- Methodologies for cataloguing cultural heritage
- Computerized cataloguing and multimedia documentation

Spreading open data: use and reuse.

ICCD ongoing projects

Author: Chiara Veninata, Margherita Porena
Teacher: Margherita Porena

Open data

Open data: definitions

data

transmissible and storable computer information

Open data

"Open data is the idea that some **data should be freely available to everyone to use and republish** as they wish, **without restrictions** from copyright, patents or other mechanisms of control".

It's one of the main concept of **Open government**

What is open government?

New concept of administration based on models, instruments and technologies allowing administration to be "**open**" and "**transparent**" towards citizens, to grant:

1. **public control over decisional process** of PA (**TRANSPARENCY**)
2. **participation to decisional process** of PA, trough bidirectional and shared interactions (**PARTICIPATION and COOPERATION**)

The instruments to achieve those goals are digital technologies

Relation between ADMINISTRATION and CITIZEN
is based on **TRUSTH**

From transparency to full access

Transparency allows

- **public protection** (*right to information, integrity and impartiality of the administration,*

- **improvement and simplification of the bureaucratic procedures** (*services' quality)*

Open government in practice

USA, 2009

Memorandum for the Heads of Executive Departments on Transparency

"My Administration is committed to create an unprecedented level of **openness** in Government. We will work together to ensure the public trust and establish a system of **transparency**, **public participation**, and **collaboration**. **Openness** will strengthen our democracy and promote **efficiency** and **effectiveness** in Government"

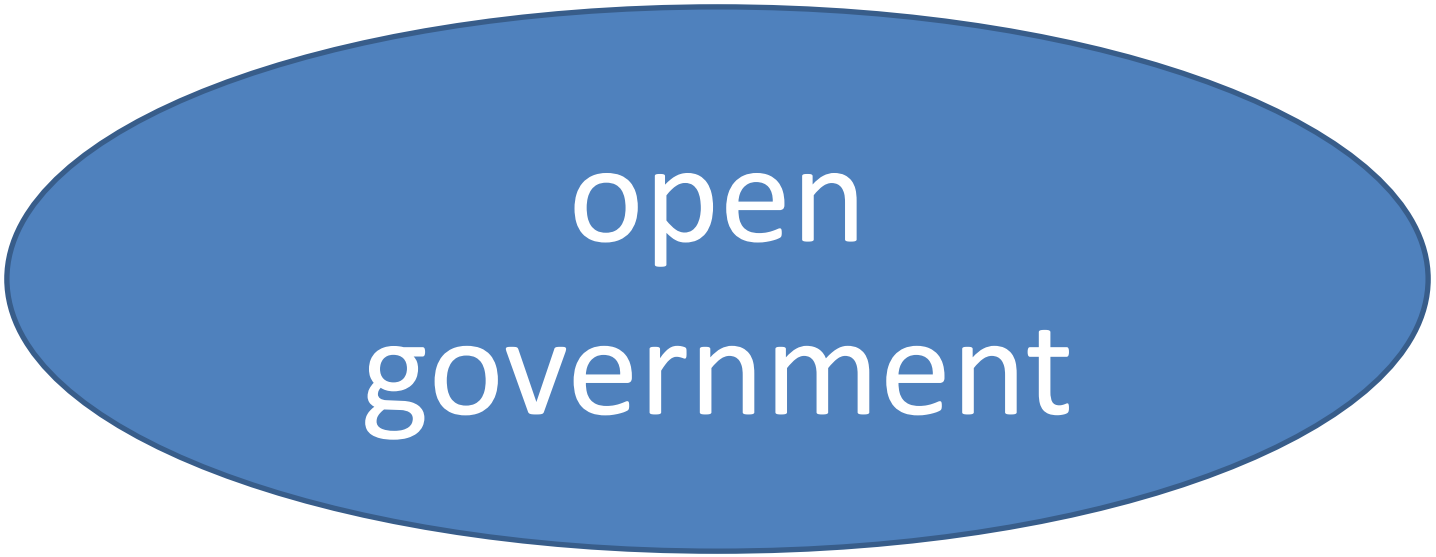
ITALY, 2009

Art. 11 legislative decree 150/2009

«Transparency means **full availability** of information about **every aspect of organization**, even throughout publication on institutional websites of public administrations, (…) with the aim of promoting common forms of **control**, according to principles of **good performance and impartiality**»

Transparency and access

Transparency of a public administration is linked to the **free access of administrative data and information** by citizens, and to share documents and knowledges between institutions and local communities



Data and rights

Features of open data

Three meanings of open

1. They are published under licenses allowing their reuse by anyone, **also for commercial purpose** (**open license**);
2. in a format that can be easily processed by a computer and (**easily extracted**)
3. They are published in **formats defined by a published specification**, and which don't require a proprietary software for their access (**open format**)

Examples:

Microsoft Excel is a format where data can be easily extracted, but it's not an open format.

PDF is an open format but it's not possible to extract data easily

CSV (comma separate value) is an open format and data are easily reusable (as XML format, etc.)

Features of open data

- **Complete:** every public data is **available**, except for data subjected to restrictions for privacy and security.
- **Primary:** data is collected from the **source**, with the maximum level of detail, not subjected to processing or manipulation.
- **Prompt:** data is publicly available **as soon as possible**, to preserve its value.
- **Accessible:** data is available to the **widest** range of **users** and for the widest types of **purposes**.
- **Machine-readable:** data is structured with the aim of being **automatically** processed.
- **Not biased:** data is available to **anyone**, without the necessity of registration.

Features of open data

- **Non-propretary:** data is available in **format** on which no one has an exclusive control.
- **Free:** use and reuse of data is not subjected to **any copyright** or patents' restriction**.**
- **Reusable:** users can **reuse and integrate data**, even to create new resources, applications, programs and services for the community.
- **Researchable:** users can **easily search data** and information through search tools as databases, catalogues and *search engine*
- **Permanent:** all the described features are permanent during the **entire lifecycle of data** in the web

Open data = common good and human rights?

- Data **belongs to human kind** (medical data, environmental data, meteorological data etc.)
- Data of public administration is **funded by public money**
- Knowledge of data allows the **growth of society** (development of app reusing open data)
- Data is essential to ease **common human activities** (for example cartography, etc.)
- In **scientific field** discovery rate grows thanks to the data access

Public Sector Information (PSI)

Data of public administrations that are **non personal or anonymous**, produced by a public institution within its mandate and that, if open and available via web, can **increase transparency and promote collaborative interaction between citizens** and **PA**.

Data is the 'money ' in the knowledge society, where richness is measurable in function of range and speediness of exchange and reuse of data between datasets.

Open data paradigm stimulates PA to **recover and organize information heritage** created during the year and often underused, because of dispersion into lot of offices and/or archival format.

Regulatory framework

https://www.dati.gov.it/content/riferimenti-normativi-documenti-indirizzo

Decreto trasparenza – d.lgs 33/2013

Art. 2 it – definition of publication:

Access

-in institutional website of public administrations

-to **documents**, **information** and **data** about **organization** and **activities** of public administrations.

-For everyone, **without authentication and identification**

Museums, Archives and Libraries

Directive 2013/37/UE on reuse of information in the public sector (c.d. PSI - ***Public Sector Information***) *

Main elements:

a) **application** of the directive to **libraries, museums and archives**;

b) obligation to allows reuse of PSI for **commercial and non commercial purposes** became a **general principle** for each Member State

Acknowledged in Italy with **DECRETO LEGISLATIVO 18 maggio 2015, n. 102** («Attuazione della direttiva 2013/37/UE che modifica la direttiva 2003/98/CE, relativa al riutilizzo dell'informazione del settore pubblico»

Guidelines for publishing Open Data by PPAA

Part I – PA and Open data
It introduces the concept of **Open Government**, the practice of **Open Data** and it points out the related regulatory framework

Part II – How to open data of PA
It describes **technical, organizational and juridical aspects** to analyze, before publishing Administration data

http://egov.formez.it/sites/all/files/VademecumOpenData_0.pdf

CAD - Codice dell'Amministrazione Digitale

(Code for Digital Administration)

Dispositions about the **use of digital technologies** as main tool in interactions between public administration and citizens.

Chapter V: data of public administrations and on-line services

CAD - Availability to privates

Art. 50 – Availability of data in public administrations.

- "PA data are formed, gathered, stored, and **made available,** through the use of digital and communication technologies, which allows **their reuse and access** by **public administrations and privates,** according to conditions stated by the law"
- exceptions:
  - ❑ restrictions stated by laws and rules,
  - ❑ restrictions in terms of personal data protection
  - ❑ restrictions stated by European Union in terms of reuse of information in public sectors.

CAD - Open by default

- **Art. 52 – On-line access and reuse of data of public administrations**.

Data and documents published by public administrations in any way, **without the adoption of a specific license**, according to art. 2, item 1, letter h), of decreto legislativo 36/2006, are meant to be released as **open data,** according to art. 68, item 3, of the Code. The possible adoption of a specific license must be justified according to national guidelines in item 7.

- In defining contracts related to products and services implying gathering and management of public data, public administrations provide for **clause to allow on-line access and reuse, by physical and juridical persons, of those data, of their metadata, data structures and databases.**

CAD - Agenzia per l'Italia Digitale

- **Art. 52 – On-line access and reuse of data of public administrations**.

  Agency for digital Italy promotes **valorization of national informative heritage** and carries out dispositions according to Chapter V of the Code.

  The Agency sends to Presidente del Consiglio dei Ministri or to Minister responsible for technology innovation

  - the National Agenda to define **contents and goals of valorization interventions**
  - an **annual report on the status of the process of valorization in Italy**; this report is published in open format on institutional website of Presidenza del Consiglio dei Ministri.

Problems and considerations

Real problems 1/2

- **Organizational problems**:
  - Generally Public Administration **is not fully informed** of considerable heritage of data it has;
  - Only a little part of PA data is available in **digital format** and, if it is, interoperability is not always possible;
  - Often **licenses** don't allow republishing and reuse.

Source: *Ernesto Belisario, lawyer and expert in law about new technology*

Real problems 2/2

- **Increase the awareness in citizens** that their request of **transparency corresponds to an higher availability of *open data***, changing anger and frustration into **civil activism**;
- Promote action of **media information literacy**
- Promote, in information technology sector, **growth and education of qualified figures** for example in *data mining*, in management and use of *open data*, in web app development for the access to open data

False problems

- **What if people interpret data in a wrong way?**
(What if people vote in a wrong way?)
- **What if data are used by few people?**
(it is always a sign of transparency)
- **What if my data are wrong?**
(publish them online and ask community for help)
- **What if data prove my inefficiency?**
(inefficiency is a problem independent from the publication of data. Be aware of the problem and solve it)

Source: Ernesto Belisario, lawyer and expert in law about new technology

Privacy problems?

The **Guarantor for protection of personal data** has showed his approval to Open Data:

Deliberation n. 88/2011

Achieving transparency of PPAA activities is possible also without using personal data. "***It's not necessary to adopt specific caution, if public administrations publish on web site information not ascribable to identified or identifiable persons***"

Copyright problems

Data can be considered as a **product of an intellectual elaboration/creation**

→ Every work, result of an intellectual work of an author, is **protected** from a moral and patrimonial point of view.

To allow **free access to public data**, one of the main tools is the license.

We can distinguish:

- **Open license**
- **Closed license.**

Copyright problems

Closed license - **copyright:**

- License agreement allowing **only the author** to exercise the **rights to the use and manipulation** of the work (exclusive)

Open license - **copyleft**:

- License agreement containing a specific **list of permitted uses for the work** (permissive)
- In general a work can be copied and distributed without costs

Example of open license

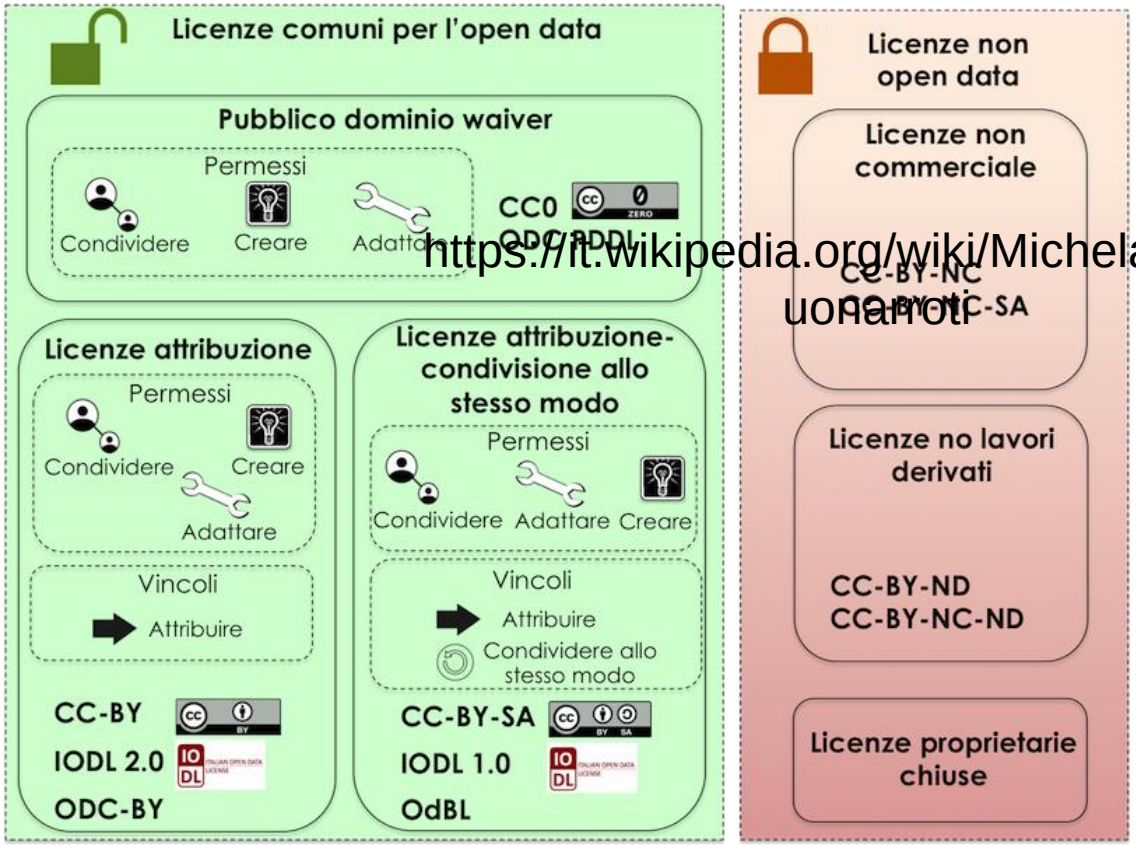
Creative Commons Licenses

You can choose what **right you want to left** and what right you want to maintain, by combining four terms of distribution:

1. **BY - Attribution** (obligation to give the author the credits)
2. **NC - Non-commercial** (obligation to copy, distribute the work and make derivative works based on it only for non-commercial purposes)
3. **ND - Non-derived** (any derivative work is permitted)
4. **SA - Share-alike** (obligation to distribute derivative works only under an identical license)

Types of license

Information about the type of license is **an essential metadata** for the reuse of dataset. It must be **always indicated**, showing the name, the version and the reference to the text of the license.

