

# WU

WIRTSCHAFTS  
UNIVERSITÄT  
WIEN VIENNA  
UNIVERSITY OF  
ECONOMICS  
AND BUSINESS



## **Open Data on the Web as the fuel for Cognitive Computing** *Das Potenzial von Open Data für Cognitive Computing*

Axel Polleres

web: <http://polleres.net>

twitter: @AxelPolleres

# Why are we here today?

23.3.2017 16:30 bis 23.03.2017 18:30

## KICK-OFF: DIGITAL INFORMATION MANAGEMENT COMMUNITY AUSTRIA

**Datum** 23.3.2017 16:30 - 23.03.2017 18:30

**Ort** Impact Hub Vienna

Mit künstlicher Intelligenz, virtueller Assistenten werden im privaten und geschäftlichen Alltag immer präsenter. Digitale Lösungen nutzen Cognitive Computing aufbereitete Informationen und Prozessautomatisierung. Disruptive digitale Businessmodelle revolutionieren ganze Branchen.

Mit welchen Themen sollten wir uns befassen?

Welche Lösungen sind im Einsatz?

Mit welchen Themen sollten wir uns befassen? Welche Lösungen sind im Einsatz? Im Rahmen der Veranstaltung werden spannende Diskussionen sowie einen projektorientierten Erfahrungsaustausch zwischen Experten aus dem Public Sector und der Privatwirtschaft.

# 1. What is Cognitive Computing?

## Cognitive computing

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From Wikipedia, the free encyclopedia

**Cognitive computing (CC)** describes [technology platforms](#) that, broadly speaking, are based on the scientific disciplines of [artificial intelligence](#) and [signal processing](#). These platforms encompass [machine learning](#), [reasoning](#), [natural language processing](#), [speech](#) and [vision](#), [human–computer interaction](#), [dialog](#) and [narrative generation](#), among other technologies.<sup>[1][2]</sup>

### Contents [\[hide\]](#)

- 1 [Definition](#)
- 2 [Use cases](#)
- 3 [See also](#)
- 4 [References](#)
- 5 [Further reading](#)

## Definition [\[edit\]](#)

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At present, there is no widely agreed upon definition for cognitive computing in either [academia](#) or industry.<sup>[3][4]</sup>

# 1. What is Cognitive Computing?

Dr. Chris Welty, now Google, formerly IBM Research (Watson team)

## Welty's Trident

IBM WATSON

WWW 2012

Keynote

- A new software paradigm has emerged

- Increasingly, computers find better solutions that combine multiple methods

- Knowledge is not

- Watson does not answer a question by translating natural language input into formally represented knowledge and simply running queries against this knowledge

- Machine intelligence is not human intelligence

- The difference is most

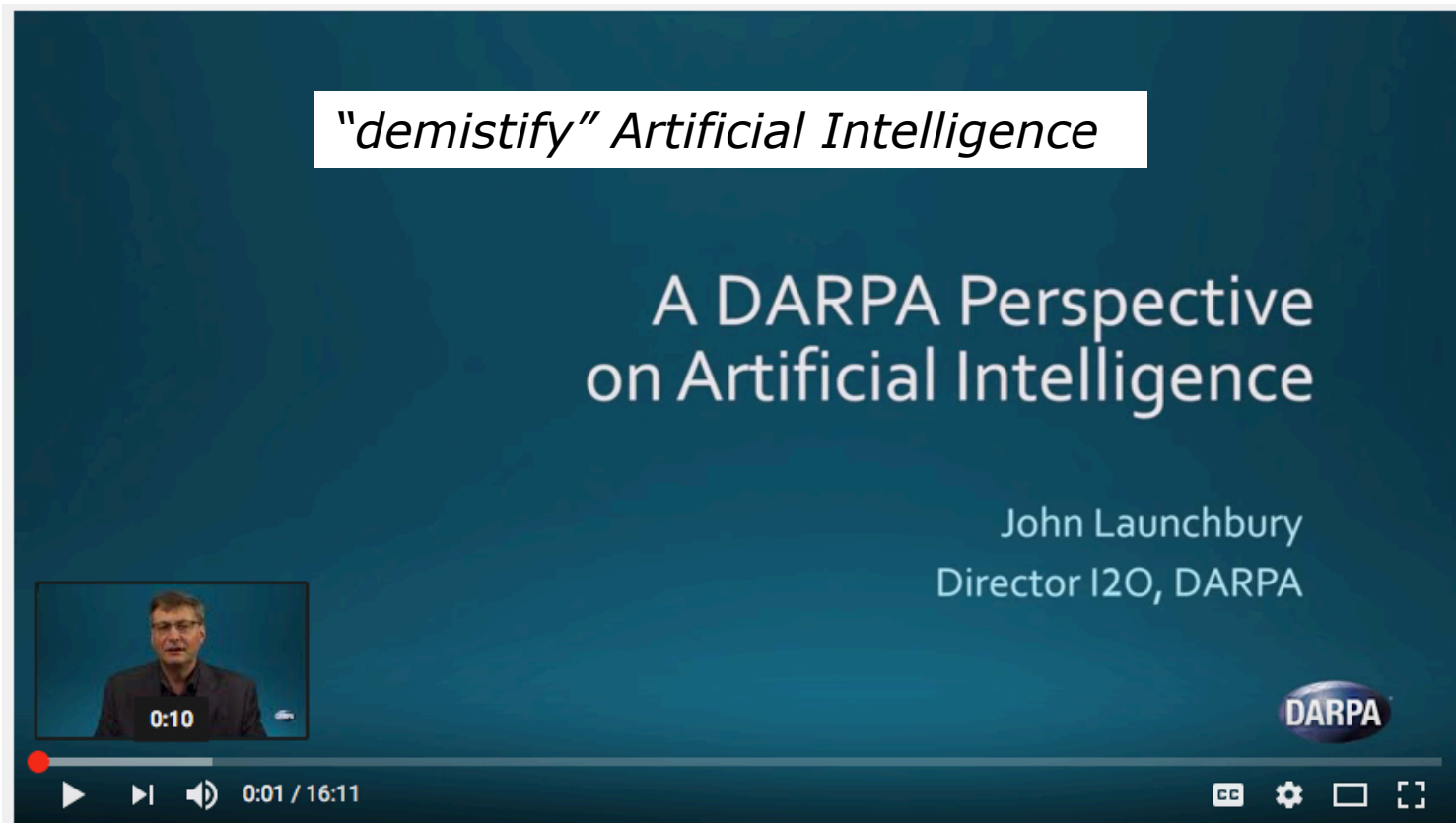
*"Help computers perform tasks we can do really quickly, at a **scale** that humans can't"*

"Computational tasks that require **inexact** solutions that **combine multiple methods** in unpredictable ways."

"Machine intelligence is not human intelligence, the difference lies in the errors it makes."

