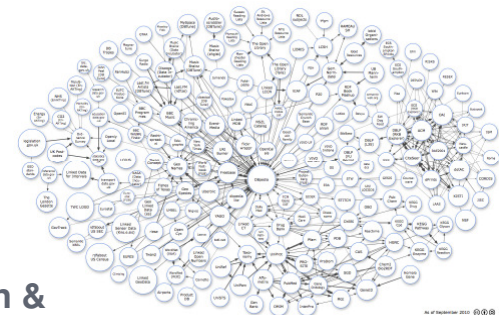
Tool Stack



Publishing



Acquisition & Enrichment



The diagram illustrates the LOD Cloud architecture. It shows a cycle where documents are analyzed and then mapped back to a thesaurus. Key components include:

- Third party documents** and **WK documents**: Sources of data to be analyzed.
- Extraction Service**: Processes documents into a **Metadata Management System, Index + LOD Cache**.
- OntoWiki** and **Domain Specific Thesaurus**: Provide semantic context.
- Silk Workbench**: Performs **Mapping** between the metadata system and the **Other Thesauri**.
- LOD Cloud**: A central hub for the LOD cache and thesauri.
- Domain Specific Application, e.g. AnnoText**: Uses the processed data for semantic meshups.

What has been done so far

- ✓ Delivery of content (around 900.000 documents)
 - Laws and Regulations
 - Court decisions
 - Books, Journals
 - ... in different legal domains
- ✓ Implementation of technical Infrastructure
- ✓ Completion of Mapping Schema & Mapping Script for RDF Transformation
- ✓ Upload, Curation and Management of controlled vocabulary
- ✓ Triplification of all delivered content
- ✓ Mapping of generated RDF metadata with the correct concept-uri's defined in the controlled vocabularies

April 2012 - First release of the news & media data sets

What will be done in 2012

- Interlinking with DBpedia via classification and mapping algorithms
- Merging WK datasets with metadata from DBpedia
- Further optimization of already used toolset (usability of SILK and OntoWiki, better integration of tools, ...)

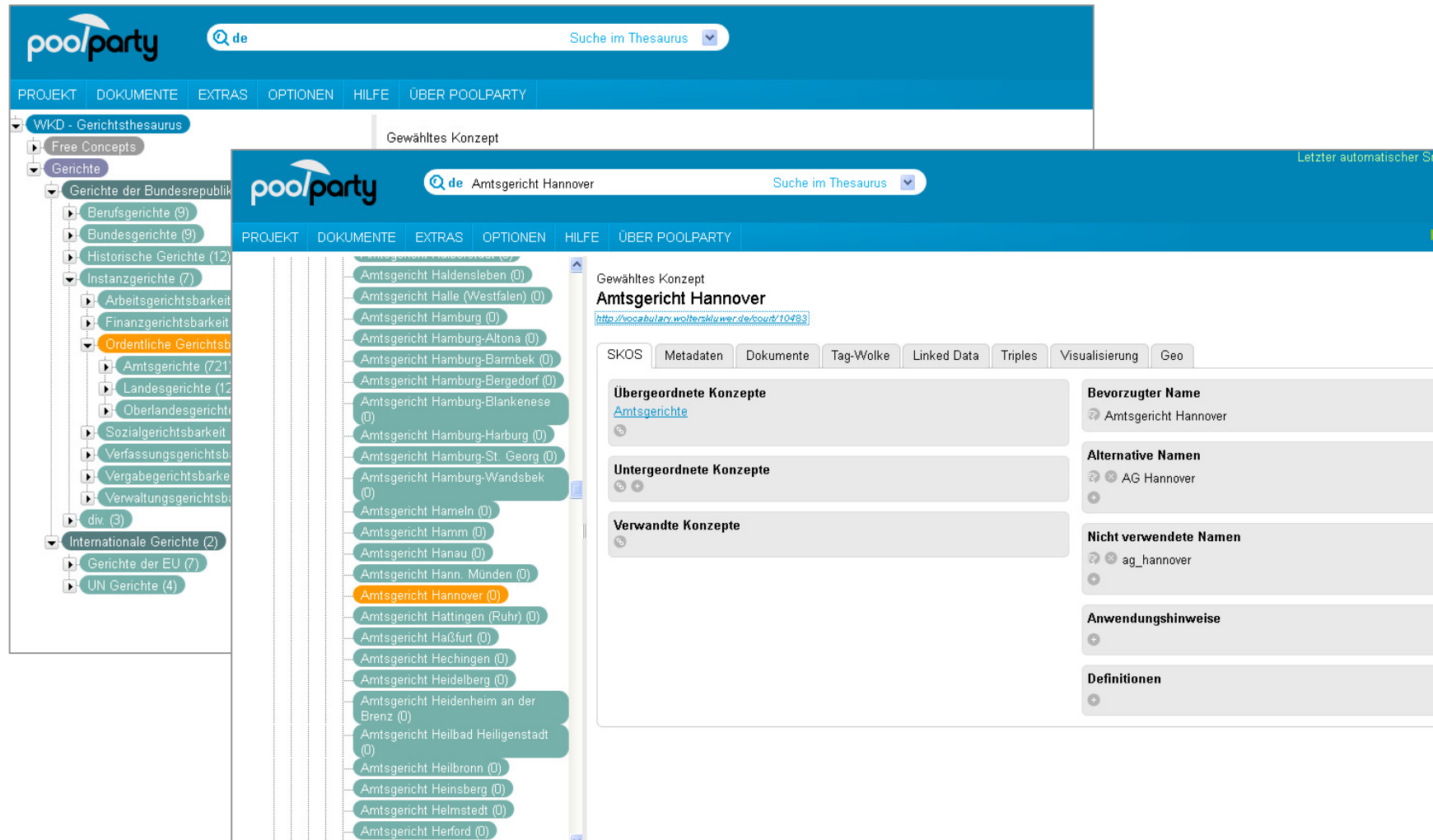
December 2012 – First release of interlinked news and media metadata sets



