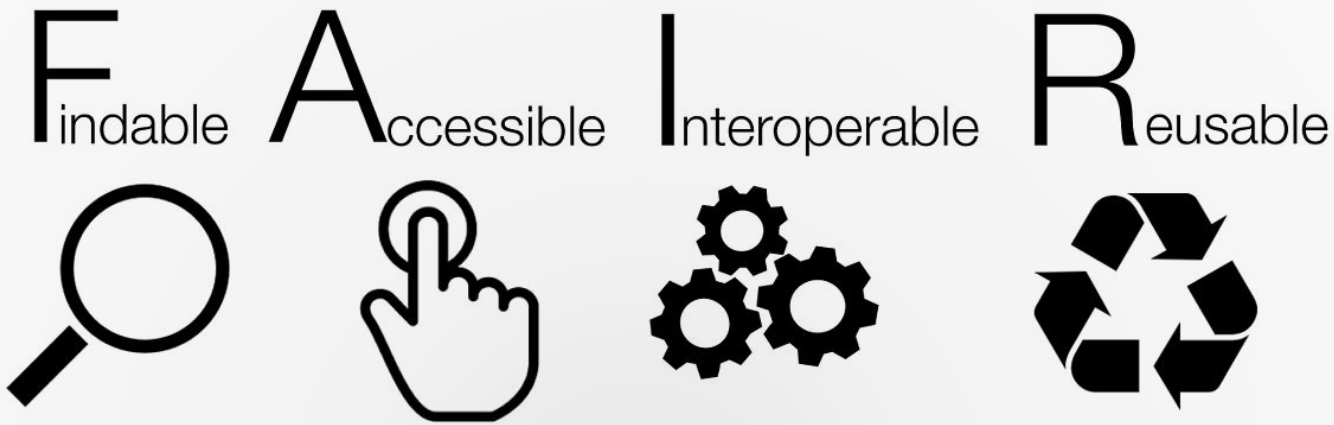
Décrire et Publier des jeux de données sur le web: vocabulaires, catalogues, portails…