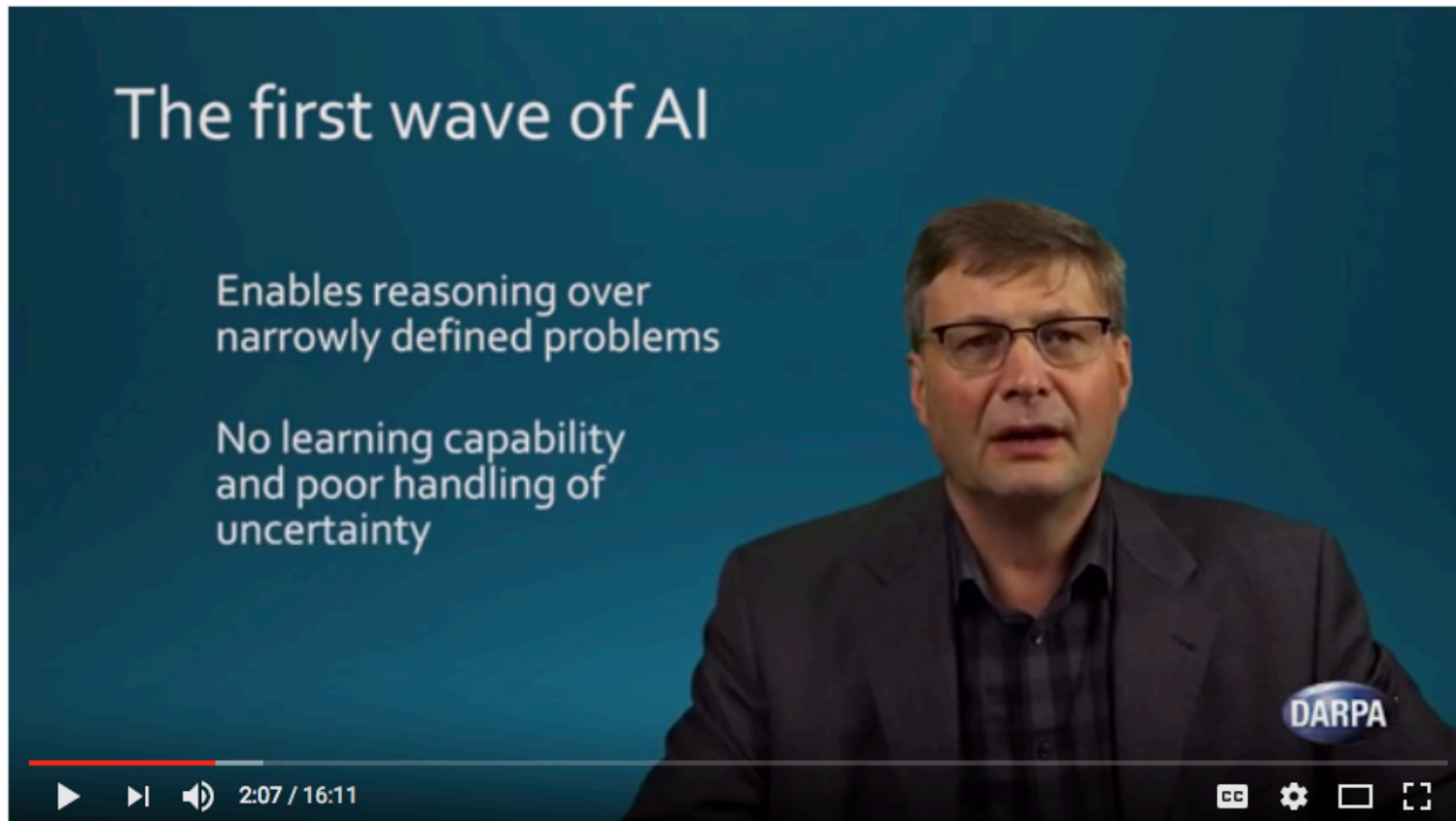
## 2. What is Artificial Intelligence?

**John Launchbury**, the Director of DARPA's Information Innovation Office  
Video, published on Feb 15, 2017



## 2. What is Artificial Intelligence?

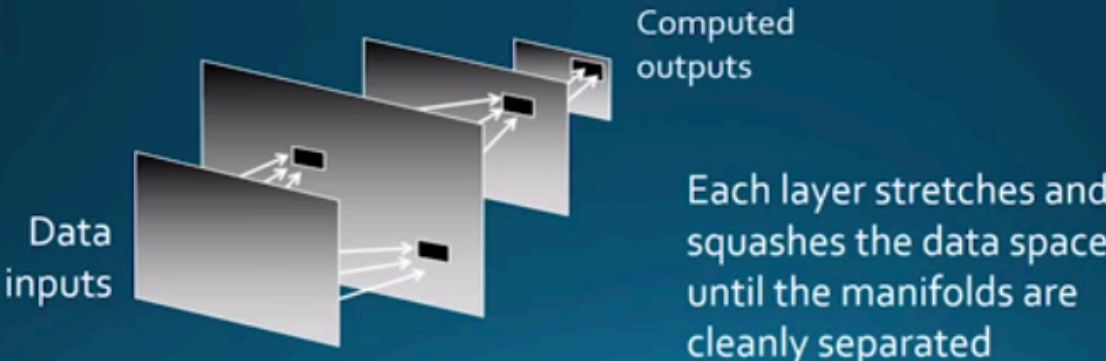
**John Launchbury**, the Director of DARPA's Information Innovation Office  
Video, published on Feb 15, 2017



## 2. What is Artificial Intelligence?

**John Launchbury**, the Director of DARPA's Information Innovation Office  
Video, published on Feb 15, 2017

Neural nets learn from data



Data inputs

Computed outputs

Each layer stretches and squashes the data space until the manifolds are cleanly separated

*"learn from **data**, like spreadsheets on steroids"*

DARPA

8:40 / 10:11

## 2. What is Artificial Intelligence?

**John Launchbury**, the Director of DARPA's Information Innovation Office  
Video, published on Feb 15, 2017

The (future) third wave of AI

Contextual Adaptation

Systems construct explanatory models  
for classes of real world phenomena

DARPA

▶ ▶| 🔊 12:59 / 16:11 CC ⚙️ 🖥️ 🗉



## 2. What is Artificial Intelligence?

**John Launchbury**, the Director of DARPA's Information Innovation Office  
Video, published on Feb 15, 2017

Models to explain decisions

Training Data

Learning Process

This is a cat:

I understand why  
I understand why not  
I know when you'll succeed  
I know when you'll fail  
I know when to trust you  
I know why you made that  
mistake

- 1. needs – if you want a combination of first and second wave AI – rules/explanations to model common sense and act in new contexts*
- 2. Again, data is at it's heart!*