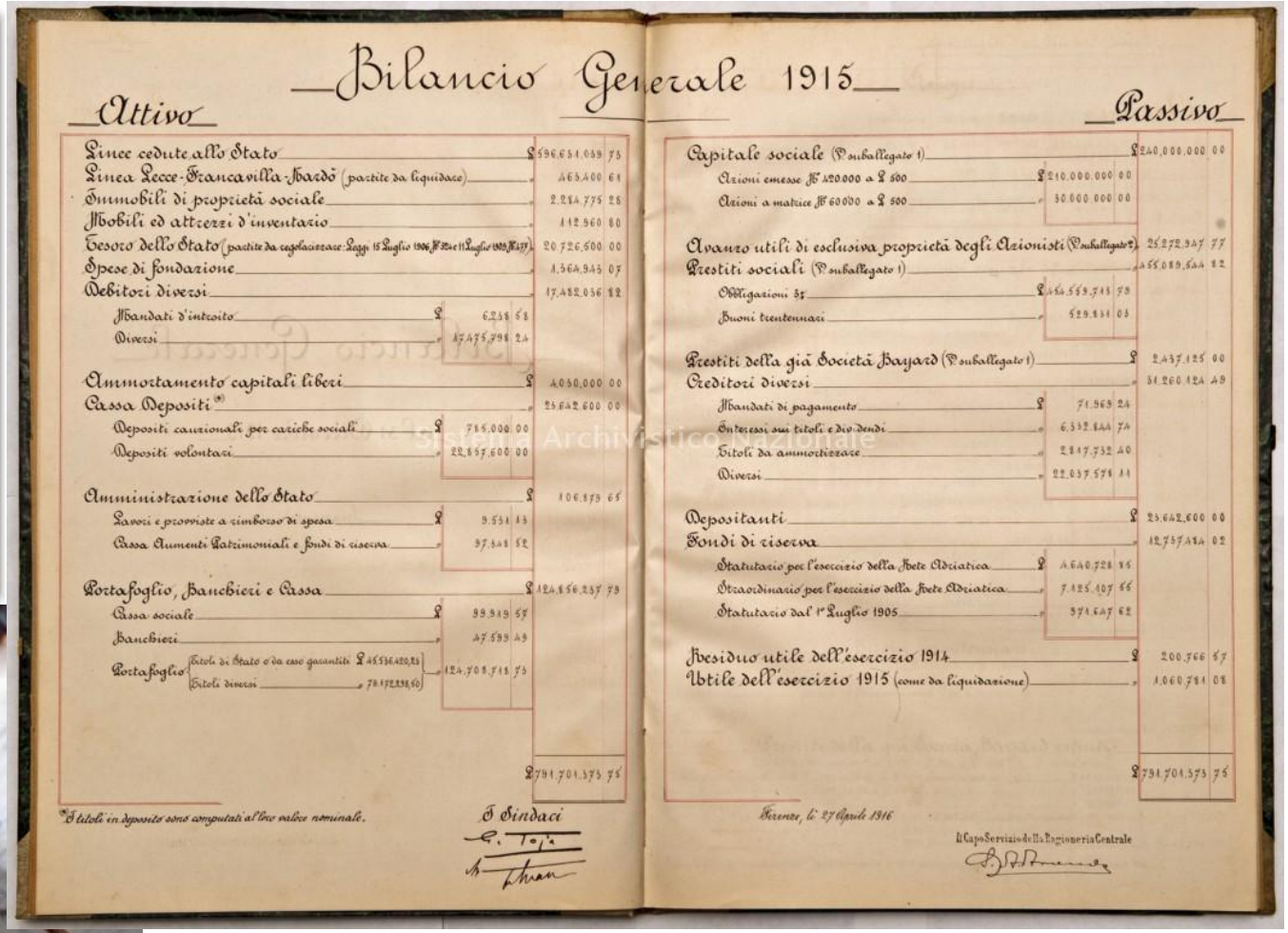


https://it.wikipedia.org/wiki/Michelangelo_Buonarroti

Every license not allowing derivative works or commercial purposes (i.e., CC license with NC and ND terms) and/or stating terms that restrict uses and distributions of data, isn't valid to identifying open dataset

http://lg-patrimonio-pubblico.readthedocs.io/it/latest/licenzecosti.html

Let's make data free!

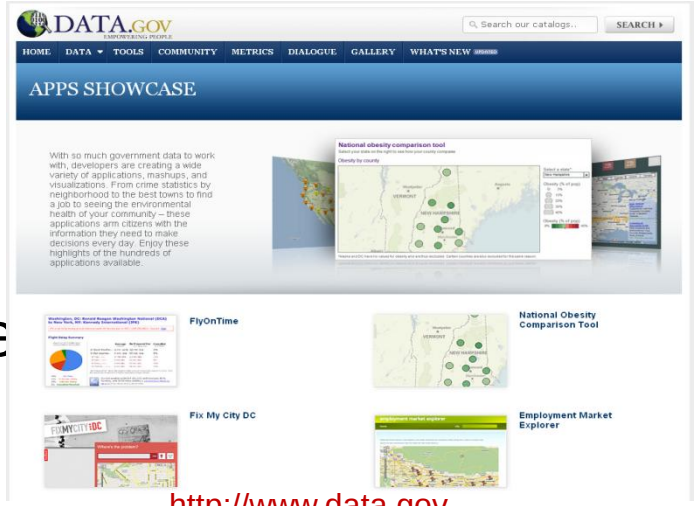


Supply vs demand

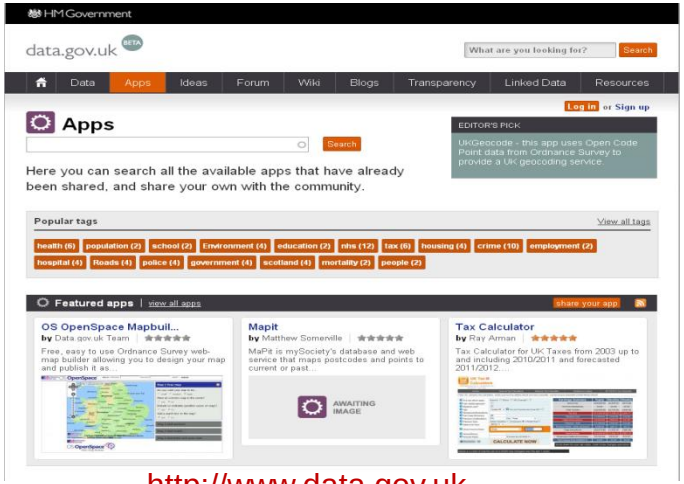
Data suppliers stimulate the **creation of market**

Forward-thinking public administrations have understand the importance, even for themselves, of promoting the **development of applications** and the **mashup** with open data they have and spread

USA and UK government and the World Bank itself, in their websites have a **section for "apps"**



http://www.data.gov



http://www.data.gov.uk

Example for the reuse of open data

Berners-Lee in the TED-2010

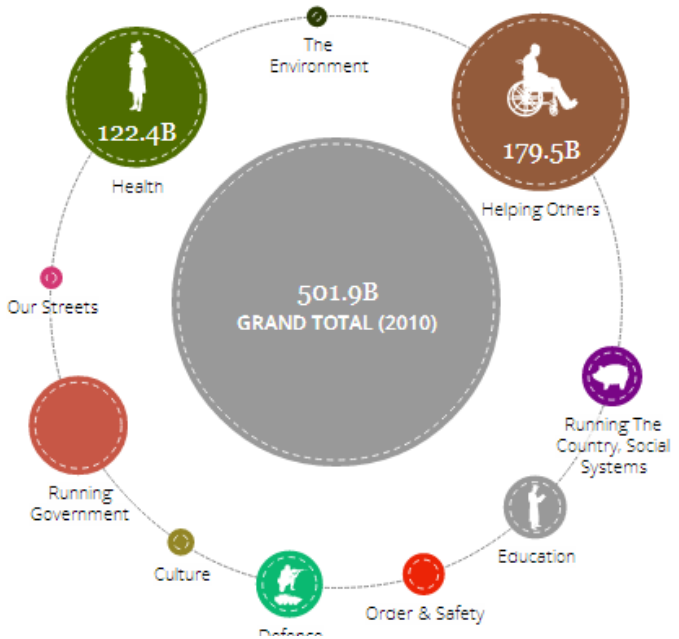
map created by a lawyer to prove the correlation between houses where white people live and houses connected to aqueduct, showing the racial discrimination against black people in Zanesville (Ohio, USA). Thanks to this map the lawyer convinced the judge to sentence the county to a compensation of over 10 million dollars.

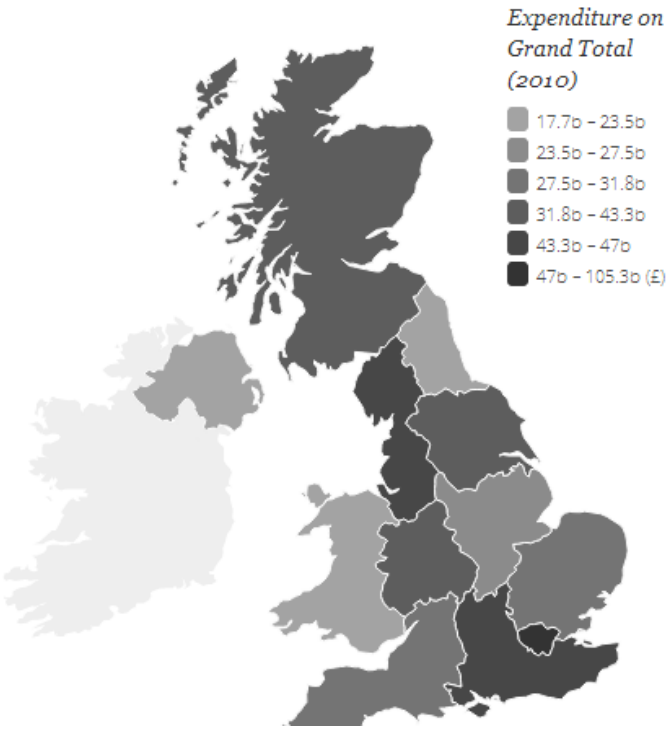
Examples

WHERE DOES MY MONEY GO?

Showing you where your taxes get spent

The Daily Bread | **Country & Regional Analysis** | Departmental Spending | About





Civil hacking? Open Camera (2010)

"Open Camera"

I conti segreti della Camera dei Deputati resi "liberi"

Tutte | Collaborazioni | Contratti | Consulenze | A.S.I. | Dati originali | Regolamento CdD

Share 5.6k Questi dati sulle collaborazioni e le consulenze della Camera dei deputati vigenti al 1° gennaio 2010, e l'elenco delle ditte con le quali sono in corso contratti di lavori, forniture e servizi, sono stati ottenuti da Rita Bernardini, parlamentare radicale eletta nelle liste del Pd, dopo una vera e propria battaglia durata mesi culminata in uno sciopero della fame. L'unico formato in cui le sono stati consegnati è quello cartaceo. Rita Bernardini ha deciso di rendere pubblici questi dati in "formato aperto", secondo quanto previsto dal programma di governo regionale di Emma Bonino e delle liste Bonino Pannella. Questa iniziativa si inserisce all'interno della storica campagna radicale per l'anagrafe pubblica degli eletti e dei nominati.

Settore | Oggetto | Fornitore | Apply

Tipologia	Settore	Fornitore	Oggetto	Previsione 2010	Note	Ordinato al 1/2/2010
Contratti	Varie	CEDAT 85 SRL	SERVIZIO DI SUPPORTO ALLE ATTIVITA' DI RESOCONTAZIONE STENOGRAF ICA	66,097.77		0.00
Contratti	Varie	TECNOCONFERENCE EUROPE SRL	NOLEGGIO IMPIANTI TRADUZIONE	130,000.00	gara in corso	0.00
Contratti	Varie	CEDAT 65 SRL |PROGETTO LAVORO SOC. COOP. |	ASSISTENZE OPERATIVE A SUPPORTO DELLA GESTIONE DOCUMENTALE E TECNICA	3,135,000.00	da gara	2,869,548.00
Contratti	Varie	INA ASSITALIA (rti con FONDIARIA, UGF)	CONVENZIONE ASSICURATIVA	2,454,050.34	da gara/gara in corso	0.00
Contratti	Telecomunicazioni	RAI RADIOTELEVISIONE ITALIANA SPA	CANONE DI ABBONAMENTO ALLA	3,905.90	fuori campo applicazione	0.00

Esempio: la mappa della salute

Health Maps Wales
Mapiau Iechyd Cymru

consente di esplorare diversi indicatori relativi alla salute della popolazione del Galles, tra cui le degenze ospedaliere (costo, durata, tempi di attesa), l'incidenza di particolari malattie, le cause e i tassi di mortalità, le maternità e la salute dell'infanzia

Esempio: i dati relativi alla mortalità per abuso di alcool sulla mappa

Archivio Centrale dello Stato

Esempio

STREETLINE
Connecting the Real World

PARKSIGHT™ – FOR CITIES

From street-level sensors to mobile apps and parking analytics, Streetline's technologies help you truly understand and effectively manage parking in your city. Learn More»

PARKEDGE™ – FOR GARAGES

Publish your parking inventory to Parker™, the leading parking guidance app. Increase occupancy. Accept reservations. Drive revenue goals. Learn More»

PARKER™ – FOR MOTORISTS

Everything you need to know about parking in one app. With real-time parking availability via Parker, quickly and easily find, pay for, or reserve available parking. Learn More»

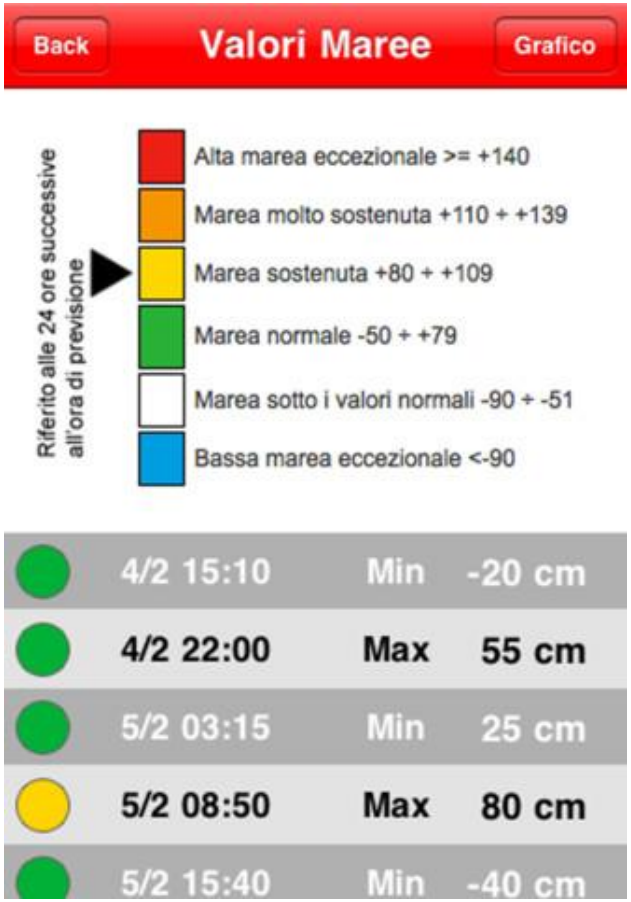
Dati aperti per migliorare la qualità della vita

Per la sicurezza

MiaPA

MiaPA utilizza la rubrica della PA realizzata da **Formez PA** per geolocalizzare gli uffici della pubblica amministrazione

Venezia News



Linked Open Data

I Linked Open Data

Pubblicate le "Linee guida per l'interoperabilità semantica attraverso i linked open data"

La Commissione di Coordinamento SPC ha approvato le "Linee guida per l'interoperabilità semantica attraverso i Linked Open Data (PDF)", consultabili anche nella sezione dedicata alle attività della Commissione di...

