

# Publication of Legislative Data

## Open Data, AI and Semantic Web in the Legal Domain

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**Czech Republic Conference on  
Open Data in Public Administration**

2 November 2018

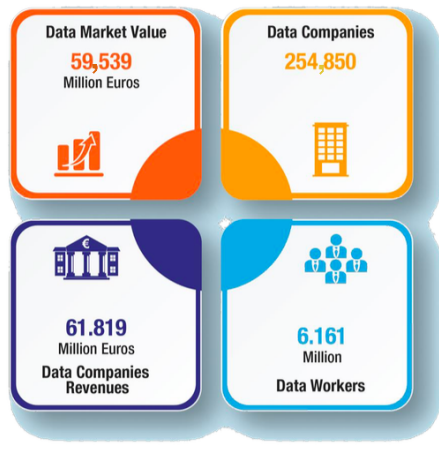


# Trends in IT



# Today's economy revolves around data

## European data market in the EU28 (2016)



Cit: "The Economic Benefits of Open Data" European Data Portal

<https://www.europeandataportal.eu/en/highlights/economic-benefits-open-data>



# Open Data in Economic Growth

Open Data economy is supposed to generate

- an additional growth up to 4% of the GDP by 2020
- a growth in cumulative revenues in the period 2016-2020 estimated to 110 million Euro





# Benefits of Open Data



# Open Data, Linked Data, and the Semantic Web

Data exploitation and mash-up on the Web need data available in a standard format, reachable, manageable and inter-linked

- Linked Data are structured and correlated data on the Web
- Linked Open Data (LOD) are Linked Data published with open licenses

The Semantic Web (Web 3.0) is made up of Linked Open Data

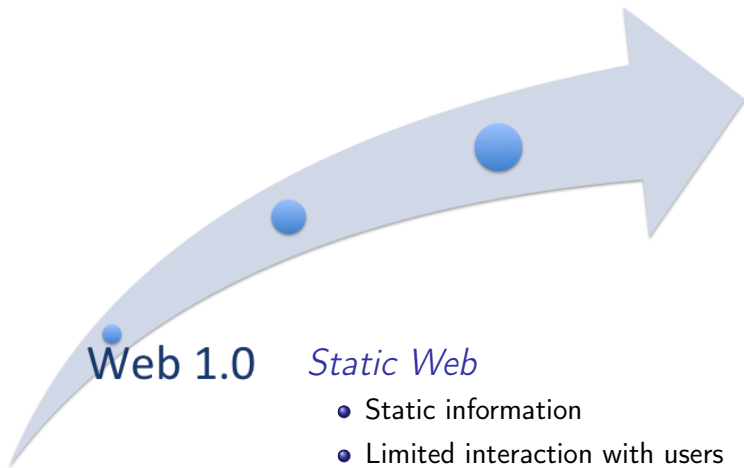
- Semantic Web is the *whole*
- Linked Open Data is the *parts*



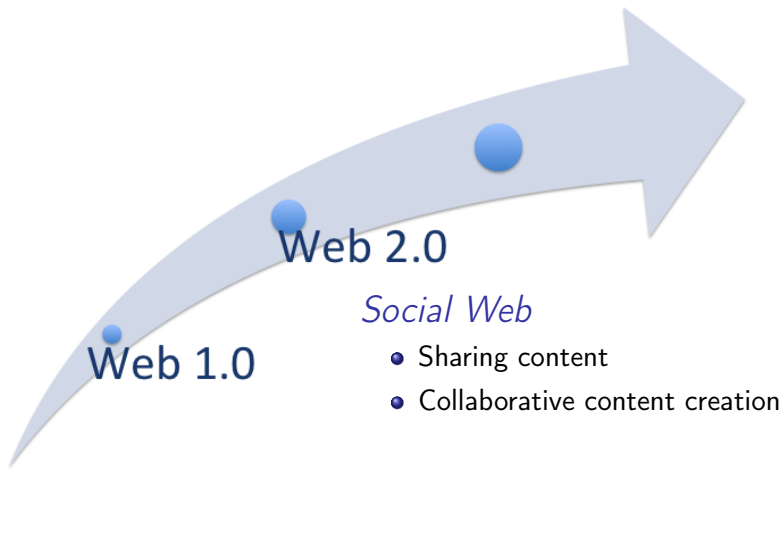
# How the Web has evolved from Web 1.0 to Web 3.0?