ANF APSEM2018 : Apprentissage et sémantique

Toulouse, 12-15 novembre 2018

F. Michel
Université Côte d'Azur, CNRS, Inria, I3S, France



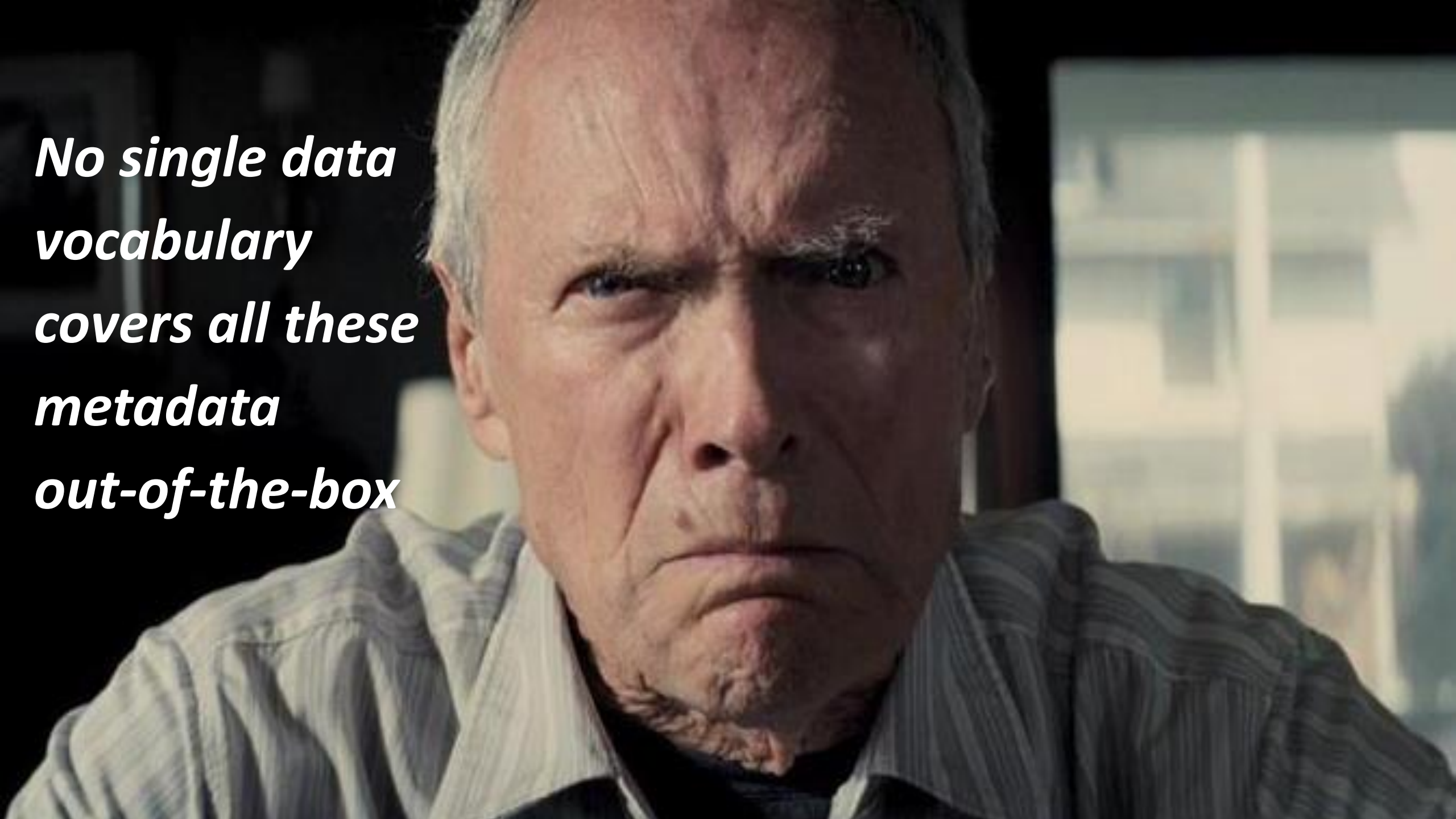
*Making datasets **FAIR***

*requires quality, comprehensive **metadata***

*published in public **catalogues***

Metadata are the key to “FAIRness”

Context	Identification, authors/organizations, dates, version, reference articles, funding, reuse conditions (licenses, rights), coverage: time, space, topics
Access	Format, structure, location (download), query methods, protocols
Interpretation	What do the data represent? What concepts, entities, semantics? Reference vocabularies, dimensions, variables, time granularity, units (cm or inches, left/right)…
Provenance	Acquired with which equipment, parameters, protocols? Derived from which dataset? With which processing? Dataset-level or entity-level provenance
Statistics	Number of triples per property of class, links to other datasets…
…	


No single data vocabulary covers all these metadata out-of-the-box

Vocabularies to describe datasets and dataset catalogues

Standards about metadata and how to us them

About metadata

DCAT: Data Catalog Vocabulary

VOID: Vocabulary of Interlinked Datasets

Schema.org: Dataset and DataCatalog

About how to use metadata

HCLS: Health Care & Life Sciences Dataset Profile

DCAT, Data Catalog Vocabulary

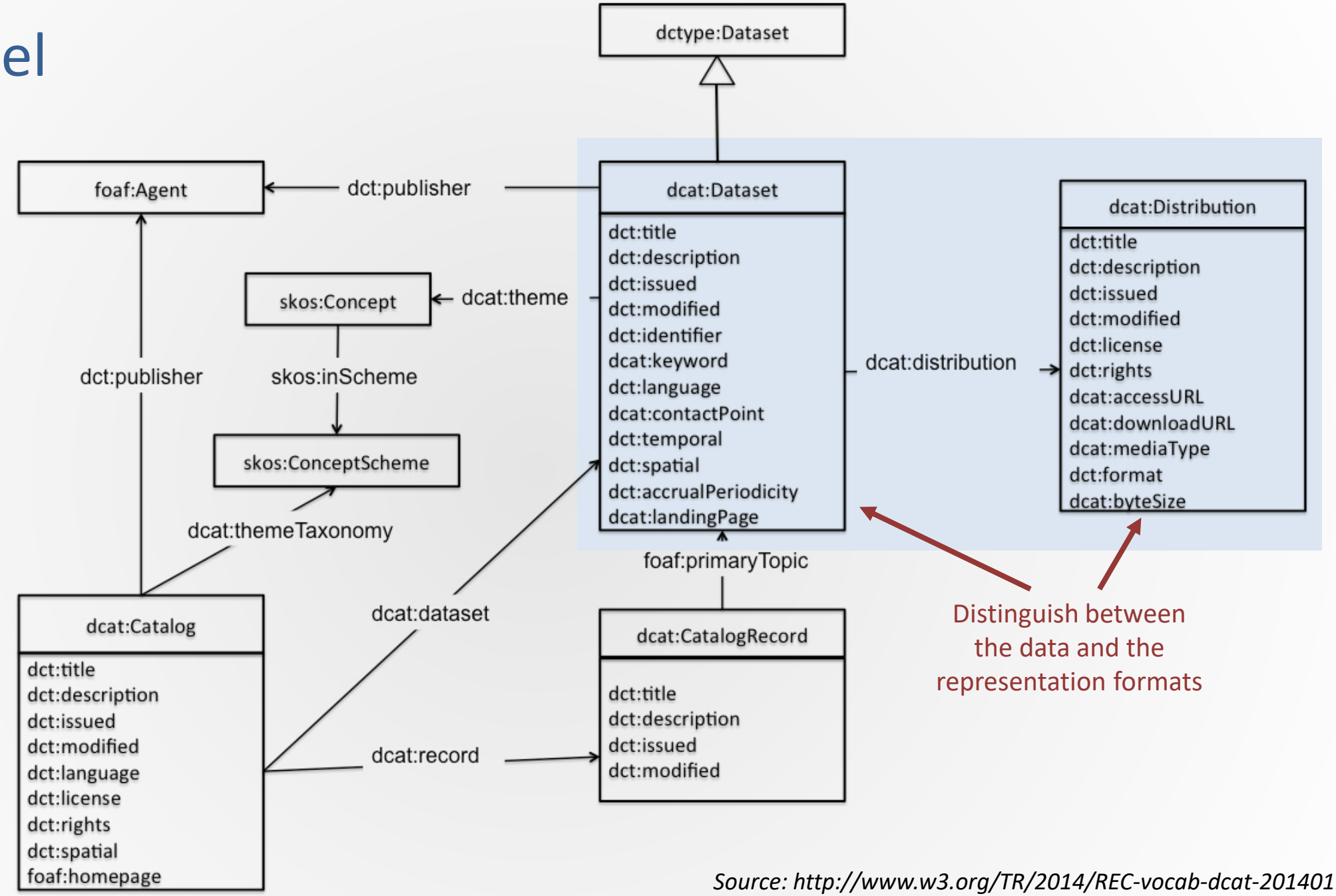
Describe any dataset, in any format, standalone or in a catalog