Creating Knowledge out of Interlinked Data

Demo of the stack in use – Management, Publishing & Enrichment of Court Metadata

Poolparty



The screenshot displays the Poolparty web application interface. The top navigation bar includes links for PROJEKT, DOKUMENTE, EXTRAS, OPTIONEN, HILFE, and ÜBER POOLPARTY. A search bar at the top right contains the text 'Suche im Thesaurus'. The main content area is divided into two panels. The left panel shows a hierarchical tree structure of concepts, with 'Gerichte' expanded to show various court types. The right panel displays the details for the selected concept, 'Amtsgericht Hannover'. This panel includes a list of related concepts (Übergeordnete, Untergeordnete, Verwandte) and a sidebar with additional information such as 'Bevorzugter Name', 'Alternative Namen', 'Nicht verwendete Namen', 'Anwendungshinweise', and 'Definitionen'.

Gerichte

- Gerichte der Bundesrepublik
 - Berufsgerichte (9)
 - Bundesgerichte (9)
 - Historische Gerichte (12)
 - Instanzgerichte (7)
 - Arbeitsgerichtsbarkeit
 - Finanzgerichtsbarkeit
 - Ordentliche Gerichtsbarkeit
 - Amtsgerichte (721)
 - Landesgerichte (12)
 - Oberlandesgerichte
 - Sozialgerichtsbarkeit
 - Verfassungsgerichtsbarkeit
 - Vergabegerichtsbarkeit
 - Verwaltungsgerichtsbarkeit
 - div. (3)
 - Internationale Gerichte (2)
 - Gerichte der EU (7)
 - UN Gerichte (4)

Amtsgericht Hannover

Übergeordnete Konzepte

- Amtsgerichte

Untergeordnete Konzepte

- Amtsgericht Haldensleben (0)
- Amtsgericht Halle (Westfalen) (0)
- Amtsgericht Hamburg (0)
- Amtsgericht Hamburg-Altona (0)
- Amtsgericht Hamburg-Barmbek (0)
- Amtsgericht Hamburg-Bergedorf (0)
- Amtsgericht Hamburg-Blankenese (0)
- Amtsgericht Hamburg-Harburg (0)
- Amtsgericht Hamburg-St. Georg (0)
- Amtsgericht Hamburg-Wandsbek (0)
- Amtsgericht Hameln (0)
- Amtsgericht Hamm (0)
- Amtsgericht Hanau (0)
- Amtsgericht Hann. Münden (0)
- Amtsgericht Hannover (0)
- Amtsgericht Hattingen (Ruhr) (0)
- Amtsgericht Haßfurt (0)
- Amtsgericht Hechingen (0)
- Amtsgericht Heidelberg (0)
- Amtsgericht Heidenheim an der Brenz (0)
- Amtsgericht Heilbad Heiligenstadt (0)
- Amtsgericht Heilbronn (0)
- Amtsgericht Heinsberg (0)
- Amtsgericht Helmstedt (0)
- Amtsgericht Herford (0)