▶ | 🔊 14:11 / 16:11

# Which solutions exist now on the Web?

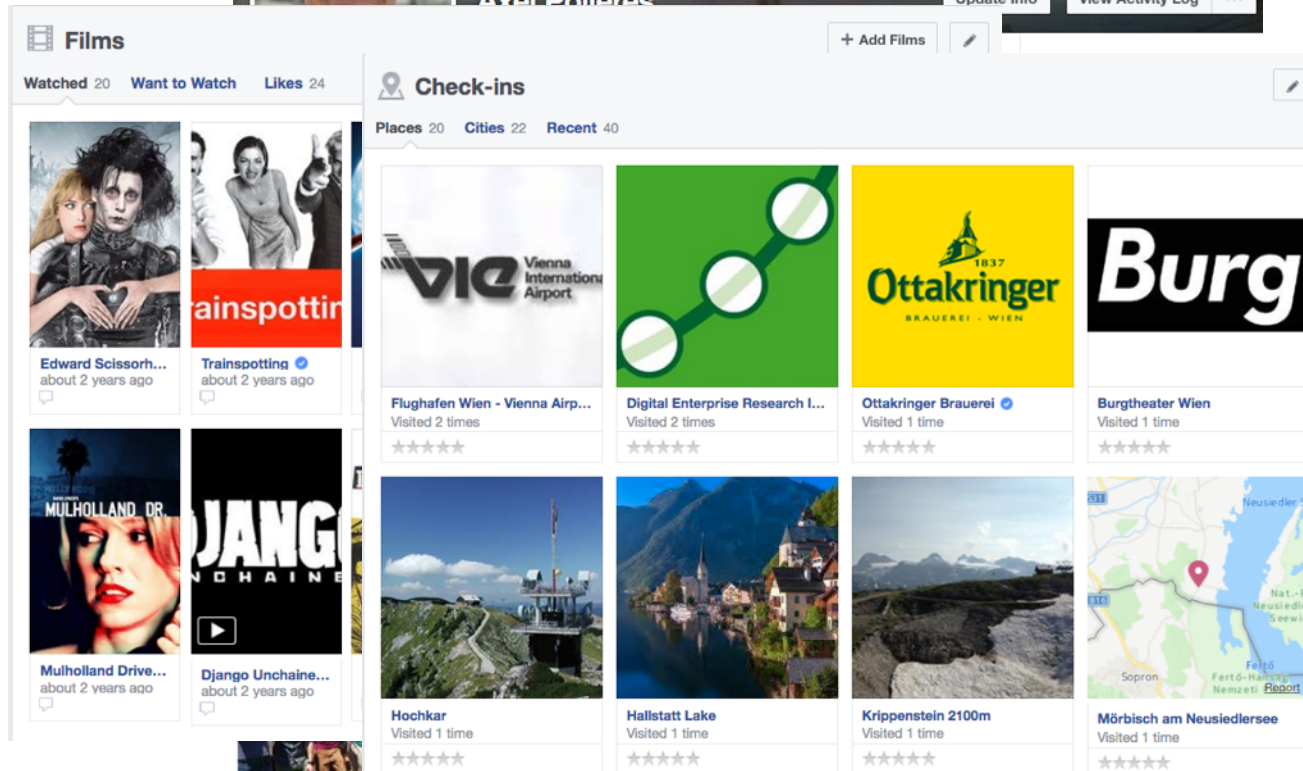
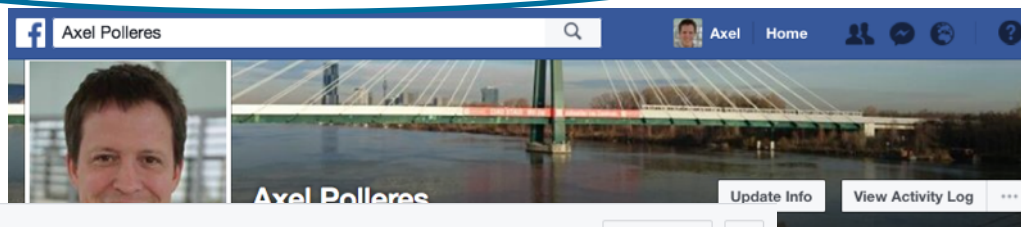
Welche Lösungen sind im Einsatz?

The screenshot shows a Google search for "Vienna". The search bar contains "Vienna" and the search button is visible. Below the search bar, there are navigation links for "Alle", "Bilder", "Maps", "News", "Videos", "Mehr", "Einstellungen", and "Tools". The search results show "Ungefähr 181 000 000 Ergebnisse (0,82 Sekunden)". A notification banner for "Hinweise zum Datenschutz bei Google" is present. The main search results include a link to "WIEN - Nachrichten und Services | VIENNA.AT" and a "Schlagzeilen" section with three articles: "Rapid: Vienna mehr als ein Test", "Rapid will Benefizspiel bei der Vienna unbedingt gewinnen", and "Benefizspiel gegen Vienna für Rapid Wien 'mehr als ein Test': 5.000 Zuschauer...". Below this, there are links for "wien.at - Infos und Services aus der Wiener Stadtverwaltung" and "Vienna - Wikipedia". On the right side, a knowledge graph for "Wien" is displayed, showing it is the capital of Austria, with weather information (7°C, wind from N at 10 km/h, 77% humidity), population (1,741 million in 2013), and a list of upcoming events: "LP Gasometers of Vienna" on March 29, "Cirque du Soleil" on March 22, and "White Miles" on March 25. Below the knowledge graph, there is a section for "Interessante Orte" with images and names of "Schloss Schönbrunn", "Hofburg", "Stephans...", "Wiener Prater", and "Schloss Belvedere". A "Feedback" link is visible at the bottom right.

**Example 1:**  
Google's  
Knowledge Graph

# Which solutions exist now on the Web?

Welche Lösungen sind im Einsatz?

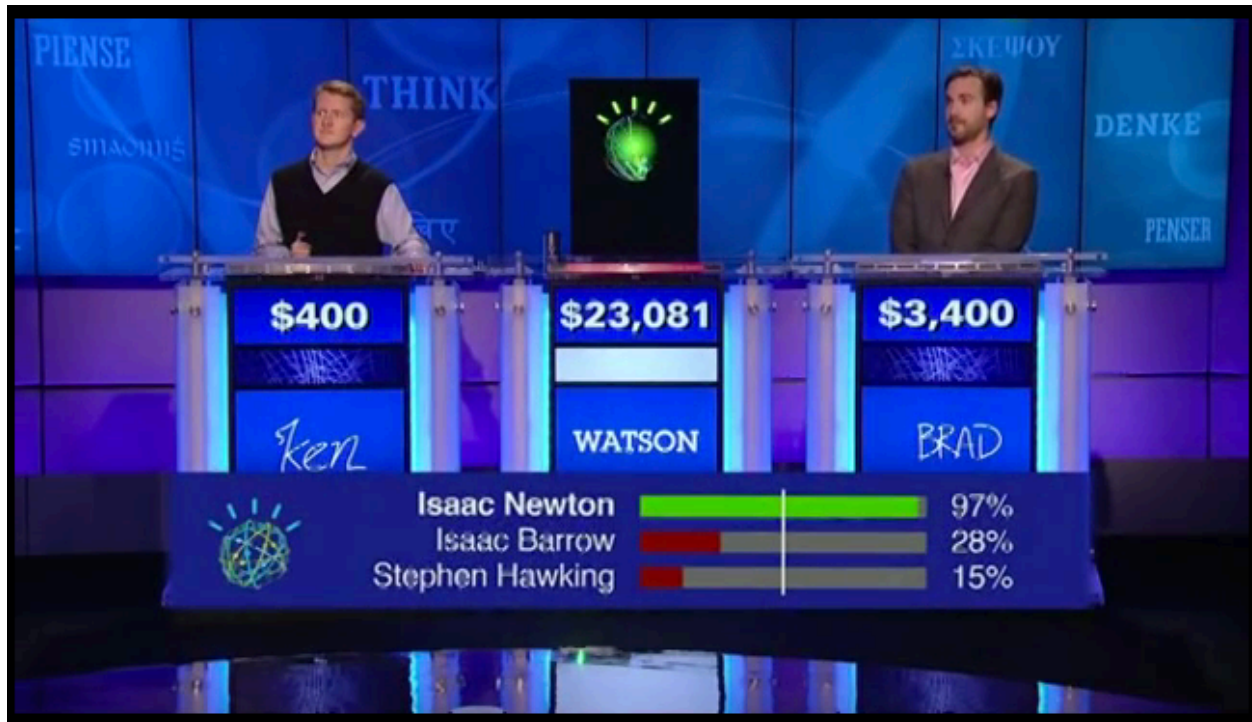


**Example 2:** FB's  
Social Graph &  
News  
Recommendations

*Also uses a  
knowledge  
graph...*

# Which solutions exist now on the Web?

Welche Lösungen sind im Einsatz?