# Evolution of the Web



# Evolution of the Web



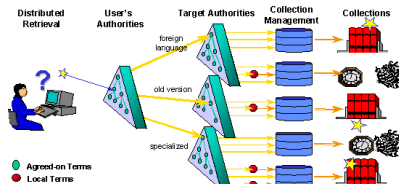
# Search Engines in Web 1.0 and 2.0

- Key concept: **Users' Information Needs**  
*a gap between what we know and what we want to know that motivates the search and this results in the formulation of a query*
- Keywords indexing
- Query based on **keywords** and not on **semantics**
- **Semantics** is inferred:
  - by contexts
  - by algorithms able to infer the meaning of queries and contexts



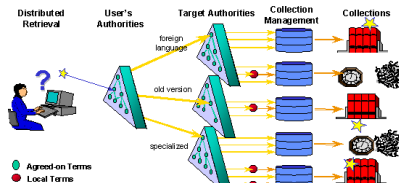
# Example of Users' Information Needs

Unique point of access to  
resources in a distributed  
environment



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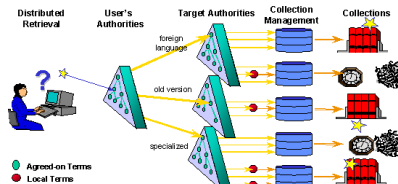
Advanced information retrieval and reasoning services (ex. in the legal domain)





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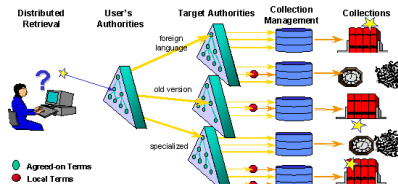
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- Which version of law n. 123 issued on 15 March 2007 was in force on 1 December 2010?



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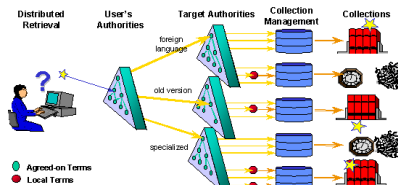
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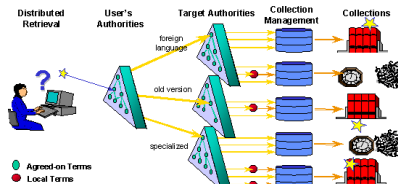
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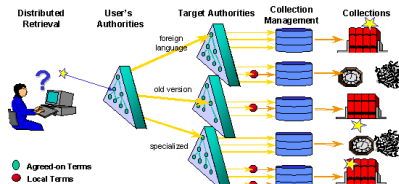
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- Which are the Implicit Rights of the Consumer according to the EU law?