Bevorzugter Name

- Amtsgericht Hannover

Alternative Namen

- AG Hannover

Nicht verwendete Namen

- ag_hannover

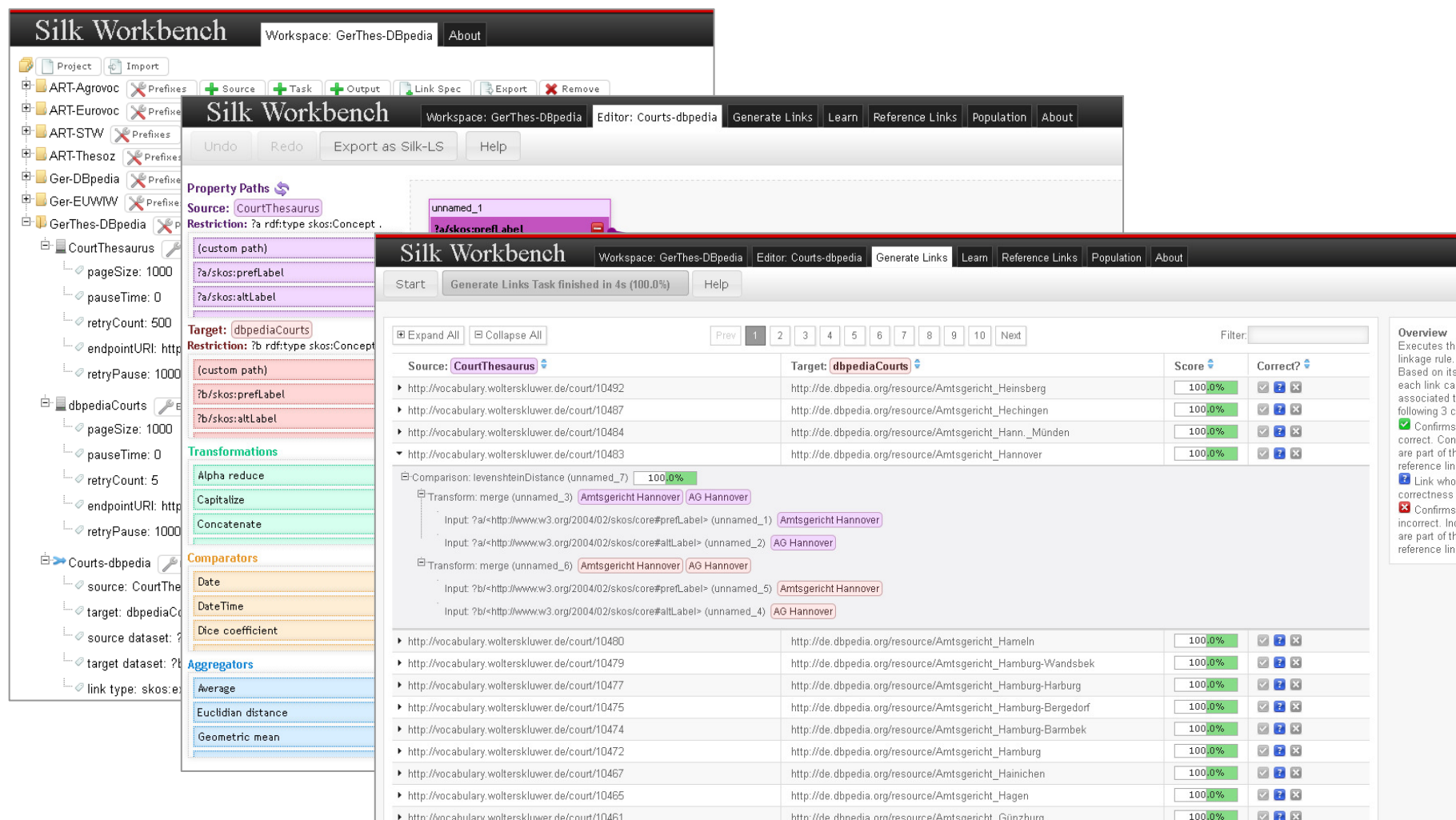
Anwendungshinweise

-

Definitionen

-

Silk



Silk Workbench Workspace: GerThes-DBpedia

Property Paths

Source: CourtThesaurus

Restriction: ?a rdf:type skos:Concept

Target: dbpediaCourts

Restriction: ?b rdf:type skos:Concept

Transformations

- Alpha reduce
- Capitalize
- Concatenate

Comparators

- Date
- DateTime
- Dice coefficient

Aggregators

- Average
- Euclidian distance
- Geometric mean

Generate Links Task finished in 4s (100.0%)

Source	Target	Score	Correct?
http://vocabulary.wolterskluwer.de/court/10492	http://de.dbpedia.org/resource/Amtsgericht_Heinsberg	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10487	http://de.dbpedia.org/resource/Amtsgericht_Hechingen	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10484	http://de.dbpedia.org/resource/Amtsgericht_Hann_Munden	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10483	http://de.dbpedia.org/resource/Amtsgericht_Hannover	100.0%	✓ ? ✗
<p>Comparison: levenshteinDistance (unnamed_7) 100.0%</p> <p>Transform: merge (unnamed_3) Amtsgericht Hannover AG Hannover</p> <p>Input: ?a<http://www.w3.org/2004/02/skos/core#prefLabel> (unnamed_1) Amtsgericht Hannover</p> <p>Input: ?a<http://www.w3.org/2004/02/skos/core#altLabel> (unnamed_2) AG Hannover</p> <p>Transform: merge (unnamed_6) Amtsgericht Hannover AG Hannover</p> <p>Input: ?b<http://www.w3.org/2004/02/skos/core#prefLabel> (unnamed_5) Amtsgericht Hannover</p> <p>Input: ?b<http://www.w3.org/2004/02/skos/core#altLabel> (unnamed_4) AG Hannover</p>			
http://vocabulary.wolterskluwer.de/court/10480	http://de.dbpedia.org/resource/Amtsgericht_Hameln	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10479	http://de.dbpedia.org/resource/Amtsgericht_Hamburg-Wandsbek	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10477	http://de.dbpedia.org/resource/Amtsgericht_Hamburg-Harburg	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10475	http://de.dbpedia.org/resource/Amtsgericht_Hamburg-Bergedorf	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10474	http://de.dbpedia.org/resource/Amtsgericht_Hamburg-Barmbek	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10472	http://de.dbpedia.org/resource/Amtsgericht_Hamburg	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10467	http://de.dbpedia.org/resource/Amtsgericht_Hainichen	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10465	http://de.dbpedia.org/resource/Amtsgericht_Hagen	100.0%	✓ ? ✗
http://vocabulary.wolterskluwer.de/court/10461	http://de.dbpedia.org/resource/Amtsgericht_Gunzburg	100.0%	✓ ? ✗

Overview

Executes the c linkage rule. Based on its c each link can b associated to a following 3 cate

- ✓ Confirms th correct. Confir are part of the r reference link s
- ? Link whose correctness is i
- ✗ Confirms th incorrect. Incon are part of the r reference link s

Linked Frontends

About: [Amtsgericht Hannover](#)

An Entity of Type: [Thing](#), from Named Graph: [http://de.dbpedia.org](#), within Data Space: [de.dbpedia.org](#)



Das Amtsgericht Hannover in Hannover ist ein Amtsgericht im Landgerichtsbezirk Hannover. Das Amtsgericht hatte 2002 insgesamt 710 Mitarbeiter, darunter 104 Richter und 97 Rechtspfleger.