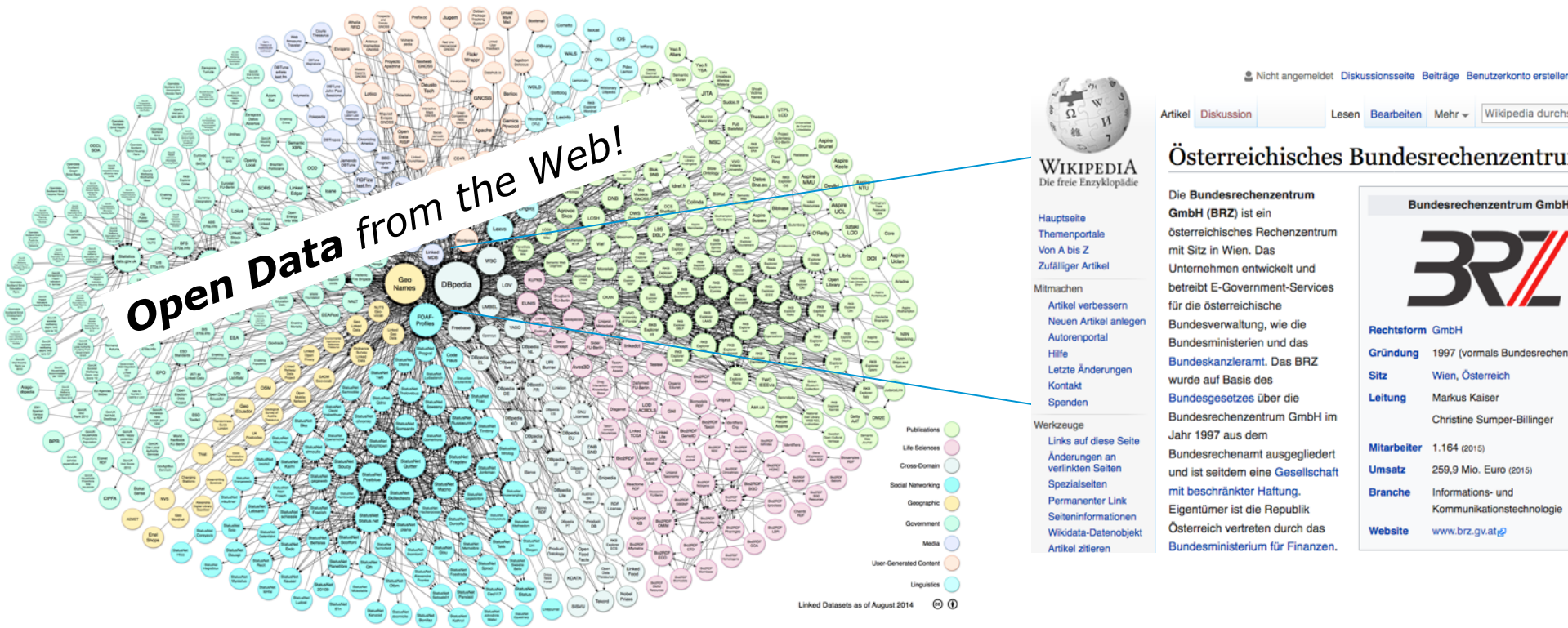


**Example 3: IBM Watson!**

*Also uses a knowledge graph...*

<https://youtu.be/P0Obm0DBvwI?t=951>

# This is the knowledge Graph that IBM Watson used:



Linking Open Data cloud diagram 2017, by Andrejs Abele, John P. McCrae, Paul Buitelaar, Anja Jentzsch and Richard Cyganiak.  
<http://lod-cloud.net/>

## 3. What is Open Data?

**Availability and Access:** data must also be available in a convenient and modifiable form, at no more than a reasonable reproduction cost.

**Reuse and Redistribution:** data must be provided under terms that permit reuse and redistribution and must be machine-readable.

**Universal Participation:** everyone must be able to use, reuse and redistribute it (**no discrimination**)

See more at: <http://opendefinition.org/okd/>

# Open Data is a global trend:

- Cities, International Organizations, National and European Portals, Int'l. Conferences:



# Open Data Portals

CKAN ... <http://ckan.org/>

- almost „de facto“ standard for Open Data Portals
- facilitates search, metadata (publisher, format, publication date, license, etc.) for datasets

• <http://opendataportal.at/>

• <http://data.gv.at/>

- machine-processable? ...  
... **partially**

The screenshot shows the homepage of data.gv.at. The browser address bar displays 'http://www.data.gv.at/'. The page features a search bar with the placeholder text 'Suchbegriff (z.B. Finanzen, Wahlen)' and a 'Suche starten' button. Below the search bar, there are navigation links for 'Datenkatalog', 'Anwendungen & News', and 'Katalog durchstöbern'. The main content area has a heading 'offene Daten Österreichs – lesbar für Mensch und Maschine' and a sub-heading 'Vielfalt, Transparenz, Offenheit, Demokratie'. It describes the portal as a 'Katalog offener Datensätze und Dienste' and provides information on how to use the data. A diagram on the right shows a computer monitor displaying binary code, with arrows pointing to a group of people and a smartphone, illustrating the accessibility of the data for both humans and machines.



# Our research: data.wu.ac.at

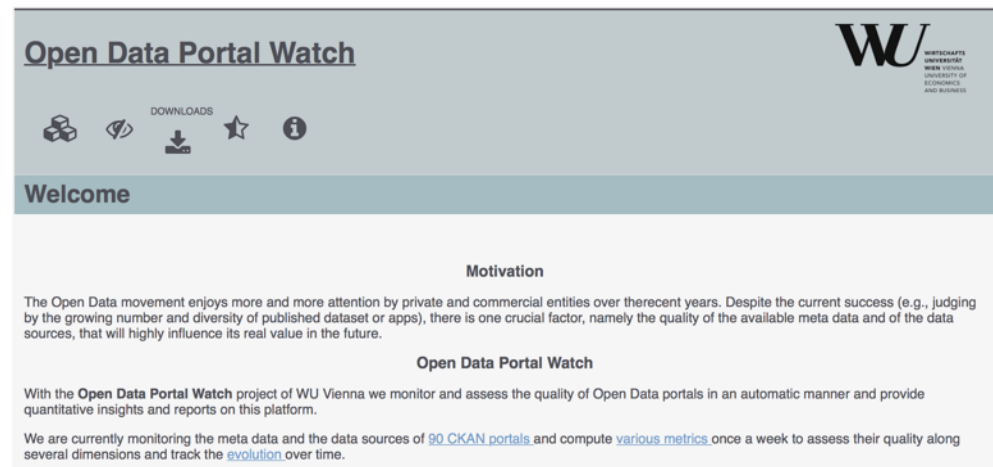


- ***What is the status of Open Data and what are the challenges using Open Data?***
  - OpenData PortalWatch – a project at WU
- ***How can Open Data be used by enterprises?***
  - Open City Data Pipeline – a joint project with Siemens on using Open Data in an Enterprise context!
- ***What's next?***
  - Improving Open Data Quality and Access: ADEQUATE (FFG - project)
  - Making Open Data Searchable
  - Building an Open Data **Knowledge Graph!**
- A striving **Data Economy** needs no silos... re-democratise the Web by Cognitive Intelligence based on Open Data?

# OPEN DATA PORTAL WATCH

<http://data.wu.ac.at/portalwatch/>

- Periodically monitoring a list of Open Data Portals
  - 260 CKAN powered Open Data Portals worldwide
- Quality assessment
- Evolution tracking
  - Meta data
  - Data
  - Formats, growth



The screenshot shows the homepage of the Open Data Portal Watch project. At the top, there is a header with the title "Open Data Portal Watch" and the WU logo. Below the header, there is a navigation bar with icons for a home page, a search function, a "DOWNLOADS" section, a star icon for favorites, and an information icon. The main content area starts with a "Welcome" message, followed by a section titled "Motivation" which discusses the importance of data quality in the Open Data movement. Below this, there is a section titled "Open Data Portal Watch" which describes the project's goal of monitoring and assessing the quality of Open Data portals. The text mentions that the project monitors 90 CKAN portals and computes various metrics weekly to track the evolution of data quality over time.

# What have we learnt? Open Data also has the "Vs"



## ■ **Volume:**

- It's growing! (we currently monitor 90 CKAN portals, 512543 resources/ 160069 datasets, at the moment (statically) ~1TB only CSV files...



