

Publication of Legislative Data

Open Data, AI and Semantic Web in the Legal Domain

Enrico Francesconi

Publications Office of the EU

enrico.francesconi@publications.europa.eu

**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

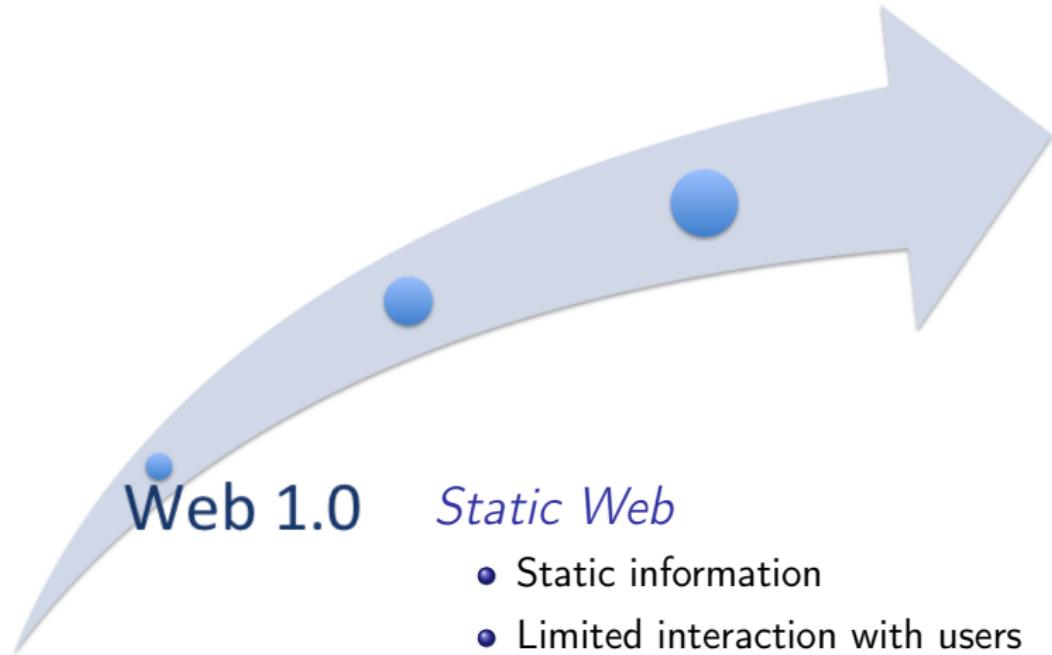
The Semantic Web (Web 3.0) is made up of
Linked Open Data

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

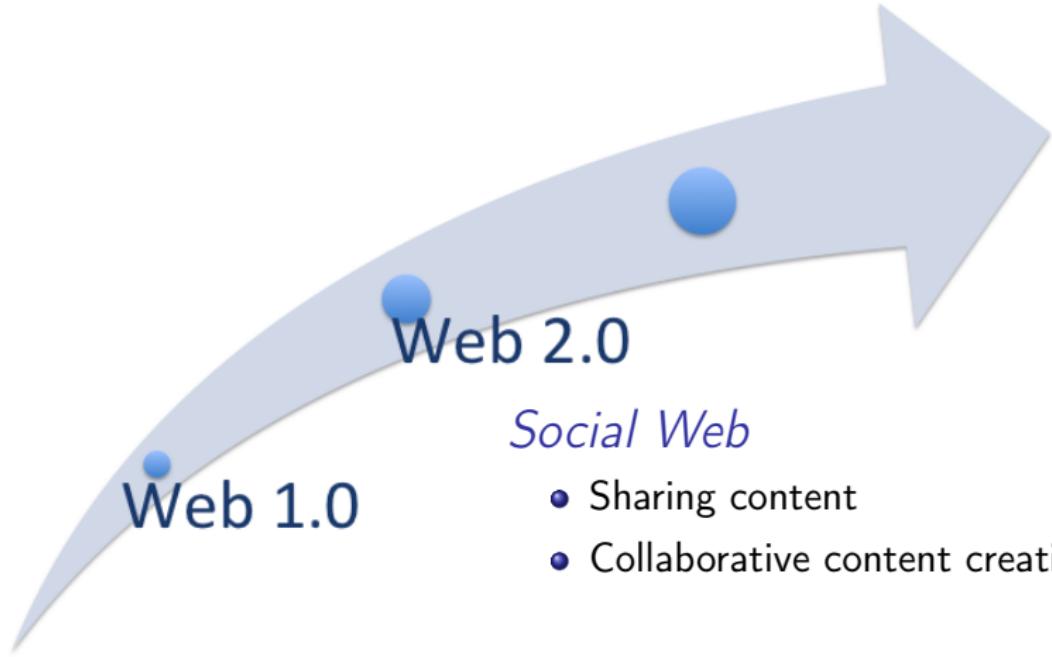


How the Web has evolved from Web 1.0 to Web 3.0?