Describe any catalog of datasets

Facilitate interoperability between catalogs published on the web

http://www.w3.org/TR/2014/REC-vocab-dcat-20140116/

DCAT model



Source: http://www.w3.org/TR/2014/REC-vocab-dcat-20140116/

DCAT limitations: partial metadata coverage

- ✘ No versioning
- ✘ No properties for provenance, organizations, projects, funding, interpretation…

Yes, but DCAT is just a framework:

> *“Other complementary vocabularies may be used (…) to provide more detailed format-specific information”*
>
> *(from DCAT recommandation)*

DCAT is extensible with *Application Profiles*

- DCAT-AP: DCAT profile for data portals in Europe

"(…) enable cross-data portal search of data sets and make public sector data better searchable across borders and sectors"

(https://joinup.ec.europa.eu/solution/dcat-application-profile-data-portals-europe)

- Europe: DCAT-AP-IT, DCAT-AP-NO, DCAT-AP.de, TransportDCAT-AP, StatDCAT-AP
- RING DCAT extension: agriculture, agrifood
- BotDCAT-AP: datasets for Chatbot Systems
- …

At DCAT 1.1 will fix many limitations (2nd Q 2019)

Draws on the experience of DCAT,
the multiple use cases and Application Profiles

Multiple extensions:

- Versioning
- Qualitative information
- Formal description (coverage, interpretation…)
- …

https://w3c.github.io/dxwg/ucr/

schema.org

Collaborative community project led by:

Google YAHOO! Bing Yandex

Define a common vocabulary to **markup web pages**

- Make data understandable to search engines
- Improve discoverability, ranking
- Lightweight descriptions to allow for summarizations

Markup formats

JSON-LD

microformats

RDFa

Microdata

schema.org

Home Schemas Documentation

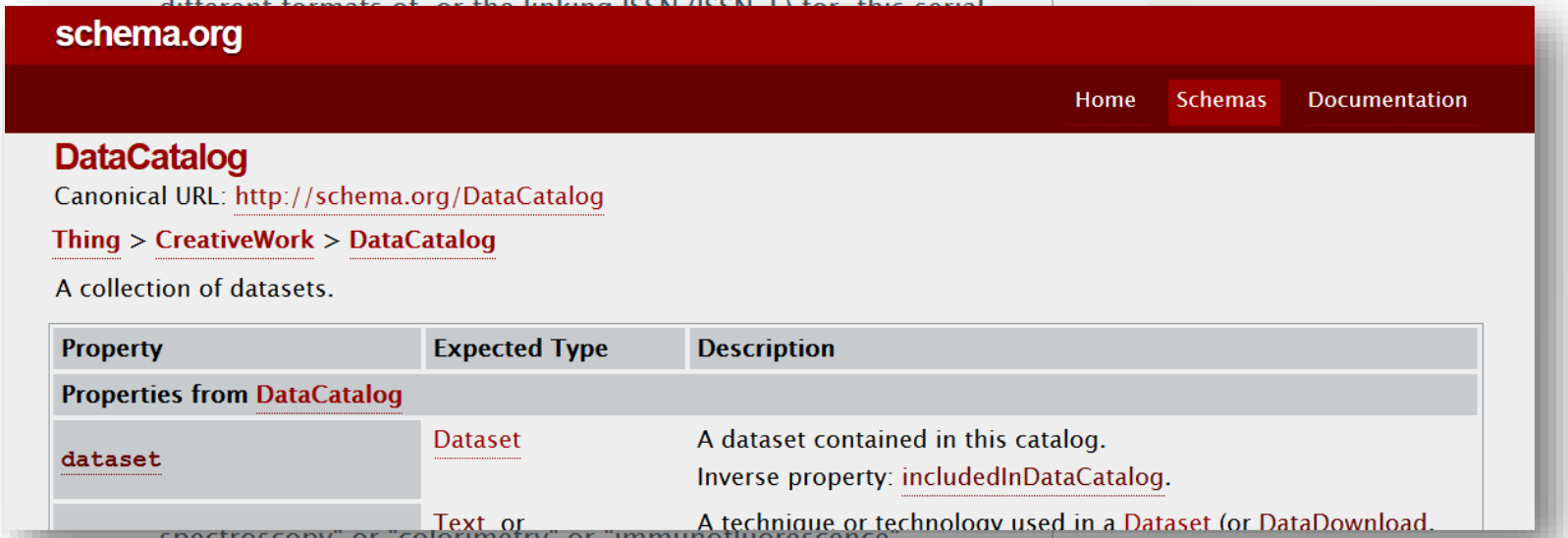
Dataset

Canonical URL: http://schema.org/Dataset

Thing > CreativeWork > Dataset

A body of structured information describing some topic(s) of interest.