## ■ **Variety:**

- different datasets (from different cities, countries, etc.), only partially comparable, partially not.
- Different metadata
- Different data formats



## ■ **Velocity:**

- Open Data changes regularly (fast and slow)
- New datasets appear, old ones disappear

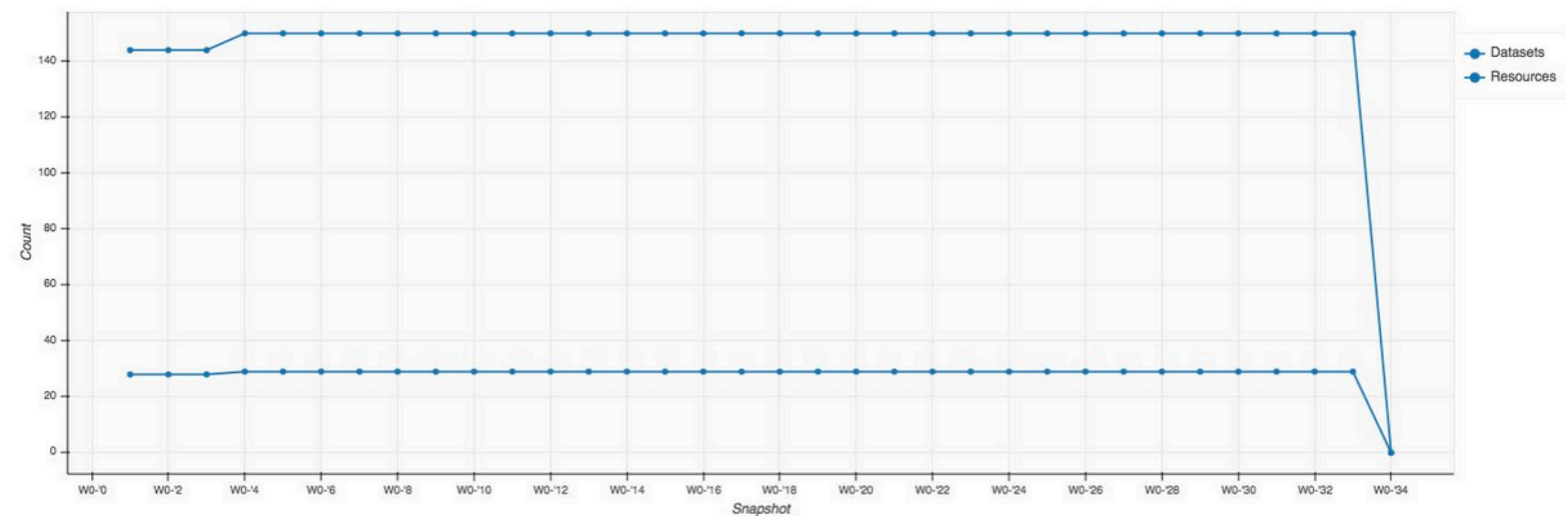
# Portalwatch Example:

Portal: open\_whitehouse\_gov

Week: Feb 13 - Feb 19, 2017

## Portal Evolution

### Portal Size



In reply to maxwell ogden



**Axel Polleres** @AxelPolleres · Feb 17

@denormalize documentation of the quite drastic the white house' #opendata policy change visualized: [data.wu.ac.at/portalwatch/po...](http://data.wu.ac.at/portalwatch/po...) [pic.twitter.com/6BQwxTWAaP](https://pic.twitter.com/6BQwxTWAaP)



# Our research: data.wu.ac.at



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# Use Case: City Data – Important for Infrastructure Providers & for City Decision Makers

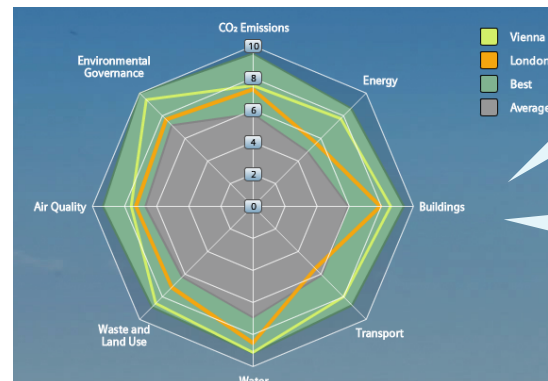
- City Assessment and Sustainability reports
- Tailored offerings by Infrastructure Providers



... however, these are often **outdated** before even published!

→Needs **up-to-date City Data** and **calculates City KPIs** in a way that allows to display the current state and run scenarios of different product applications.

e.g. towards a “Dynamic” Green City Index:



Goal (short term):

- Leverage Open Data for calculating a city' performance from public sources on the Web **automatically**

Goal (long term):

- Define and Refine KPI models to assess specific impact of infrastructural investments and gather/check input **automatically**

# City Data Pipeline (started 2012)

- <http://citydata.wu.ac.at/>

## Open City Data Pipeline

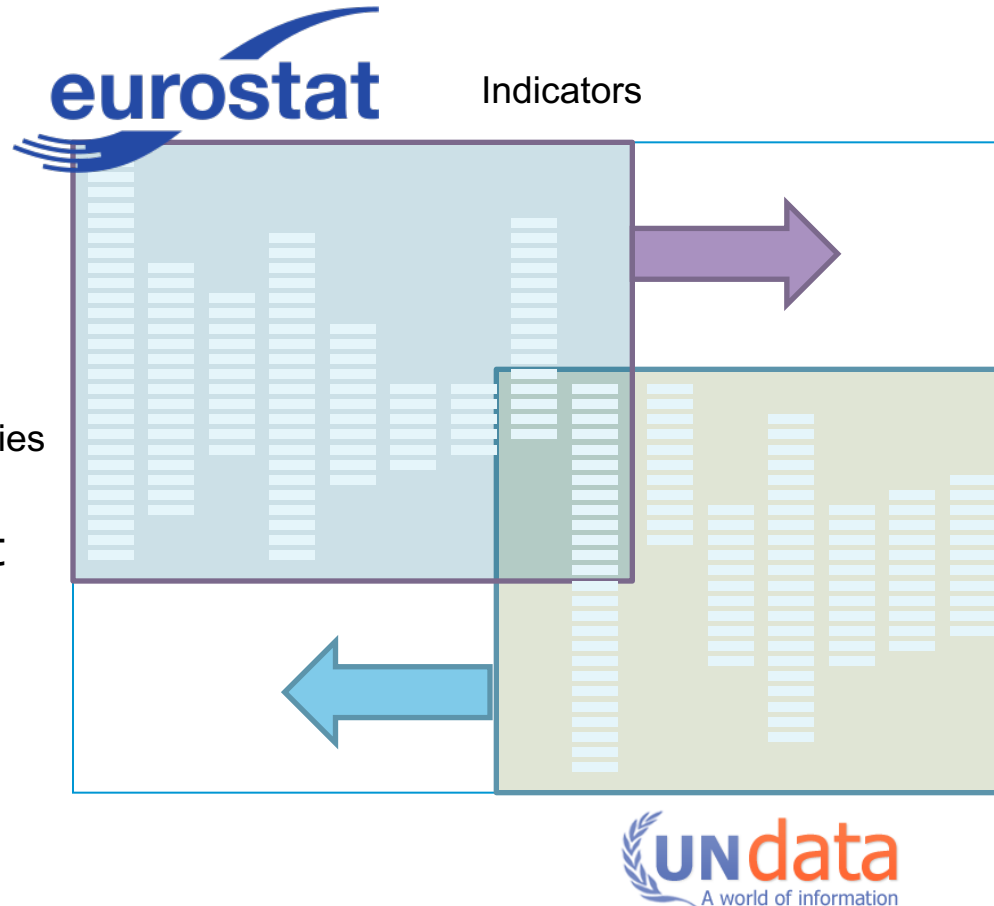
We present the City Data Pipeline – a system for gathering city performance indicators published as Open Data in order to ease the compilation of studies and reports used within Siemens. Under the assumption that Open Data provides means to automatise tedious data research tasks, we have built a system that integrates basic indicators for cities from various Open Data sources. The architecture is flexible, extensible, and natively based on RDF & SPARQL.