2012

Linked Open Data - LOD

The main feature of LOD is its double value:

1. "**open**" → to increase transparency and reuse by anyone
2. "**linked**" → based on the main technologies of **web of data**
   Data that is linked to other data referring to identical objects or to objects that are related

Availability of *Open data* is important to increase information, but openness is not enough.
Open data has to be **autodescriprive** to allow **inferences** thanks to aggregation and correlation of datasets.
Semantic web technologies, and in particular **Linked *Open data model***, are important tools to overcome *Open data* restrictions.

WEB development

WEB (World wide web) is born in 1991, when Tim Berners Lee launched the first web page.
This first stage of web is called **web 1.0**:

- **read-only** (passive users and unidirectional information flow)
- Three main elements - **URI** ((Uniform Resource Identifier - system of identification of a web resource)
  - **HTTP** (protocol for the transmission of information, independently from the type of data
  - **HTML** (markup language to make web document readable by individuals)
- Problems: - information is **fragmented** (formats, databases, not-explicit relations)
  - Difficulty in **information retrieval** (caused by information overload)

WEB development

The following stage of web is called **web 2.0** (or **semantic web**) evolution of Web, toward its transformation into a **unique, huge database, linking datasets** to find out new information that can be freely republished

Semantic interoperability
Semantic web

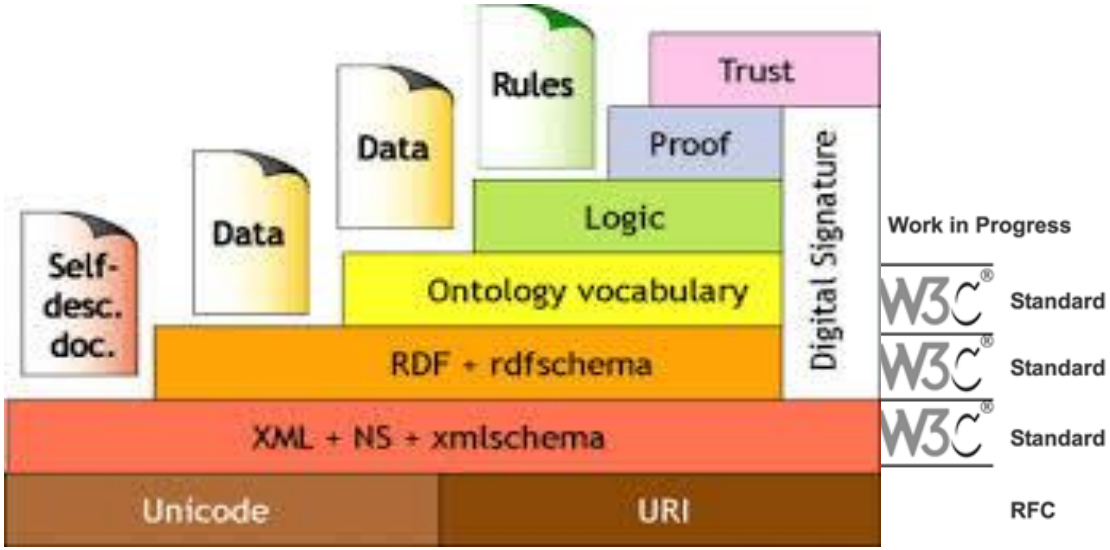
The **semantic interoperability** is the ability of computer systems to exchange data with **unambiguous, shared meaning**.

And the **semantic web** is the place where semantic interoperability can be developed: the future of the web is linked to semantic technologies, to realize a new *machine readable* and *understandable* web,

a web of data linked through semantic relation, processable by machines

Only with technologies linked to SW it will be possible to show data about cultural heritage **linked with a universe of data**, on which machines will be able to make **automatic reasoning**, thanks to their huge computing power.

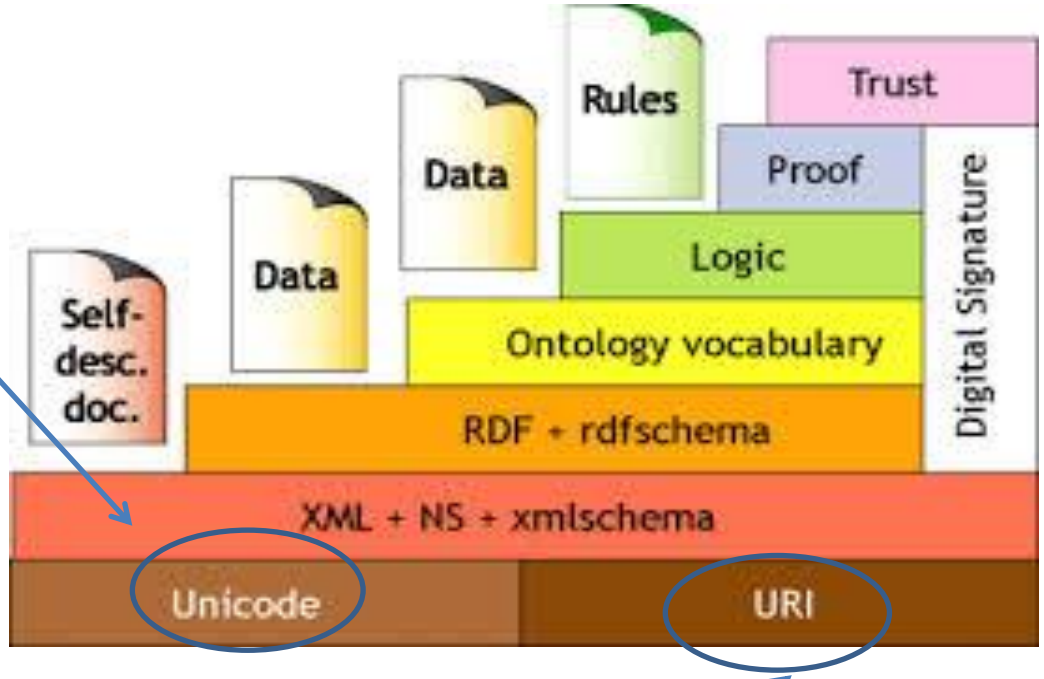
WEB Semantic pyramid



Developed by Berners-Lee to explain the various **protocols and challenges** underlying semantic Web technologies.

WEB Semantic pyramid

Unicode is a system to **codify characters.** It associates each character of every language to a unique number, that is the same for every computer system, software or language used.



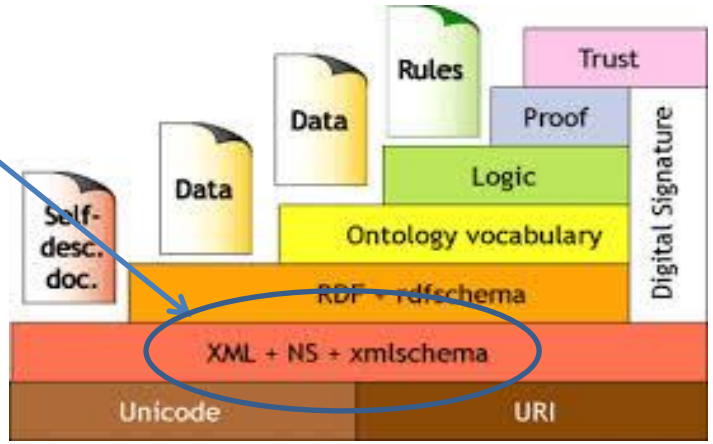
The **Uniform Resource Identifier (URI)** allows to name every object in a **non-ambiguous** way

https://it.wikipedia.org/wiki/Michelangelo_Buonarroti

(if we use HTTP protocol we can access it via WEB).

WEB Semantic pyramid

XML + Nampespace + XML Schema allows to identify structure and syntax of web documents, through the representation of textual contents that are hierarchically organized



XML (eXtensible Markup Language): standard defining the syntax to **mark up** data through **tags**

<title>Proud and preguidice</title> → Tag

<author> <firstName>Jane</firstName><lastName>Austen</lastName> </author>

- **non-proprietary textual format** (it can be used by every computer system)
- Based on association of descriptive tag to data
- We can chose **any name** for the tag

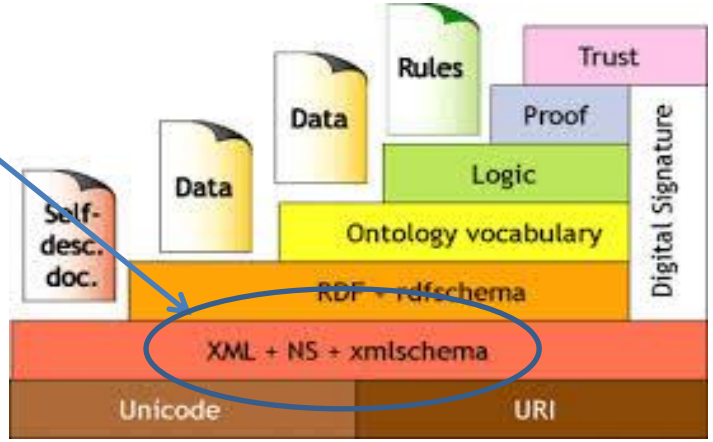
WEB Semantic pyramid

Namespace: it's the **domain**, identified by a URI and a prefix, that allows to **solve conflict between names** of tags

Example:

In the domain of books, the tag <title> means the name of a book.

In the domain of 'persons', the tag <title> means someone's position or job



To avoid conflict, we can identify the two domains as follow:

Book domain: URI www.books.it

prefix book

tag <book:title>

Person domain: URI www.persons.it

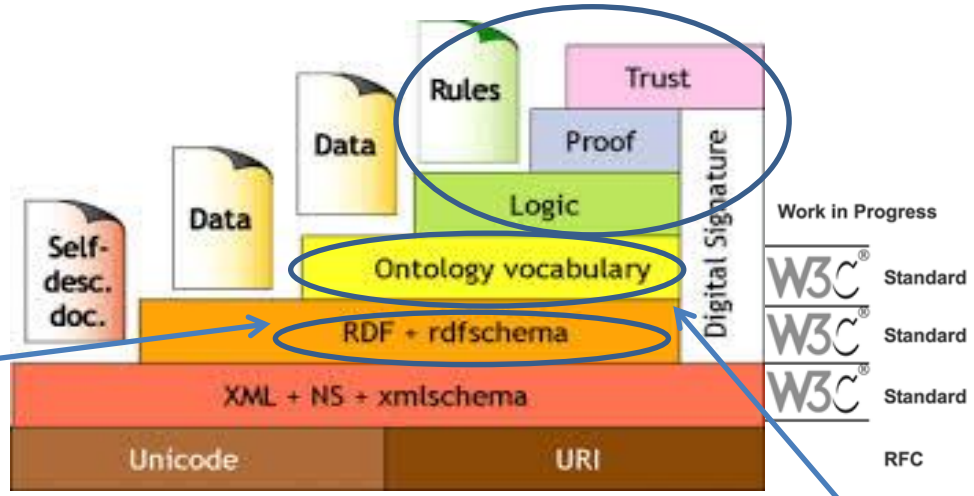
prefix person

tag <person:title>

WEB Semantic pyramid

- Superior levels are still "work in progress"

- **RDF + RDF Schema** allow to express machine-processable **statements**, throughout **triples** having the form of Subject, Verb and Direct Complement. RDF Schema adds to RDF some concepts to increase expressive potentiality of RDF.



- **Ontology and vocabulary** make available instruments to define **main concepts** to "speak" about a certain **domain**.

RDF: a new language for the web

- **RDF-Resource Description Framework** is the grammar of the language through which the web evolution is possible.

- RDF is a **model to represent relations between data**, so that they can be understood not only by humans, but also by computer.

According to W3C, RDF is important to the evolution of *web* from *machine-representable* to *machine-understandable*. The idea is to generate “documents” that can be read and understood by human beings but that also can be interpreted by automatic systems

RDF: a new language for the web

Prerequisite: granularity of data

"it refers to the **size** in which data fields are sub-divided".

Example: Postal address

Low granularity:
via di San Michele 18, 00153.
Roma (RM), Italy

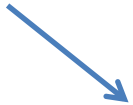
Fine granularity:
Street address: Via di San Michele
Address number: 18
Postal code: 00153
City: Roma
Province: (RM)
Country: Italy

RDF: a new language for the web

RDF is inspired to logic of predicates: data is expressed through simple statements, made up by triples in the form of “subject-predicate-object”.