# Users' Information Needs in the EU Legal Domain

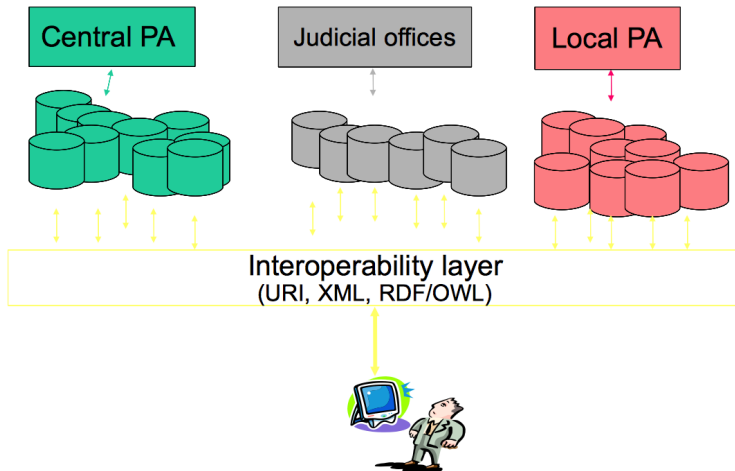


## Cross-Language Accessibility

Accessing heterogeneous data sources without language barriers



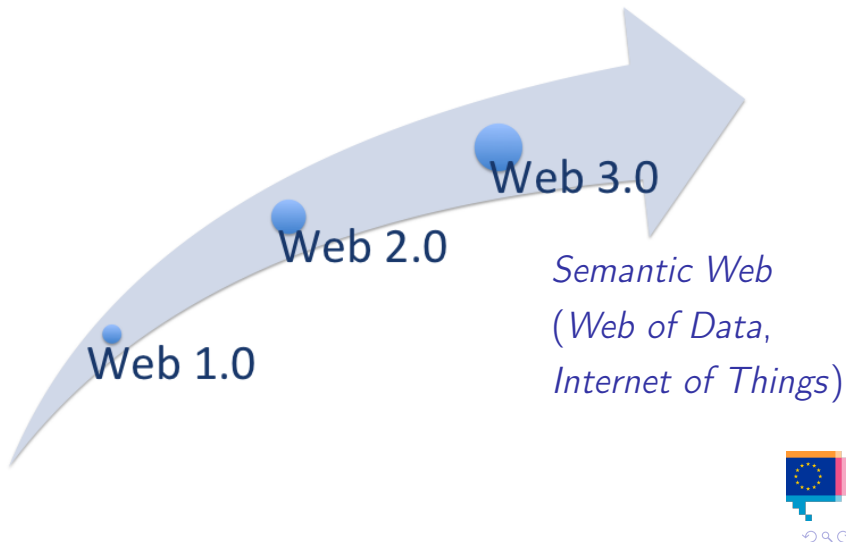
# Interoperability in a Multilanguage and Distributed Environment



Re-organization of information in a distributed environment by an infrastructure based on standards



# Evolution of the Web





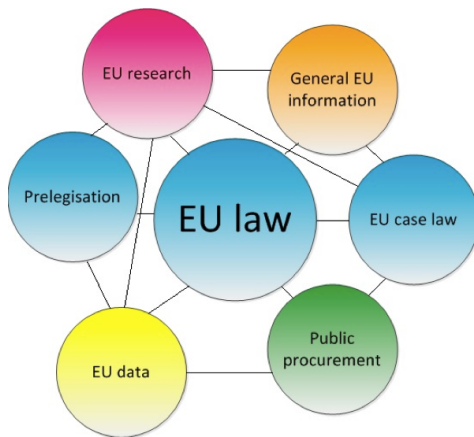
# 5-star Rating Scheme for Linked Open Data



- ★ ★ ★ ★ ★ Link your data to other people's data to provide context
- ★ ★ ★ ★ Use open standard from W3C (URI, RDF and SPARQL) to describe things, so that people can point at them
- ★ ★ ★ Use non-proprietary format (e.g. CSV instead of excel)
- ★ ★ Available as machine-readable structured data (e.g. excel instead of image scan of a table)
- ★ Available on the Web (whatever format) but with an Open License (to be Open Data)



# Publications Office Web 3.0 services – Open Data cloud



Central hub of the OP publications and data, composed by:

- 1 Common Content Repository (CCR)
- 2 Common Metadata Repository (CMR)

Docs are available for

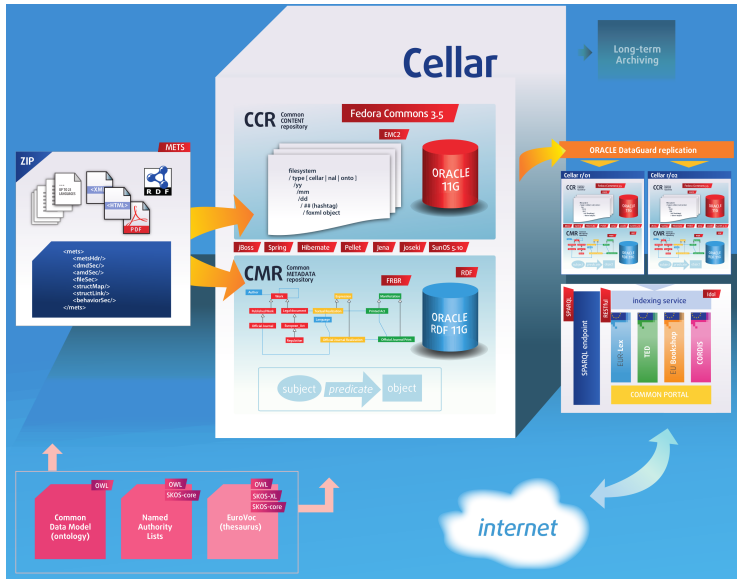
- long term preservation
- open data
- indexing and advanced search & retrieval services