Property	Expected Type	Description
Properties from Dataset		
distribution	DataDownload	A downloadable form of this dataset, at a specific location, in a specific format.
includedInDataCatalog	DataCatalog	A data catalog which contains this dataset. Supersedes catalog, includedDataCatalog. Inverse property: dataset.
issn	Text	The International Standard Serial Number (ISSN) that identifies this serial publication. You can repeat this property to identify
measurementTechnique	Text or URL	spectroscopy" or "colorimetry" or "immunofluorescence".



Not as comprehensive as DCAT, but benefits from large adoption of schema.org

VOID: Vocabulary of Interlinked Datasets

*"VOID is an RDF Schema vocabulary for expressing metadata **about RDF datasets**"*

(from VOID recommandation)

General metadata

Terms from Dublin Core, FOAF: topics, web page, contacts, license, ~~version~~…

Access metadata

Data dump, RDF serialization formats, SPARQL endpoint, example

Structural metadata

URIs scheme, vocabularies, statistics (no. triples, properties, classes, subjects, objects), dataset partitions, root resource

Links from/to other datasets

No. link triples, link predicates (e.g. owl:sameAs, skos:exactMatch, owl:equivalentClass)

http://www.w3.org/TR/2011/NOTE-void-20110303/

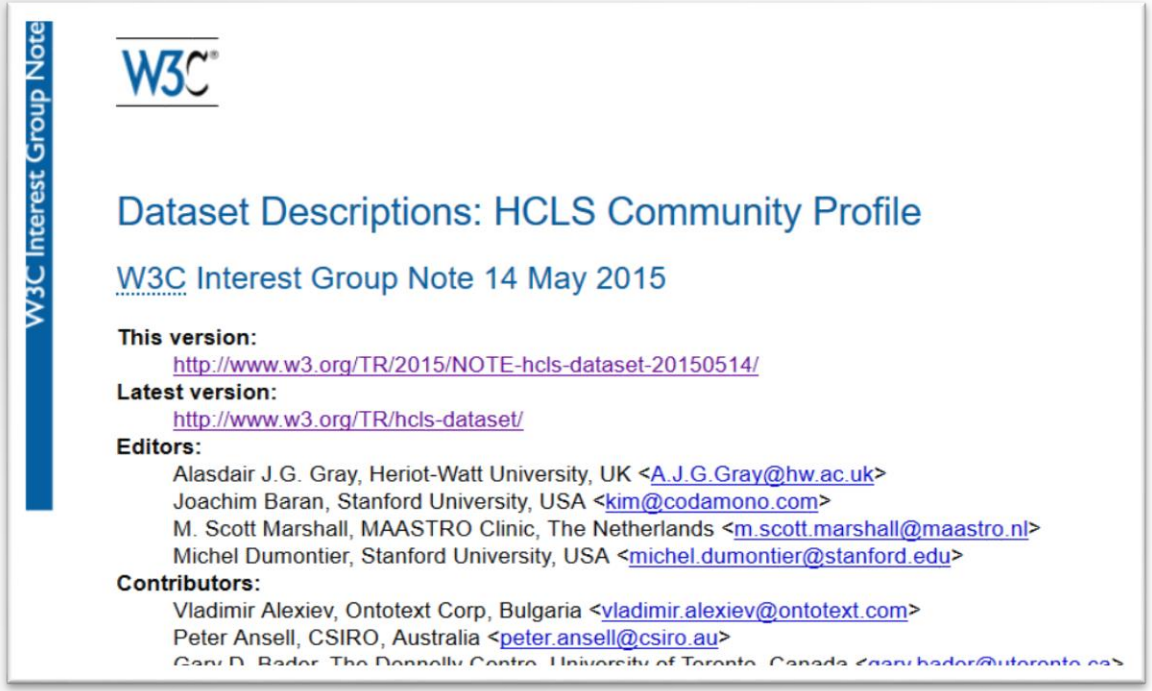
Health Care and Life Sciences Profile (HCLS)

“Develop a guidance note for reusing existing vocabularies to describe datasets with RDF”

(Michel Dumontier, https://www.slideshare.net/micheldumontier/w3c-hcls-dataset-description)

Consensus among participating stakeholders on the RDF description of HC and LS datasets

Detailed requirements have been drawn from a wide range of use cases


W3C Interest Group Note

W3C

Dataset Descriptions: HCLS Community Profile

W3C Interest Group Note 14 May 2015

This version:
http://www.w3.org/TR/2015/NOTE-hcls-dataset-20150514/
Latest version:
http://www.w3.org/TR/hcls-dataset/
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Vocabularies used in HCLS

Data Catalog (DCAT)
Citation Typing Ontology
Dublin Core Types/Terms
Friend-of-a-Friend (FOAF)
Collection Description Frequency Vocabulary
Identifiers.org vocabulary (IdoT)
Lexical Vocabulary (Lexvo)
Provenance Authoring and Versioning ontology (PAV)
PROV Ontology
Schema.org
SPARQL Service Description (SD)
Semantic science Integrated Ontology (SIO)
Vocabulary of Interlinked Datasets (VOID)

Organize, host, search datasets with data portals

CKAN, the world's leading Open Source data portal platform

CKAN is a powerful data management system that makes data accessible – by providing tools to streamline publishing, sharing, finding and using data.