Every element of the triple is an atomic, meaningful concept, identified by a URI:

- Subject: resource, identified by a dereferenciable URI (URI allowing the access to the description of a resource – HTTP URI)
- Predicate: property of the resource, identified by a URI (every domain can define property of resources thanks to ontologies)
- Object: resource or literal



Not identified by a URI, but by a data type. For example the object can be a date of birth, that is not identified by an URI, but by the digit model yyyy/mm/dd

RDF in practice

statua

Beni mobili - Beni storici e artistici - Codice ICCD 09 00281988 Visualizza su mappa

Chi
Autore: **Buonarroti Michelangelo**
Condizione giuridica: **proprietà Stato**

Cosa
Tipologia: **Opera e oggetto d'Arte**
Soggetto: **David**
Descrizione: **NR (recupero pregresso)**

Dove
Localizzazione: **Toscana (FI) - Firenze**
Indirizzo: **via Ricasoli, 58/60**
Luogo di conservazione: **Monastero di S. Niccolò di Cafaggio ora Galleria dell'Accademia Galleria dell'Accademia**

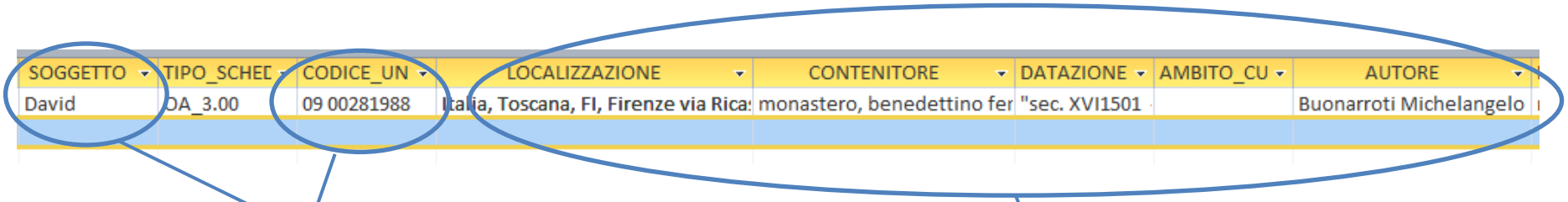
Quando
Datazione: **sec. XVI - 1501 1504**

Come
Materia e tecnica: **marmo bianco di Carrara/ scultura**

Scheda completa

RDF in practice

Granularity



SOGGETTO	TIPO_SCHEI	CODICE_UN	LOCALIZZAZIONE	CONTENITORE	DATAZIONE	AMBITO_CU	AUTORE
David	OA_3.00	09 00281988	Italia, Toscana, FI, Firenze via Rica:	monastero, benedettino fer	"sec. XVI1501		Buonarroti Michelangelo

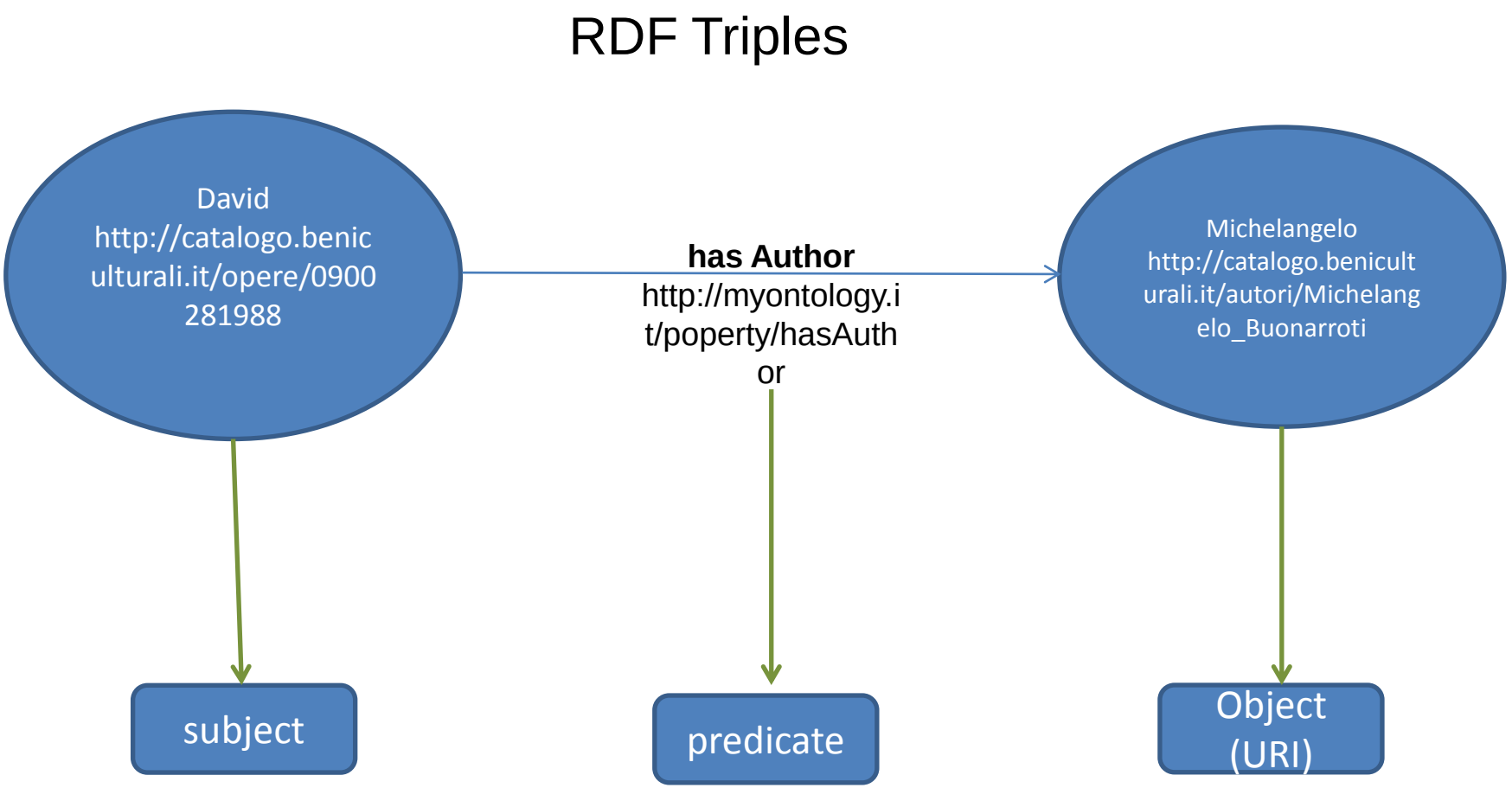
Resource identifier

Resource name

Other features/properties of resource

Every line of the table is a resource
Columns are properties

RDF in practice

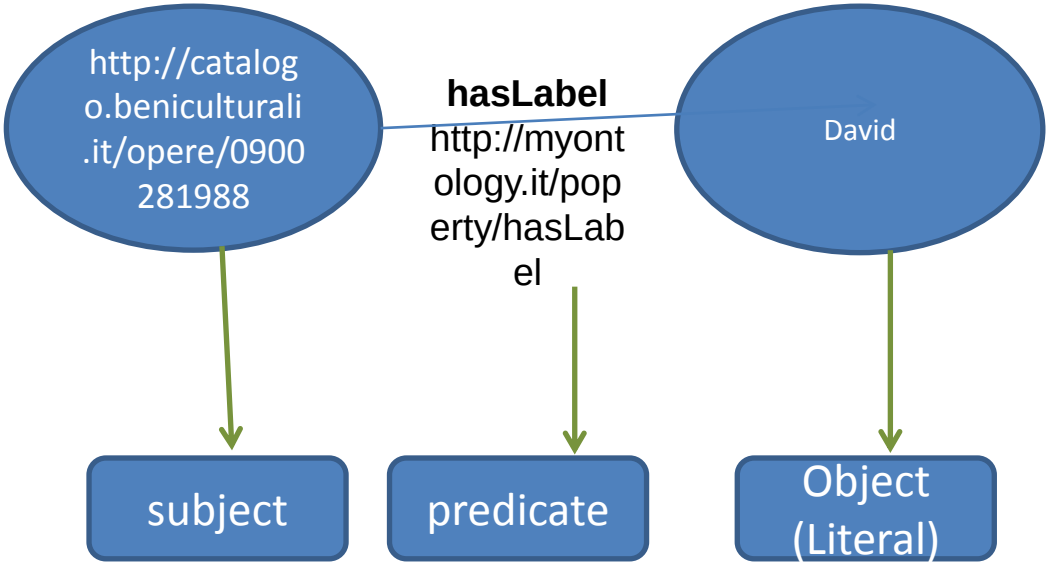


URI importance

Data describes things, persons, places, books, artifacts, institutions, companies, etc.

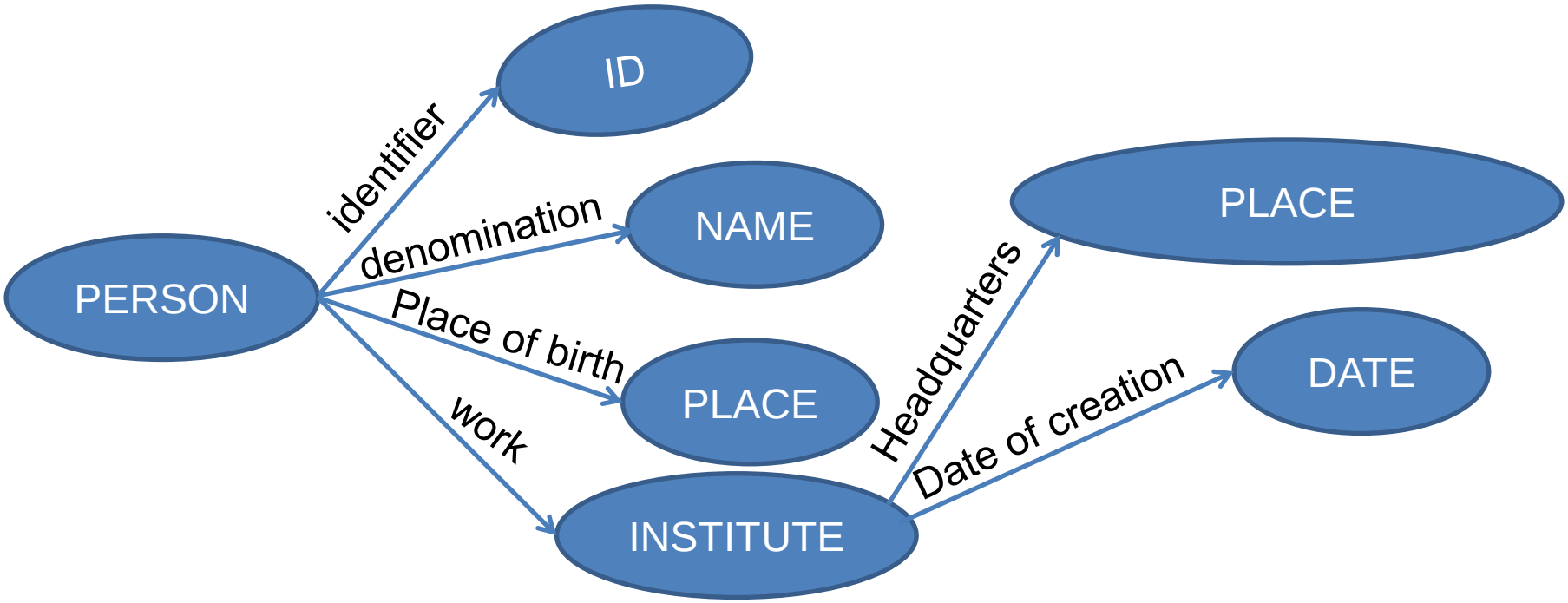
Those things have identifying names (Dante, Palermo, David di Michelangelo). But in **RDF**, those names are only labels and the **URI is the real name identifying the resource.**

URI identifies unambiguously a resource.



The graph

A resource can be described in more than a triple and have different functions



Triples can share object or subject, to form a graph.