Property	Value
dbpedia-owl:abstract	Das Amtsgericht Hannover in Hannover ist ein Amtsgericht im Landgerichtsbezirk Hannover. Das Amtsgericht hatte 2002 insgesamt 710 Mitarbeiter, darunter 104 Richter und 97 Rechtspfleger.
dbpedia-owl:thumbnail	http://upload.wikimedia.org/wikipedia/commons/thumb/2/2e/Hannover_Amtsgericht.jpg/200px-Hannover_Amtsgericht.jpg
dbpedia-owl:wikiPageExternalLink	http://www.amtsgericht-hannover.de
dbpedia-owl:wikiPageWikiLink	<ul style="list-style-type: none"> dbpedia:Zweiter category:Region dbpedia:Hannover dbpedia:Langer category:Bauwerk dbpedia:Seelze category:Organisation dbpedia:Amtsgericht dbpedia:Hemmen dbpedia:Liste category:Amtsgericht dbpedia:König dbpedia:Liste dbpedia:Landgericht dbpedia:Laatz dbpedia:Amtsgericht dbpedia:Amtsgericht dbpedia:Amtsgericht dbpedia:Datei dbpedia:Datei
http://de.dbpedia.org/property/dim	25 (xsd:integer)
http://de.dbpedia.org/property/ew	9 (xsd:integer)
http://de.dbpedia.org/property/ns	52 (xsd:integer)
http://de.dbpedia.org/property/region	DE-NI
http://de.dbpedia.org/property/type	landmark
http://de.dbpedia.org/property/wikiPageUsesTemplate	dbpedia:Vorlage
dbpedia:Vorlage:Coordinate	NS
	EW



A B C D E F G H I J K L M N O P Q R S T

Wolters Kluwer Deutschland > WKD - Gerichte

HTML VISUAL

Amtsgericht Hannover

<http://vocabulary.wolterskluwer.de/court/>



(Wikipedia article)

Alternativer Namen

AG Hannover

Übergeordnetes Konzept

<http://vocabulary.wolterskluwer.de/court/>

Downloads

RDF/XML

Downloads

RDF/XML

Verlinkungen zu anderen Thesauri und Vokabularen

<http://de.dbpedia.org>

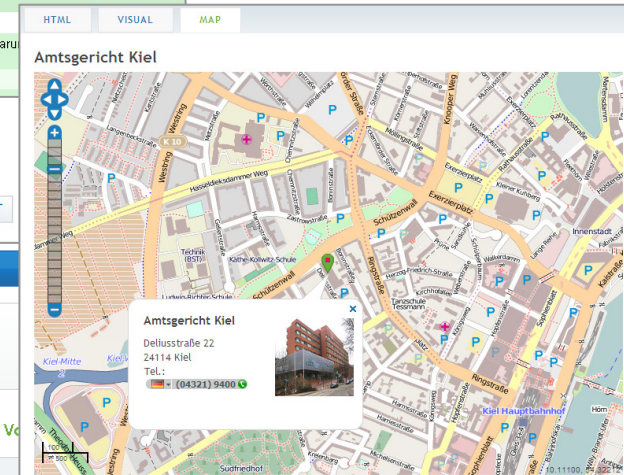
<http://dbpedia.org/ontology/thumbnaill>

<http://www.w3.org/2000/01/rdf-schema#label>

<http://purl.org/dc/terms/subject>

<http://dbpedia.org/ontology/abstract>

<http://www.w3.org/2004/02/skos/core#exactMatch>



contact | about | skos

Ontowiki

OntoWiki

User Extras Help

Search for Resources

POWERED BY VIRTUOSO

Selector: SKOS

View Taxonomy Profiles

Search in Navigation

Gerichte der Bundesrepublik Deutschland

Bundesgerichte (7)

Instanzgerichte (10)

Berufsgerichte

Historische Gerichte (1)

div.

Login

Local OpenID FOAF+SSL

Username

Password

Remember me

Login Register

Pebbles (Selected model: http://schema.wolterskluwer.de/resource/ag_frankfurt-main_2009-08-21_31-c-1141-09_cas_grs.rdf)

Keine Begründung eines „fliegenden Gerichtsstandes“ für Urheberverletzungen im Internet

Comments, Descriptions and Notes

There are no comments, descriptions or notes on this knowledge base.

[Suggestions](#) | [Outgoing references](#) | [Documents that refer to this this document](#)

Add Property

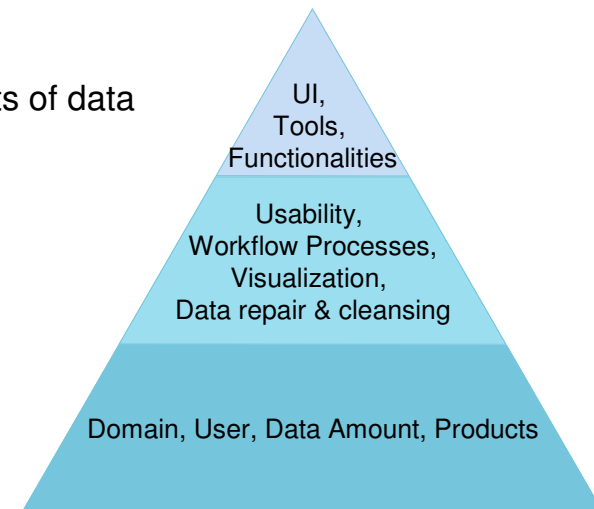
Edit Properties

Meta Data

Date of Creation	8676-02-04
Language	de
Reference	ag_frankfurt-main_31%20C%201141%2F09_2009-08-21
Title	Keine Begründung eines „fliegenden Gerichtsstandes“ für Urheberverletzungen im Internet
Abstract	Bei Urheberverletzungen im Internet durch Herunterladen von Musikstücken wird der sogenannte „fliegende Gerichtsstand“ nicht begründet. Der Gerichtsstand richtet sich vielmehr nach dem Wohnsitz des beklagten Urheberrechtsverletzers. Dies liegt unter anderem auch darin begründet, dass der Gesetzgeber das Ziel verfolgt hat, den beklagten Urheberrechtsverletzer, der sich einem Prozessverhältnis im Gegensatz zum klagenden Geschädigten nicht entziehen kann, nicht dadurch zu benachteiligen, dass der Rechtsstreit an einem für ihn weit entfernten Ort stattfindet. Dieser Zweck würde bei Urheberrechtsverletzungen im Internet durch die Annahme eines fliegenden Gerichtsstandes ausgehebelt werden, da dieser letztlich dazu führt, dass der Urheberrechtsverletzer überall in Deutschland in Anspruch genommen werden könnte.
Court	AG Frankfurt/Main
Issuer	WP07
Associated Practice Area	Verfahrensrecht Urheberrecht Zivilprozessrecht

