

LINKED (OPEN) DATA

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5 STAR LINKED OPEN DATA



Linked Open Data star scheme by example:

<http://5stardata.info/>

LINKED DATA PRINCIPLES

1) Use URIs as names for things

ISBN: 9781775411840

2) Use HTTP URIs so that people can look up those names

```
<http://www.worldcat.org/title/north-and-south/oclc/606818482>
```

3) Provide useful information for each URI, using the Linked Data standards (RDF(S), SPARQL)

```
<http://www.worldcat.org/title/north-and-south/oclc/606818482>  
rdf:type schema:Book
```

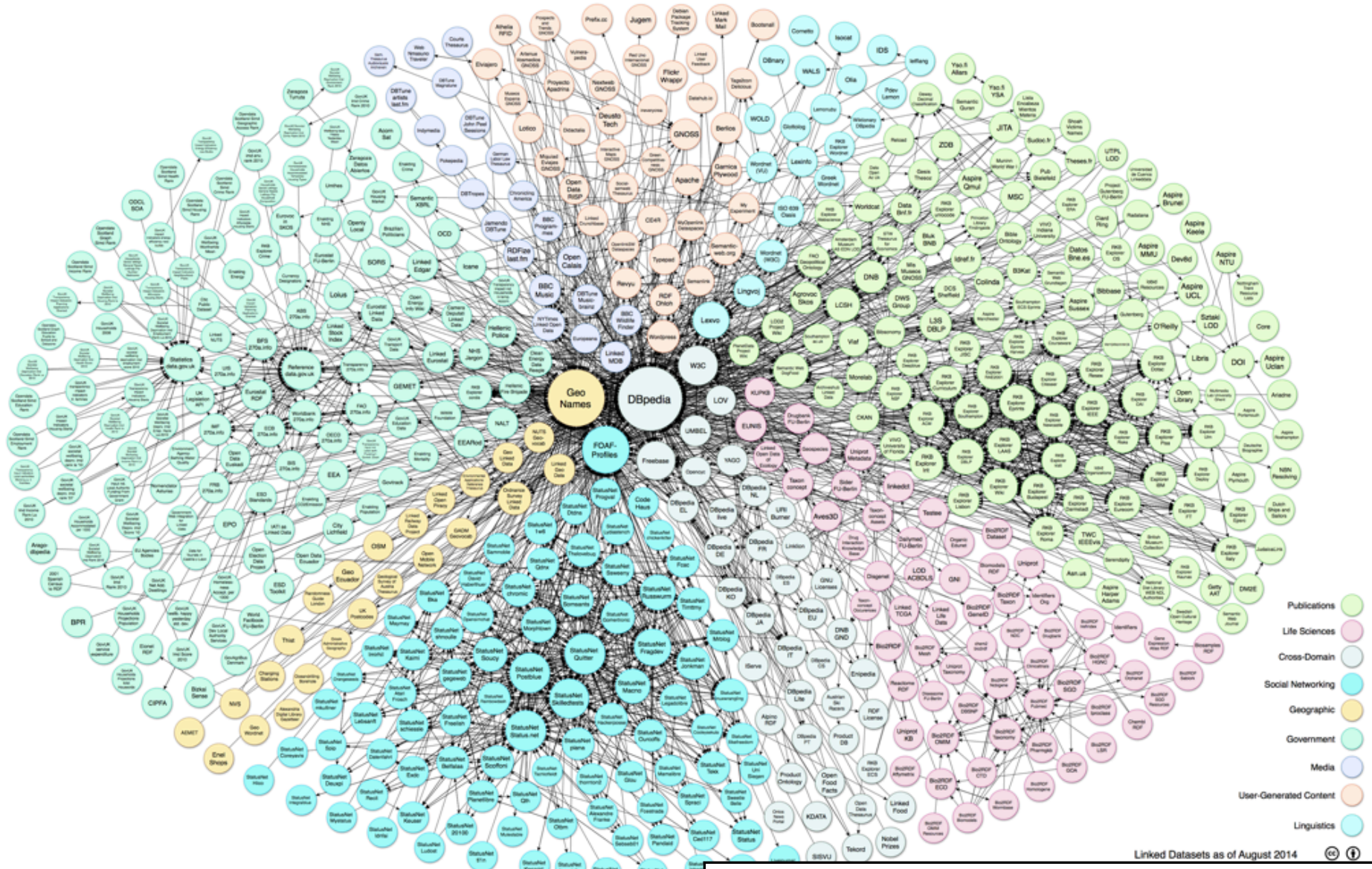
4) Include links to other URIs so that more things could be discovered.

```
<http://www.worldcat.org/title/north-and-south/oclc/606818482>  
schema:author <http://viaf.org/viaf/39377536/>
```

