CC7220-1
La Web de Datos
Primavera 2022

Lecture 11: Conclusion

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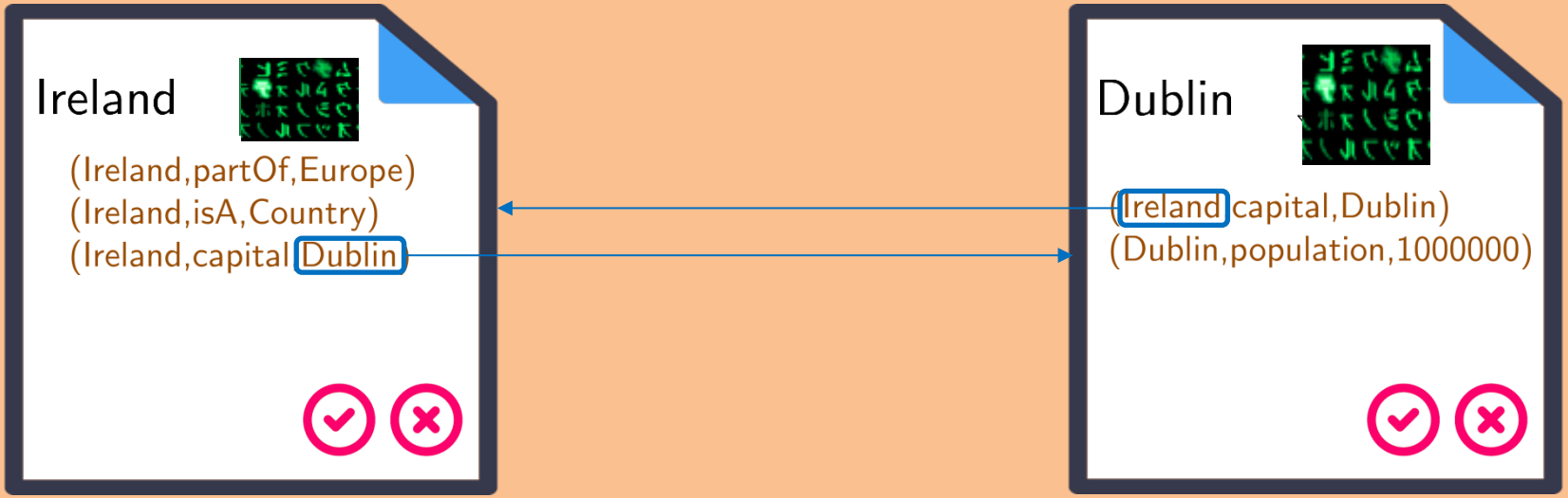
* More or less

Semantic Web: Data, Logic, Query, Links, Validation

Data:



Logic:

"$(b$,capital,$a) \rightarrow (a$,partOf,$b)$"

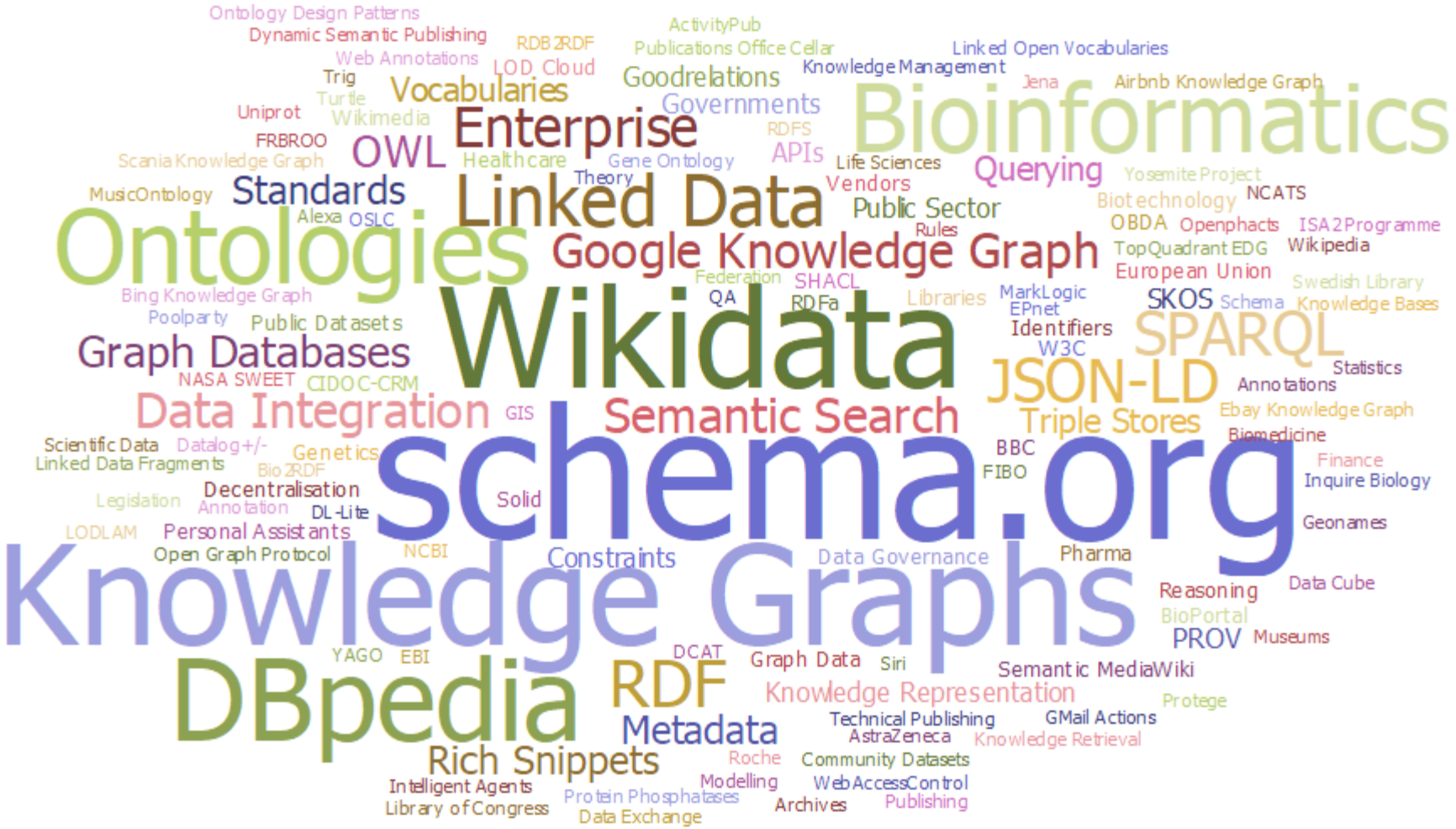
"$(a$,partOf,$b)$, $(b$,partOf,$c) \rightarrow (a$,partOf,$c)$"

Query: "$(x$,partOf,$y)$?"

Output: $\{(x \mapsto$ Ireland, $y \mapsto$ Europe),
$(x \mapsto$ Dublin, $y \mapsto$ Ireland),
$(x \mapsto$ Dublin, $y \mapsto$ Europe$)\}$