Experiences

- Project as a chance to participate in the development and shape the landscape of published information in the legal domain
 - Tools are working good for our purposes, e.g. 95 % of the silk links are reasonable, about 75% are exact (depending on the concepts), in this early stage
 - Nonetheless much work is left: functionalities, interfaces and new tools have to be adapted for our specific use cases with regard to...
 - Usability - Logic behind is difficult to understand for non technicians – therefore usability has to be improved to ease the handling of metadata
 - Workflow Processes
 - Visualization – tools have to stay manageable for large amounts of data
 - Data repair and cleansing has to be supported
- > influenced by our domain, users, data amount, products, ...
- Beside the tool stack, huge effort is necessary for data transformation due to schema development and cleansing of inconsistencies





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Thanks for your attention!

<http://lod2.eu>



LOD

Creating Knowledge out of Interlinked Data



Creating Knowledge out of Interlinked Data

LOD2 is a large-scale integrating project co-funded by the European Commission within the FP7 Information and Communication Technologies Work Programme. This 4-year project comprises leading Linked Open Data technology researchers, companies, and service providers. Coming from across 12 countries the partners are coordinated by the Agile Knowledge Engineering and Semantic Web Research Group at the University of Leipzig, Germany.

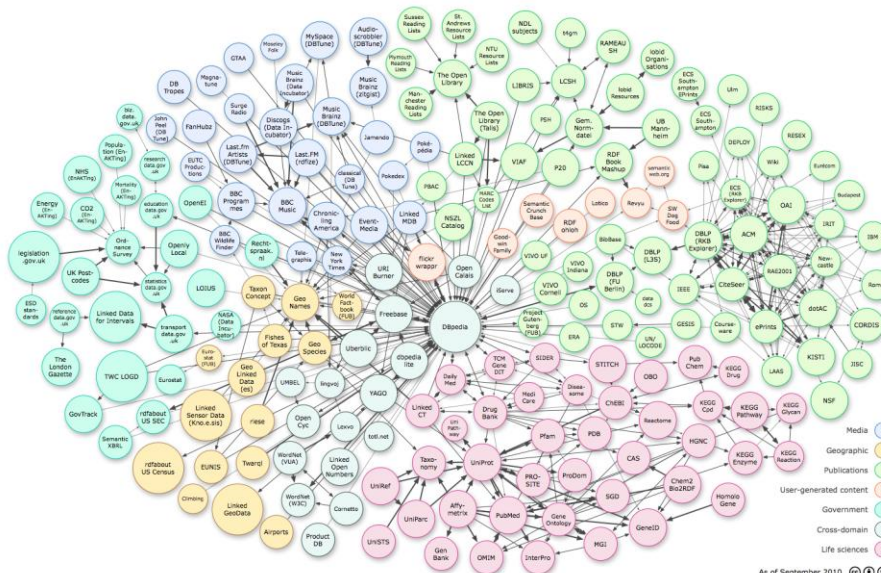
LOD2 will integrate and syndicate Linked Data with existing large-scale applications. The project shows the benefits in the scenarios of Media and Publishing, Corporate Data intranets and eGovernment.

Web-based Systems Group

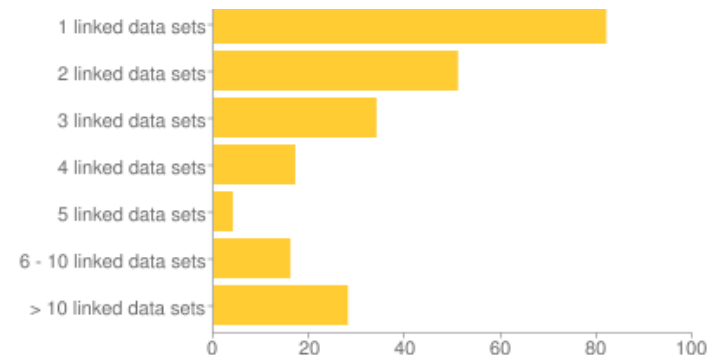
- School of Business & Economics, Freie Universität Berlin
- Research focus: Linked Data technologies for extending the World Wide Web with a global data commons
- Funded Projects:
 - LOD2 - Creating Knowledge out of Interlinked Data
 - LATC - LOD Around The Clock
 - PlanetData
- Visit us at: <http://wbsg.de>

Motivation

- The Web of Data is a single global data space because data sources are connected by links
- Over 30 billion triples published as Linked Open Data (09/19/2011)
- But:
 - Less than 500 million links
 - Most publishers only link to one other dataset