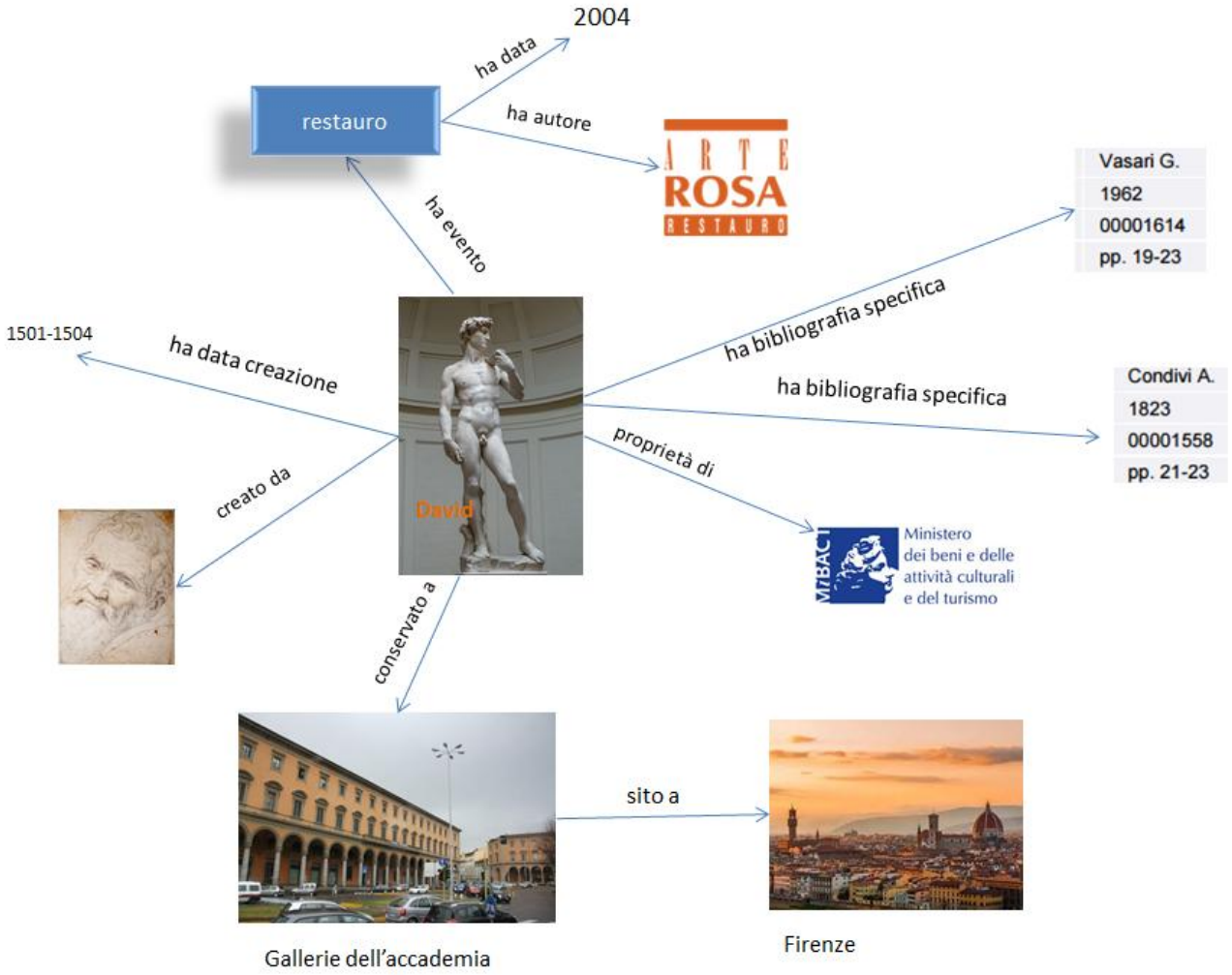
4 rules for Linked Open Data

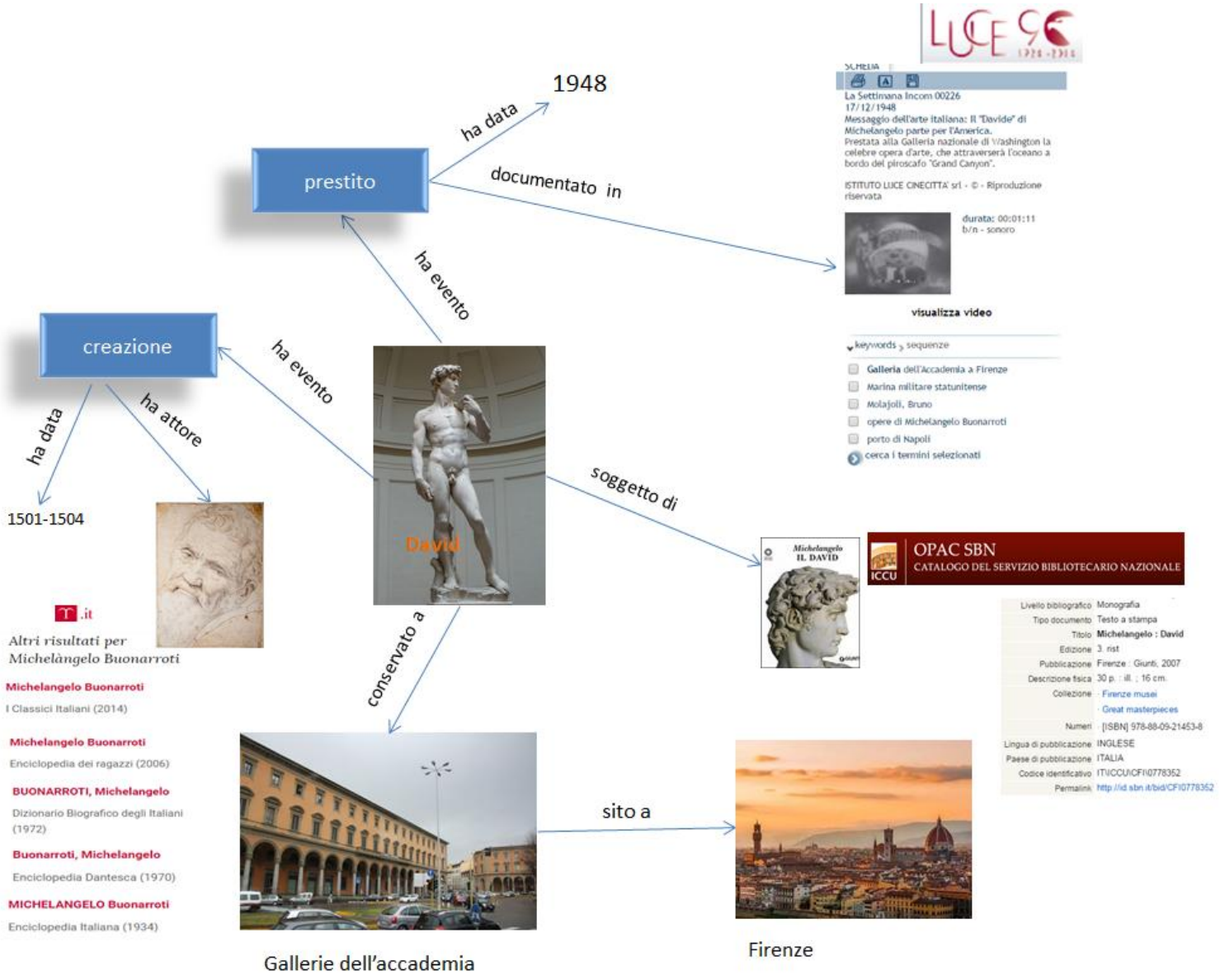
Tim Berners-Lee in 2006 identified four rules to publish *Linked Open Data*:

1. To use **URI** (*Uniform Resource Identifier*) as names of resources
2. To use **HTTP URI** (that is URL),so that it is possible to access the resource via web.
3. To use open standards to describe resources (**RDF and SPARQL**).
4. To include ***link* to other URI**, to promote the discovery of other resources

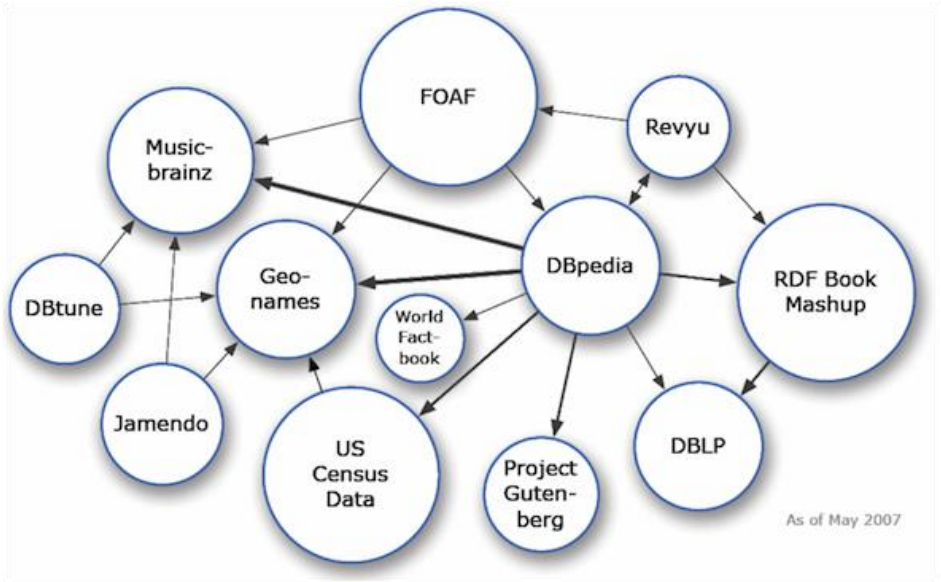
Open data's five stars

Our triple in the web of data



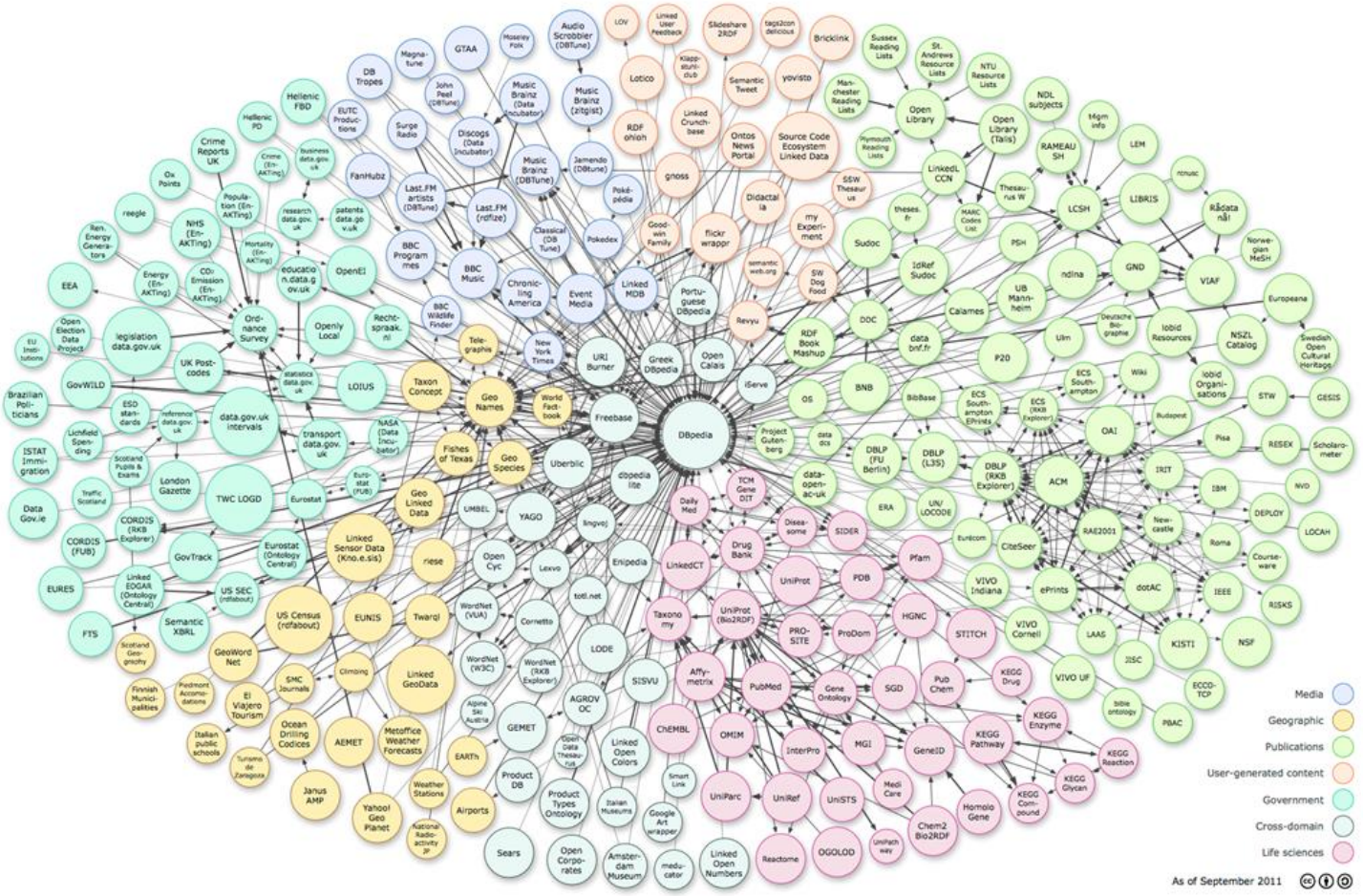

prestito
ha data
1948
documentato in
ha evento
creazione
ha data
ha attore
1501-1504
ha evento
David
soggetto di
conservato a
sito a
Gallerie dell'accademia
Firenze
visualizza video
OPAC SBN
CATALOGO DEL SERVIZIO BIBLIOTECARIO NAZIONALE
Altri risultati per Michelàngelo Buonarroti
Michelangelo Buonarroti
I Classici Italiani (2014)
Michelangelo Buonarroti
Enciclopedia dei ragazzi (2006)
BUONARROTI, Michelangelo
Dizionario Biografico degli Italiani (1972)
Buonarroti, Michelangelo
Enciclopedia Dantesca (1970)
MICHELANGELO Buonarroti
Enciclopedia Italiana (1934)