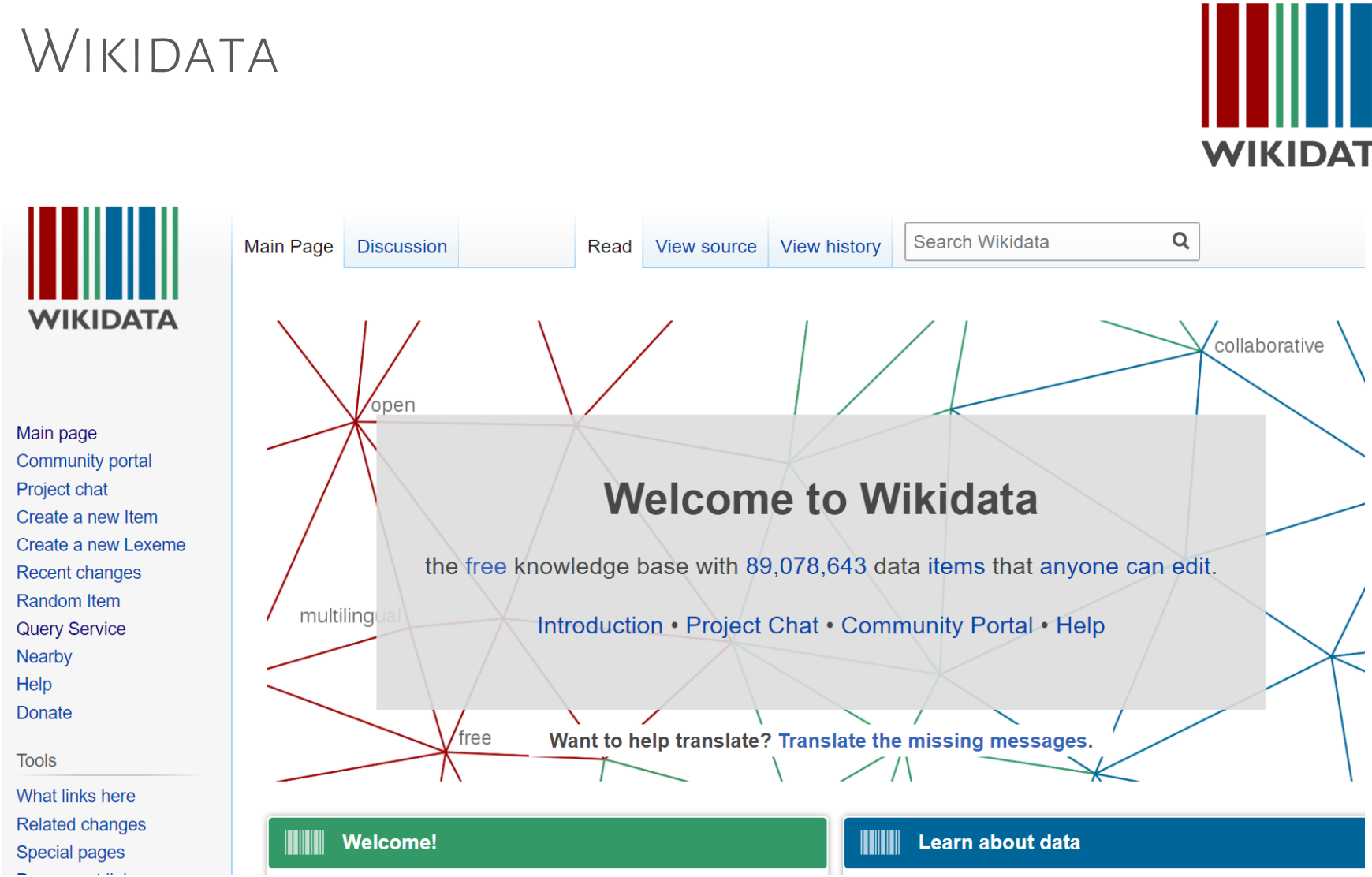

TAKING OFF
Hannover
AIR BERLIN
Lufthansa
SOUTHWEST
KLM
QANTAS
virginexpress
VIA
CSA

Success stories

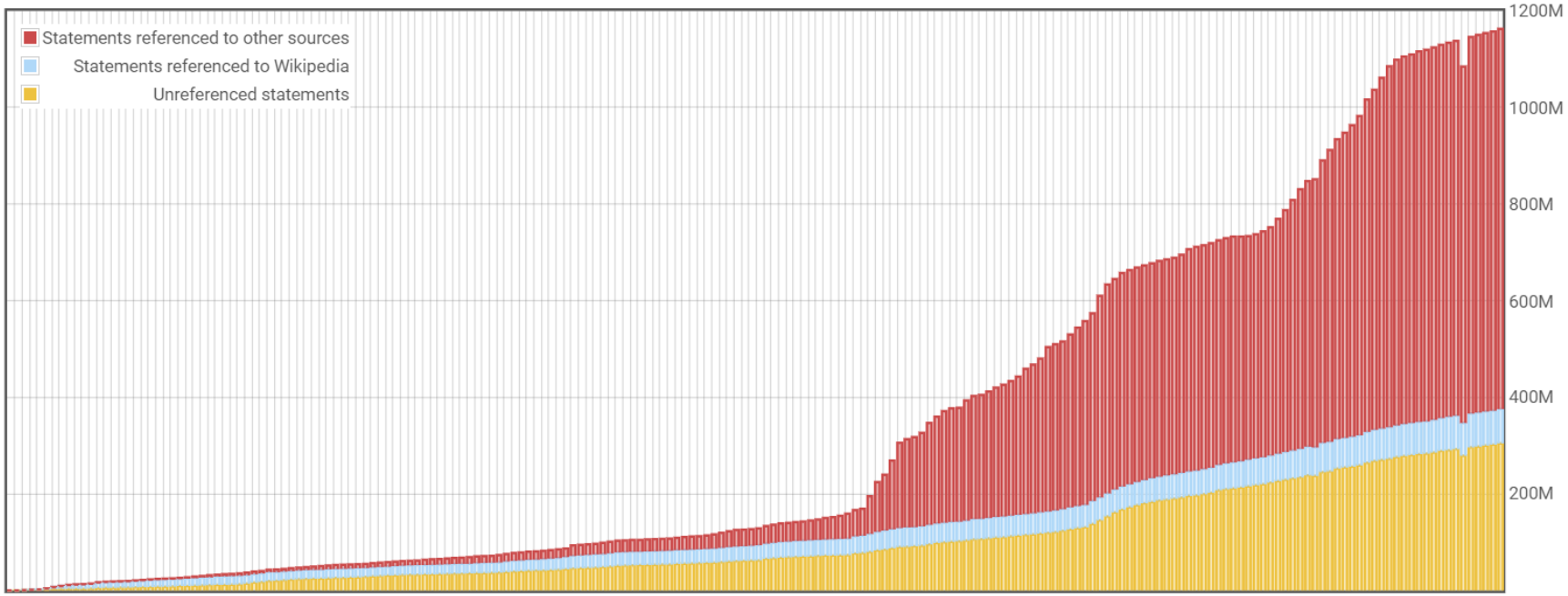


http://aidanhogan.com/docs/semantic-web-now.pdf

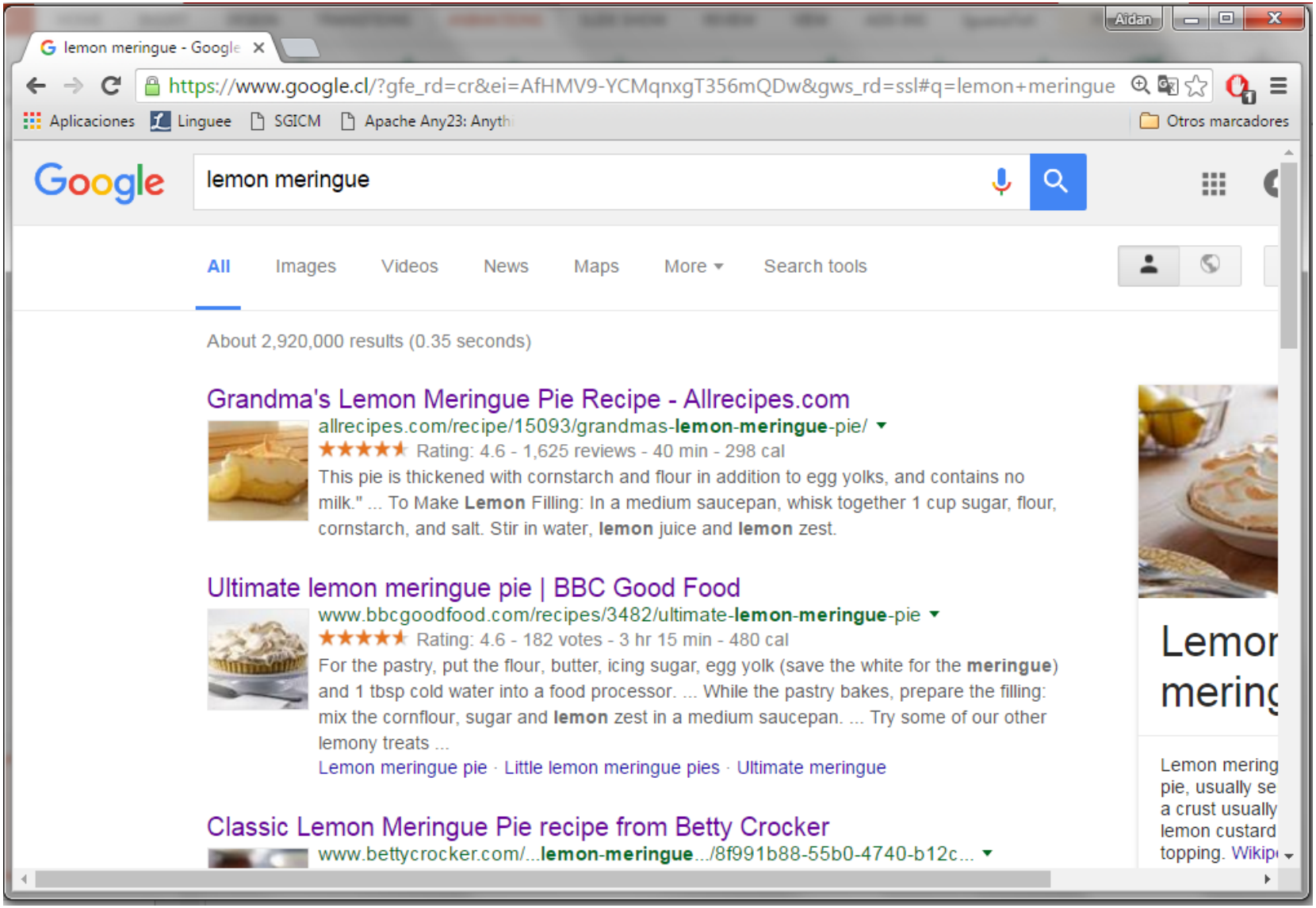
Wikidata


WIKIDATA
Main Page
Discussion
Read
View source
View history
Search Wikidata
Main page
Community portal
Project chat
Create a new Item
Create a new Lexeme
Recent changes
Random Item
Query Service
Nearby
Help
Donate
Tools
What links here
Related changes
Special pages
open
collaborative
multilingual
free
Welcome to Wikidata
the free knowledge base with 89,078,643 data items that anyone can edit.
Introduction • Project Chat • Community Portal • Help
Want to help translate? Translate the missing messages.
Welcome!
Learn about data