Resources are semantically described by an ontology:  
Common Metadata Model (CDM)

Cellar SPARQL end-point publicly available



# Cellar architecture



# Cellar figures

- ~250 million documents in 24 languages
- Metadata in 24 languages
- ~1500 million semantic statements (triples)
- 10 million requests per day

## Manual for reusers

<https://publications.europa.eu/en/publication-detail/-/publication/50ecce27-857e-11e8-ac6a-01aa75ed71a1/language-en>



# Adoption of relevant standards

## METS (Metadata encoding and transmission standard)

- ingestion protocol for the repository and the long-term preservation archive

## Dublin Core

- core metadata definition

## FRBR (Functional Requirements for Bibliographic Records)

- data model/ontology

## RDF(S)/OWL (Linked Open Data (LOD))

- access/reuse

## DCAT (Data Catalog Vocabulary), DCAT-AP (Application profile)

- reuse



## Cellar provides content for different services as Eur-Lex

The screenshot displays the Eur-Lex website interface. At the top, there is a header with the Eur-Lex logo, the text "Access to European Union law", and language options (English, Guest). Below the header is a navigation bar with a menu icon and a search bar. The main content area shows search results for a query. On the left, there is a "Refine query" sidebar with filters for "By subdomain", "By month of document", "By type of procedure", and "By author". The search results list two items, with the first one selected. The selected item is a Council Decision (EU) 2018/1603 of 18 September 2018 on the conclusion on behalf of the Union of the Cooperation Agreement between the European Union and the Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA) on the development of satellite navigation and the provision of associated services in ASECNA's area of competence for the benefit of civil aviation. The results show 10 of 110 items, with the first item selected. The interface includes a search bar, a menu icon, and a language selector.

**EUR-Lex**  
Access to European Union law

English Guest

MENU QUICK SEARCH

Need more search options? Use the [Advanced search](#)

EUROPA > EU law and publications > EUR-Lex home > Expert search > Search results

**Search Results**

> Search criteria

The order has been defined in the query

☐ Results 1 - 10 of 110 1 2 > >

Clear selection Change displayed metadata Export >

☐ Council Decision (EU) 2018/1603 of 18 September 2018 on the conclusion on behalf of the Union of the Cooperation Agreement between the European Union and the Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA) on the development of satellite navigation and the provision of associated services in ASECNA's area of competence for the benefit of civil aviation

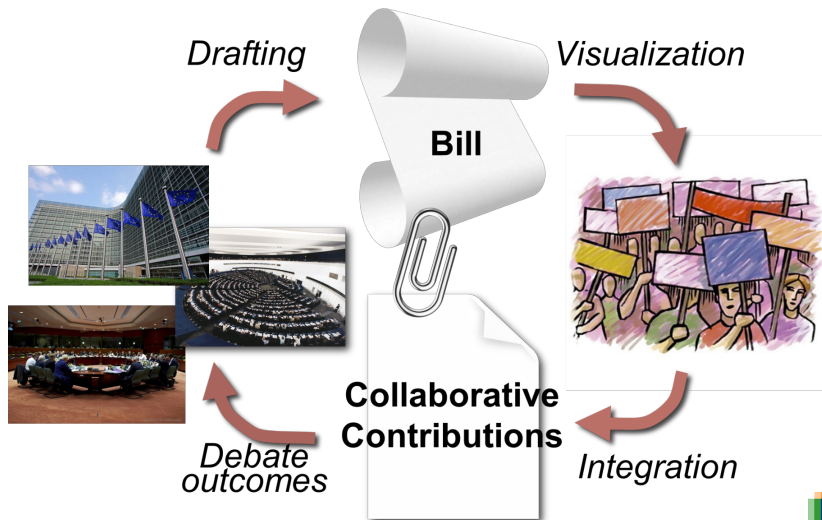
*OJ L 268, 26.10.2018, p. 1–2 (BG, ES, CS, DA, DE, ET, EL, EN, FR, HR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)*