Linked Open Data Cloud
May 2007

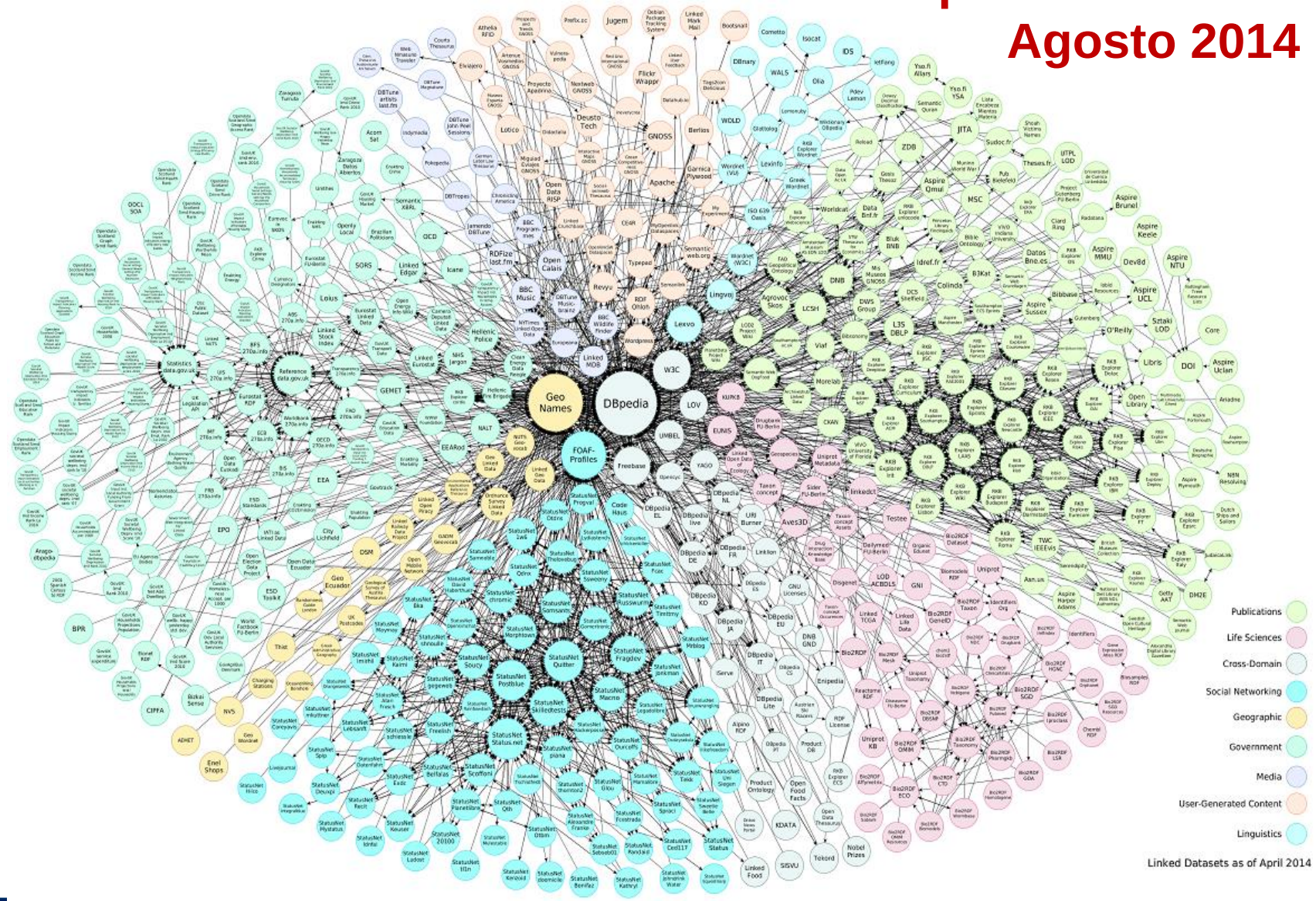


http://linkeddata.org

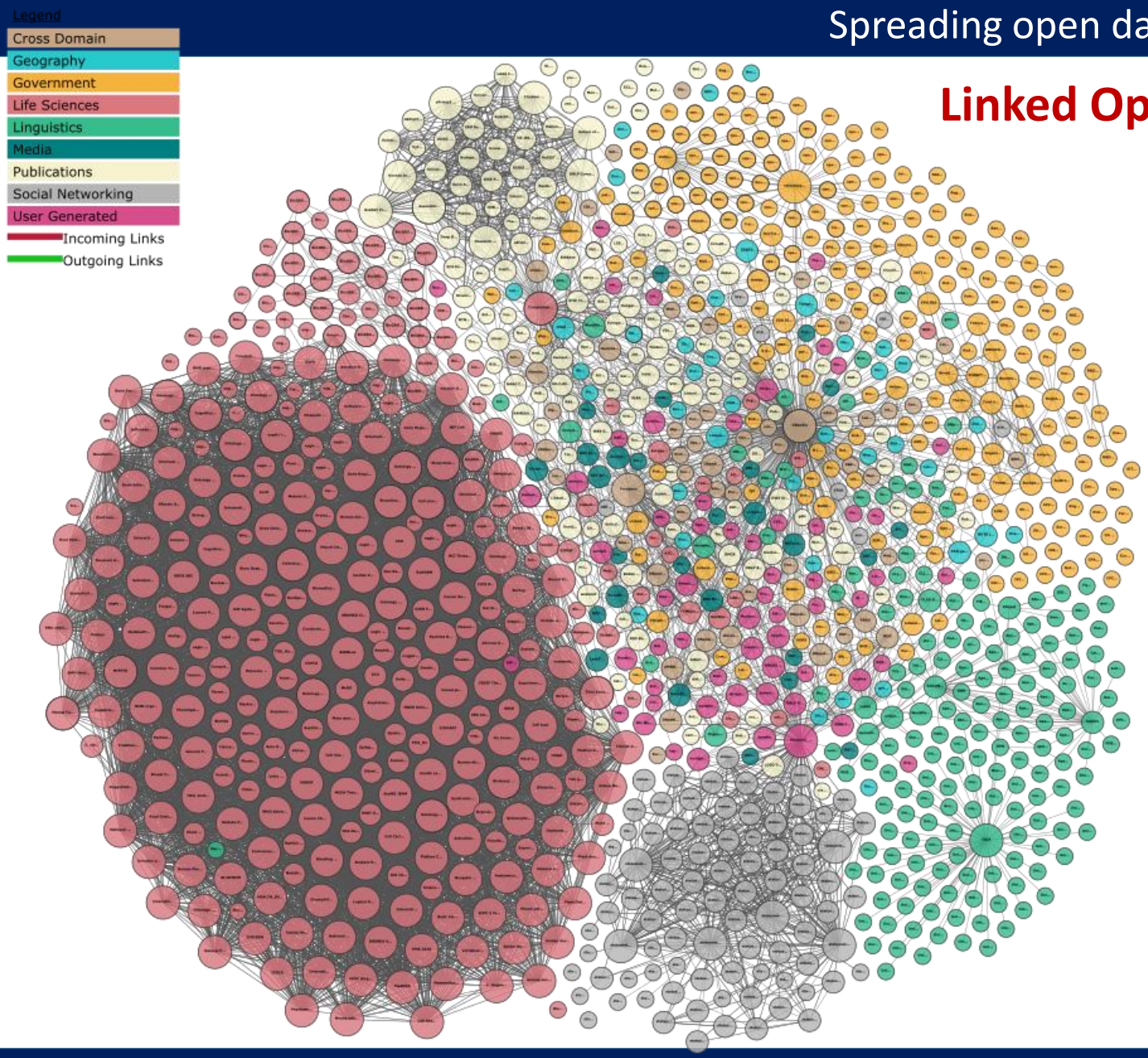
Linked Open Data Cloud September 2011



Linked Open Data Cloud
Agosto 2014



Linked Open Data Cloud
Agosto 2017

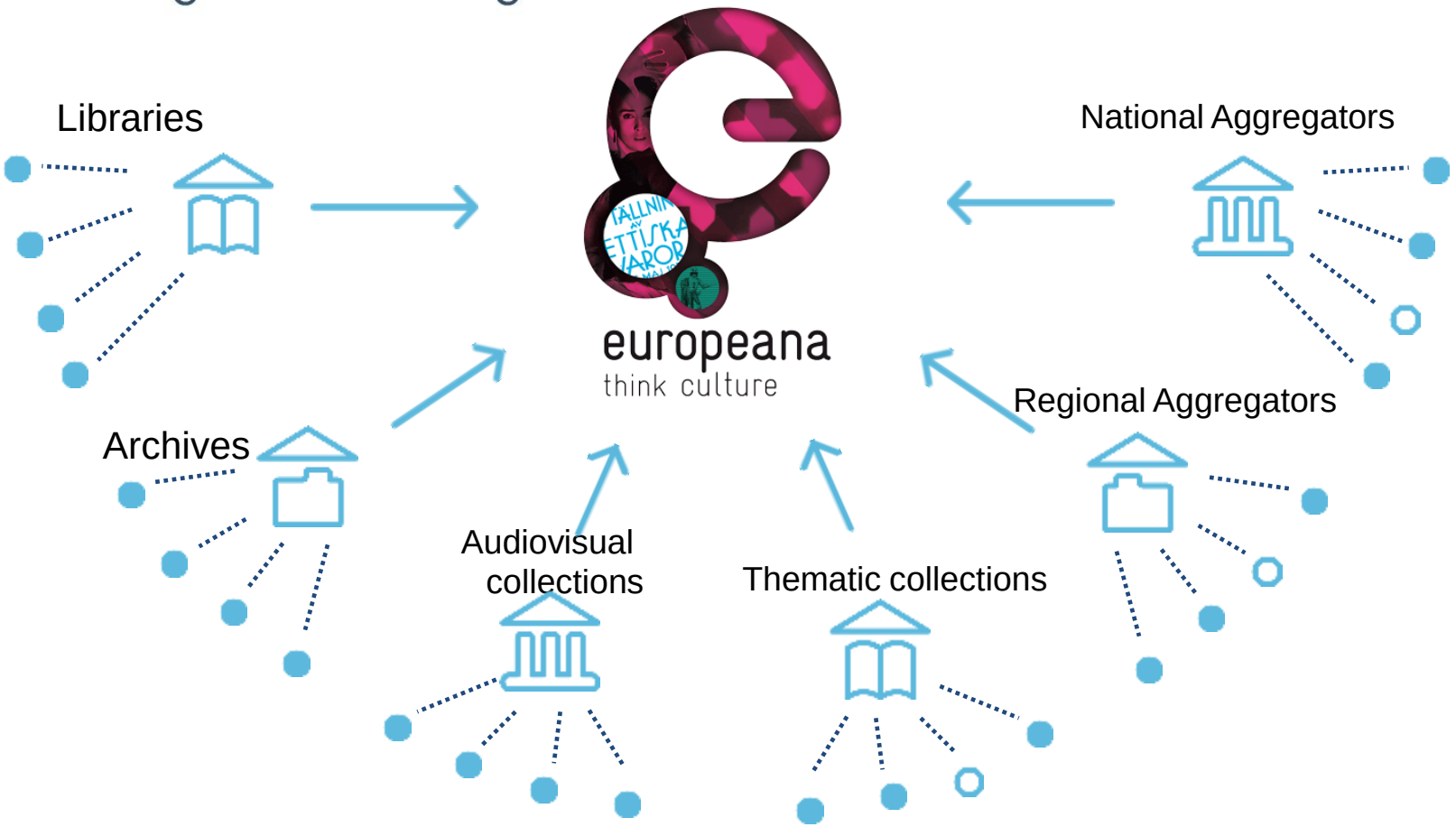


✓ Main experimentations with *linked open data in the* cultural heritage sector

Europeana.eu, Europe's cultural heritage portal

EUROPEANA
connecting cultural heritage

26M objects from 2,200 European galleries, museums, archives and libraries



Open AGRIS

In **1974** FAO set up an initiative called AGRIS to make **information on agriculture research** globally available –> now **4 million of bibliographic records**

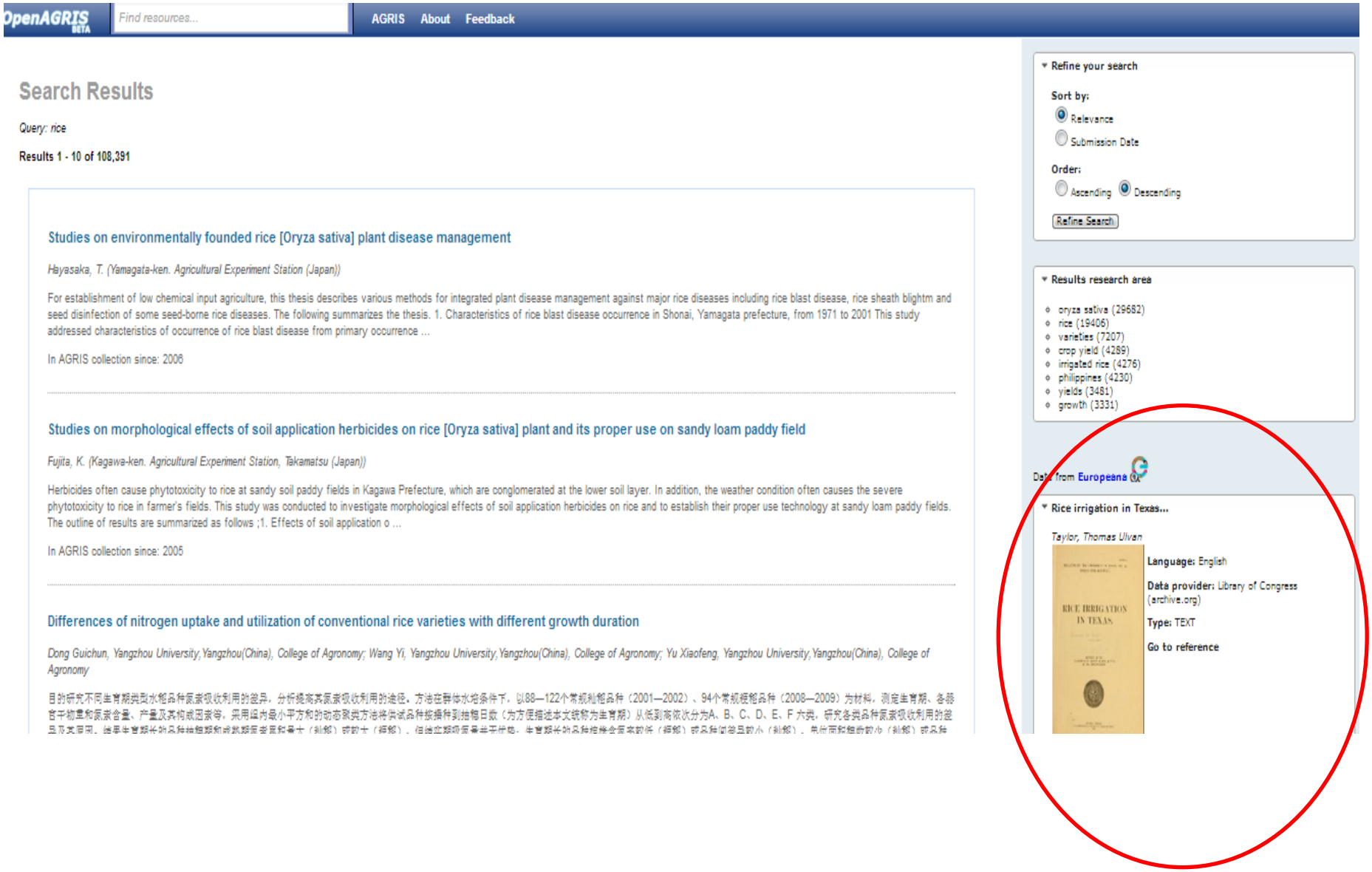
AGRIS bibliographic records sometimes suffered of **lack of information**, like the full text of a document → only 3% of the entire collection had a full text link, so the user had to search Google to find the publication.

Users, and especially researchers, are **interested in the entire content** of a publication and not only in its abstract.

Moreover, lack of information like **connections with related work and related web resources** makes impossible to interlink to other sources of data.

To allow users to **access the fulltext** of a publication and all the information the Web knows about a specific research area in the agricultural domain, OpenAGRIS has been developed, following Linked Open Data principles

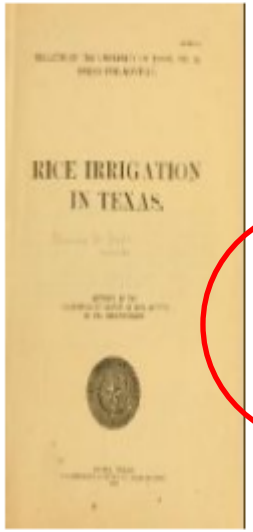
http://agris.fao.org/openagris/


OpenAGRIS BETA
Find resources...
AGRIS
About
Feedback
Search Results
Query: rice
Results 1 - 10 of 108,391
Studies on environmentally founded rice [Oryza sativa] plant disease management
Hayasaka, T. (Yamagata-ken. Agricultural Experiment Station (Japan))
For establishment of low chemical input agriculture, this thesis describes various methods for integrated plant disease management against major rice diseases including rice blast disease, rice sheath blightm and seed disinfection of some seed-borne rice diseases. The following summarizes the thesis. 1. Characteristics of rice blast disease occurrence in Shonai, Yamagata prefecture, from 1971 to 2001 This study addressed characteristics of occurrence of rice blast disease from primary occurrence ...
In AGRIS collection since: 2006
Studies on morphological effects of soil application herbicides on rice [Oryza sativa] plant and its proper use on sandy loam paddy field
Fujita, K. (Kagawa-ken. Agricultural Experiment Station, Takamatsu (Japan))
Herbicides often cause phytotoxicity to rice at sandy soil paddy fields in Kagawa Prefecture, which are conglomerated at the lower soil layer. In addition, the weather condition often causes the severe phytotoxicity to rice in farmer's fields. This study was conducted to investigate morphological effects of soil application herbicides on rice and to establish their proper use technology at sandy loam paddy fields. The outline of results are summarized as follows ;1. Effects of soil application o ...
In AGRIS collection since: 2005
Differences of nitrogen uptake and utilization of conventional rice varieties with different growth duration
Dong Guichun, Yangzhou University,Yangzhou(China), College of Agronomy; Wang Yi, Yangzhou University,Yangzhou(China), College of Agronomy; Yu Xiaofeng, Yangzhou University,Yangzhou(China), College of Agronomy
Refine your search
Sort by:
Relevance
Submission Date
Order:
Ascending
Descending
Refine Search
Results research area
oryza sativa (29682)
rice (19406)
varieties (7207)
crop yield (4289)
irrigated rice (4276)
philippines (4230)
yields (3481)
growth (3331)
Data from Europeana
Rice irrigation in Texas...
Taylor, Thomas Ulvan
RICE IRRIGATION IN TEXAS
Language: English
Data provider: Library of Congress (archive.org)
Type: TEXT
Go to reference

Data from Europeana

▼ **Rice irrigation in Texas...**

Taylor, Thomas Ulvan



Language: English

Data provider: Library of Congress (archive.org)

Type: TEXT

Go to reference

▸ **The greatest of grains. Rice.**

▸ **On the growth of the rice plant, by Shinkichi Suzuki.**

▸ **The storage and germination of wild rice seed.**

▸ **Gibberella fujikuroi (Sawada) Wollenweber, the new parasitical fungus on rice in the Republic of Macedonia**

europeana
think culture

Search | Search | Help

View item at
Library of Congress
(archive.org)

Share

Cite on Wikipedia

Translate details

Rice irrigation in Texas...

Creator: Taylor, Thomas Ulvan,

Publication date: 1902.

Type: Text

Subject: Irrigation; Rice; Texas

Identifier: oai:eu.bhl:BHLUS:ITEMS/000000080460; DLC 05035279

Relation: Rice irrigation in Texas...;
http://www.eionet.europa.eu/gemet/concept/210;
http://www.eionet.europa.eu/gemet/concept/4505;
http://www.eionet.europa.eu/gemet/concept/3313;
http://www.eionet.europa.eu/gemet/concept/7214

Language: English

Publisher: Von Boeckmann, Schutze & co., state printers, Austin, Tex.

Data provider: Library of Congress (archive.org)

Provider: BHL Europe

Providing country: Europe

Auto-generated tags

Search also for:

Title
Rice irrigation in Texas... (1)

Who
Taylor, Thomas Ulvan, (1)

What
Text (4184424)
Irrigation (333)
Rice (789)
Texas (396)

Provider
Library of Congress (archive.org) (5188)
BHL Europe (100561)

Summary | Details | MODS | BibTeX | Endnote

Volumes

(no volume description)

Title

Rice irrigation in Texas...