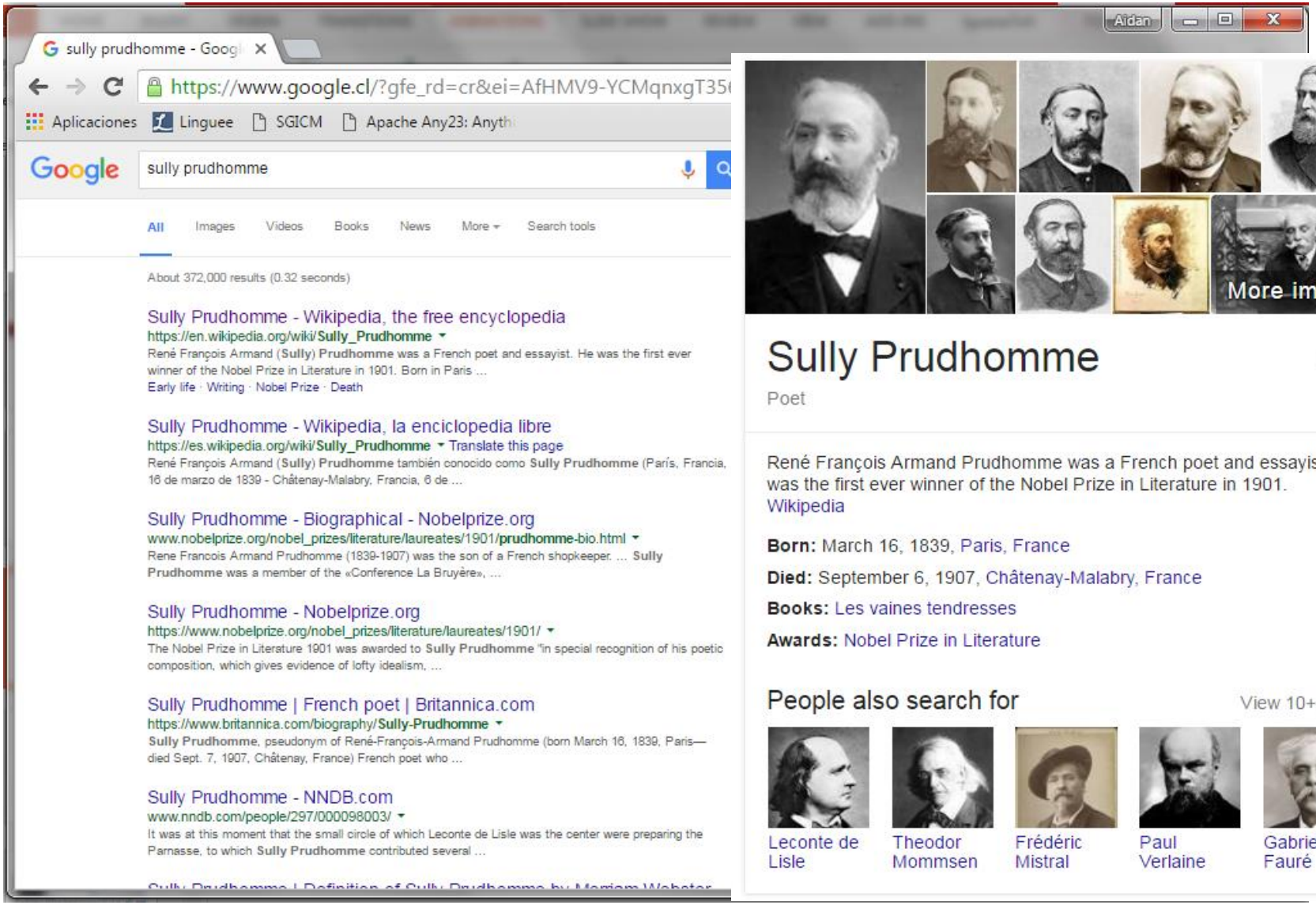
Wikidata


Statements referenced to other sources
Statements referenced to Wikipedia
Unreferenced statements
1200M
1000M
800M
600M
400M
200M

Google's rich snippets ...



Google's Knowledge Panel



SCHEMA.ORG

Welcome to Schema.org

Schema.org is a collaborative, community activity with a mission to create, maintain, and promote schemas for structured data on the Internet, on web pages, in email messages, and beyond.

Schema.org vocabulary can be used with many different encodings, including RDFa, Microdata and JSON-LD. These vocabularies cover entities, relationships between entities and actions, and can easily be extended through a well-documented extension model. Over 10 million sites use Schema.org to markup their web pages and email messages. Many applications from Google, Microsoft, Pinterest, Yandex and others already use these vocabularies to power rich, extensible experiences.

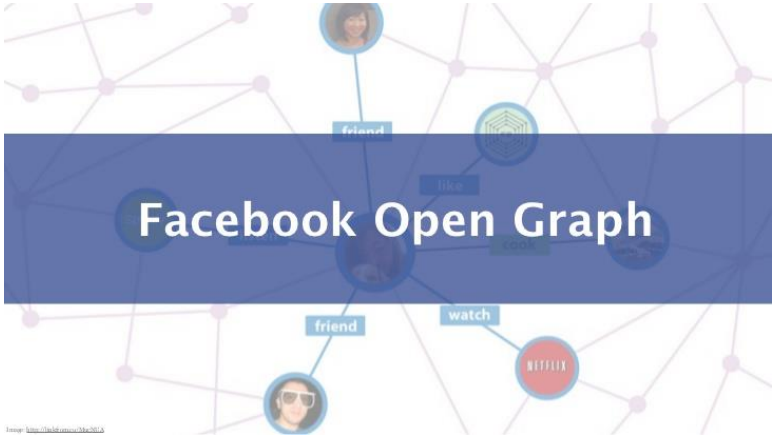
Founded by Google, Microsoft, Yahoo and Yandex, Schema.org vocabularies are developed by an open community process, using the public-schemaorg@w3.org mailing list and through GitHub.

A shared vocabulary makes it easier for webmasters and developers to decide on a schema and get the maximum benefit for their efforts. It is in this spirit that the founders, together with the larger community have come together - to provide a shared collection of schemas.

We invite you to get started!

View our blog at blog.schema.org or see release history for version 11.01.

Facebook's Open Graph



Facebook Open Graph

IMDb
16 hrs ·

The latest trailer for "Game of Thrones" is out, and contains so many fantastic details that we don't even know where to begin. Take a look: http://imdb.to/1KXLPFJ