THE MAIN OBJECTIVE OF LINK (OPEN) DATA

Transform
World Wide Web (WWW)
into
Gigantic Global Graph (GGG)

LINKED OPEN DATA CLOUD



Linked Datasets as of August 2014



Animation that illustrates the development of the LOD Cloud: <http://goo.gl/49p9Eh>



Source: <http://lod-cloud.net/>

DBPEDIA ([HTTP://DBPEDIA.ORG/](http://dbpedia.org/))

Machine readable version of Wikipedia;

Comprises structured data extracted from Wikipedia

http://en.wikipedia.org/wiki/San_Francisco

Country	 United States
State	 California
Founded	June 29, 1776
Incorporated	April 15, 1850 ^[9]
Founded by	José Joaquín Moraga Francisco Palóu
Named for	St. Francis of Assisi
Government	
• Type	Mayor-council
• Body	Board of Supervisors
• Mayor of San Francisco	Ed Lee
• Board of Supervisors	Supervisors [show]
• California State Assembly ^{[10][11]}	Tom Ammiano (D) Phil Ting (D)
• CA State Senate ^[12]	Mark Leno (D)
• United States House of Representatives ^{[13][14]}	Nancy Pelosi (D) Barbara Lee (D) Jackie Speier (D)

```
<http://dbpedia.org/resource/San_Francisco>  
db:country dbpedia:United_States ;  
...  
db:foundingDate "1776-6-29"^^xsd:date ;  
dbpprop:namedFor  
    dbpedia:Francis_of_Assisi ;  
db:governmentType  
    dbpedia:Mayor-council_government ;  
...
```

GEONAMES ([HTTP://WWW.GEONAMES.ORG/](http://www.geonames.org/))

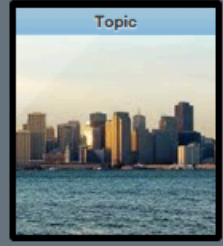
- Open, global knowledge base of geo data/knowledge
- Allows for answering questions such as:
 - What is geo location of the given place?
 - What region does it belong to?
 - What is its postal code?
 - What city or address are nearby that place?
 - ...

GEONAMES ([HTTP://WWW.GEONAMES.ORG/](http://www.geonames.org/))

```
<http://sws.geonames.org/3020251/>
  rdf:type geo:Feature ;
  geo:name "Embrun"@fr ;
  geo:alternateName "Embrun, Hautes-Alpes"@fr ;
  geo:inCountry <http://www.geonames.org/countries/#FR> ;
  geo:population "7069" ;
  geo:postalCode "05200" ;
  wgs84_pos:lat "44.5667" ;
  wgs84_pos:long "6.5000" ;
  geo:locationMap
    <http://www.geonames.org/3020251/embrun.html> ;
  owl:sameAs <http://rdf.insee.fr/geo/COM_05046> ;
  geo:wikipediaArticle
    <http://en.wikipedia.org/wiki/Embrun> ;
  ...
```


FREEBASE.COM

- Open structured knowledge base of general knowledge
- Often referred to as “structured Wikipedia”
- Two major kinds of sources of data and knowledge:
 - Various (mostly structured) online sources
 - E.g., CIA Factbook, Wikipedia
 - Crowdsourcing – human volunteers
 - User-friendly interaction forms for adding new and updating existing facts
- Served as the foundation for the development of the Google’s Knowledge Graph



San Francisco ^{en}

mid: /m/0d6lp notable type: /location/us_county notable for: /location/us_county on the web: wikipedia.org

San Francisco, officially the City and County of San Francisco, is the cultural, commercial and financial center of Northern California. The only consolidated city-county in California, San Francisco covers about 46.9 square miles on the northern end of the San Francisco Peninsula, giving it a density of about 17,867 people per square mile. It is the most densely settled large city in the state and the most densely populated major city in the United States after New York City. San Francisco is the fourth-most populous city in California, after Los Angeles, San Diego and San Jose, and the 14th most populous city in the United States with a population of 837,442. The city and its surrounding area, known as the San Francisco Bay Area, is the San Jose-San Francisco-Oakland combined statistical area.