Related Titles

Series: Bulletin of the University of Texas, no. 16

By

Taylor, Thomas Ulvan,

Genre

Book

Publication info

Austin, Tex., Von Boeckmann, Schutze & co., state printers, 1902.

Subjects

Irrigation , Rice , Texas

DOI

http://dx.doi.org/10.5962/bhl.title.35260

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Contributing Library:
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07/23/2009

View Book

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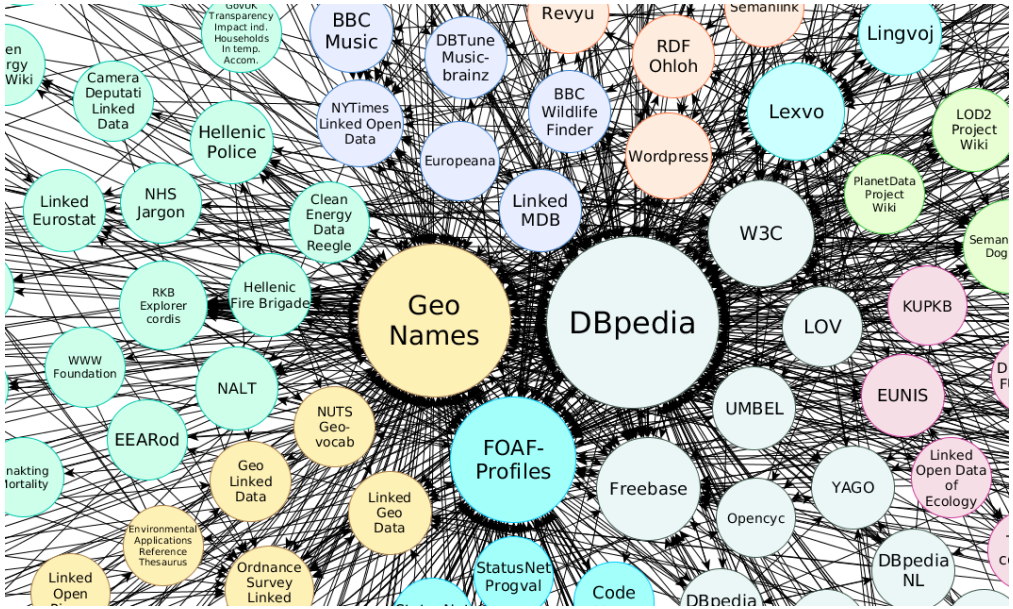
Dbpedia at the center of linked data cloud



→ DBPedia is one of the main nodes of the current ***linked data cloud***

→ Using its **URI** is considered as **authoritative reference**

Ontologies: ArCo

Defining ontology

“a specification of a conceptualization”

T. R. Gruber

A conceptualization is a formal representation of a cluster of knowledges: it is **a cluster of objects, concepts and relations between them** belonging to a **particular area of study (domain)**.

A conceptualization is an **abstract and simplified representation** of a **particular domain that we want to represent for any purpose**.

Defining ontology

An ontology has a common language	**syntax**
The meaning of the symbols and expressions in an ontology is clear	**semantics**
Symbols and expressions with similar semantics are grouped in classes	**conceptualization**
Concepts are organized in a hierarchical way	**taxonomy**
Implicit knowledge can be made explicit	**reasoning**

Defining ontology

An ontology is a **formal model** representing a **knowledge domain**, according to specific requirements. It is used to describe the **semantic of data** with an **established terminology** and it can be **reused** in other projects with similar goals

To define an ontology we need:

1. To collect requirements
2. To **define classes**
3. To **organize** classes in a taxonomic **hierarchy** (subclasses-superclasses)
4. To define **properties and describe restrictions** for each of them

The agreement with CNR

Started from Dicember 2014, the agreement defines cooperation between MIBAC and CNR (Laboratorio di Tecnologie Semantiche or STLab) to:

- ✓ Model place of culture/events data according to paradigm of Linked Open Data
- ✓ Find out technical solutions for the integration and rationalization of databases of the cultural heritage (promotion and protection)
- ✓ Cooperate in spreading the reuse of open data and in defining guidelines for the promotion of cultural heritage

The DB Unico 2.0

✓ MIBAC manages **"Places of culture"** and **"Cultural events databases**, containing information on:

- About 8000 places (archaeological areas and parks, monuments, monumental complex, other permanent structures for the public access of heritage)
- Cultural events (exhibitions, conferences, seminars, catalogue presentations, ecc.) organized by the Minister and linked institutions

Database features:

- ***open-data*** format (XML),
- **data structure** available in http://www.beniculturali.it/mibac/xsd/MibacSchema-1.2.xsd)
- **open license** CC-BY 3.0

Datasets

Luoghi della cultura statali

Estratto dal database dei luoghi della cultura (DBUnico 2.0) relativo ai luoghi della cultura statali.

Contenitori fisici

Dataset relativo alle schede ICCD per i contenitori fisici, entità che rappresentano "nodi di aggregazione" di beni culturali mobili e che indicano il luogo fisico (un edificio, un complesso architettonico o uno spazio territoriale) dove è collocato un bene.

Anagrafe delle biblioteche italiane

Dataset dell'Anagrafe delle biblioteche italiane, rilasciato dall'Istituto Centrale per il Catalogo Unico (ICCU)

Archivi di Stato

Dataset dell'Anagrafe degli Archivi di Stato, rilasciato dall'Istituto Centrale per gli Archivi (ICAR)

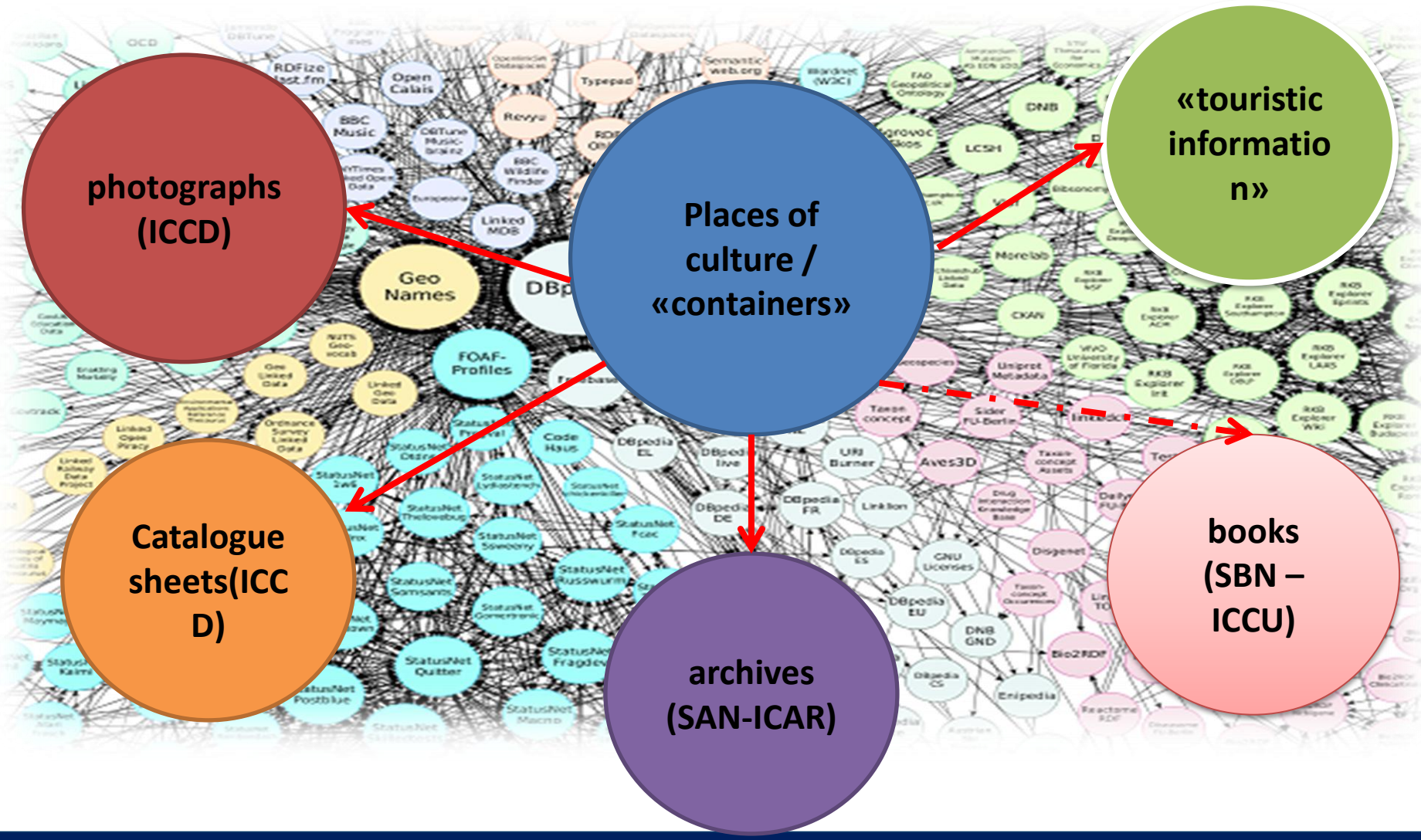
Archivio schede di catalogo

E' l'inventario "topografico" dell'archivio cartaceo delle "vecchie" schede di catalogo utilizzate per il rilevamento dei beni immobili architettonici ed archeologici e per i beni mobili artistici, storici ed archeologici, pervenuto all'allora l'Ufficio Centrale per il Catalogo nel 1969. Dataset rilasciato dall'Istituto Centrale del Catalogo e della Documentazione (ICCD)

Fondo MPI

Set minimo di dati dell'Archivio fotografico della Direzione generale antichità e belle arti del Ministero della pubblica istruzione, acquisito dall'ICCD. Dataset di test rilasciato dall'Istituto Centrale del Catalogo e della Documentazione (ICCD)

Aim: linked (MIBAC) data



Result: Cultural-ON

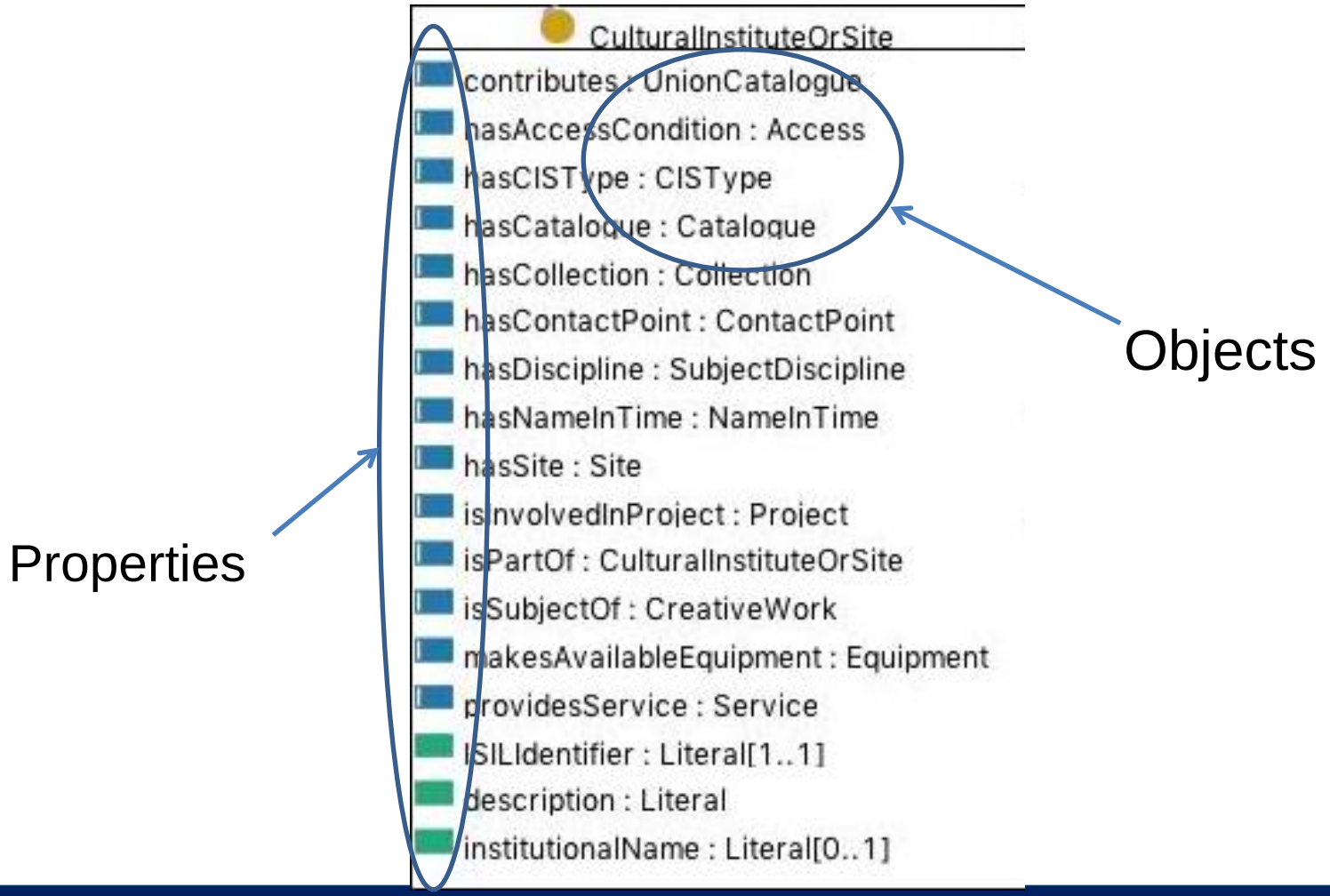
- ✓ **Multilingual** ontology, not to limit its reuse to national boundary
  - Available in English and Italian

- ✓ Definition of classes and properties to point out **essential elements** of Institutes and Places of Culture, as they are defined by the Codice dei Beni Culturali

- ✓ **In compliance** with recommendations of **AgID guidelines** about semantic interoperability through Linked Open Data