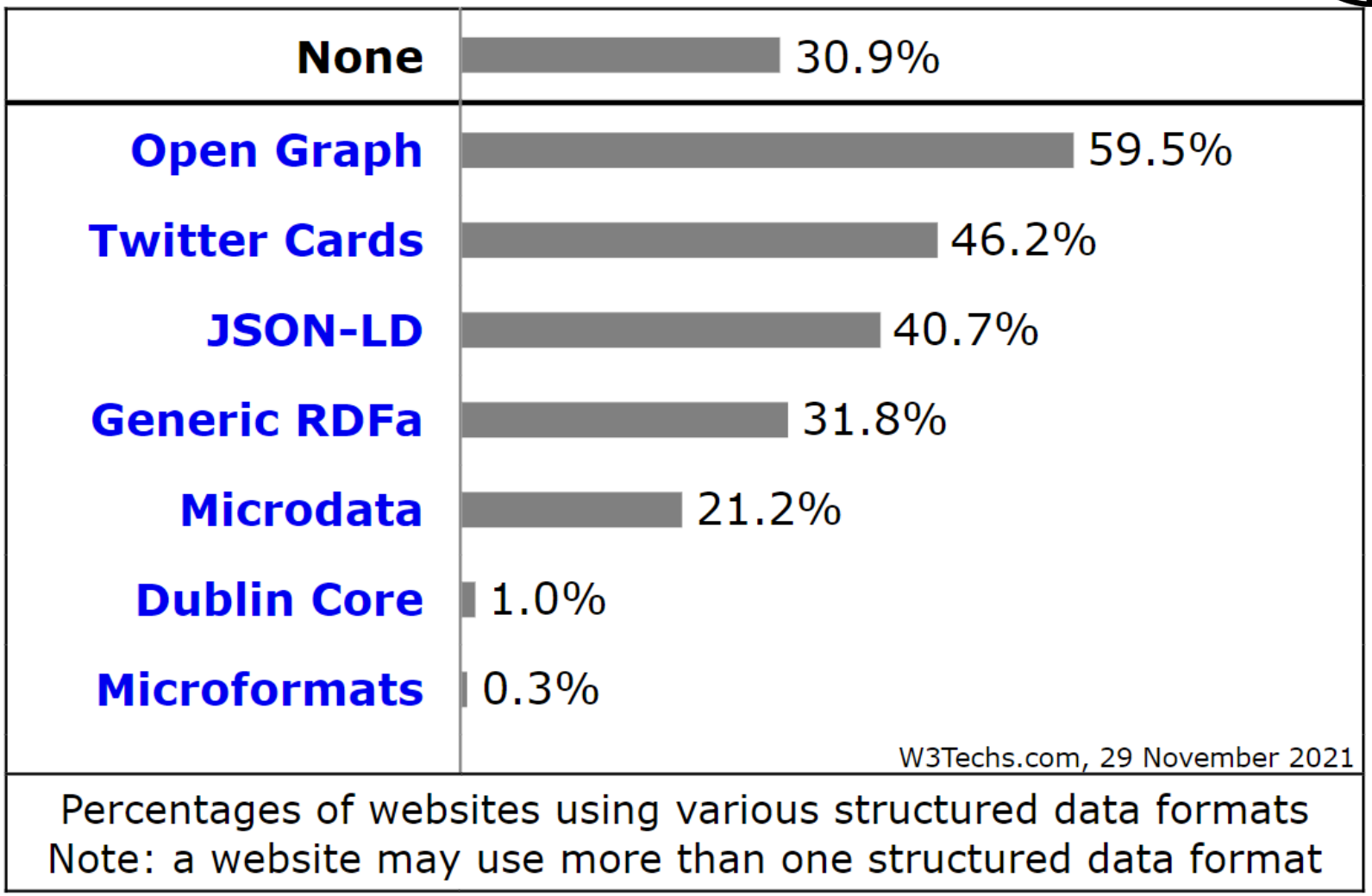
"Game of Thrones": The Wheel

"I'm not going to stop the wheel. I'm going to break the wheel."

IMDB.COM

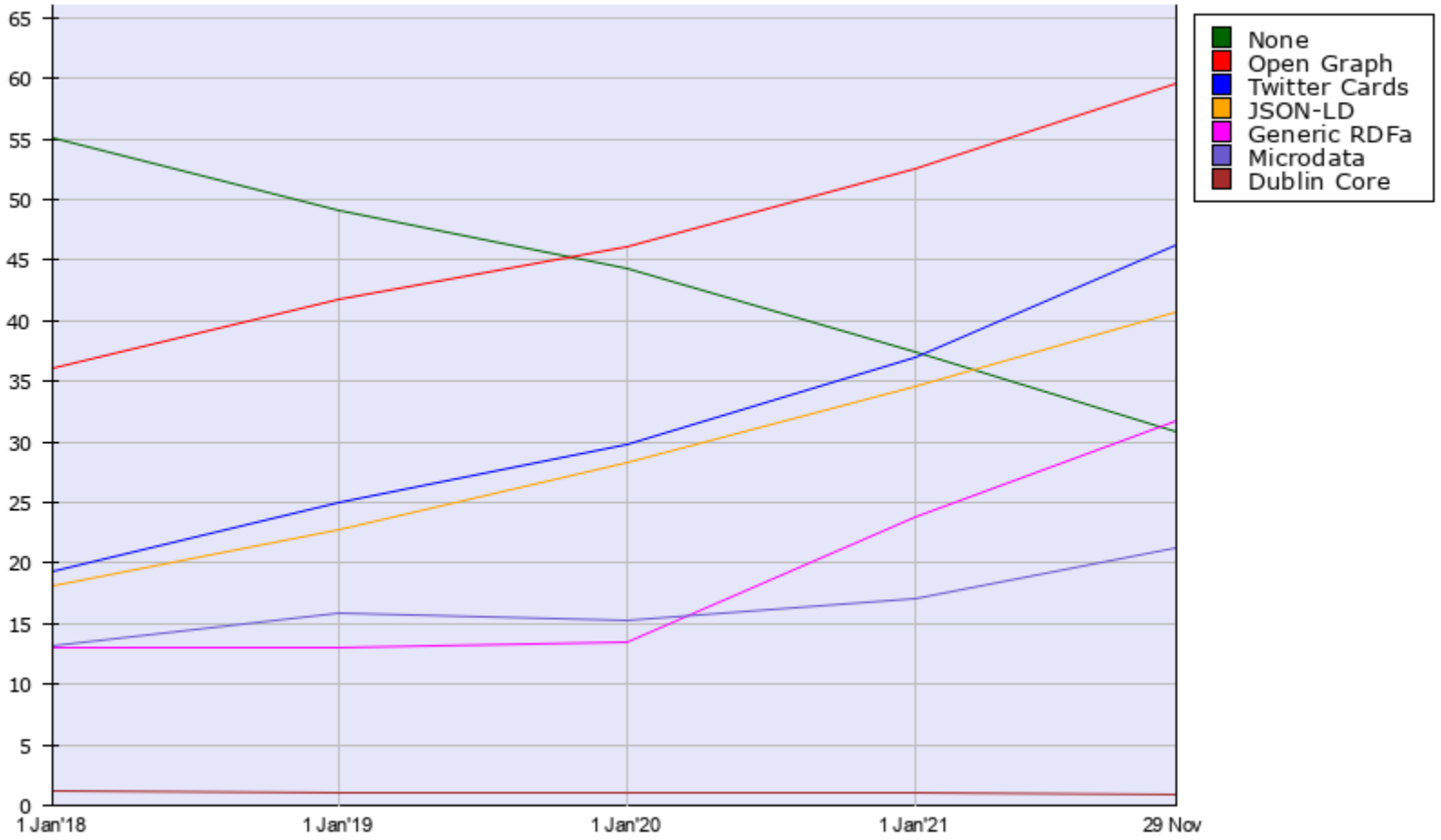
Like · Comment · Share · Send · 6,469 395 1,381

Embedded structured data



https://w3techs.com/technologies/overview/structured_data

Embedded structured data



Usage of structured data formats for websites, 29 Nov 2021, W3Techs.com

https://w3techs.com/technologies/history_overview/structured_data/all/y

Google's Knowledge Graph

Amazon Prime

☐ prime

☐ Free UK Delivery by Amazon

FREE Delivery on orders over £10 for books or over £20 for other categories shipped by Amazon

Deals

☐ Today's Deals

Department

Books
- Artificial Intelligence (A.I.)
- Beginner's Guide to Databases
- Managers' Guides to Computing
- Data Mining
- E-Business
- See more

