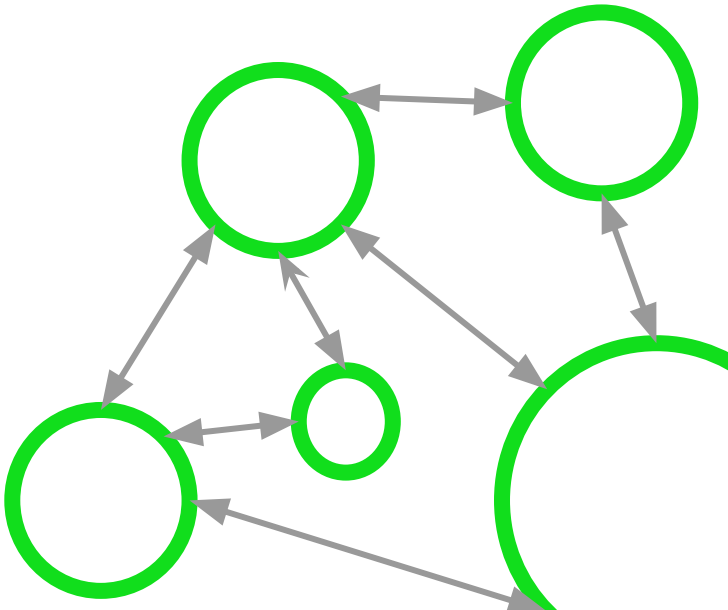
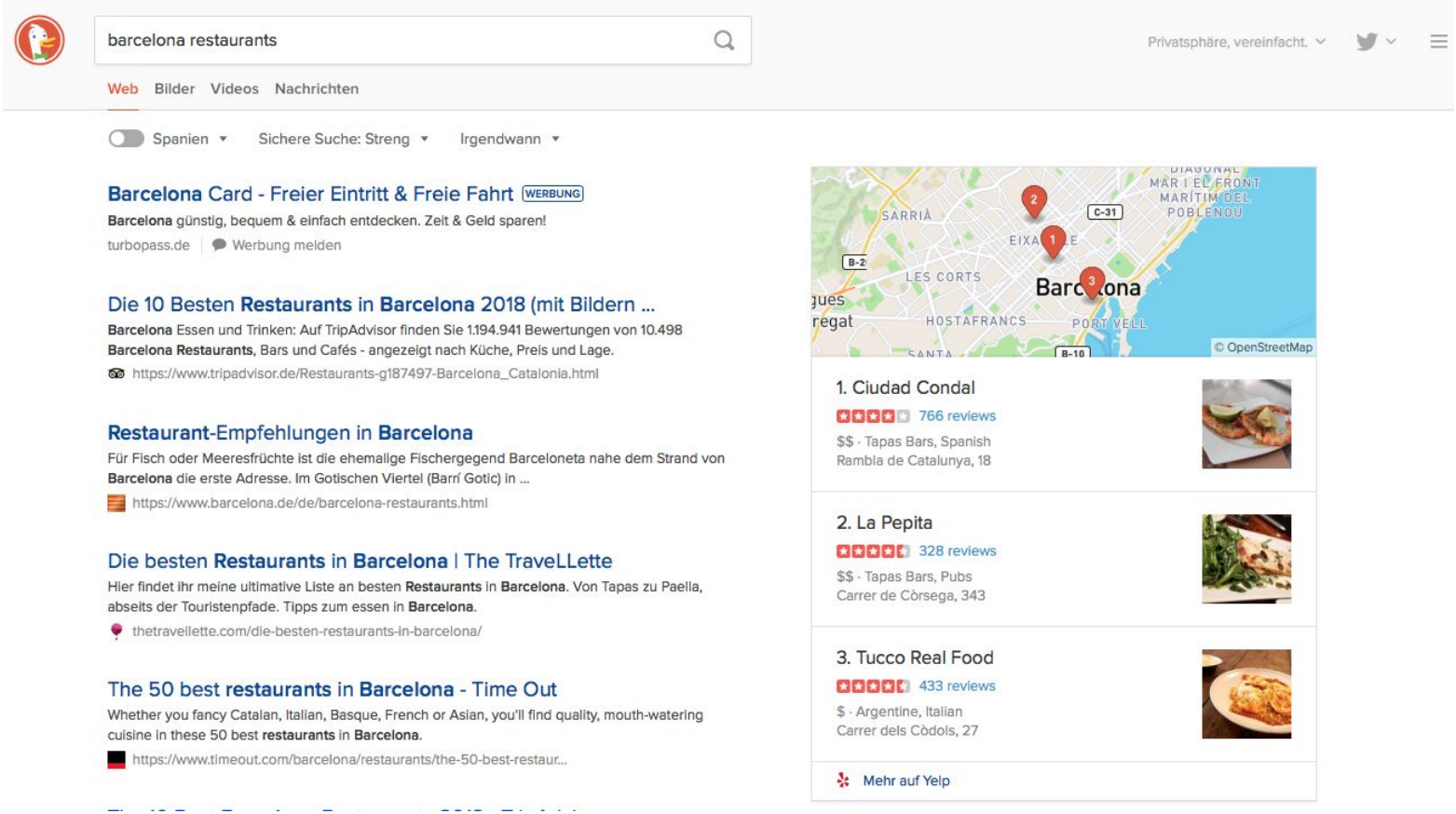
Semantic Web