[Launch Open City Data Pipeline](#)

# City Data Pipeline: could be viewed as a cognitive computing use case

Goal:  
understanding, Cities  
combining,  
enriching, different  
open datasets

using both first-  
wave and second  
wave AI methods





# City Data Pipeline

[citydata.wu.ac.at](http://citydata.wu.ac.at)

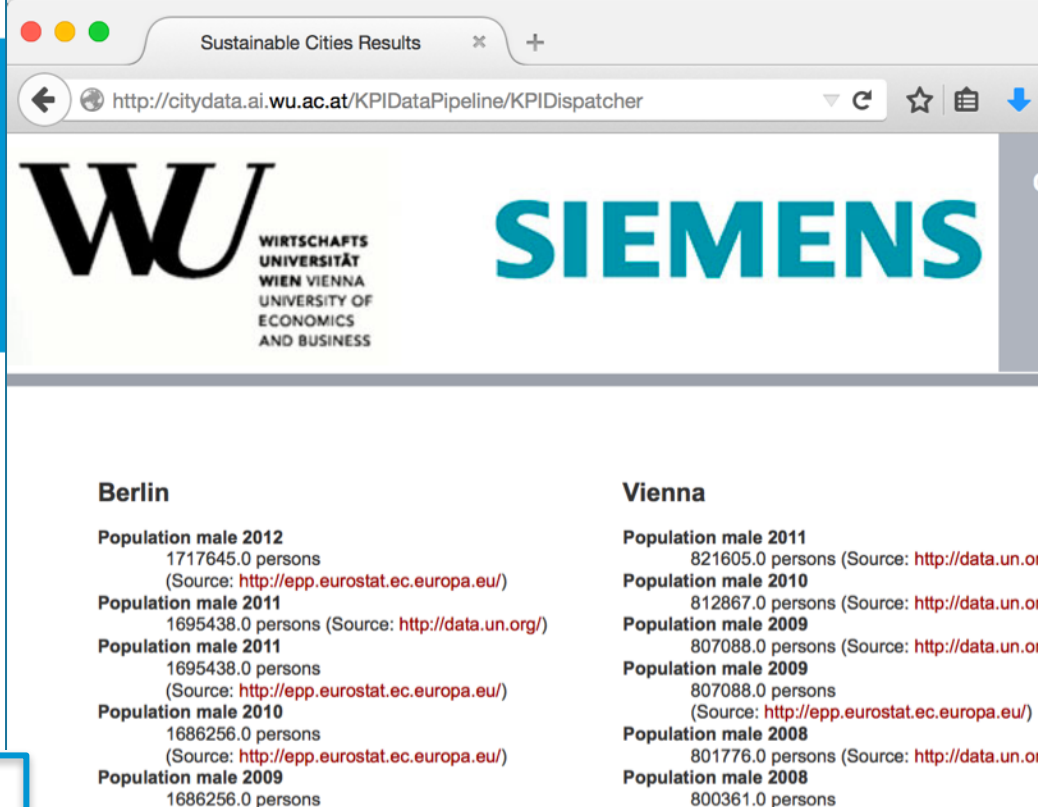
- Search for indicators & cities
- obtain results incl. sources
- Integrated data served as Linked Open Data
- Predicted values AND **estimated error rates** for missing data...



## Vienna

### Municipal waste (1000 t)

- › **2004:** 778.905392176222 1000 t (from <http://citydata.wu.ac.at/ns#Prediction>, predicted by with an estimated error of %RMSE)
- › **2005:** 813.77643147163 1000 t (from <http://citydata.wu.ac.at/ns#Prediction>, predicted by with an estimated error of %RMSE)
- › **2006:** 813.889824195497 1000 t (from <http://citydata.wu.ac.at/ns#Prediction>, predicted by with an estimated error of %RMSE)
- › **2007:** 811.538914636665 1000 t (from <http://citydata.wu.ac.at/ns#Prediction>, predicted by with an estimated error of %RMSE)
- › **2008:** 811.010344391444 1000 t (from <http://citydata.wu.ac.at/ns#Prediction>, predicted by with an estimated error of %RMSE)
- › **2009:** 811.172539879368 1000 t (from <http://citydata.wu.ac.at/ns#Prediction>, predicted by with an estimated error of %RMSE)



The screenshot shows a web browser displaying the website <http://citydata.wu.ac.at/KPIDataPipeline/KPIDispatcher>. The page features the logos for WU (Wirtschaftsuniversität Wien) and Siemens. Below the logos, there are two columns of data for Berlin and Vienna. The Berlin data includes population male for the years 2010, 2011, and 2012, with sources cited as <http://epp.eurostat.ec.europa.eu/> and <http://data.un.org/>. The Vienna data includes population male for the years 2008, 2009, and 2010, with sources cited as <http://data.un.org/> and <http://epp.eurostat.ec.europa.eu/>.

City	Year	Population (persons)	Source
Berlin	2012	1717645.0	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
	2011	1695438.0	<a href="http://data.un.org/">http://data.un.org/</a>
	2010	1686256.0	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
Vienna	2011	821605.0	<a href="http://data.un.org/">http://data.un.org/</a>
	2010	812867.0	<a href="http://data.un.org/">http://data.un.org/</a>
	2009	807088.0	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>

...it's not finished, but:  
assumption: Predictions get better, the more Open data we integrate...



# Our research: data.wu.ac.at



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# Why is Search in Open Data a problem?

<https://www.youtube.com/watch?v=kCAymmbyIvc>

Structured Data in Web Search by Alon Halevy

data.gv.at  
Suchbegriff (z.B. Finanzen, Wahlen)  
Datenkatalog ● Apps & News  
data.gv.at – offene Daten Österreichs  
Startseite Daten Dokumente Linked Data Anwendungen News

VS.

Katalog  
Bevölkerung in Wien: Bezirk - Geschlecht

### HTML Tables

Beer	Company	IBU	SRM	OGW	OGF
Novik Wolf Light	A.B. Pilsen Bryggerier (Breweri)	4.7	110		
Turbodog	Abba Brewing Company	5.6	166	15	28
Abbey Ale	Abba Brewing Company	8.0	230	18	32
Pilsen	Abba Brewing Company	5.0	150	11	20
Jockamo	Abba Brewing Company	6.5	190	13	52
Red Ale	Abba Brewing Company	5.2	151	11	30
Amber	Abba Brewing Company	4.5	128	10	17
Rock	Abba Brewing Company	6.5	187	16	25
Pat Fast	Abba Brewing Company	5.4	167	15	20
Razation	Abba Brewing Company	5.0	167	15	20
Andygar	Abba Brewing Company	8.0	235	19	28
Purple Haze	Abba Brewing Company	4.2	128	11	13
Balsam	Abba Brewing Company	5.1	155	11	17
Strawberry	Abba Brewing Company	4.2	120	11	13
Save Our Shore	Abba Brewing Company	7.0	200	15	30
Wheat	Abba Brewing Company	4.2	125	10	15
Golden	Abba Brewing Company	4.2	125	10	11
Light	Abba Brewing Company	4.0	118	8	10
Christmas Ale	Abba Brewing Company	7.5			30

research.google.com/tables

B	C	D	E	F	G	H	I
NUTS2	NUTS3	DISTRICT_CODE	SUB_DISTRICT_CODE	POP_TOTAL	POP_MEN	POP_WOMEN	REF_DATE
AT13	AT130	90101		0	16131	7726	8405 01.01.2014
AT13	AT130	90201		0	99597	48650	50947 01.01.2014
AT13	AT130	90301		0	86454	41085	45369 01.01.2014
AT13	AT130	90401		0	31452	14903	16549 01.01.2014
AT13	AT130	90501		0	53610	26299	27311 01.01.2014
AT13	AT130	90601		0	30613	14833	15780 01.01.2014
AT13	AT130	90701		0	30792	14703	16089 01.01.2014
AT13	AT130	90801		0	24279	11855	12424 01.01.2014
AT13	AT130	90901		0	40528	19286	21242 01.01.2014
AT13	AT130	91001		0	186450	91638	94812 01.01.2014
AT13	AT130	91101		0	93440	45541	47899 01.01.2014
AT13	AT130	91201		0	90874	43752	47122 01.01.2014