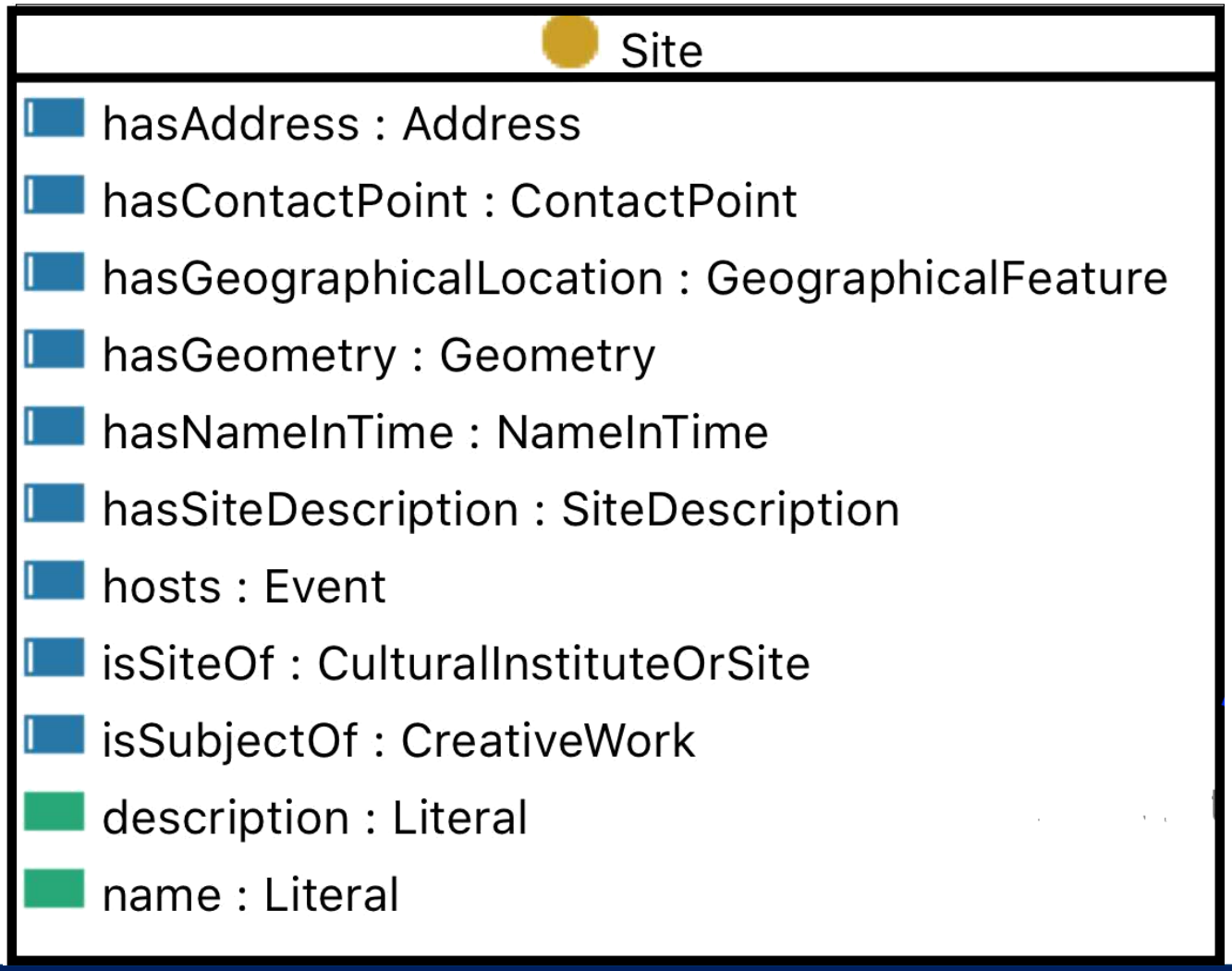
Main elements of the Ontology

Main class, modeling the concept of **Cultural Institute or Site (CIS)**



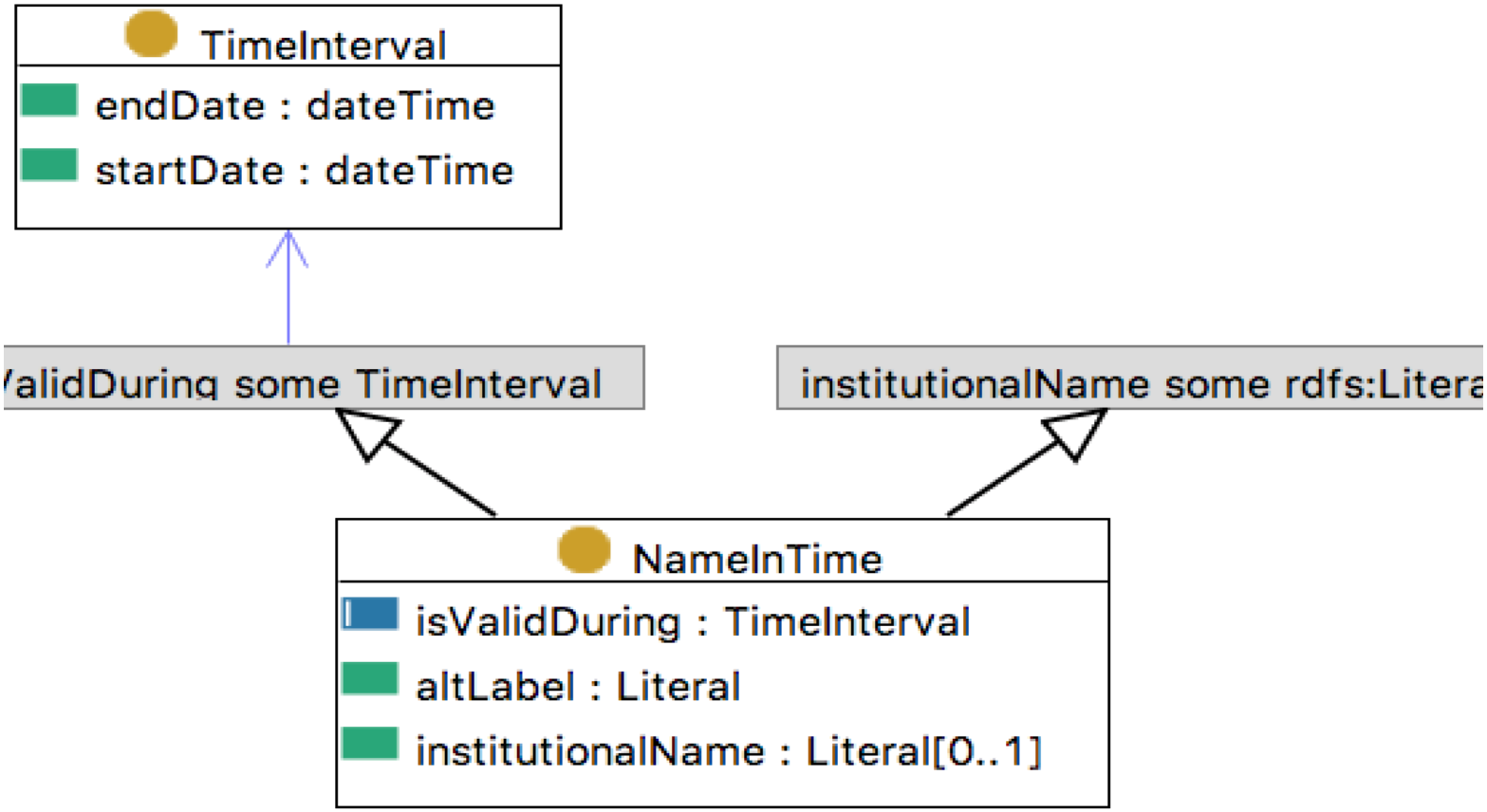
Site

Location
of a place
or an event



Name

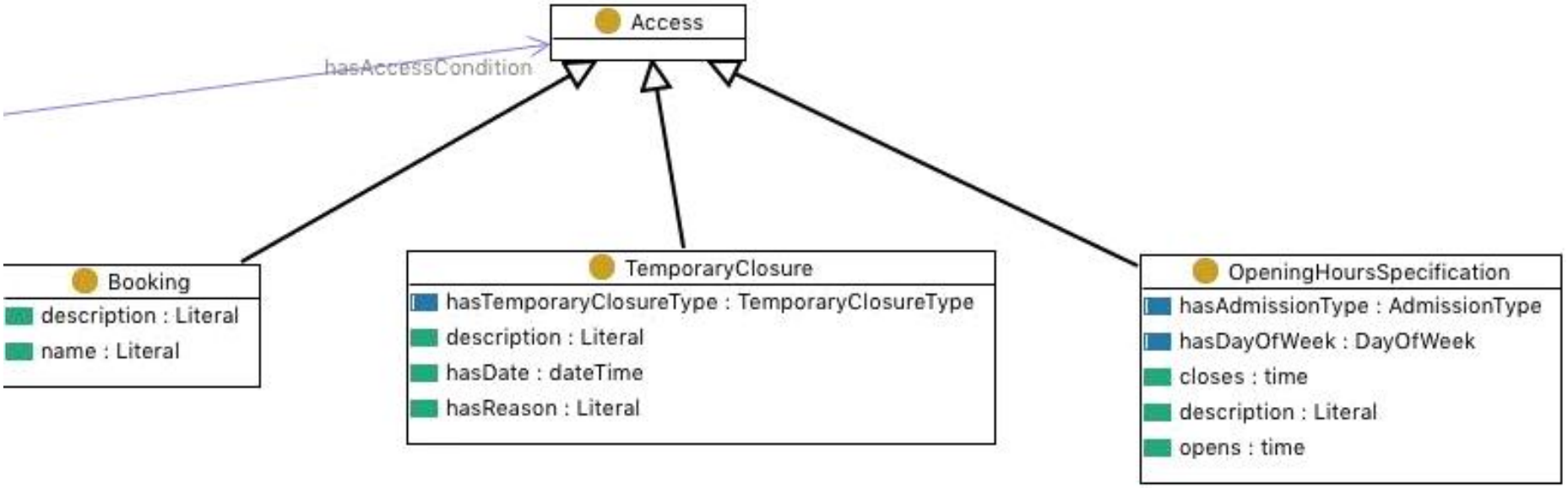
The **name** of the place can **vary** during the **time**



Access restrictions

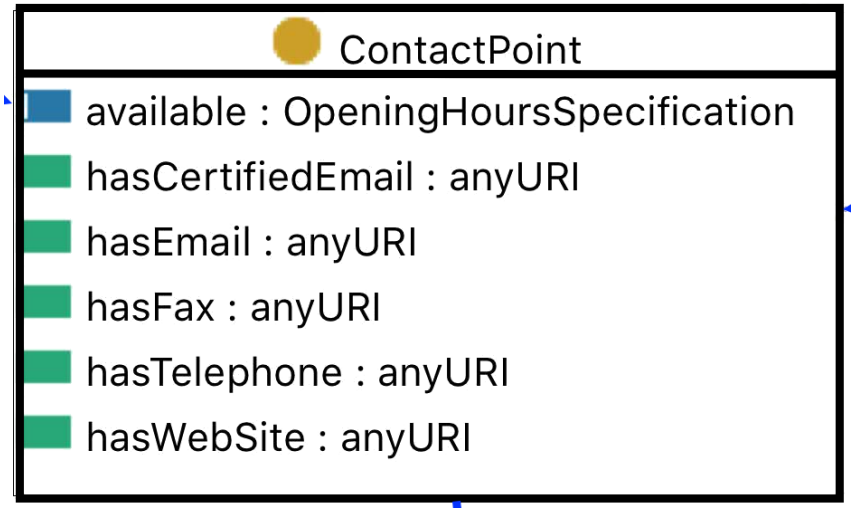
✓**Information** about place **access**

- E.g., type of booking, temporary closure, opening hours , type of access, statistics on



Contact point and services

Contact point of the place/headquarters of cultural place/event



Services offered by the cultural place

Tickets

includes

Offers

ha come super-classi

include[op] **some** Biglietto[c]

ha validità[op] **only** Validità[c]

descrizione[dp] **only** literal

è nel dominio di

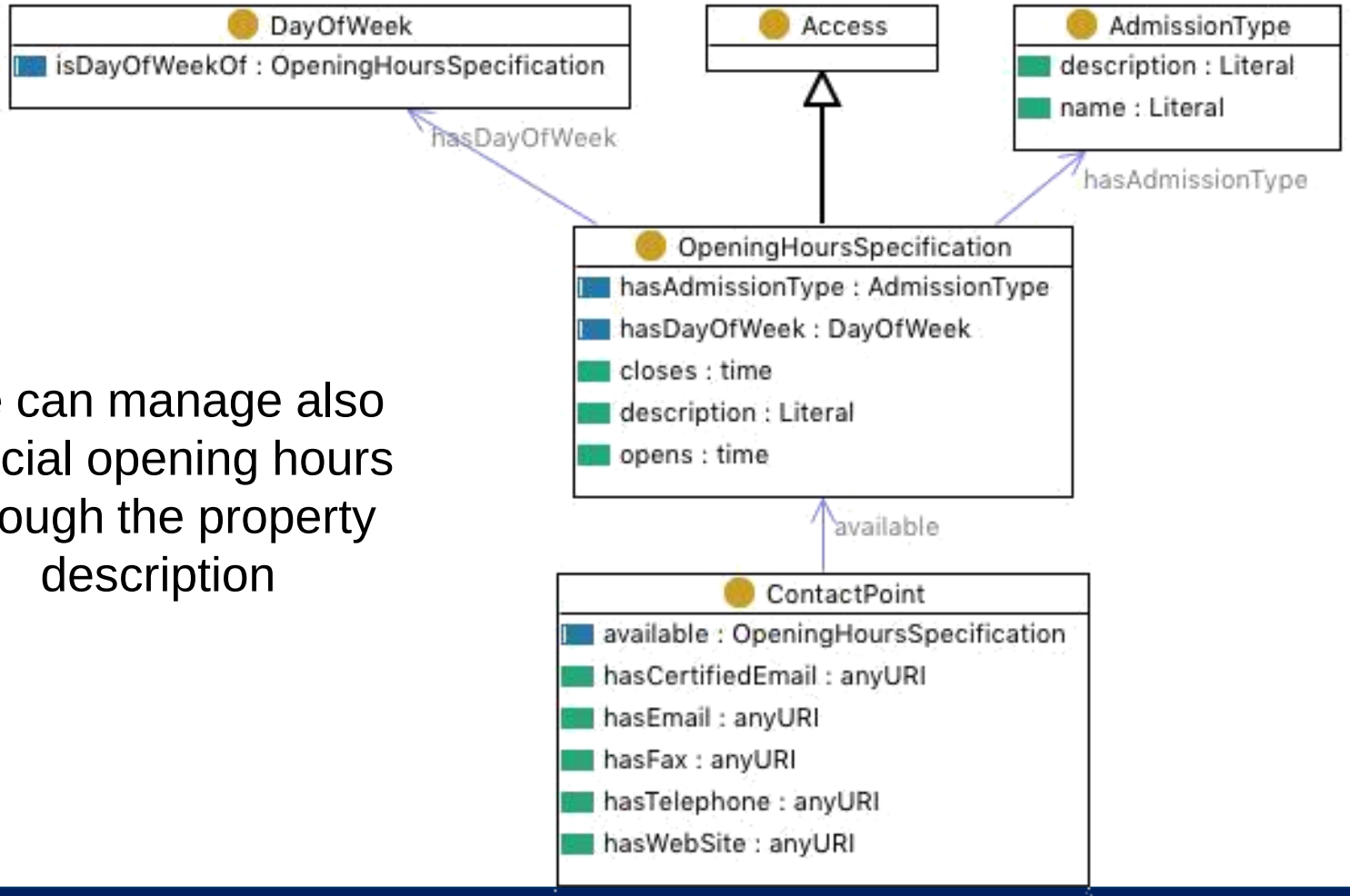
ha specifica di prezzo [op], ha utente eligibile[op], include[op]

è nel codominio di

offre[op]

Opening hours

- ✓ Management of **normal opening hours,** used for Events, Places of Cultures and for their contact point



We can manage also special opening hours through the property description