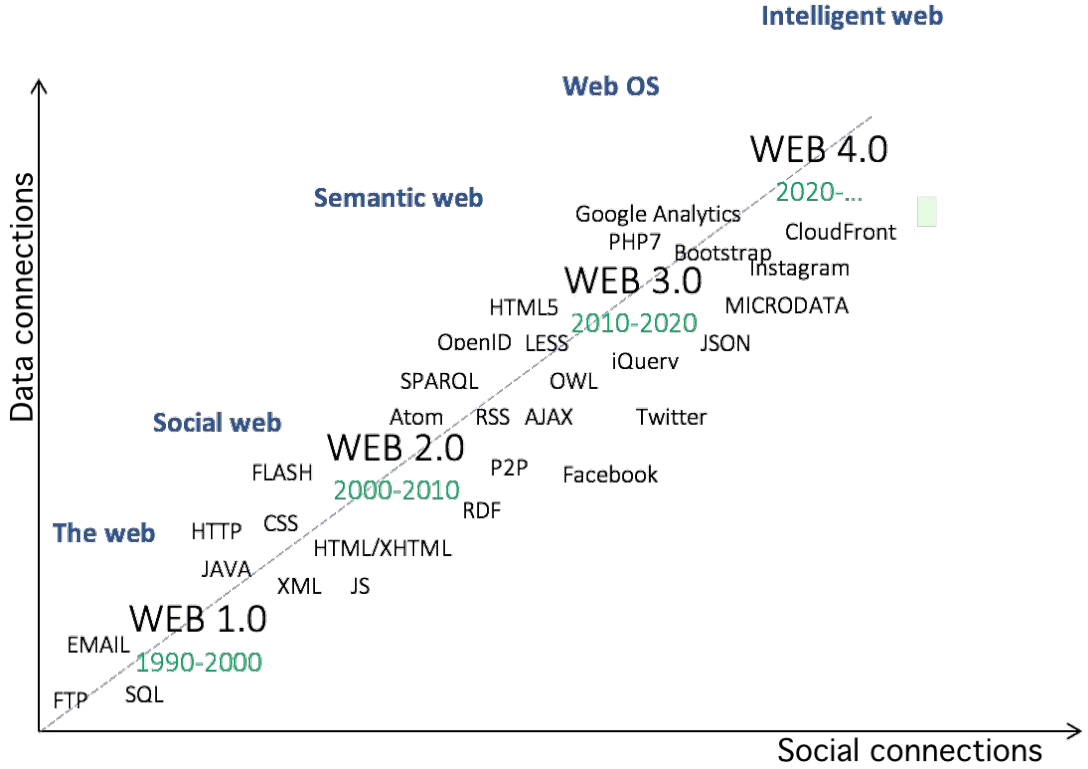
Aleksei Karetnikov
Maksim Hrytsenia



Semantic web in real life



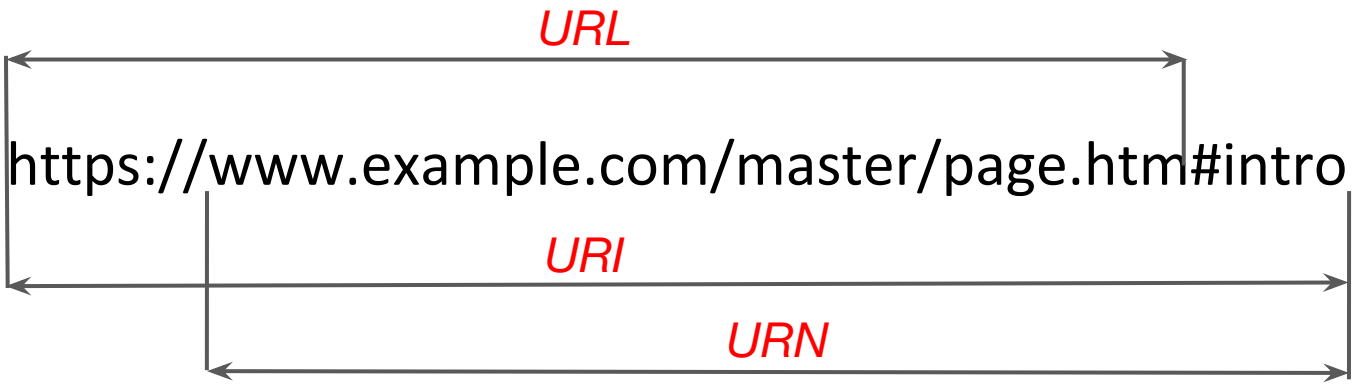
Web versions

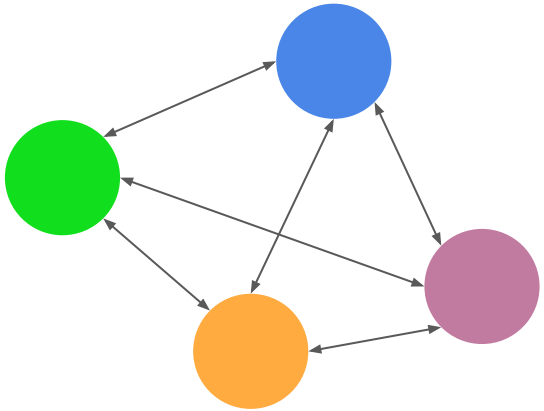


Web 1.0 → Web 2.0 → Web 3.0

URIs

"Anything can link to anything





RDF triples

Subject
(:The Mona Lisa)

Predicate
(:was created by)

Object
(:Leonardo da Vinci)