Evolution of the Web



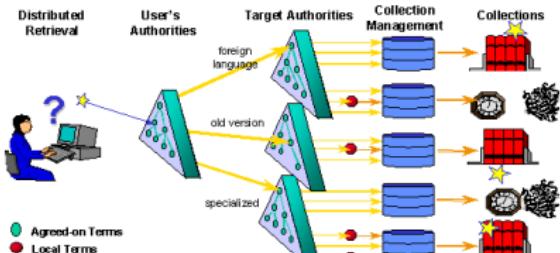
Search Engines in Web 1.0 and 2.0

- 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



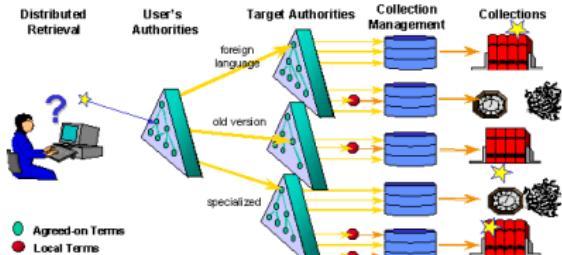
Example of Users' Information Needs

Unique point of access to resources in a distributed environment



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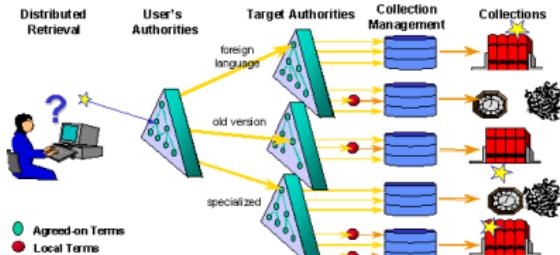


Advanced information retrieval and reasoning services (ex. in the legal domain)



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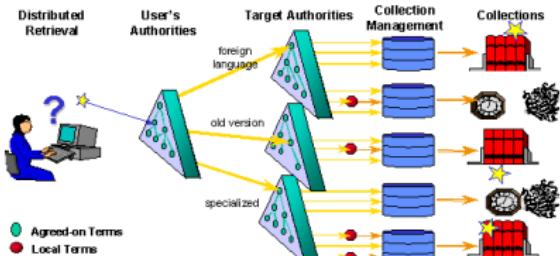
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- Which version of law n. 123 issued on 15 March 2007 was in force on 1 December 2010?



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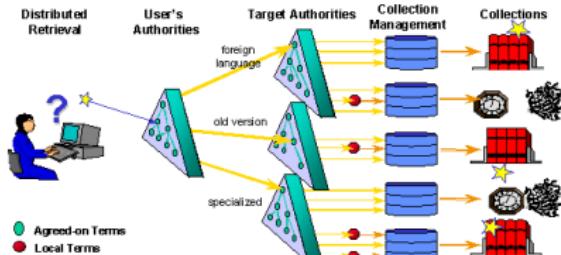
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- In which laws Mr. XY is the **first signer**?



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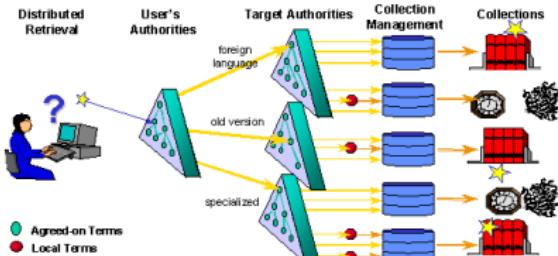
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- Which laws on consumer protection do apply in a [specific region]?



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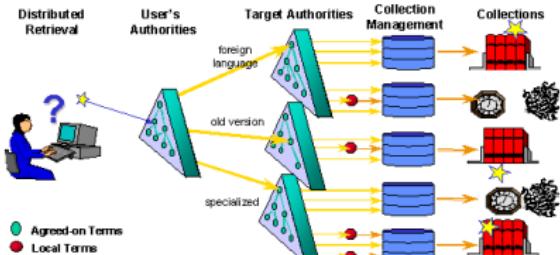
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- Which are the Implicit Rights of the Consumer according to the EU law?



