UNIVERSITY OF MANNHEIM

Big Open Research Data

UNIVERSITY OF MANNHEIM

DATA AND WEB SCIENCE GROUP

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Outline

- Requirements of a data scientist
- Open access datasets
  - DBpedia
  - Common Crawl
  - The Web Data Commons project
- Why should we share data?
- How should we share data?

Data and Web Science group

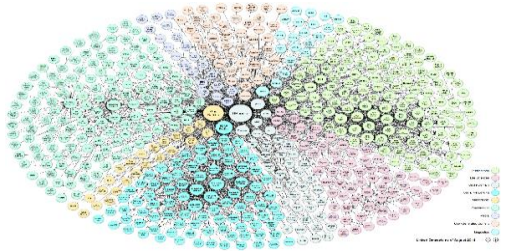
Data profiling

Data integration

Data mining

Extract knowledge from data

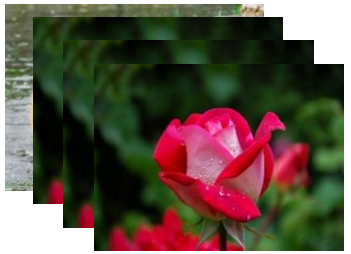
What kind of **data**?



Graphs

Text documents

Webpages



Images

Data is all we need

We need structured data to **extract** knowledge

- Use data to **learn** patterns
- Use data to **evaluate** our solutions and **compare** to existing ones

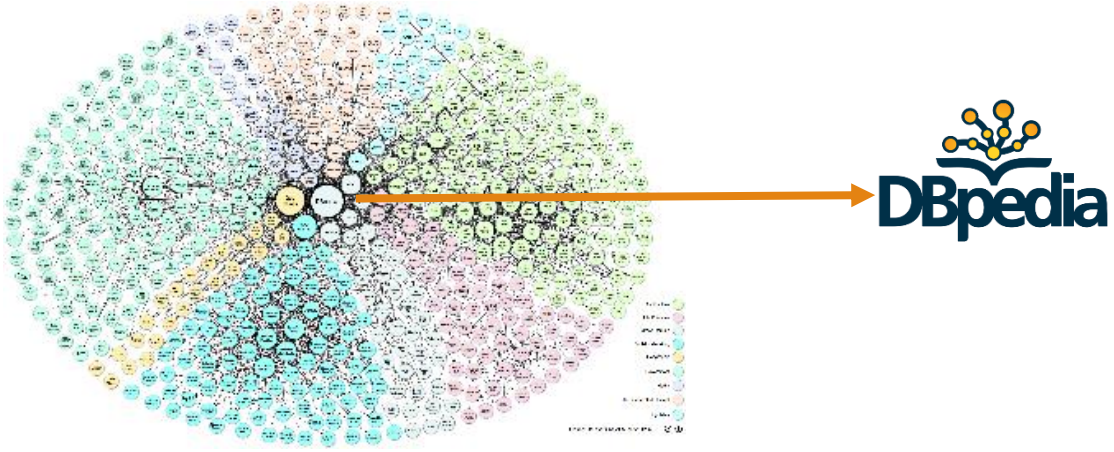
BUT

- we need a different data corpus for every task
- creating a big data corpus can be too expensive for a single researcher

Data scientists spend 80% of their time on data preparation (Zhang et al., 2013)

Zhang, S., Zhang, C., & Yang, Q. (2003). Data preparation for data mining. *Applied Artificial Intelligence*, *17*(5-6), 375-381.

DBpedia: A big “open access” knowledge graph



Extracts infobox data from Wikipedia in 125 languages. The data is linked producing a single graph which provides knowledge of the world.

- Initial release in 2007
- Joint effort of research communities of companies and universities
- Central in the Linked Open Data cloud
- **>20,000** publications listed in Google Scholar that include in their title the term DBpedia
- **50,000** data downloads per month

Common Crawl: an open large-scale Web corpus

Only big search engine companies had access to realistic snapshots of the Web.