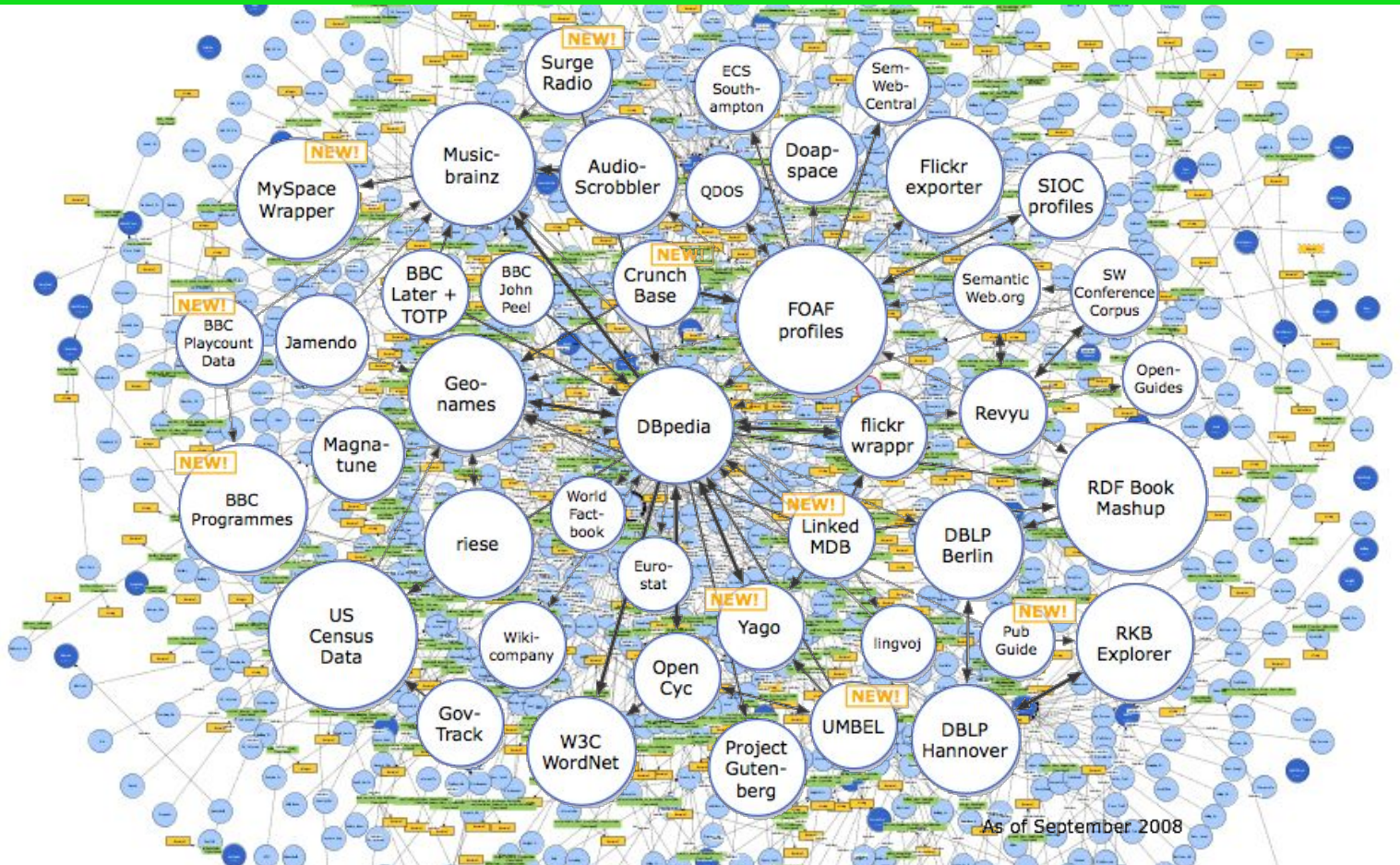
<http://dbpedia.org/page/Mona_Lisa>

<http://dbpedia.org/ontology/author>

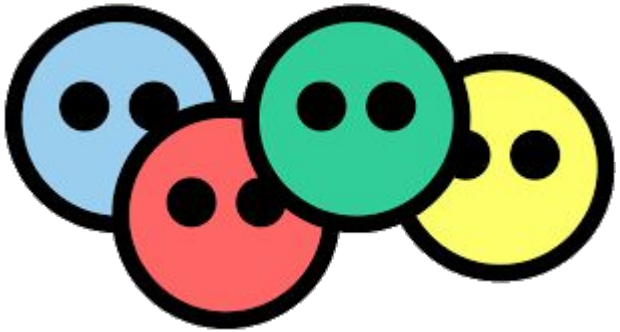
<http://dbpedia.org/page/Leonardo_da_Vinci>