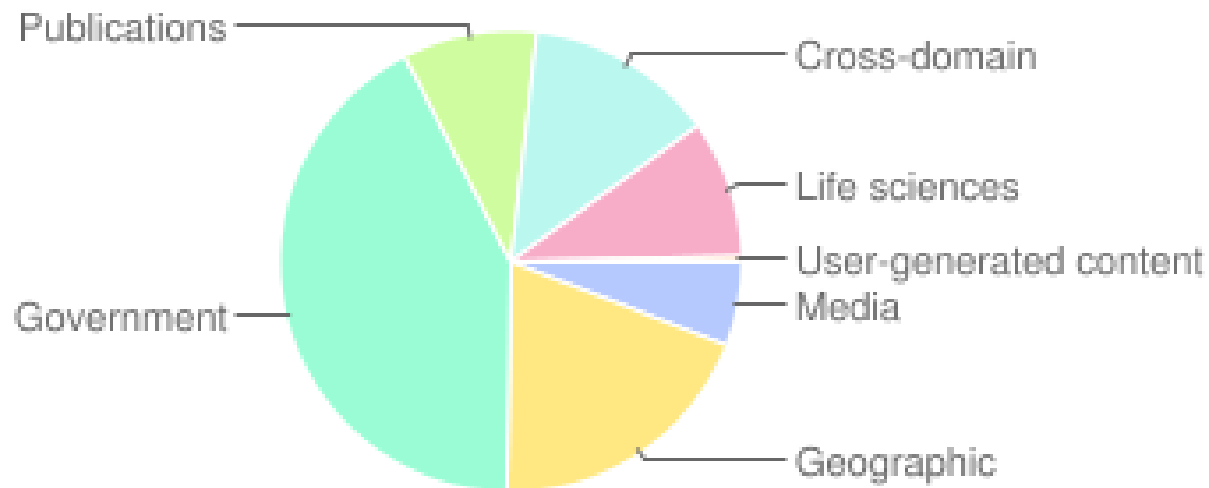
As of September 2010



LOD data sets by the number of other data sources that are target of outgoing RDF links.

Challenges for Link Discovery

- Large range of domains
 - 277 data sources in the LOD cloud from a variety of domains
 - Linkage Rules are different in each domain
 - Writing a Linkage Rule for each of these domains is usually not trivial



Distribution of triples by domain

Challenges for Link Discovery

- Scalability
 - The current LOD cloud contains 277 datasets (August 2011)
 - Over 31 billion triples in total
 - Infeasible to compare every possible entity pair

Domain	Number of datasets	Triples	%	(Out-)Links	%
Media	27	1,855,413,060	5.88 %	50,469,665	10.10 %
Geographic	26	6,111,263,253	19.36 %	35,751,295	7.16 %
Government	45	13,302,470,684	42.14 %	19,353,426	3.87 %
Publications	86	2,958,969,764	9.37 %	135,925,930	27.21 %
Cross-domain	36	4,157,191,654	13.17 %	62,805,095	12.57 %
Life sciences	42	3,042,142,230	9.64 %	191,825,949	38.40 %
User-generated content	14	115,072,057	0.36 %	3,431,983	0.69 %
	277	31,568,522,702		499,564,104	

LOD datasets per domain

Link Discovery Tools

- Tools enable data publishers to set links
- Most tools generate links based on user-defined linkage rules
- A linkage rule specifies the conditions data items must fulfill in order to be interlinked
- Popular Link Discover Tools:
 - Silk Link Discovery Framework
 - LIMES
 - Others:
<http://esw.w3.org/TaskForces/CommunityProjects/LinkingOpenData/EquivalenceMining>

Silk Link Discovery Framework

- Tool for discovering links between data items within different Linked Data sources.
- The Silk Link Specification Language (Silk-LSL) allows to express complex linkage rules
- Can be used to generate owl:sameAs links as well as other relationships
- Scalability and high performance through efficient data handling

Silk Versions

- **Silk Single Machine**
 - **Generate links on a single machine**
 - **Local or remote data sets**
- **Silk MapReduce**
 - Generate RDF links using a cluster of multiple machines
 - Based on Hadoop (Can be run on Amazon Elastic MapReduce)
- **Silk Server**
 - Provides an HTTP API for matching instances from an incoming stream of RDF data while keeping track of known entities
 - Can be used as an identity resolution component within applications that consume Linked Data from the Web

(Simplified) Linking Workflow

Select Datasets

- Select two data sources
- Select the entity types to be interlinked

Write Linkage Rule

- Specifies how two entities are compared
- Can be written manually or learned

Generate Links

- Locally or on a Hadoop Cluster
- Write Links to file or a triple store

Linkage Rule Components

A linkage rule is represented as a tree consisting of 4 types of operators:

RDF paths

- Similar to SPARQL 1.1 Property Paths
- Examples:
 - `?movie/dbpedia:director/rdfs:label`
 - `?person/label[@lang='en']`

Transformations

- Transforms the result set of an RDF paths
- Variety of built-in transformations
- Examples:
 - LowerCase
 - RegexReplace
 - Stem