WHAT IS CKAN?

CKAN is aimed at data publishers (national and regional governments, companies and organizations) wanting to make their data open and available. Learn more

WHY CKAN?

CKAN is open source, free software. This means that you can use it without any license fees, and you retain all rights to the data and metadata you enter.

HOW TO CONTRIBUTE?

CKAN version releases are coordinated, tested and deployed by the tech team. Being an open source project, CKAN and its extensions are developed by a large community of people.

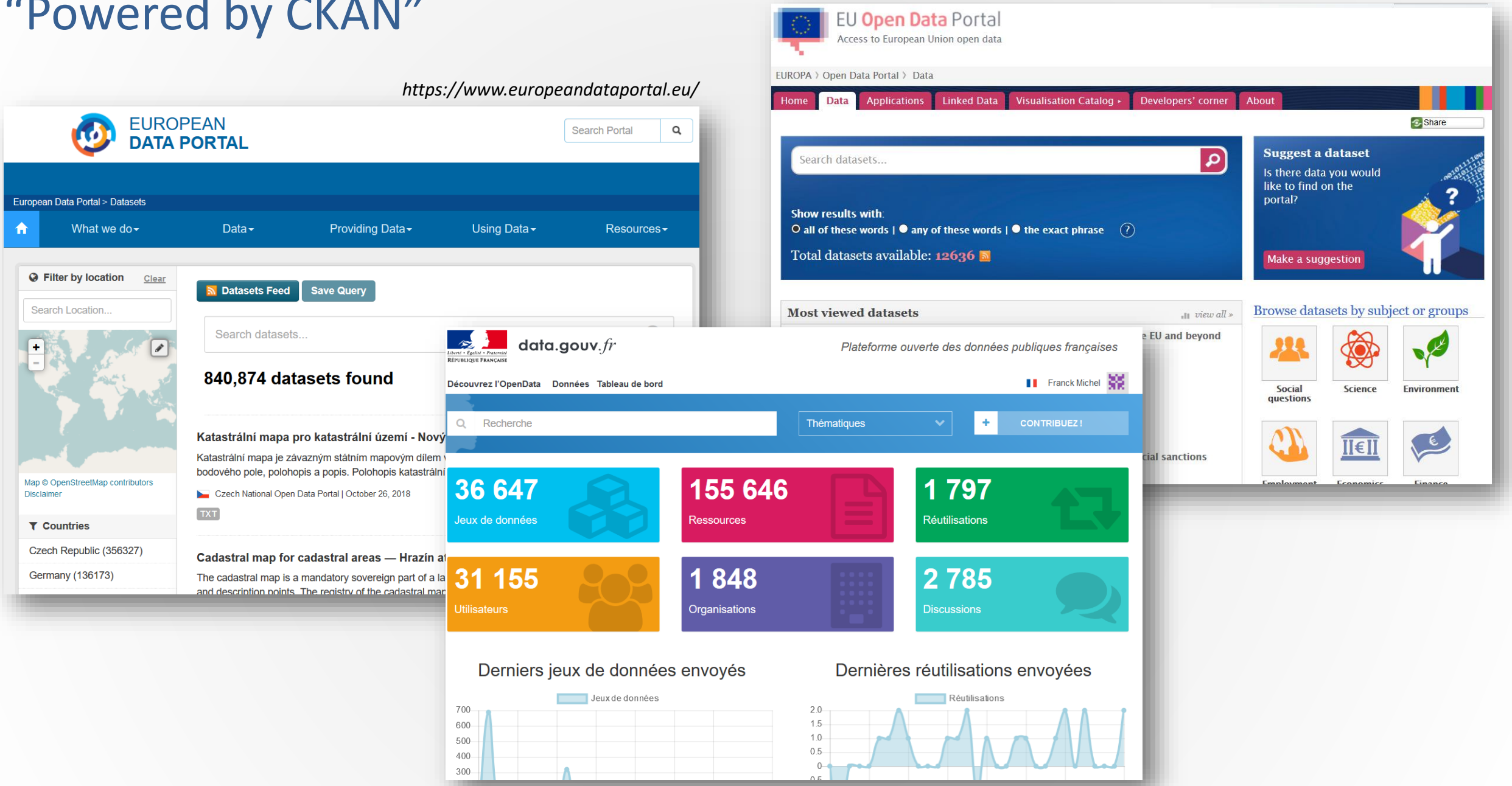
CKAN Data Management Platform

- Functions: allow to publish, share, search datasets
- Faceted search by topics, publishers, keywords, formats, languages…
- 197 instances as of Oct. 2018 (https://ckan.org/about/instances/)
  - 93 in Europe, 39 national government instances
  - data.gov.*
- Native exporting of records in DCAT and harvesting DCAT records from other catalogues