Kindle Store
- Information Technology
- Mathematical & Statistical

See All 4 Departments

Avg. Customer Review

★★★★☆ & Up

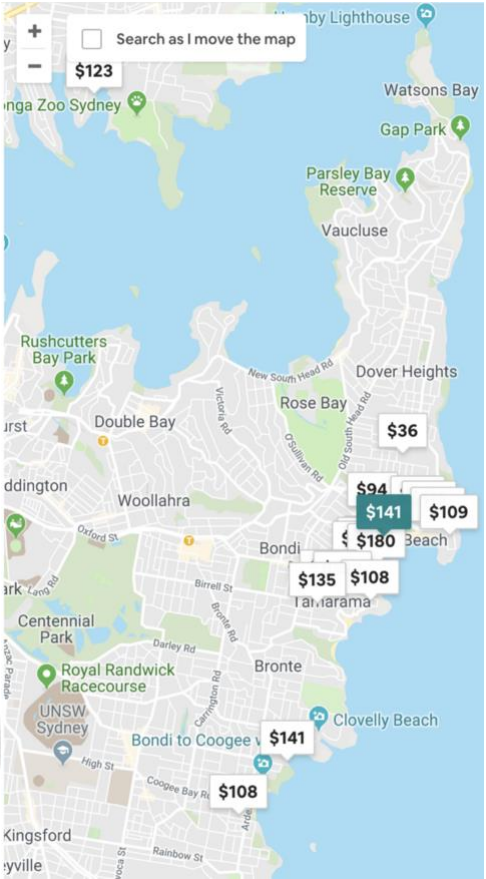
★★★☆☆ & Up

★★☆☆☆ & Up

★☆☆☆☆ & Up

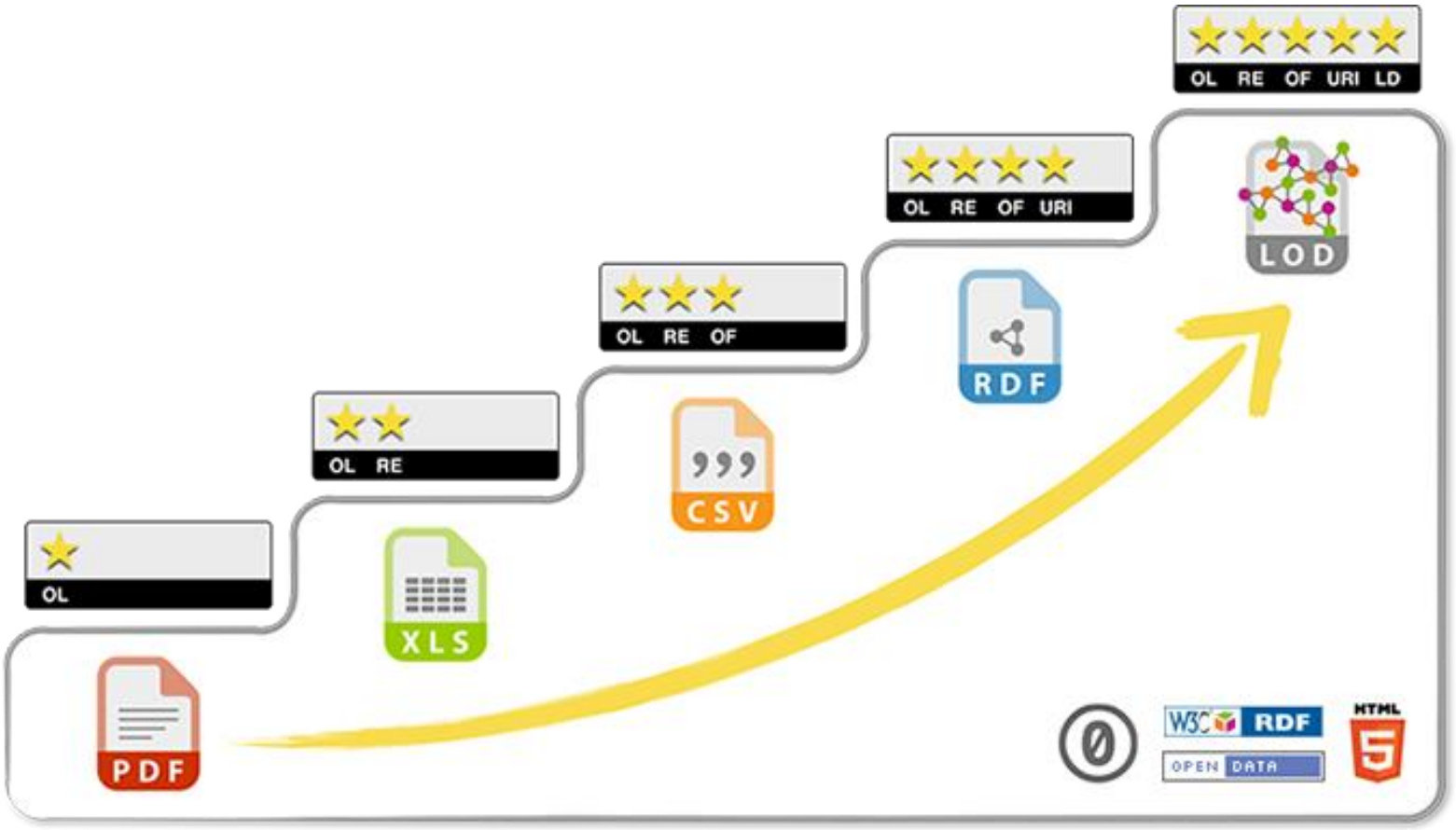
Knowledge Graph

The Knowledge Graph is a knowledge base used by Google and its services to enhance its search engine's results with information gathered from a variety of sources. The information is presented to users in an infobox next to the search results.
Wikipedia