CELEX number: 32018D1603 Author: Council of the European Union

Form: Decision Date of document: 18/09/2018


☐ Council Decision (EU) 2018/1609 of 28 September 2018 on the position to be taken on behalf of the European Union within the United Nations Economic Commission for Europe (UNECE) Working Party on Customs Questions affecting Transport and within the UNECE Inland Transport Committee concerning the adoption of the Convention on the facilitation of border crossing procedures for

# OP pilot project: LOD and e-Participation





# Home page

**e-participation**  
Linked open data

About | E-participation | Linked open data | FAQ | Legal notice | Contact

English (en)

Search

e-Participation LOD

Login / Register

Document finder

Keywords

From  To

Eurovoc terms

- 04 POLITICS +
- 08 INTERNATIONAL RELATIONS +
- 10 EUROPEAN UNION +
- 12 LAW +
- 16 ECONOMICS +
- 20 TRADE +
- 24 FINANCE +
- 28 SOCIAL QUESTIONS +
- 32 EDUCATION AND COMMUNICATIONS +
- 36 SCIENCE +
- 40 BUSINESS AND COMPETITION +
- 44 EMPLOYMENT AND WORKING CONDITIONS +
- 48 TRANSPORT +
- 52 ENVIRONMENT +
- 56 AGRICULTURE, FORESTRY AND FISHERIES +
- 60 AGRI-FOODSTUFFS +
- 64 PRODUCTION, TECHNOLOGY AND RESEARCH +
- 66 ENERGY +
- 68 INDUSTRY +
- 72 GEOGRAPHY +
- 76 INTERNATIONAL ORGANISATIONS +

List of preparatory acts

Sort by Date

14 documents found

Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on copyright in the Digital Single Market

2016-09-14 - Ordinary legislative procedure (COD)

copyright / transmission network / reprography / audiovisual industry / cultural heritage / internet / single market / cross-frontier data flow / trans-European network

35

22%

54%

22%

Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EC) No.1920/2006 as regards information exchange, early warning system and risk assessment procedure on new psychoactive substances

2016-08-29 - Ordinary legislative procedure (COD)

health risk / drug traffic / European Monitoring Centre for Drugs and Drug Addiction / psychotropic substance / market approval / information transfer

6

33%

33%

33%

Proposal for a COUNCIL REGULATION fixing for 2017 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Baltic Sea

2016-08-29 - Non-legislative procedure (NLE)

conservation of fish stocks / Baltic Sea / catch area / ship's flag / sea fishing / sea fish / catch quota / fishing rights / catch by species

8

50%

25%

25%

lost-dk:displayDoc?path=COM0308542/rev\_COM\_COM02060547\_EN.pamd&tr=eng&lang=en

Navigation icons: back, forward, search, etc.

E. Francesconi

Publication of Legislative Data

# The discussion forum (comments, sentiments, amendments)

Language of documentEnglish (en)

Expand all

Proposal for a  
DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
on copyright in the Digital Single Market

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN .

TITLE I GENERAL PROVISIONS

Article 1 Subject matter and scope

1.  
This Directive lays down rules which aim at further harmonising the Union law applicable to copyright and related rights in the framework of the internal market, taking into account in particular digital and cross-border uses of protected content. It also lays down rules on exceptions and limitations, on the facilitation of licences as well as rules aiming at ensuring a well-functioning marketplace for the exploitation of works and other subject-matter.

2.  
Except in the cases referred to in Article 6, this Directive shall leave intact and shall in no way affect existing rules laid down in the Directives currently in force in this area, in particular Directives 96/9/EC, 2001/29/EC, 2006/115/EC, 2009/24/EC, 2012/28/EU and 2014/26/EU.

Article 2 Definitions

For the purposes of this Directive, the following definitions shall apply:

(1)  
"research organisation" means a university, a research institute or any other organisation the primary goal of which is to conduct scientific research or to conduct scientific research and provide educational services:


(a)  
on a non-for-profit basis or by reinvesting all the profits in its scientific research; or

(b)  
assigned to a public interest mission recognised by a Member State.