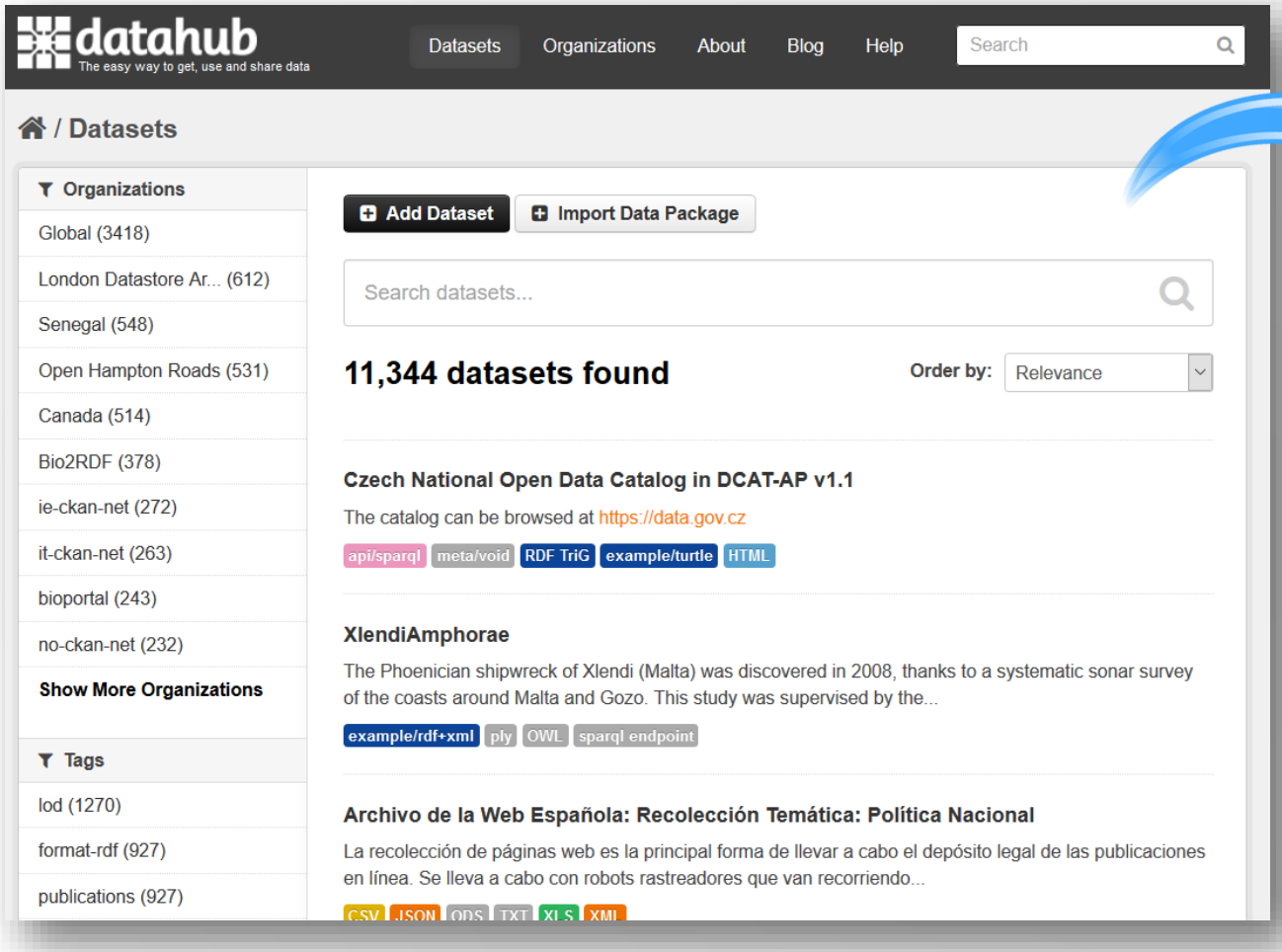
“Powered by CKAN”