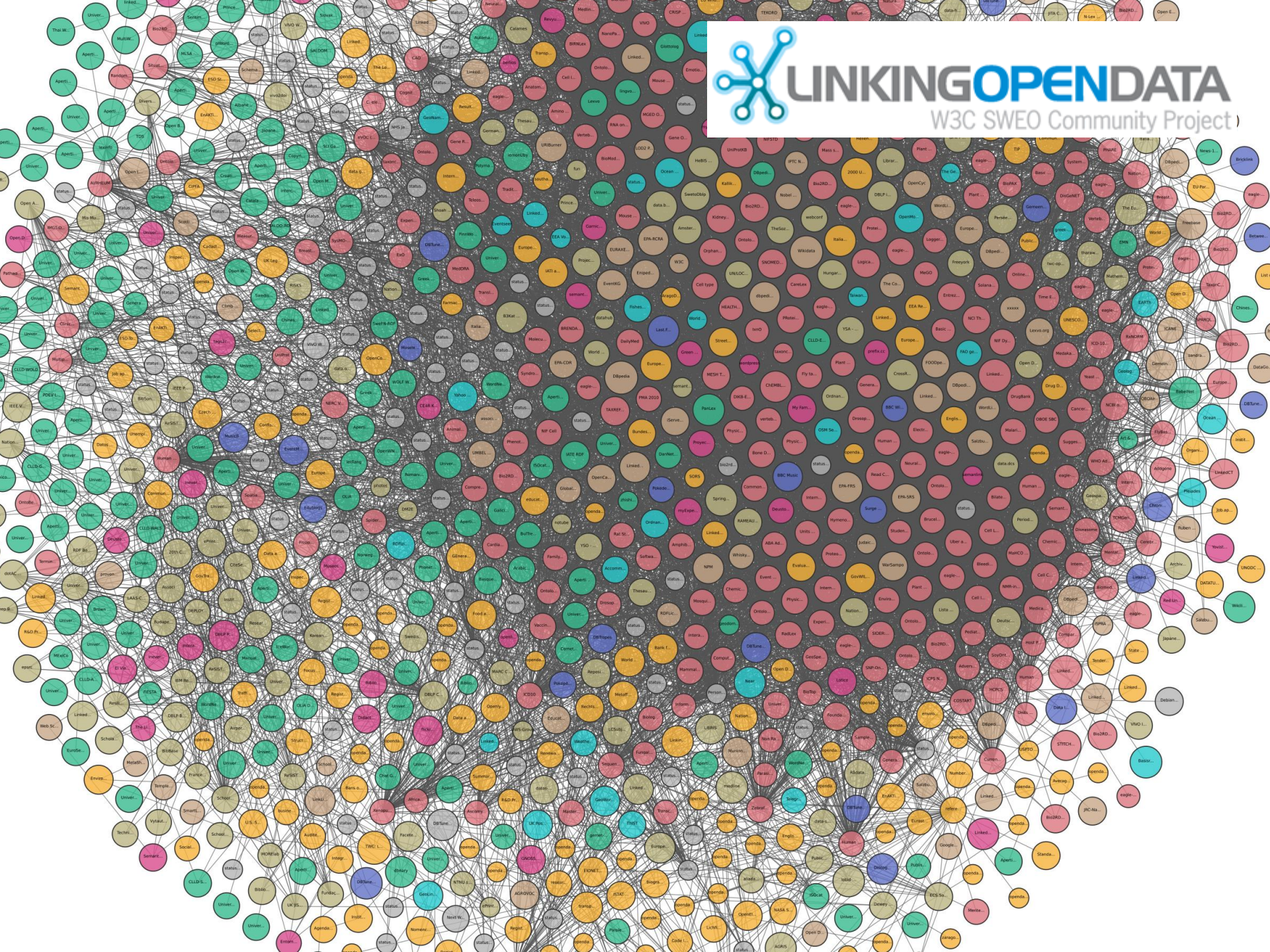


Linked Open Data

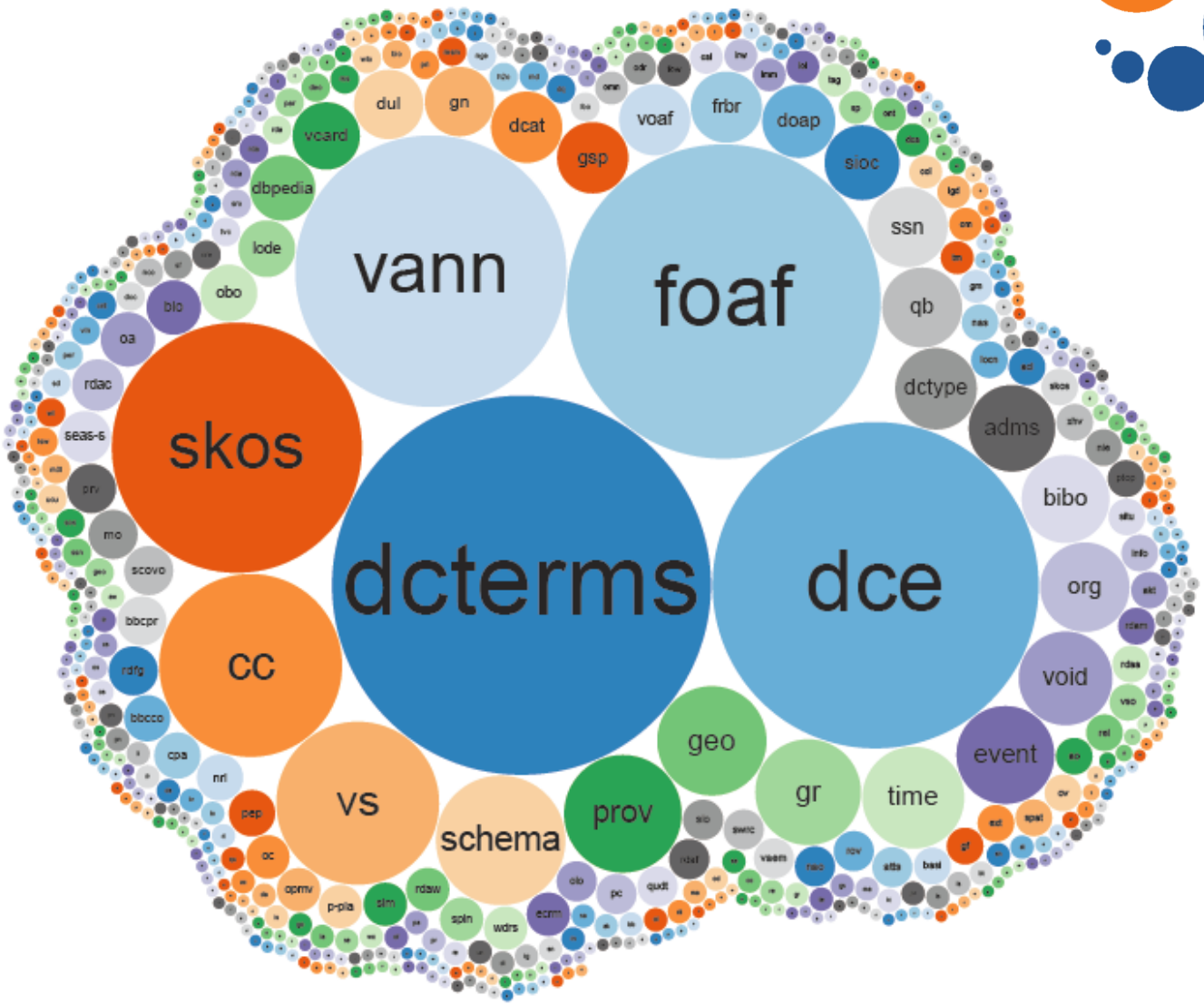
LINKINGOPENDATA
W3C SWEO Community Project



5-Star Linking Open Data Scheme


LINKINGOPENDATA
W3C SWEO Community Project

Linked Open Vocabularies



From https://lov.linkeddata.es/

Biomedical ontologies

The Open Biological and Biomedical Ontology (OBO) Foundry

Community development of interoperable ontologies for the biological sciences

bfo	Basic Formal Ontology (CC BY)	The upper level ontology upon which OBO Foundry ontologies are built. Detail	
chebi	Chemical Entities of Biological Interest (CC BY)	A structured classification of molecular entities of biological interest focusing on 'small' chemical compounds. Detail	
doid	Human Disease Ontology (PUBLICDOMAIN)	An ontology for describing the classification of human diseases organized by etiology. Detail	
go	Gene Ontology (CC BY)	An ontology for describing the function of genes and gene products Detail	
obi	Ontology for Biomedical Investigations (CC BY)	An integrated ontology for the description of life-science and clinical investigations Detail	
pato	Phenotype And Trait Ontology (CC BY)	An ontology of phenotypic qualities (properties, attributes or characteristics) Detail	
po	Plant Ontology (CC BY)	The Plant Ontology is a structured vocabulary and database resource that links plant anatomy, morphology and growth and development to plant genomics data. Detail	

Biomedical ontologies

BioPortal

BioPortal Ontologies Search Annotator Recommender Mappings Login Support

Welcome to BioPortal, the world's most comprehensive repository of biomedical ontologies

Search for a class

Enter a class, e.g. Melanoma

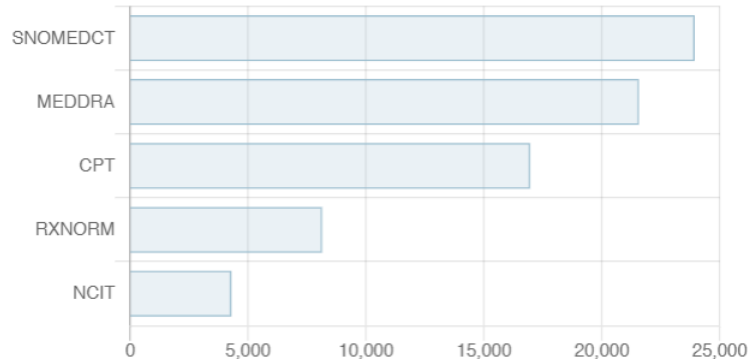
Advanced Search

Find an ontology

Start typing ontology name, then choose from list

Browse Ontologies

Ontology Visits (November 2020)