## Data Integration as Search

Coffee Consumption around the world

The Merge dialog box shows:

Merge: Select a table

Suggested tables matching on: population

- World Population 2 97% of total population in a country View table
- World Merged 97% of total population in a country View table
- FARA, GRACIA 97% of total population in a country View table
- World Countries: Resolutions km View table

**Open Data Search is hard...**

- a) No natural language „cues“ like in Web tables...
- b) Existing knowledge graphs don't cover the domain of "Open Data"
- c) Open Data is not properly geo-referenced

# Some starting points:

- First baby steps on building an Open Data Knowledge Graph:
- Ongoing work to make
- Open Data geo-searchable e.g. in our project [communidata.at](http://communidata.at):

*International Semantic Web conference 2016:*

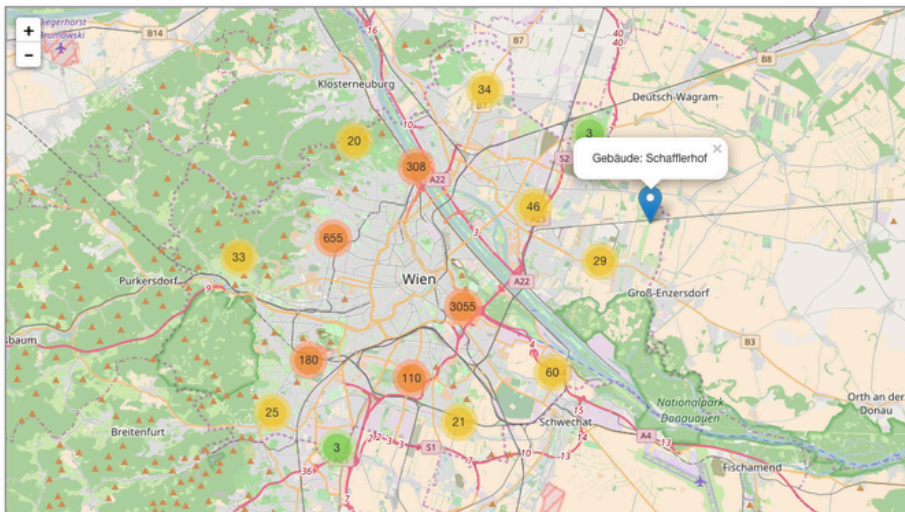
## Multi-level semantic labelling of numerical values

Sebastian Neumaier<sup>1</sup>, Jürgen Umbrich<sup>1</sup>, Josiane Xavier Parreira<sup>2</sup>, and Axel Polleres<sup>1</sup>

<sup>1</sup> Vienna University of Economics and Business, Vienna, Austria

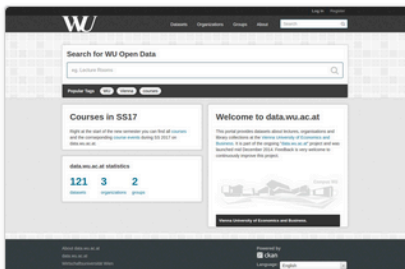
<sup>2</sup> Siemens AG Österreich, Vienna, Austria

**Abstract.** With the success of Open Data a huge amount of tabular data sources became available that could potentially be mapped and linked into the Web of (Linked) Data. Most existing approaches to “semantically label” such tabular data rely on mappings of textual information to classes, properties, or instances in RDF knowledge bases in order to link – and eventually transform – tabular data into RDF. However, as we will illustrate, Open Data tables typically contain a large portion of numerical columns and/or non-textual headers; therefore solutions that solely focus on textual “cues” are only partially applicable for mapping such data sources. We propose an approach to find and rank candidates of semantic labels and context descriptions for a given bag of numerical values. To this end, we apply a hierarchical clustering over information taken from DBpedia to build a background knowledge graph of possible “semantic contexts” for bags of numerical values, over which we perform a nearest neighbour search to rank the most likely candidates. Our evaluation shows that our approach can assign fine-grained semantic labels, when there is enough supporting evidence in the background knowledge graph. In other cases, our approach can nevertheless assign high level contexts to the data, which could potentially be used in combination with other approaches to narrow down the search space of possible labels.



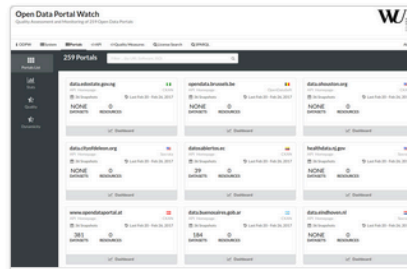
# Ongoing Projects (data.wu.ac.at)

## Projects



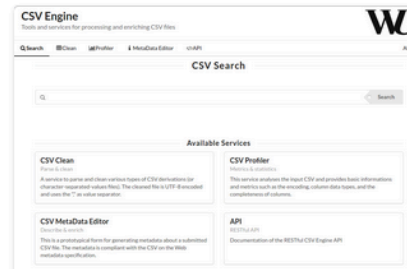
**WU Open Data Portal**  
WU lectures, rooms and organizations  
data.wu.ac.at is an Open Data portal where you can find data about lectures, rooms and organizations at WU.

121 datasets

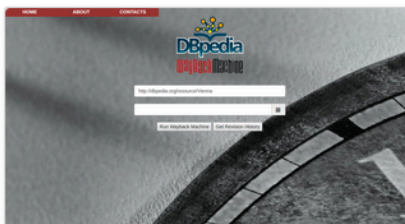


**Open Data Portal Watch**  
Monitoring & exposing portals' metadata  
Open Data Portal Watch assesses the evolution of the (meta) data quality of about 260 Open Data portals over since September 2014.

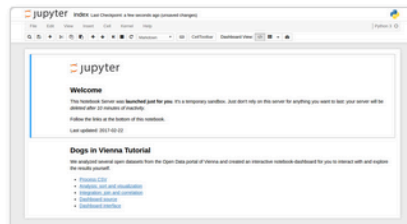
259 portals



**CSV Engine**  
Tools and services for processing and enriching CSV files  
Search & enrich CSVs  
The CSV Engine is a collection of tools and services for processing and enriching CSV files.

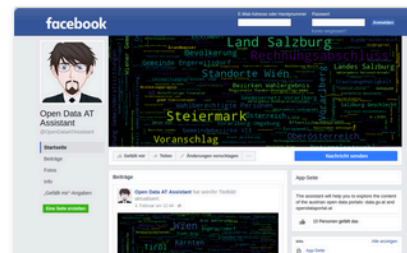


**DBpedia Wayback Machine**  
Extract past DBpedia versions  
The DBpedia Wayback Machine aims at providing the wayback functionality for DBpedia based on the revisions of their Wikipedia article.



**Jupyter Notebook Server**  
Programming & Documentation  
Notebook documents are documents which contain both computer code (e.g. python) and human-readable rich text elements.