Comments  
Preparatory act


View more statistics

Get your opinion



Sentiment	Percentage
Positive	14%
Negative	86%

Filter comments


**Enrico Francesconi**  
2016-10-18 - 16:34

Positive 0 0

Direttiva essenziale per il diritto europeo sui diritti digitali #digitairights

Edit Remove Translate

Replies: 0

**Julia Da Silva**  
2016-10-18 - 14:34

Positive 1 0

This is a good act

Translate

Replies: 1



# Statistics on users' sentiments per document and section

Proposal for a  
**DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**  
**on copyright in the Digital Single Market**

Interinstitutional procedure code : 2016/0280/COD

CELEX : 52016PC0593

Creation date of document : 2016-09-14

Legal procedure type : **Ordinary legislative procedure (COD)**

Document directory identifier : 132060

Keywords : *copyright / transmission network / reprography / audiovisual industry / cultural heritage / internet / single market / cross-frontier data flow / trans-European network*



35

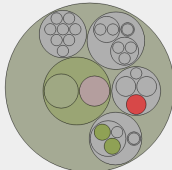
Statistics about the Act

Statistics about the Act and its sections

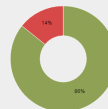
Comments

Amendments

Back to the document



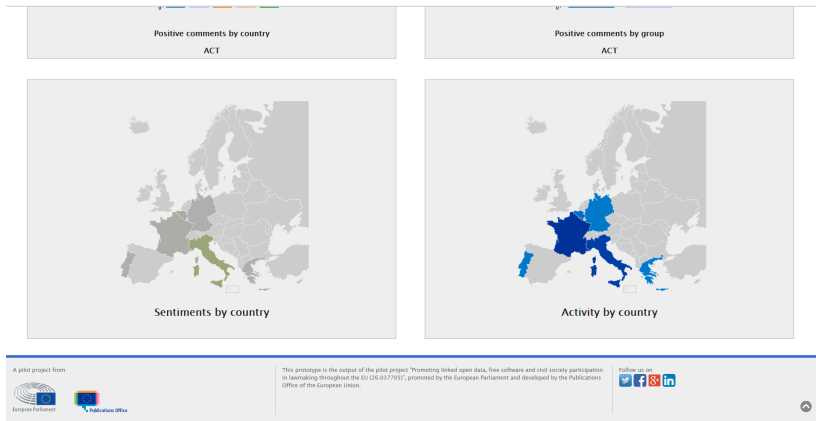
Sentiments per section



Comments division  
ACT



# Maps of the sentiments and activities per country



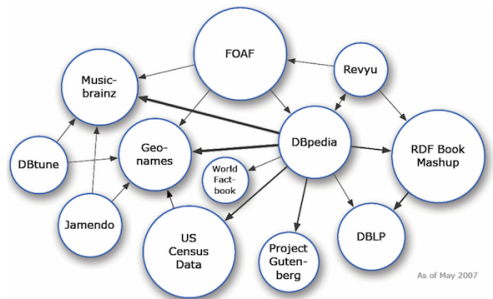
# Role of Artificial Intelligence in the Semantic Web

*Semantic Web* is an infrastructure for *Artificial Intelligence* (AI)

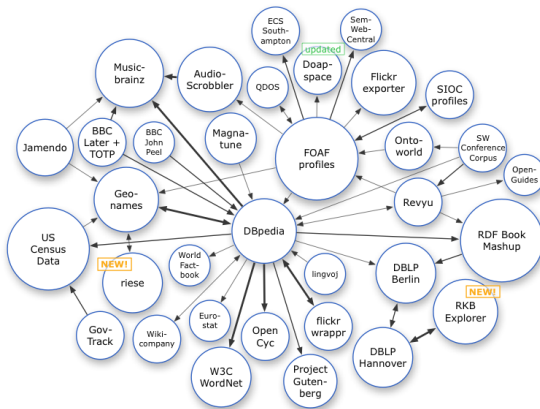
- AI (NLP, machine learning) helps to translate the language into **machine-understandable data** (*Smart Data*)
- AI exploits **Smart Data** to implements **advanced reasoning**
  - Premises  $\implies$  Conclusions
  - Accessing Implicit Knowledge