Properties

View and edit specific data

Filter options: Show all

[Common](#) /common

[Topic](#) /common/topic

Also known as /common

Also known as

- San Fran, Frisco, The City, The City
 - SanFran
 - San Francisco, California
 - San Francisco, CA
 - Frisco
 - Baghdad by the Bay
 - SF
 - The City by the Bay
 - Esseff
- 26 values total »

[Description](#) /common/

Google

+Jelena

[Web](#) [News](#) [Maps](#) [Images](#) [Videos](#) [More](#) [Search tools](#)

About 852,000,000 results (0.45 seconds)

San Francisco - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/San_Francisco - Wikipedia
The only consolidated city-county in California, **San Francisco** encompasses a land area of about 46.9 square miles (121 km²) on the northern end of the San Francisco Peninsula. It is the most densely settled large city in the state and the most densely populated major city in the United States after New York City. San Francisco is the fourth-most populous city in California, after Los Angeles, San Diego and San Jose, and the 14th most populous city in the United States with a population of 837,442. The city and its surrounding area, known as the San Francisco Bay Area, is the San Jose-San Francisco-Oakland combined statistical area.

San Francisco Travel

www.sanfrancisco.travel/
San Francisco is home to a little bit of everything. Whether you're a first time visitor or a long-time local. This is the place to find out about all things **San Francisco** ...
[Explore](#) - [Events](#) - [Meeting Planners](#) - [Hotels](#)

San Francisco Chronicle

www.sfgate.com/ - San Francisco Chronicle
Daily newspaper for the greater **San Francisco** area. Includes global news, regional information, classifieds, and entertainment.

San Francisco City Guide | Hotels, Restaurants, Nightlife ...

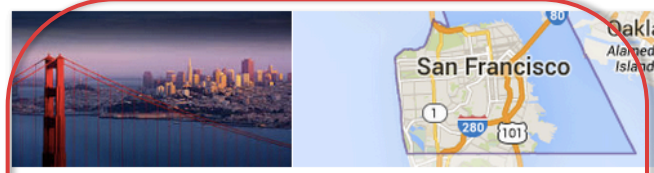
www.sanfrancisco.com/
Playing host to every type of traveler—from foreign dignitaries to fashionistas to New Age nomads—**San Francisco** offers hotels as diverse as those of any city in ...

City and County of San Francisco

sfgov.org/ - San Francisco
The official website for the City and County of **San Francisco**. Municipal code, services, information for businesses and visitors.

In the news

Google's Knowledge Graph



San Francisco

City in California

San Francisco, officially the City and County of San Francisco, is the cultural, commercial and financial center of Northern California. [Wikipedia](#)

Area: 231.9 sq miles (600.6 km²)

Founded: June 29, 1776

Weather: 68°F (20°C), Wind W at 3 mph (5 km/h), 50% Humidity

Local time: Wednesday 2:29 PM

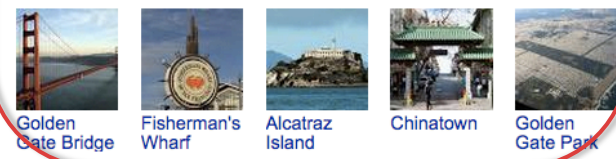
Minimum wage: 10.74 USD per hour (Jan 1, 2014)

Population: 837,442 (2013)

Colleges and Universities: [San Francisco State University](#), [More](#)

Points of interest

View 45+ more



PUBLISHING LINKED (OPEN) DATA

Different ways of making linked data available:

- Embedding data in Web pages
- Making data accessible via SPARQL endpoint(s)
- RESTful access via [Linked Data APIs](#)

ADDITIONAL EXAMPLES OF LINKED OPEN DATA

- Open Government Data
 - USA government data: <http://data.gov>
 - UK government data: <http://data.gov.uk>
 - [World Map of Open Government Data Initiatives](#)
- Linked Clean Energy Data: <http://data.reegle.info/>

ADDITIONAL EXAMPLES OF LINKED OPEN DATA

- Data released by Europeana (European cultural heritage): <http://labs.europeana.eu/>
- Data published by well-known libraries
 - [Library of Congress](#)
 - [British Library](#)
 - [ZBW German National Library of Economics](#)
- [World Catalog](#)
 - the world-largest online catalogue of books and manuscripts from over 72,000 libraries all over the world

RECOMMENDATION

Introductory content (slides, webcasts, e-books,..) to Linked (Open) Data (practical focus):

<http://euclid-project.eu/resources/learning-materials>

Linked Data Glossary

<http://www.w3.org/TR/ld-glossary/>

Hello Open Data World – tutorial on Linked Data, Web of Data, and relevant technologies

<http://www.slideshare.net/terraces/hello-open-world-semtech-2009>