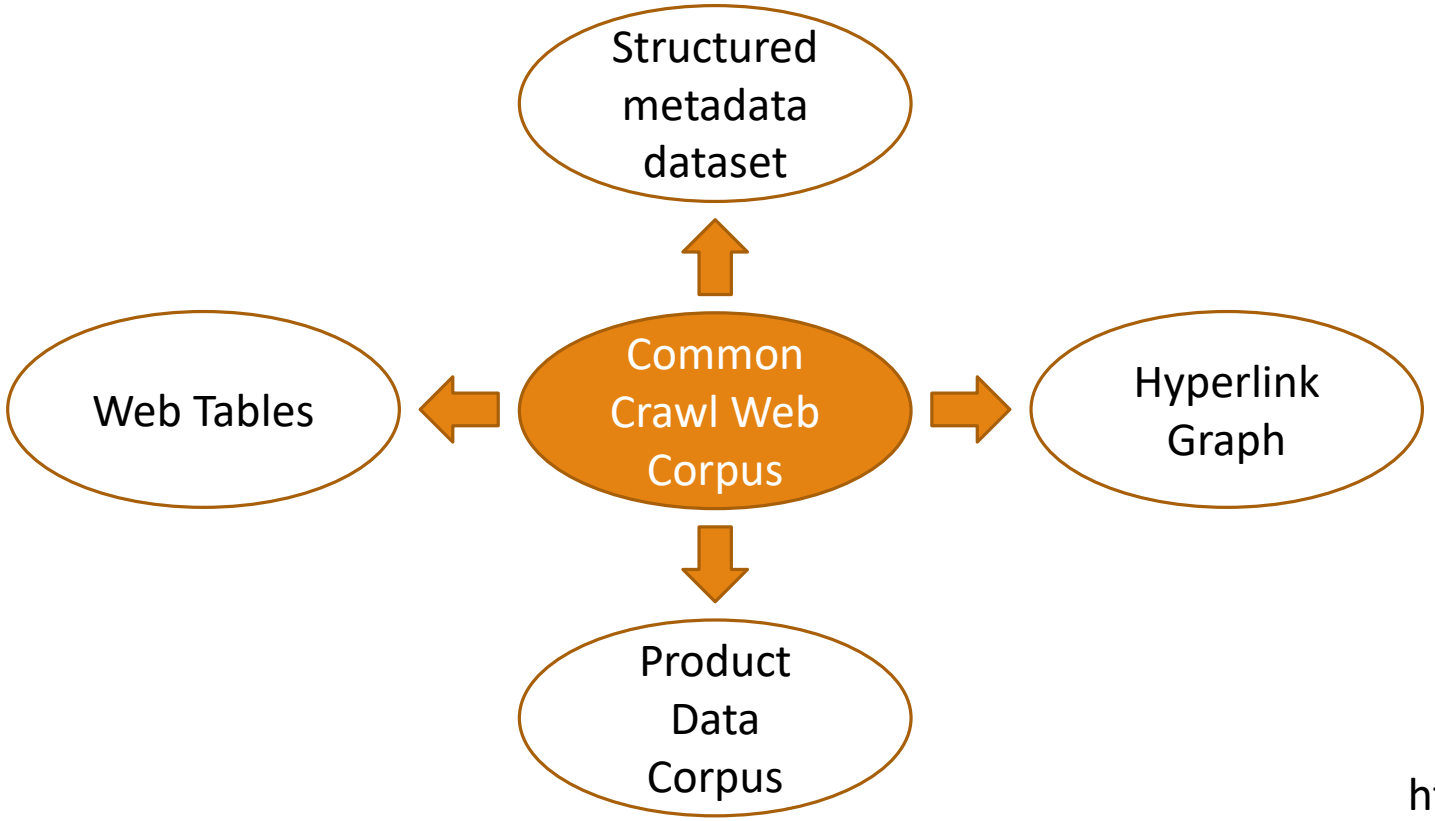
Common Crawl extracts snapshots of the Web on a regular basis and provides the data to the public free of charge.