http://data.europa.eu/euodp/en/data/

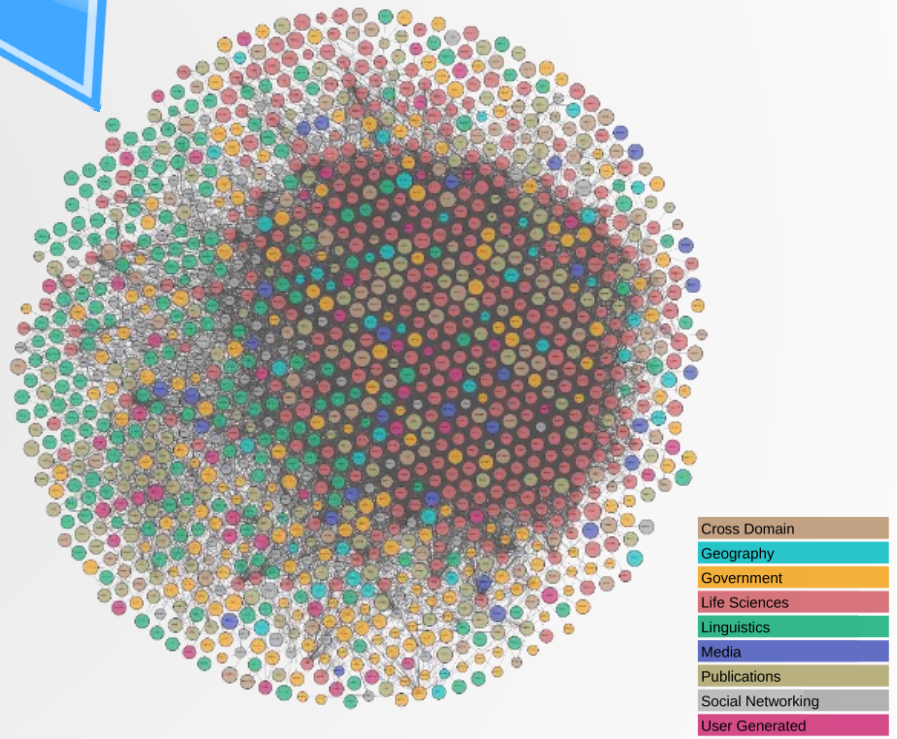
https://www.europeandataportal.eu/



“Powered by CKAN”



Datahub.io: Source for the **Linked Open Data** cloud



Linking Open Data cloud diagram, 2018. J.P. McCrae, A. Abele, P. Buitelaar, A. Jentzsch, V. Andryushechkin and R. Cyganiak. http://lod-cloud.net/

https://www.blog.google/products/search/making-it-easier-discover-datasets/

Google

The Keyword Latest Stories Product Updates Company News

SEARCH

Making it easier to discover datasets

Natasha Noy
Research Scientist, Google AI

Published Sep 5, 2018

In today's world, scientists in many disciplines and a growing number of journalists live and breathe data. There are many thousands of data repositories on the web, providing access to millions of datasets; and local and national governments around the world publish their data as well. To enable easy access to this data, we launched Dataset Search, so that scientists, data journalists, data geeks, or anyone else can find the data required for their work and their stories, or simply to satisfy their intellectual curiosity.

Similar to how Google Scholar works, Dataset Search lets you find datasets wherever they're hosted, whether it's a publisher's site, a digital library, or an author's personal web page. To create Dataset search, we developed guidelines for dataset providers to describe their data in a way that Google (and other search engines) can better understand the content of their pages. These guidelines include salient information about datasets: who created the dataset, when it was

https://toolbox.google.com/datasetsearch

Rechercher

À propos

F

Google Dataset Search Bêta

Rechercher des ensembles de données

Essayer boston education data ou weather site:noaa.gov

D

INPN - Référentiel taxonomique TAXREF

www.data.gouv.fr
data.wu.ac.at

Dernière mise à jour : 31 janv. 2017

W

TAXREF-LD: Linked Data French Taxonomic Register

data.wu.ac.at
datahub.ckan.io

Dernière mise à jour : Jun 21, 2018

D

Inventaire de la faune

next.data.gouv.fr
opendata.hauts-de-seine.fr
+3plus

Dernière mise à jour : 6 avr. 2017

D

INPN - Espèces protégées et réglementées

www.data.gouv.fr
data.wu.ac.at

Dernière mise à jour : 13 avr. 2016

TAXREF-LD: Linked Data French Taxonomic Register

data.wu.ac.at datahub.ckan.io

Ensemble de données mis à jour le Jun 21, 2018
Ensemble de données publié le Jan 27, 2017

Ensemble de données fourni par
French Muséum National d'Histoire Naturelle

Licence
http://creativecommons.org/licenses/by-nc/2.0/

Formats de téléchargement disponibles auprès des fournisseurs
SPARQL , DCAT , VOID , HTML , TURTLE

Description

TAXREF-LD is the Linked Data representation of TAXREF (https://inpn.mnhn.fr/programme/referentiel-taxonomique-taxref?lg=en), the French national taxonomical register for fauna, flora and fungus, that covers mainland France and overseas territories. It accounts for over 500000 scientific names.

TAXREF-LD is a joint initiative of the National Museum of Natural History (http://www.mnhn.fr/) and the I3S laboratory (http://www.i3s.unice.fr/) (Université Côte d'Azur, CNRS, Inria). Its model is described in [1].

[1] Michel F., Gargominy O., Tercerie S. & Faron-Zucker C. (2017). A Model to Represent Nomenclatural and Taxonomic Information as Linked Data. Application to the French Taxonomic Register, TAXREF. In *Proceedings of the 2nd International Workshop on Semantics for Biodiversity*

tool for processing

- Images capturing data
- Files relating to machine learning, such as trained parameters or neural network structure definitions
- Anything that looks like a dataset to you