Users' Information Needs in the EU Legal Domain

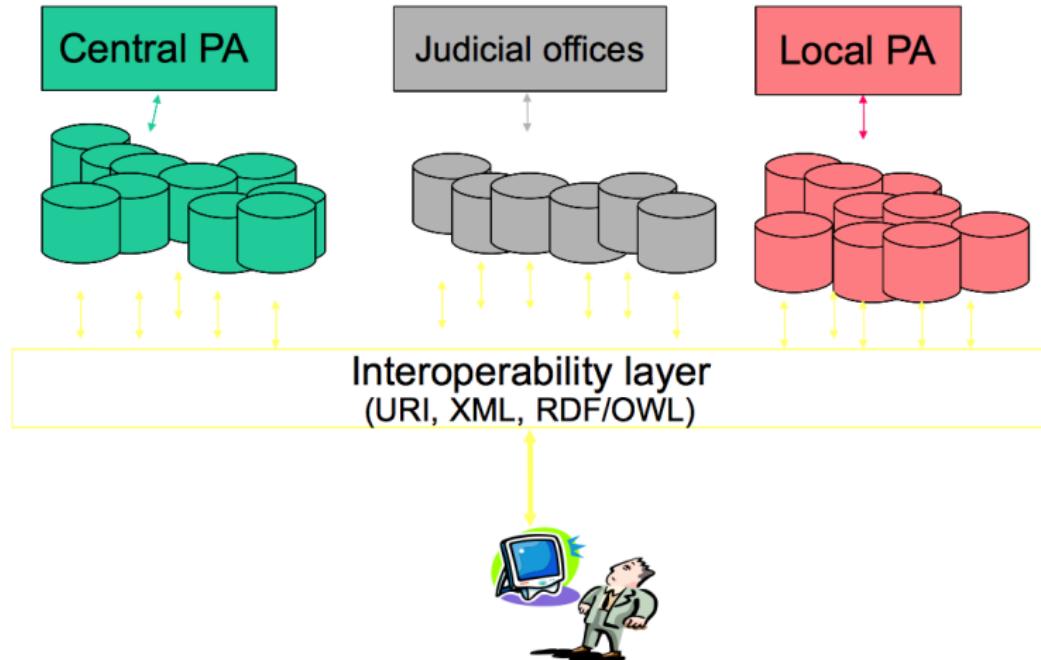


Cross-Language Accessibility

Accessing heterogeneous
data sources without
language barriers



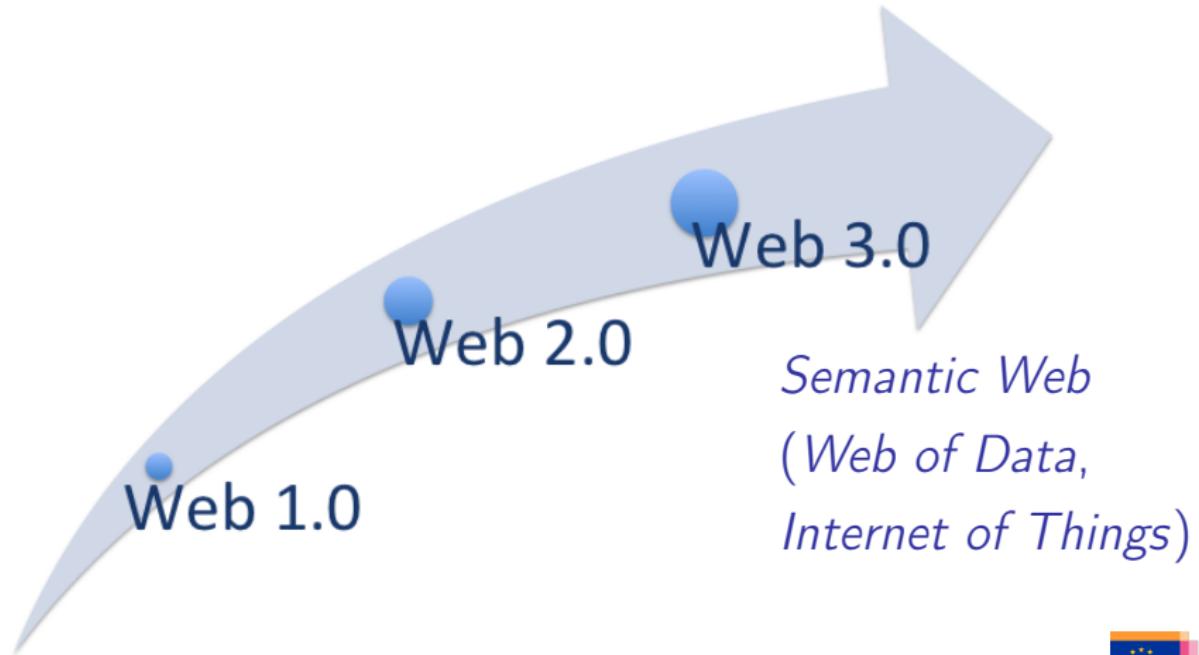
Interoperability in a Multilanguage and Distributed Environment



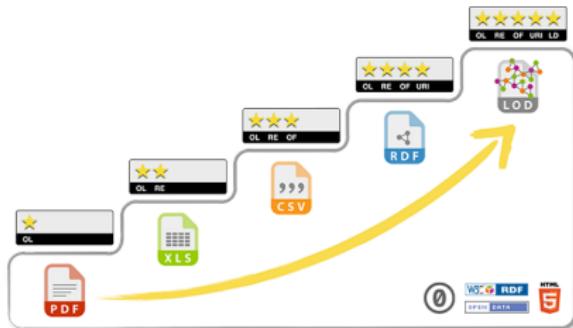
Re-organization of information in a distributed environment by an infrastructure based on standards