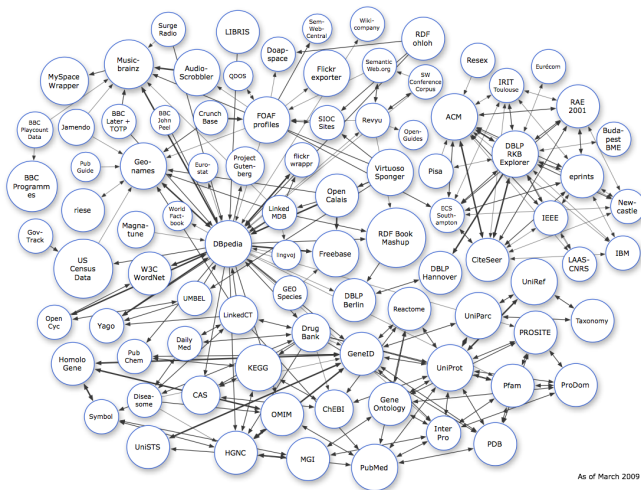
# Linked Open Data growth



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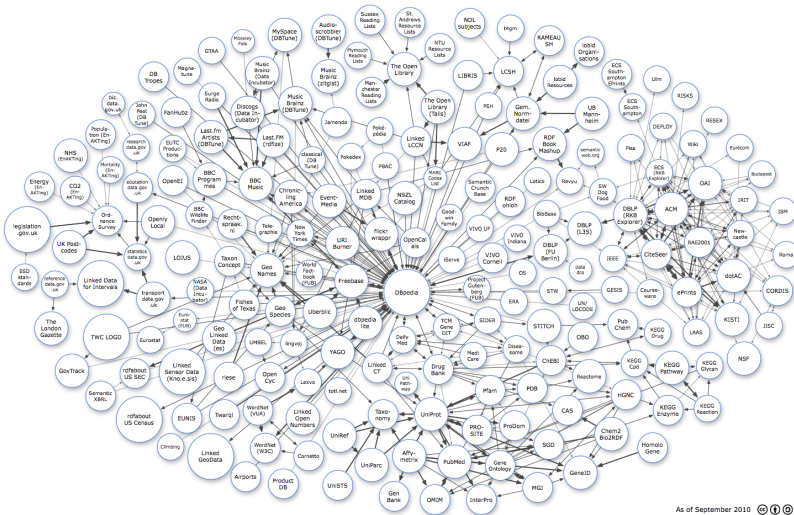


# Linked Open Data growth





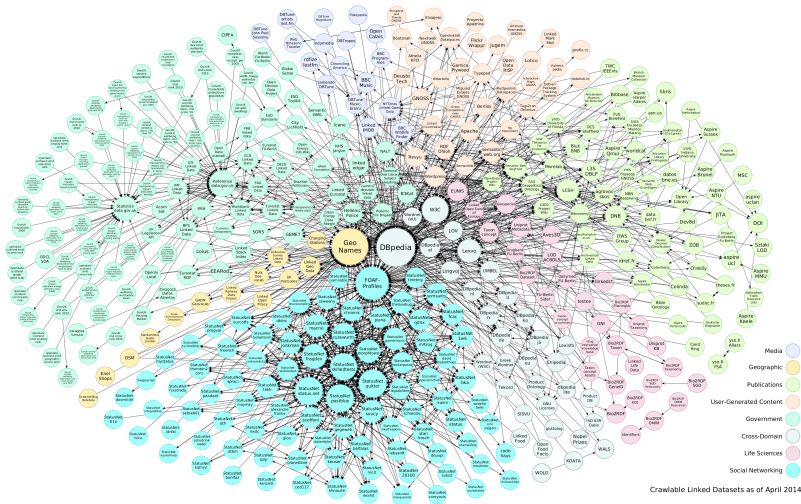
## Linked Open Data growth



As of September 2010 



# Linked Open Data growth



# What Open Data and Semantic Web are about?

They have do with **Business Models** for data consuming and sharing (**Web services** and **Apps**)



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- Memorandum on **Transparency and Open Government** (Barack Obama's administration, 2009)
- Open Data institutional initiatives (**European Union**)

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They are about:

## Legal Data Accessibility, Quality, Reusability for Citizens

Therefore a promotion of:

## Freedom, Justice and Democracy



# Thanks for your attention!

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