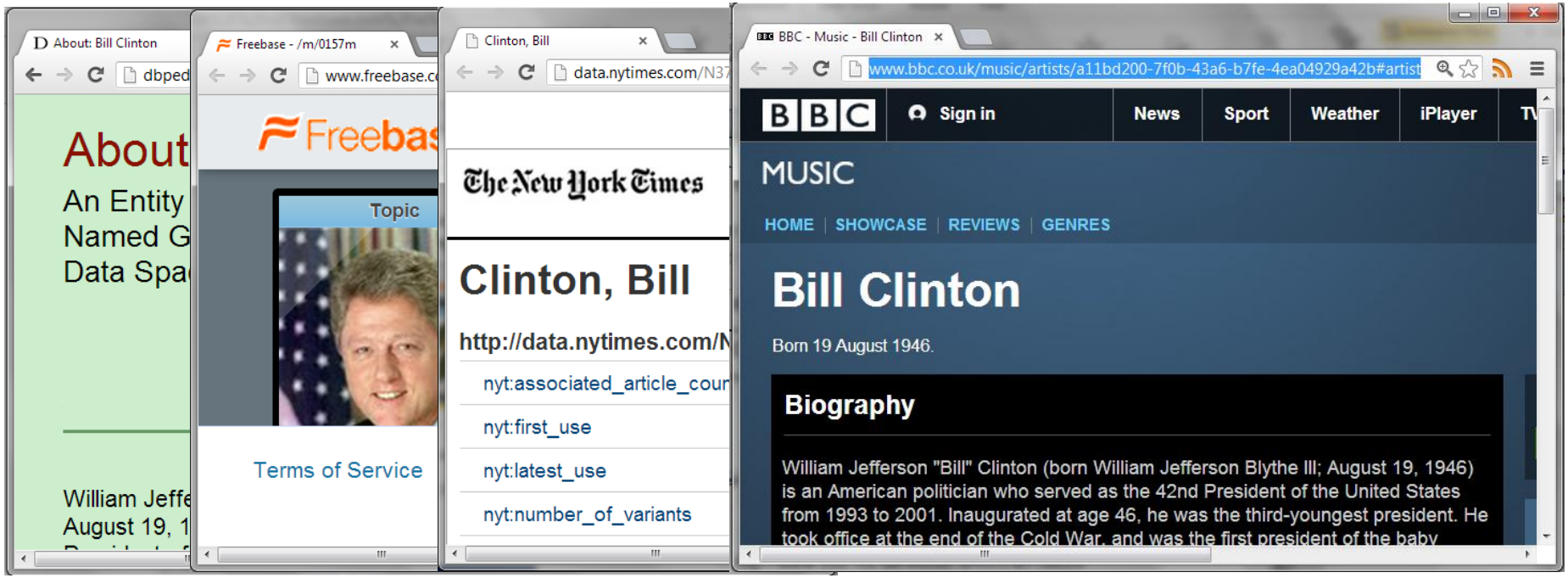


BioPortal Statistics

Ontologies	912
Classes	12,108,726
Properties	36,286
Mappings	111,130,779

Ongoing Research

Integrating diverse data



`http://dbpedia.org/resource/Bill_Clinton`

`http://rdf.freebase.com/ns/en.bill_clinton`

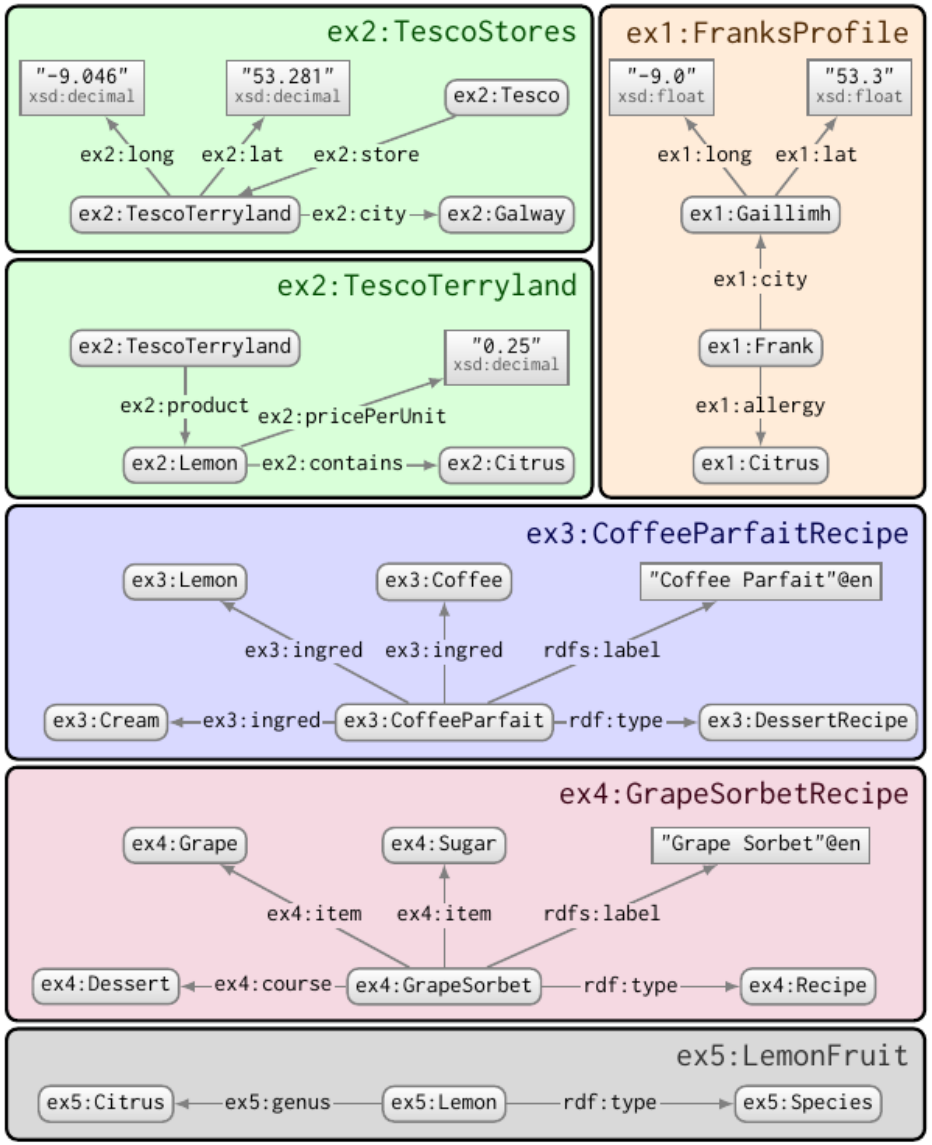
`http://data.nytimes.com/clinton_bill_per`

`http://www.bbc.co.uk/music/artists/…`

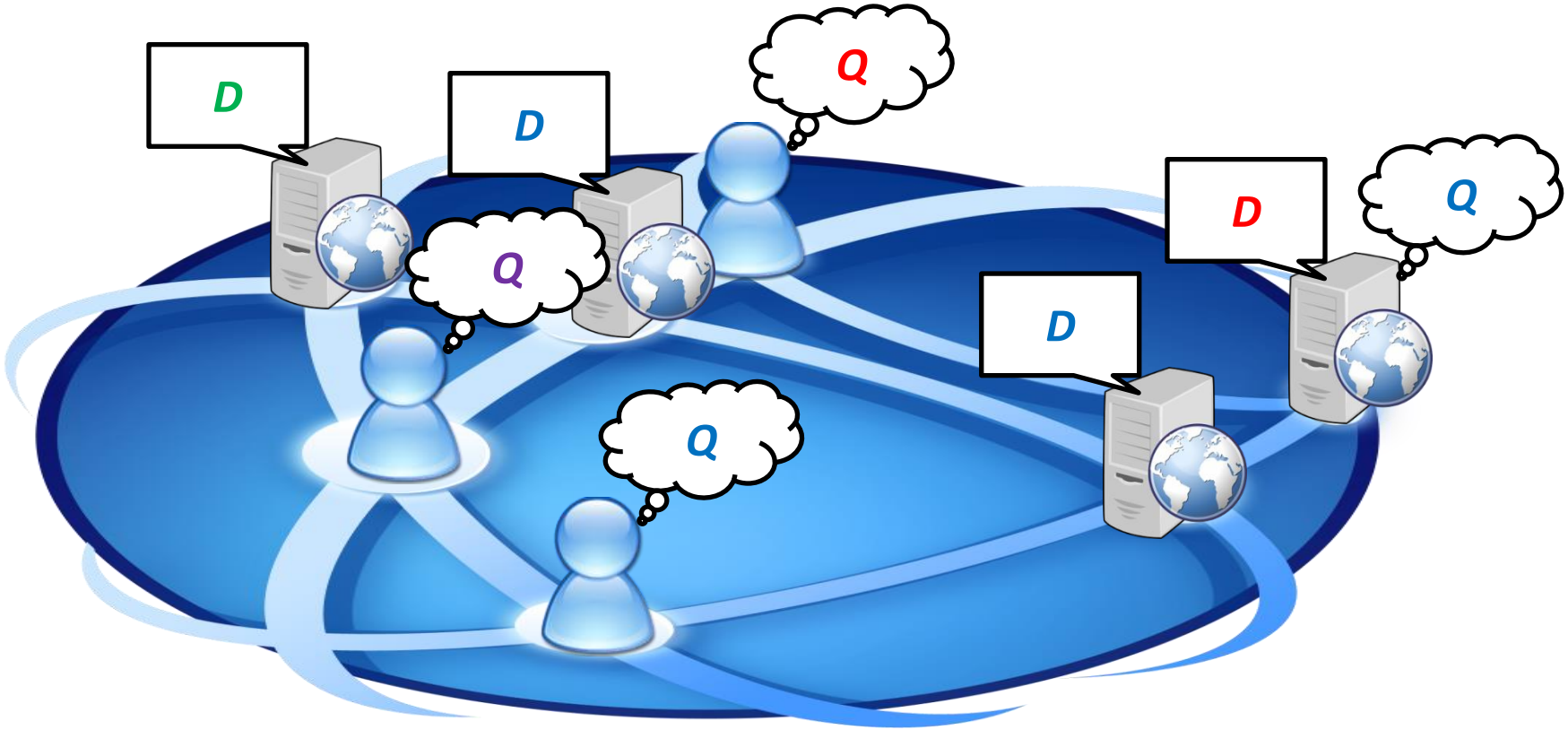
How can we integrate data using different identifiers from different sources?

Integrating diverse vocabularies

How can we integrate and write queries against Linked Data using different vocabularies?