Evolution of the Web

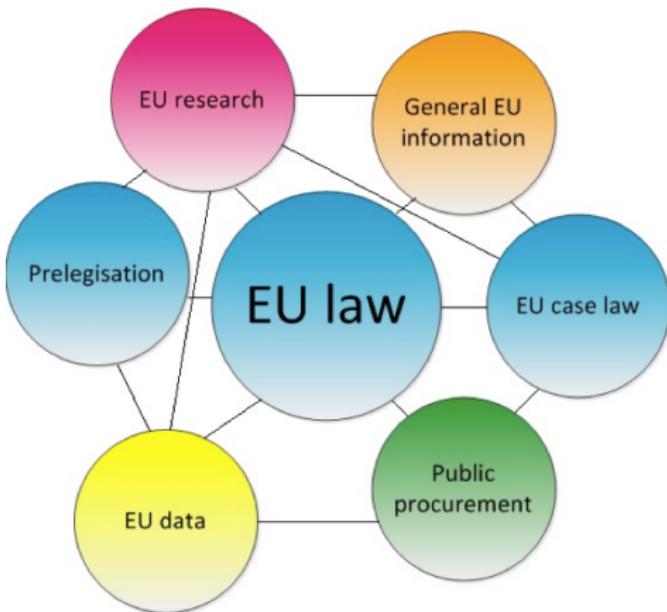


5-star Rating Scheme for Linked Open Data



- ★★★★★ 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)





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

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

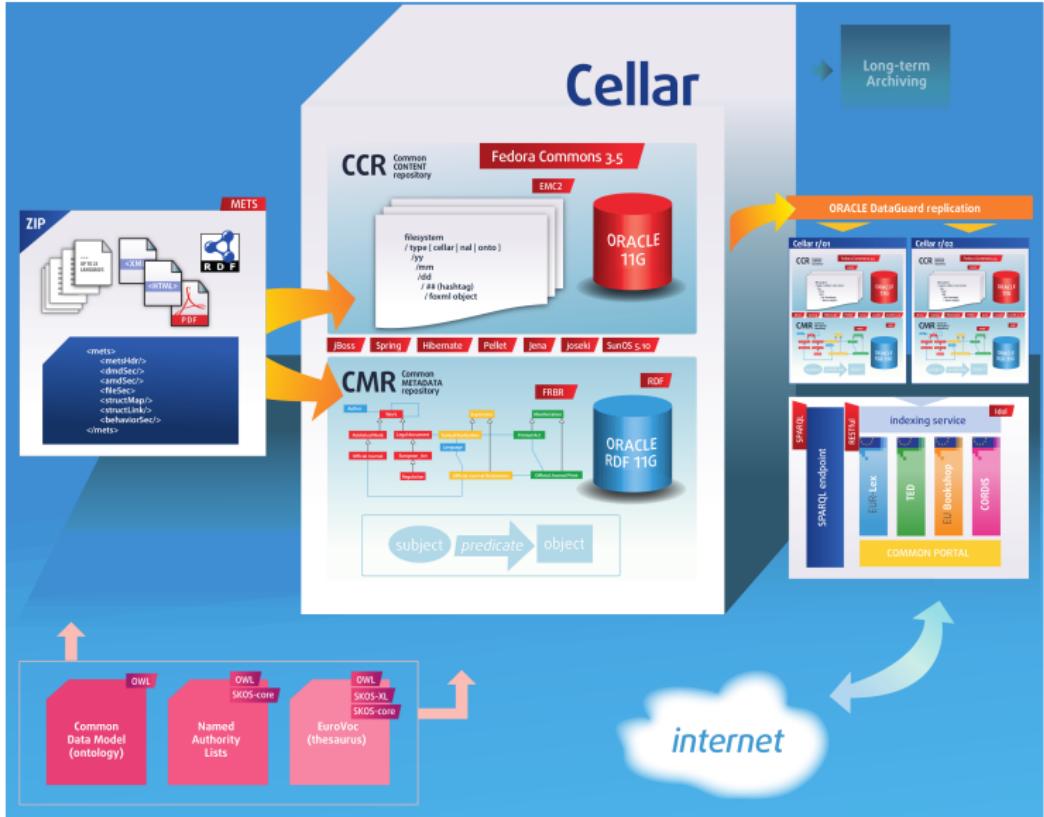
Docs are available for

- 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



- ~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))