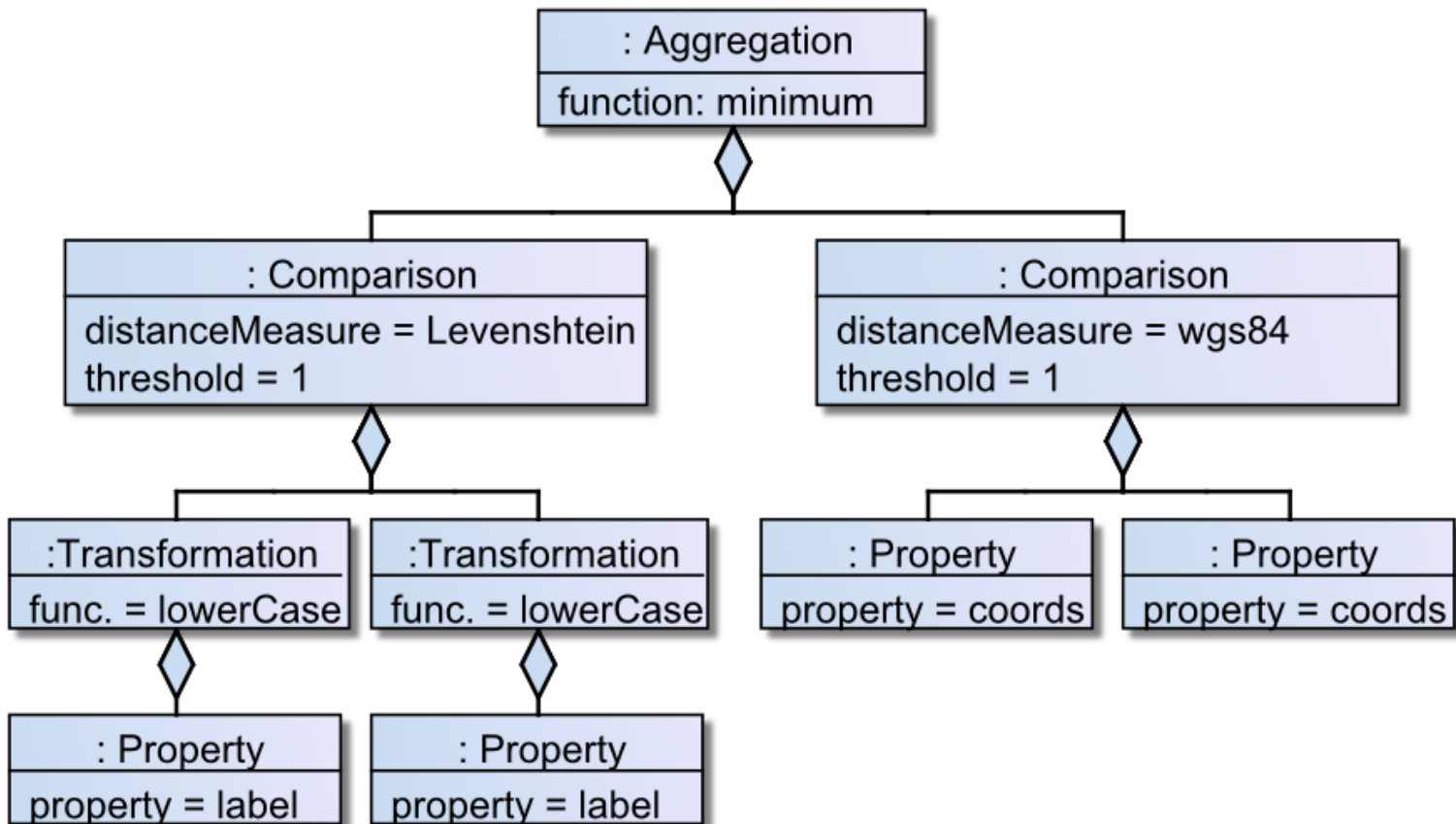
Similarity Metrics

- Similarity of two inputs based on a user-defined metric.
- Examples:
 - Various string similarity metrics
 - Geographic similarity
 - Date similarity

Aggregations

- Aggregates multiple similarity metrics
- Examples:
 - Min, Max, Average
 - Quadratic Mean
 - Geometric Mean

Example: Interlinking cities



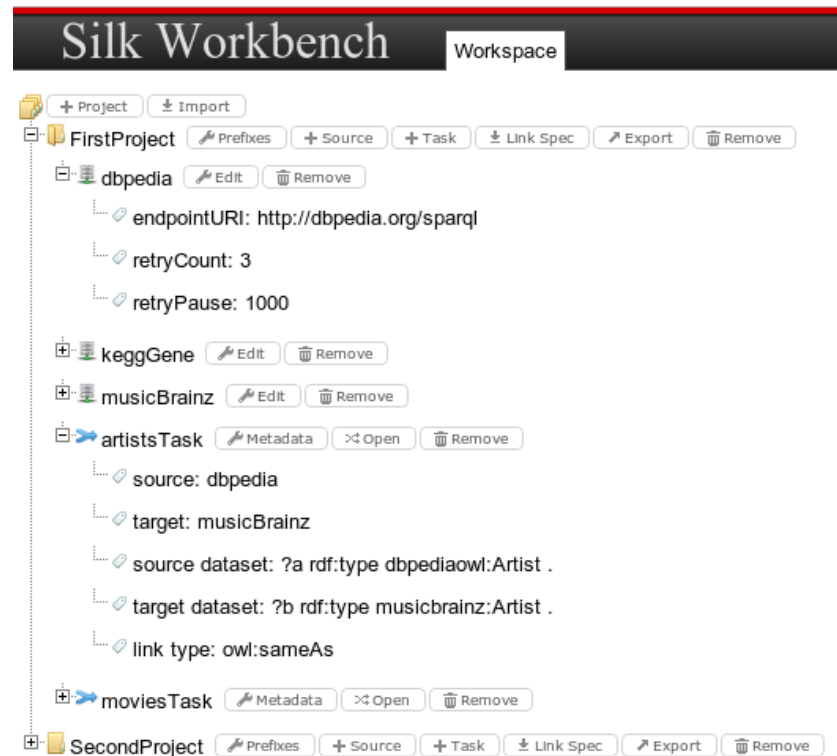
Silk Workbench

- Silk Workbench is a web application which guides the user through the process of interlinking different data sources.
- Enables the user to manage different sets of data sources and linking tasks.
- Offers a graphical editor which enables the user to easily create and edit linkage rules
- Offers tools to evaluate the current linkage rule
- Includes support for learning linkage rules

