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)

TBL’s blog post on GGG: http://dig.csail.mit.edu/breadcrumbs/node/215
Animation that illustrates the development of the LOD Cloud: [http://goo.gl/49p9Eh](http://goo.gl/49p9Eh)
DBPEDIA (http://dbpedia.org/)

Machine readable version of Wikipedia;
Comprises structured data extracted from Wikipedia

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

<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 ;
  ...

<table>
<thead>
<tr>
<th>Country</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>California</td>
</tr>
<tr>
<td>Founded</td>
<td>June 29, 1776</td>
</tr>
<tr>
<td>Incorporated</td>
<td>April 15, 1850</td>
</tr>
<tr>
<td>Founded by</td>
<td>José Joaquin Moraga Francisco Palou St. Francis of Assisi</td>
</tr>
<tr>
<td>Named for</td>
<td></td>
</tr>
</tbody>
</table>
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/)

```rdf
<http://sws.geonames.org/3020251/>;
  rdf:type geo:Feature;
  geo:name "Embrun"@fr;
  geo:alternateName "Embrun, Hautes-Alpes"@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
...
```
**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

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 encompasses a land area of about 48.9 square miles (121 km²) 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 fourth-most populous city in California, after Los Angeles, San Diego and San Jose, and the 14th largest city by population in the United States, with a population of 883,305. The city limits include the islands of Alcatraz, Yerba Buena, and Treasure. San Francisco Bay Area includes San Francisco and its surrounding counties

San Francisco - Wikipedia, the free encyclopedia
San Francisco, California
San Francisco, CA
San Francisco
San Francisco Bay Area
San Francisco Chronicle
San Francisco City Guide | Hotels, Restaurants, Nightlife ...
City and County of San Francisco

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 2:23 PM
Minimum wage: 10.74 USD per hour (Jan 1, 2014)
Colleges and Universities: San Francisco State University, More

Points of interest
Golden Gate Bridge
Fisherman’s Wharf
Alcatraz Island
Chinatown
Golden Gate Park
**Linked Open Vocabularies**

- RDF vocabularies / ontologies that are used to structure and semantically describe data in the LOD Cloud

- Browse vocabularies and their relations: [http://lov.okfn.org/dataset/lov](http://lov.okfn.org/dataset/lov)
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/](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