<> Only available within local WU Vienna network



**Open Data AT Assistant**  
Search chatbot for Austrian datasets  
The assistant will help you to explore the content of the austrian open data portals: data.gv.at and opendataportal.at.

# Our research: data.wu.ac.at



- ***What is the status of Open Data and what are the challenges using Open Data?***
  - OpenData PortalWatch – a project at WU
- ***How can Open Data be used by enterprises?***
  - Open City Data Pipeline – a joint project with Siemens on using Open Data in an Enterprise context!
- ***What's next?***
  - Improving Open Data Quality and Access: ADEQUATE.at
  - Making Open Data Searchable
  - Building an Open Data **Knowledge Graph!**
- A striving **Data Economy** needs no silos... re-democratise the Web by Cognitive Intelligence based on Open Data?

Google Knowledge Graph

Facebook Graph Search

## Out of Facebook Graph Search and Google Knowledge Graph, which is more revolutionary, creative and useful?

Say after both these graphs grow to their full extent

Compare and contrast Facebook's [Introducing Graph Search](#) and Google's <http://www.google.co.in/insidese...> in terms of

- 1.Revolution to the internet
- 2.Creativity in their design
- 3.Usefulness to the users

### 3 Answers



Justin Moore, Engineering Manager at Facebook

Written Mar 19, 2013

You're comparing apples to oranges. Facebook has graph search *and* a knowledge graph (although we didn't give it a name externally that I know of). **Both our knowledge graph and google's have roots in Wikipedia and freebase** and both are semantic knowledge stores. Search for baseball (sport) on Facebook and scroll through the page to see our knowledge graph about players, teams, etc.

*"Both our knowldege graph and google's habe **roots in Wikipedia and freebase**" – but none of Google and FB make their knowledge graphs freely and openly available again as Open Data!*

Linking  
McCra  
[http:](http://)

Graph search is different. Its structured semantic search on top of structured data like knowledge graph but also all of your connections to people, photos, places. You can't really judge the two any more than comparing the Internet and google.

707 Views · View Upvotes

This is  
that IE

Open

John P.  
ak.

# This is a fundamental threat to the Web itself:

<https://www.theguardian.com/technology/2017/mar/11/tim-berners-lee-web-inventor-save-internet>

## Internet

Tim Berners-Lee: I invented the web. Here are three things we need to change to save it

It has taken all of us to build the web we have, and now it is up to all of us to build the web we want - for everyone

**1) We've lost control of our personal data**

**2) It's too easy for misinformation to spread on the web**

**3) Political advertising online needs transparency and understanding**



© Sir Tim Berners-Lee, inventor of the worldwide web. Photograph: Sarah Lee for the Guardian



# Open-Data-Fueled Cognitive Computing to the rescue!

- <http://www.communidata.at/austrian-open-data-day-students-co-create-open-data-ideas/>

The image shows a screenshot of a news article from the website 'Heute' with several handwritten annotations and a hand-drawn diagram. The article title is 'Dauer der Asylverfahren werden verkürzt'. The text discusses the duration of asylum procedures and mentions that 57,439 asylum decisions were made in 2016, with 48% being positive. It also lists the top countries for asylum seekers: Afghanistan (11,742), Syria (8,845), Iraq (2,837), and Pakistan (2,494). Other statistics include 5,797 voluntary departures and 4,880 forced returns in 2016, and 2,582 Dublin cases.

**Handwritten Annotations:**

- A red box highlights the text '98%' and '21%' with '1200 users' written below it.
- Blue brackets highlight the number '57.439' and the text '48 Prozent davon, also 27.767 Fälle, wurden positiv entschieden.'
- Blue brackets highlight the text '57.439 Asylentscheidungen wurden 2016 gefällt. 48 Prozent davon, also 27.767 Fälle, wurden positiv entschieden.'
- Blue brackets highlight the text '57.439 Asylentscheidungen wurden 2016 gefällt. 48 Prozent davon, also 27.767 Fälle, wurden positiv entschieden.'
- Blue brackets highlight the text '57.439 Asylentscheidungen wurden 2016 gefällt. 48 Prozent davon, also 27.767 Fälle, wurden positiv entschieden.'

**Hand-drawn Diagram:**

- A circle at the top contains the text 'Fälle positiv Asylentscheidung 2016'.
- A box below it contains the text 'Open data'.
- A box below that contains the text 'Source bmi.gv.at' and '57.439 Asylentscheidungen'.
- A box below that contains the text 'Source statistikAT' and '060.000 Asyl...'. There are also some dots below this box.

# Open-Data-Fueled Cognitive Computing to the rescue!



**Roland Ledinger** @Roland\_Ledinger · 3. März

Business Treff Open Data Day Statement von Staatssekretärin Duzdar offene Daten sind für Alle wichtig



👤 10 ❤️ 16



**Axel Polleres** @AxelPolleres · Mar 3

Staatssekretärin Muna #Duzdar at #opendataday: #fakenews? #opendata to the rescue!



👤 1 🔄 3 ❤️ 4

# Bottomline: Let's build Open Knowledge Graphs as a basis for Cognitive Computing for all businesses!

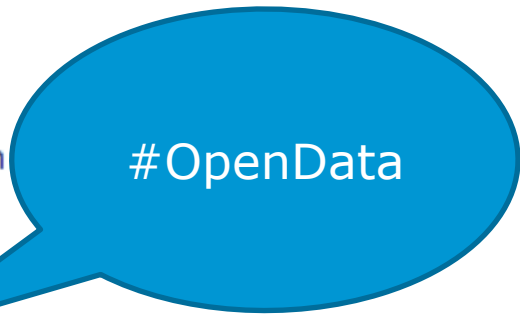


23.3.2017 16:30 bis 23.03.2017 18:30

## KICK-OFF: DIGITAL INFORMATION MANAGEMENT COMMUNITY AUSTRIA

**Datum** 23.3.2017 16:30 - 23.03.2017 18:30  
**Ort** Impact Hub Vienna

Mit künstlicher Intelligenz, virtuellen Assistenten werden im privaten und geschäftlichen Alltag immer präsenter. Digitale Lösungen nutzen Cognitive Computing, aufbereitete Informationen und Prozessautomatisierung. Disruptive digitale Businessmodelle revolutionieren ganze Branchen.



künstliche Intelligenz

Cognitive Computing

Mit welchen Themen sollten wir uns befassen?

Welche Lösungen sind im Einsatz?

Mit welchen Themen sollten wir uns befassen? Welche Lösungen sind im Einsatz? Spannende Diskussionen sowie einen projektorientierten Erfahrungsaustausch zwischen Experten aus dem Public Sector und der Privatwirtschaft.

Danke!

# Eine Einladung...

Wenn Sie mehr zu den Themen ***Semantic Web, Cognitive Computing, Linked Open Data*** erfahren wollen:

<https://iswc2017.semanticweb.org/>

ISWC 2017 THE 16<sup>TH</sup> INTERNATIONAL SEMANTIC WEB CONFERENCE October 21-25

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- We launch the ISWC 2017 website!

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ISWC 2017 is the premier international forum, for the Semantic Web / Linked Data Community. ISWC 2017 will bring together researchers, practitioners and industry specialists to discuss, advance, and shape the future of semantic technologies. Every year ISWC offers five exciting and fruitful days that **you definitely don't want to miss!**

Looking forward to seeing you in Vienna!

- Wir veranstalten von 21.-25.10. an der WU die **16. International Semantic Web Conference (ISWC2017)**

# Things I did NOT have time to talk about:

- Open Data and licences → [DALICC](#)
- Open Data adoption barriers → see our recent paper to be presented at [CEDEM2017](#)
- Privacy and data on the Web → <http://privacylab.at>