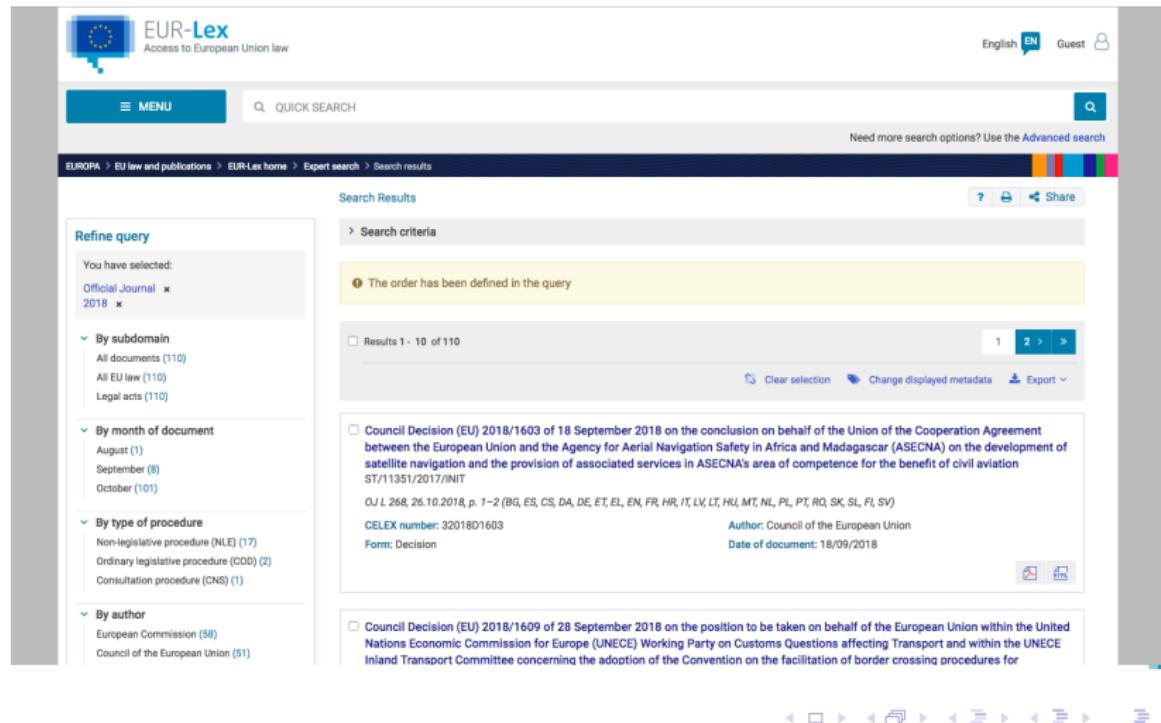
- access/reuse

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

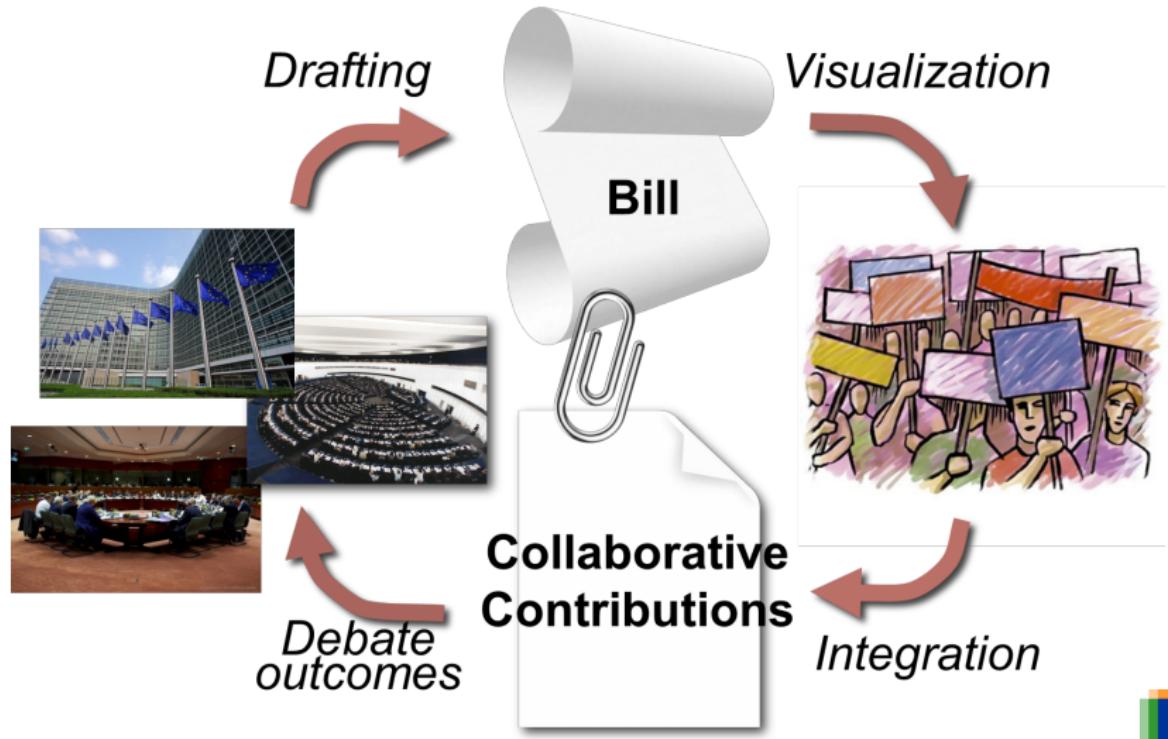
- reuse



Cellar provides content for different services as Eur-Lex



The screenshot shows the EUR-Lex website interface. At the top, there is a header with the EUR-Lex logo and a search bar. The main content area shows a search results page for 'Expert search > Search results'. The results are filtered by 'Official Journal x 2018'. The first result 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 document is dated 01.09.2018, has a CELEX number of 32018D1603, and is authored by the Council of the European Union. The second result is a 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 inland transport.