Data offered by Common Crawl the last five years

	2012	2013	2014	2015	2016
Size of Data	40.1 TB	44 TB	64 TB	45 TB	54 TB
#Pages	3 billion	2.2 billion	2 billion	1.7 billion	3.1 billion
#Domains	40 million	12 million	15 million	14 million	34 million

Creating more „open access“ data

The Web Data Commons project (2012 - today)



- ✓ Available for download
- ✓ Free of charge
- ✓ Enhanced with metadata
- ✓ Listed in **MADATA**

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Web Data Commons
http://webdatacommons.org

The Web Data Commons structured data corpus

What is it?

A large collection of structured data, like product offers, found on the Web

What for?

Supports researchers and companies in exploiting the wealth of structured information found on the Web

Required Resources

Last release:

- 1 TB of structured data
- 650 $ total cost
- 50 hours of calculations
- 200 working hours

Who uses our dataset?

- Members of the Web and Data Science group
- Other researchers: Google groups community
- 54 citations of the paper describing the dataset (Meusel et al., 2014)

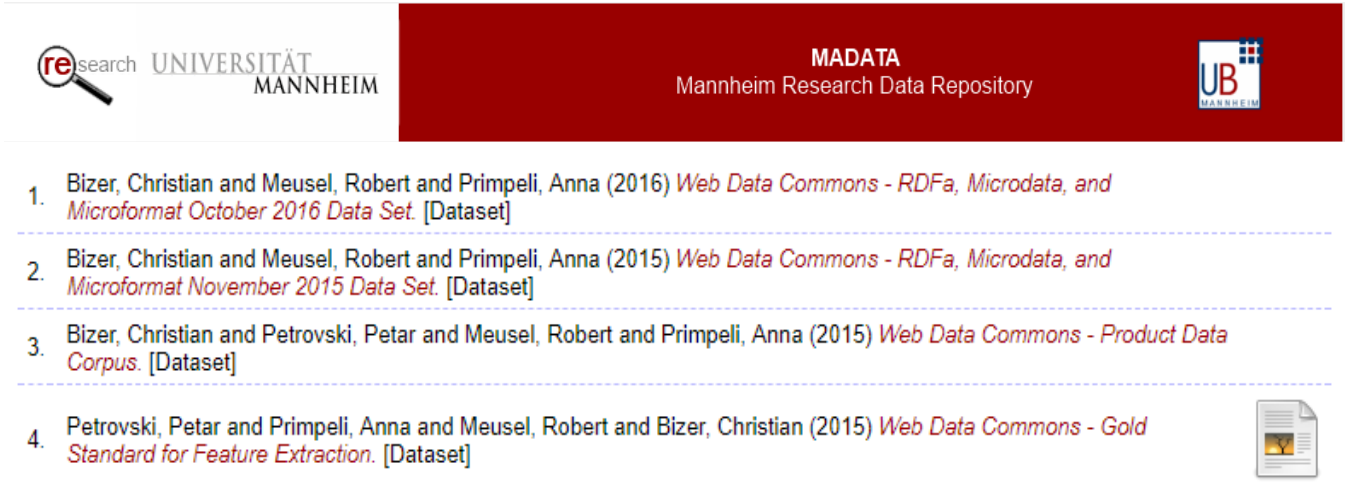
Meusel, R., Petrovski, P., & Bizer, C. (2014, October). The webdatacommons microdata, rdfa and microformat dataset series. In *International Semantic Web Conference* (pp. 277-292). Springer, Cham.

Big Open Data - Motivation

Effort sharing	• Support the research community • Different researchers have different areas of expertise
Collaboration enhancement	• Create better data • Create better algorithmic methods
Benchmarking	• Compare different solutions of the same task
„Honest research“	• Published knowledge relies on data. Your results need to be reproducible.
Increase of your publications‘ popularity	• Publishing your data will drive up your citation count

How should we share the data?

- Publish on the Web
- Enhance with metadata
- Include the relevant data sources in the publications
- Inform the related research community with announcements in relevant mailing lists
- Add in data repositories



Thank you very much for your attention!