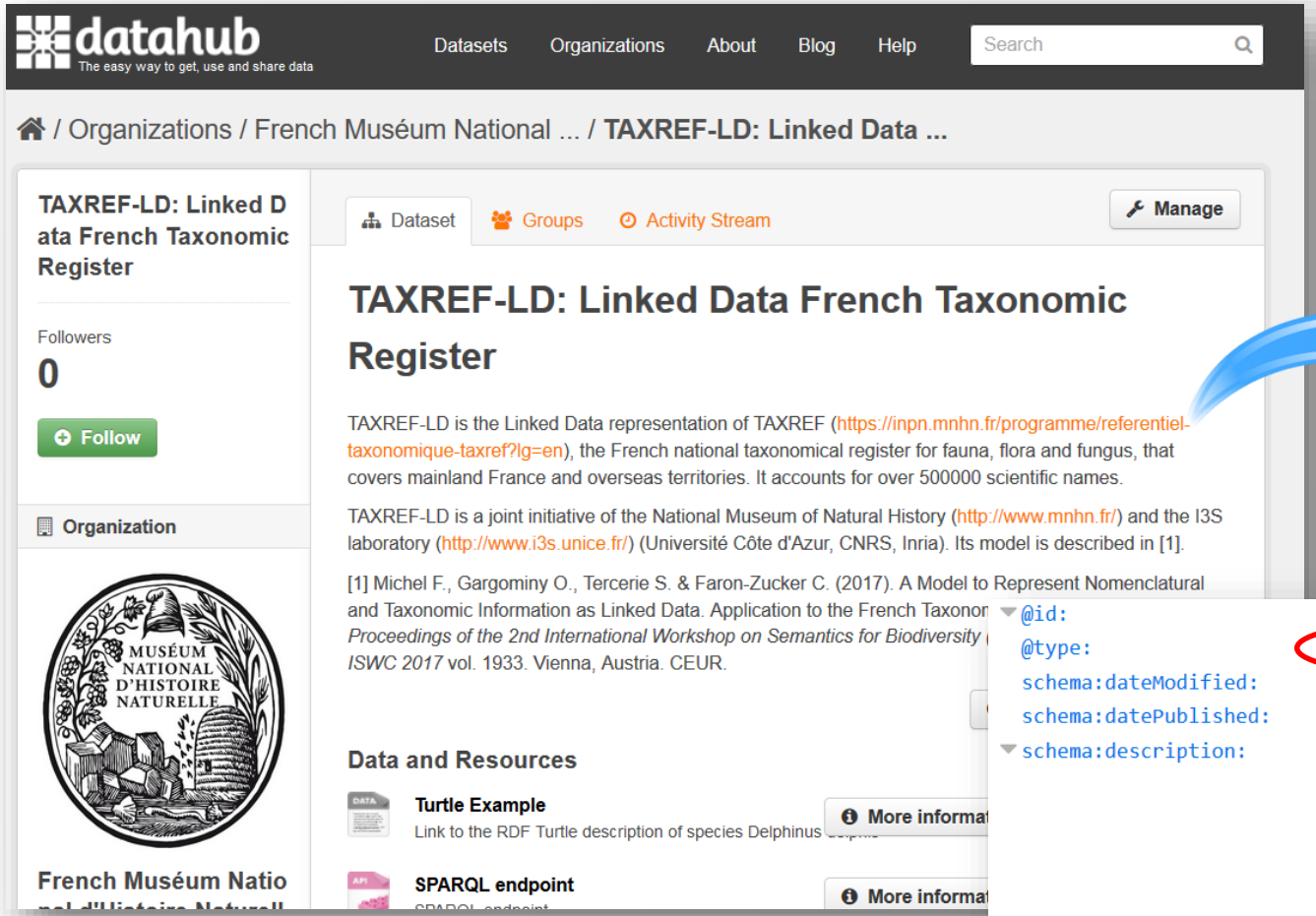
Our approach to dataset discovery

We can understand structured data in Web pages about datasets, using either schema.org Dataset markup, or equivalent structures represented in W3C's Data Catalog Vocabulary (DCAT) format. We also exploring experimental support for structured data based on W3C CSVW, and expect to evolve and adapt our approach as best practices for dataset description emerge. For more information about our approach to dataset discovery, see Facilitating the discovery of public datasets.

Examples

Here's an example for datasets using JSON-LD syntax (preferred) in the Structured Data Testing Tool. The same vocabulary can also be used in RDFa 1.1, Microdata, or W3C DCAT vocabulary. The following example is based on a real-world dataset description.

JSON-LD RDFA



Makup embedded in the web page as JSON-LD


```
@id:                    "https://datahub.ckan.io/dataset/709597bd-9fcf-4c06-8845-2c74c51000c2
@type:                  "schema:Dataset"
schema:dateModified:    "2018-06-21T08:26:23.362605"
schema:datePublished:   "2017-01-27T09:10:18.569429"
schema:description:     "TAXREF-LD is the Linked Data representation of TAXREF (https://inpn.
                        taxonomique-taxref?lg=en), the French national taxonomical register f
                        mainland France and overseas territories. It accounts for over 500000
                        a joint initiative of the National Museum of Natural History (http://
                        (http://www.i3s.unice.fr/) (Université Côte d'Azur, CNRS, Inria). Its
                        Michel F., Gargominy O., Tercerie S. & Faron-Zucker C. (2017). A Mode
                        Taxonomic Information as Linked Data. Application to the French Taxon
                        of the 2nd International Workshop on Semantics for Biodiversity (S4Bi
                        1933. Vienna, Austria. CEUR."
schema:distribution:
  0:
    @id:                "https://datahub.ckan.io/dataset/709597bd-9fcf-4c06-8845-2c74c51000c2
                        b48d5da7e25d"
  1:
    @id:                "https://datahub.ckan.io/dataset/709597bd-9fcf-4c06-8845-2c74c51000c2
                        e31107d48572"
  2:
    @id:                "https://datahub.ckan.io/dataset/709597bd-9fcf-4c06-8845-2c74c51000c2
```

Thank you!