Home page

e-participation
Linked open data

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Search

e-Participation LOD

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

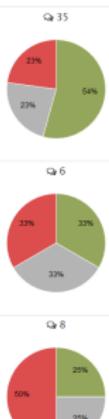
14 documents found

Sort by: Date

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

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

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



[/displayDoc?path=COM20160547/fme_COM_COM20160547_EN.json&ln=eng&gen=1](#)



The discussion forum (comments, sentiments, amendments)

Language of document English (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;

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

Comments Preparatory act

View more statistics [\[link\]](#)

Give your opinion

Filter comments

Enrico Francesconi 2016-10-18 - 16:34

Positive 0 Replies: 0

Direttiva essenziale per il diritto europeo sui diritti digitali #digitalrights

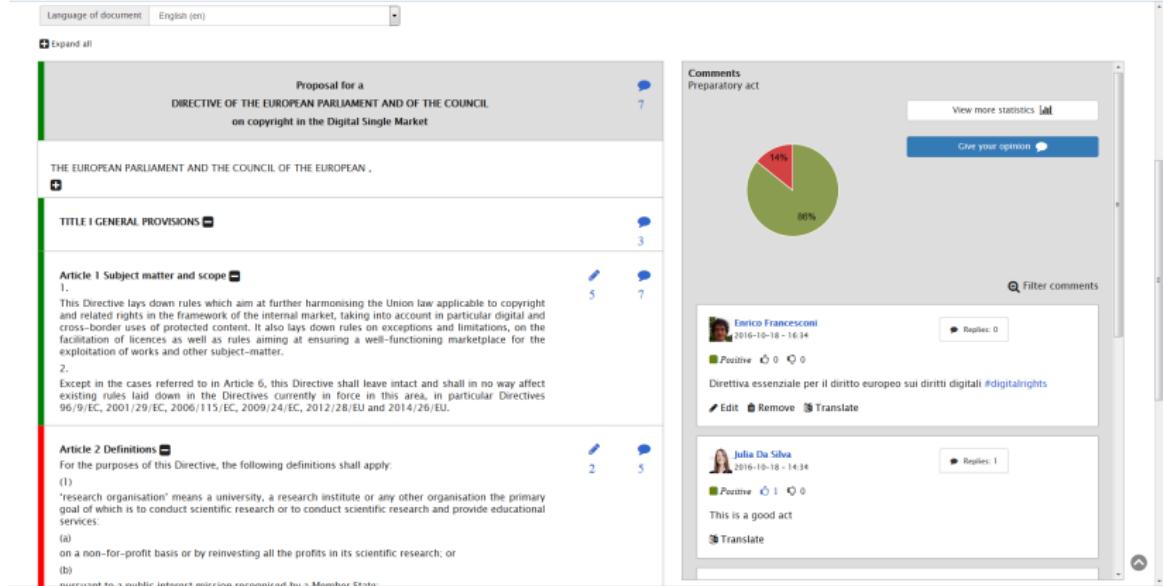
Edit Remove Translate

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

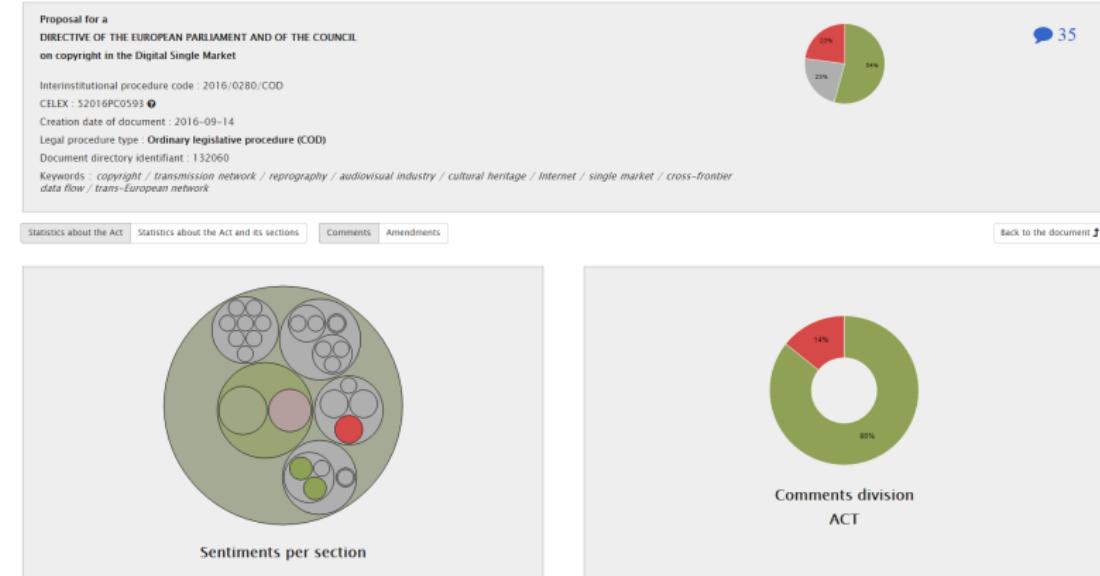
Positive 1 Replies: 1

This is a good act

Translate



Statistics on users' sentiments per document and section



Maps of the sentiments and activities per country

Positive comments by country

ACT



Sentiments by country

Positive comments by group

ACT



Activity by country

A pilot project from



This prototype is the output of the pilot project "Promoting linked open data, free software and civil society participation in lawmaking throughout the EU (26.0377/03)", promoted by the European Parliament and developed by the Publications Office of the European Union.