Workspace

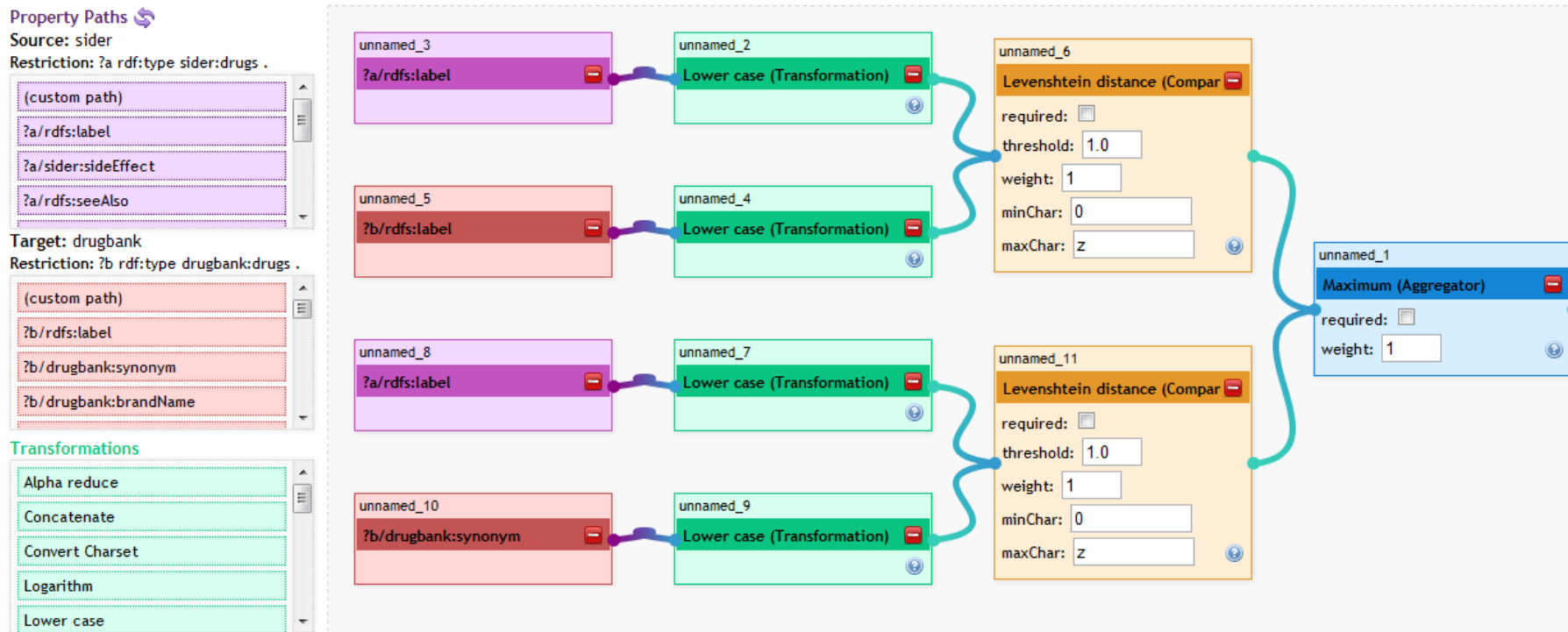
The Workspace holds a set of projects consisting of:

- Data Sources
 - Holds all information that is needed by Silk to retrieve entities from it.
 - Usually a file dump or a SPARQL endpoint
- Linking Tasks
 - Interlinks a type of entity between two data sources
 - e.g. Interlinking movies in DBpedia and LinkedMDB




Linkage Rule Editor

- Allows to view and edit linkage rules
- Linkage Rules are shown as a tree
- Editing using drag & drop.



Learning Linkage Rules

- Linkage Rules can be learned interactively
- Can be used to generate new linkage rules or to improve existing rules
- Learned Linkage Rule can be viewed and edited by the user

Source: DBpedia	Target: linkedmdb	Score 	Correct?
▼ Topaz_%281969_film%29	mdb.org/resource/film/230	-4.1%	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<div> <div> http://dbpedia.org/resource/Topaz_%281969_film%29 <ul style="list-style-type: none"> ?a/<http://xmlns.com/foaf/0.1/name> Topaz ?a/<http://dbpedia.org/ontology/releaseDate> 1969-12-19 ?a/<http://dbpedia.org/property/name> Topaz </div> <div> http://data.linkedmdb.org/resource/film/230 <ul style="list-style-type: none"> ?b/<http://purl.org/dc/terms/title> Topaz ?b/<http://data.linkedmdb.org/resource/movie/initial_release_date> 1945 ?b/<http://www.w3.org/2000/01/rdf-schema#label> Topaz </div> </div>			
▶ erbolt_%281910_film%29	ndb.org/resource/film/350	-14.6%	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
▶ _from_Brazil_%28film%29	ndb.org/resource/film/353	14.6%	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
▶ kness_%282002_film%29	db.org/resource/film/2320	14.6%	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
▶ a:Castaway_%28film%29	db.org/resource/film/2051	-15.8%	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Availability

- Silk can be downloaded from the official homepage at:

<http://www4.wiwiss.fu-berlin.de/bizer/silk/>

- Support is provided through the official mailing list:

<http://groups.google.com/group/silk-discussion>

- The latest source code is available from the project's Git repository and can be browsed online at:

<http://www.assembla.com/code/silk/git/nodes/>

- Silk is licensed under the terms of the Apache Software

Demo 1: Interlinking Movies

- Interlinking movies between two datasources:
 - DBpedia: Linked dataset extracted from Wikipedia
 - LinkedMDB: Large dataset for movies
- For demonstration, we assume that no existing links are available