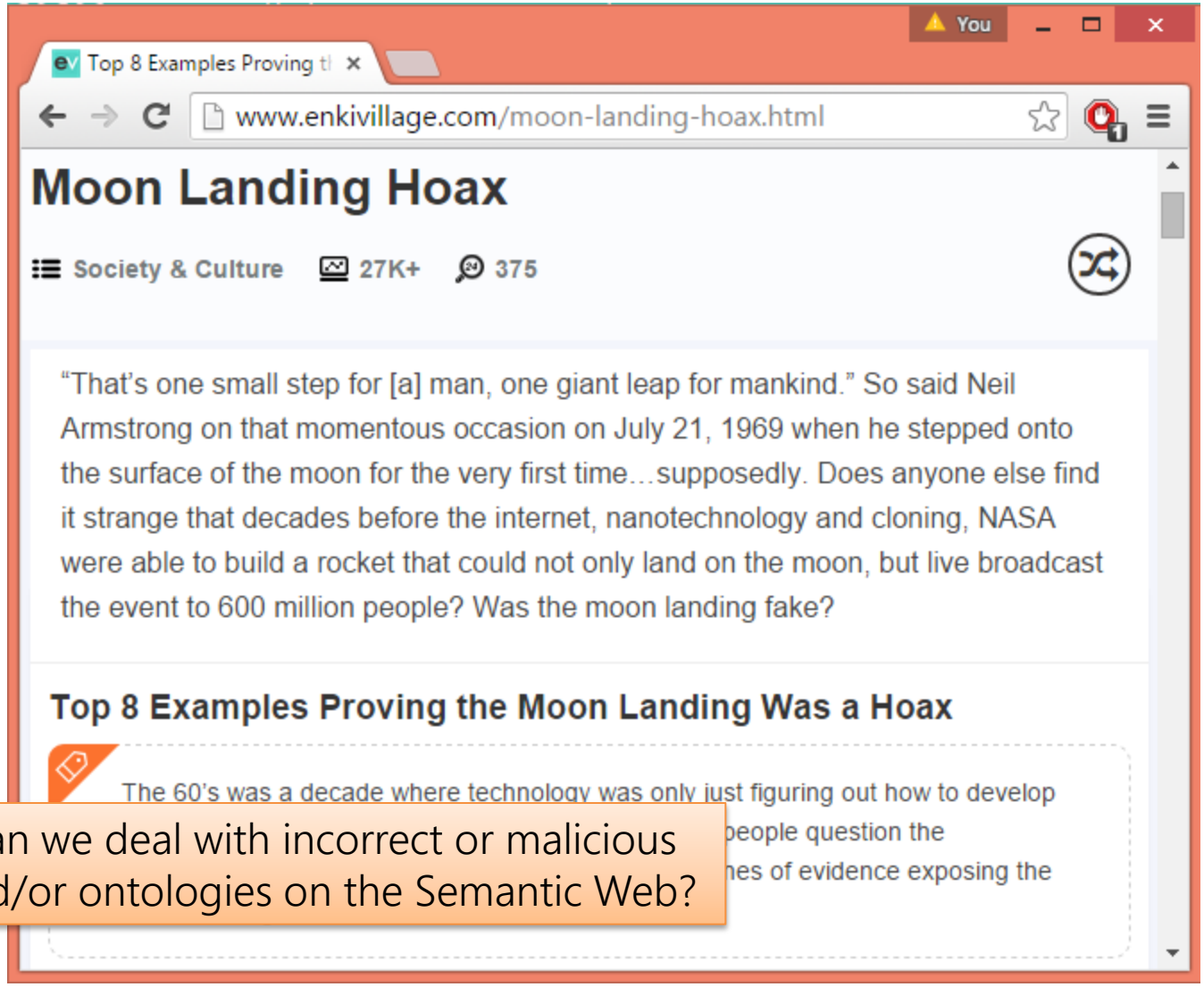


Decentralised querying



How can we enable decentralised querying over multiple decentralised datasets?

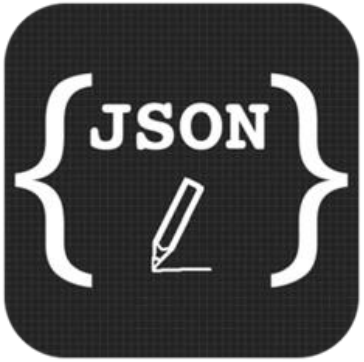
Veracity



How can we deal with incorrect or malicious data and/or ontologies on the Semantic Web?

Legacy data

How can we “import” more legacy data into the Semantic Web?

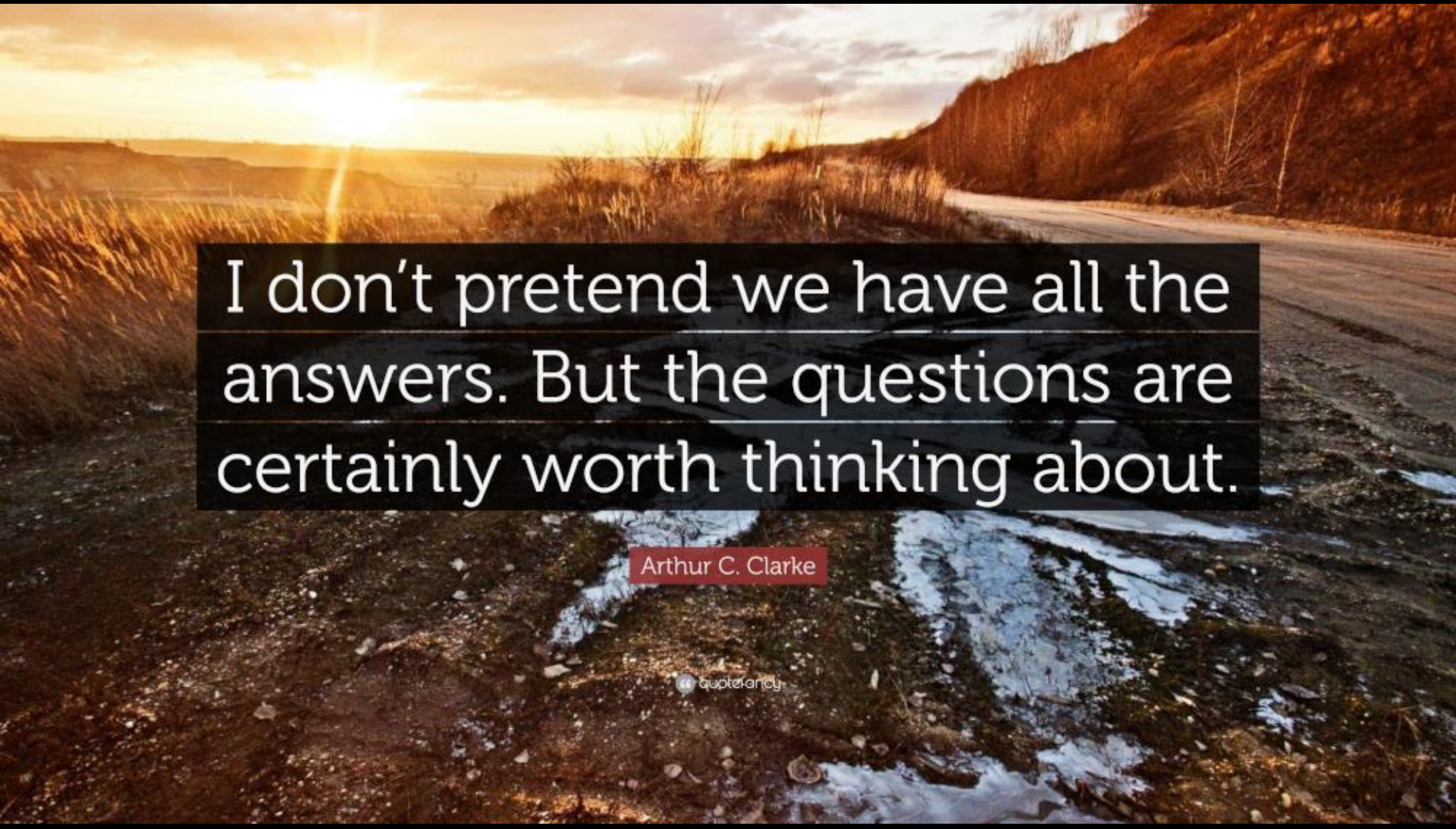


Usability

```
PREFIX geo: <http://www.opengis.net/ont/geosparql#>
PREFIX lgdo: <http://linkedgeodata.org/ontology/>
PREFIX geom: <http://geovocab.org/geometry#>
PREFIX bif: <bif:>

SELECT ?country ?geometry ?label WHERE {
  SERVICE <http://linkedgeodata.org/sparql> {
    ?s geom:geometry [ geo:asWKT ?geometry ] ;
       a lgdo:Embassy ;
       lgdo:country ?code ;
       rdfs:label ?label .
    FILTER(bif:st_intersects(?geometry, bif:st_point(-70.6693,-33.4489), 10))
  }
  ?country wdt:P297 ?code ;
     wdt:P30 wd:Q48 . # continent: Asia
}
```

What kinds of interfaces can help non-expert users to better interact with the Semantic Web?


I don't pretend we have all the answers. But the questions are certainly worth thinking about.
Arthur C. Clarke
quotefancy

Ongoing research in Chile

That's all Folks ...

Questions?