Follow us on

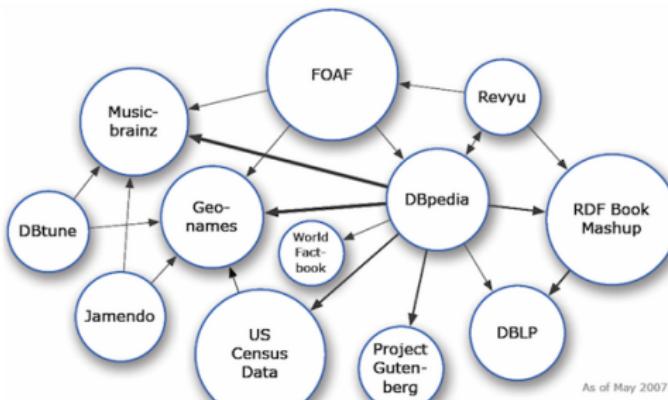


Semantic Web is an infrastructure for *Artificial Intelligence* (AI)

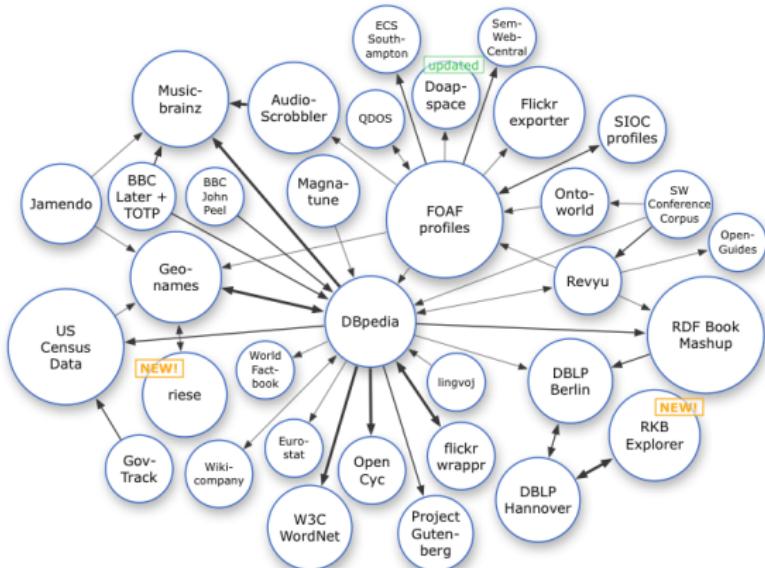
- AI (NLP, machine learning) helps to translate the language into **machine-understandable data** (*Smart Data*)
- AI exploits **Smart Data** to implements **advanced reasoning**
 - Premises \implies Conclusions
 - Accessing Implicit Knowledge



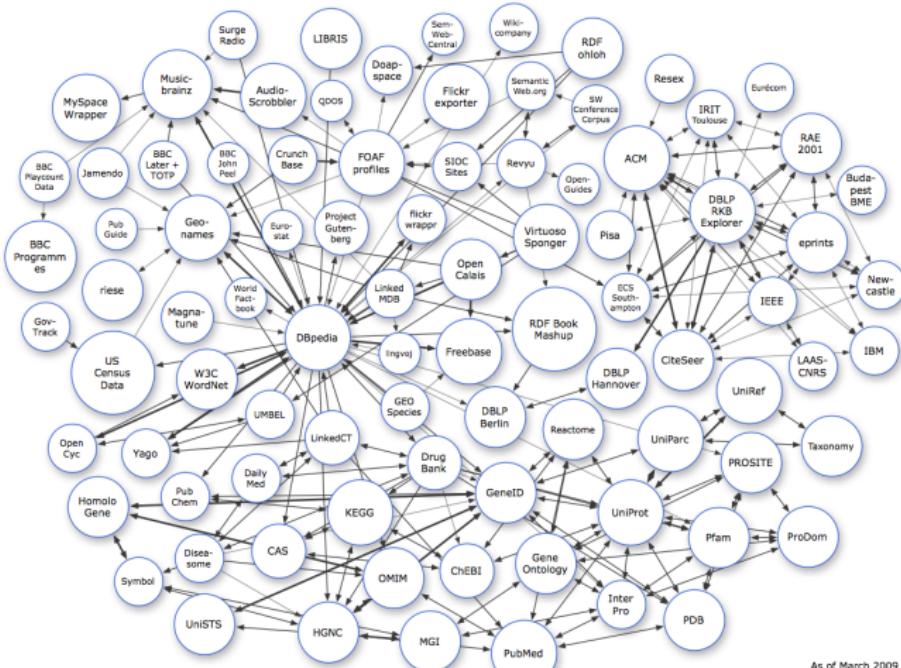
Linked Open Data growth



Linked Open Data growth



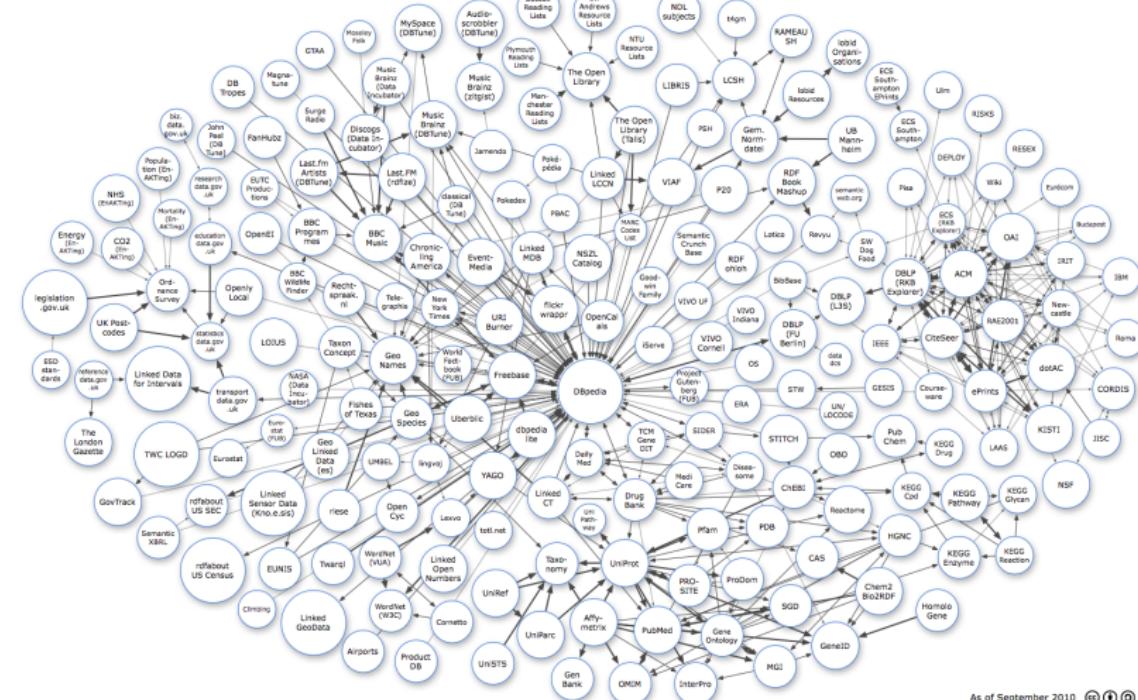
Linked Open Data growth



As of March 2009



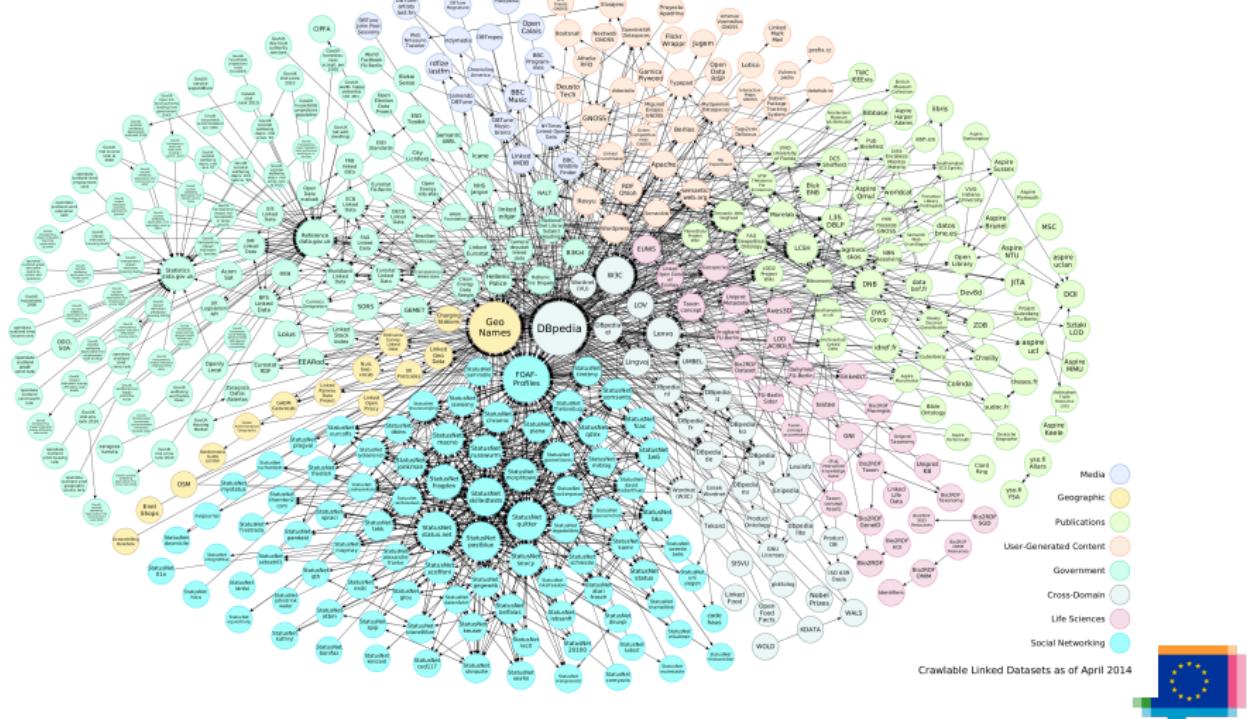
Linked Open Data growth



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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In conjunction with **eGov** initiatives:

- 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!

enrico.francesconi@publications.europa.eu