DBpedia

Ontologies (Vocabularies)



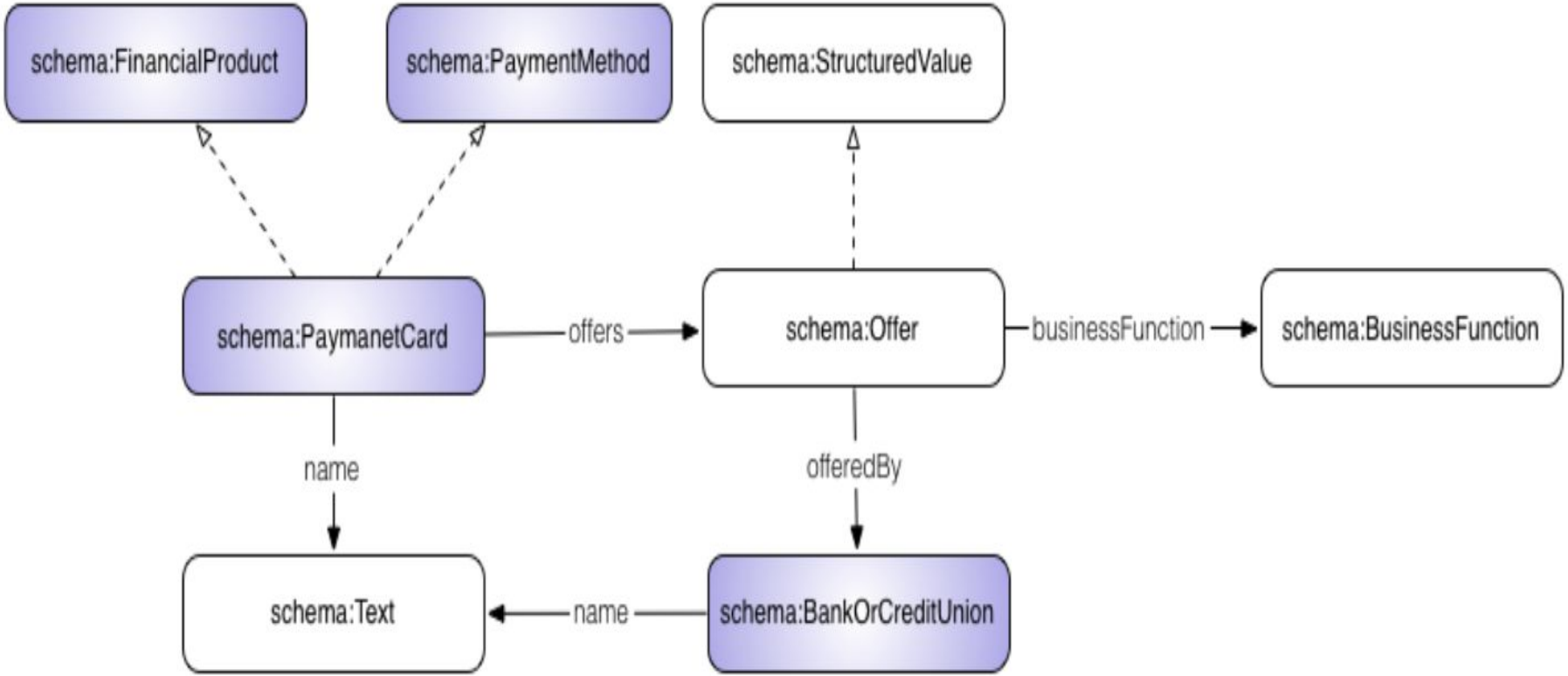
Vocabularies



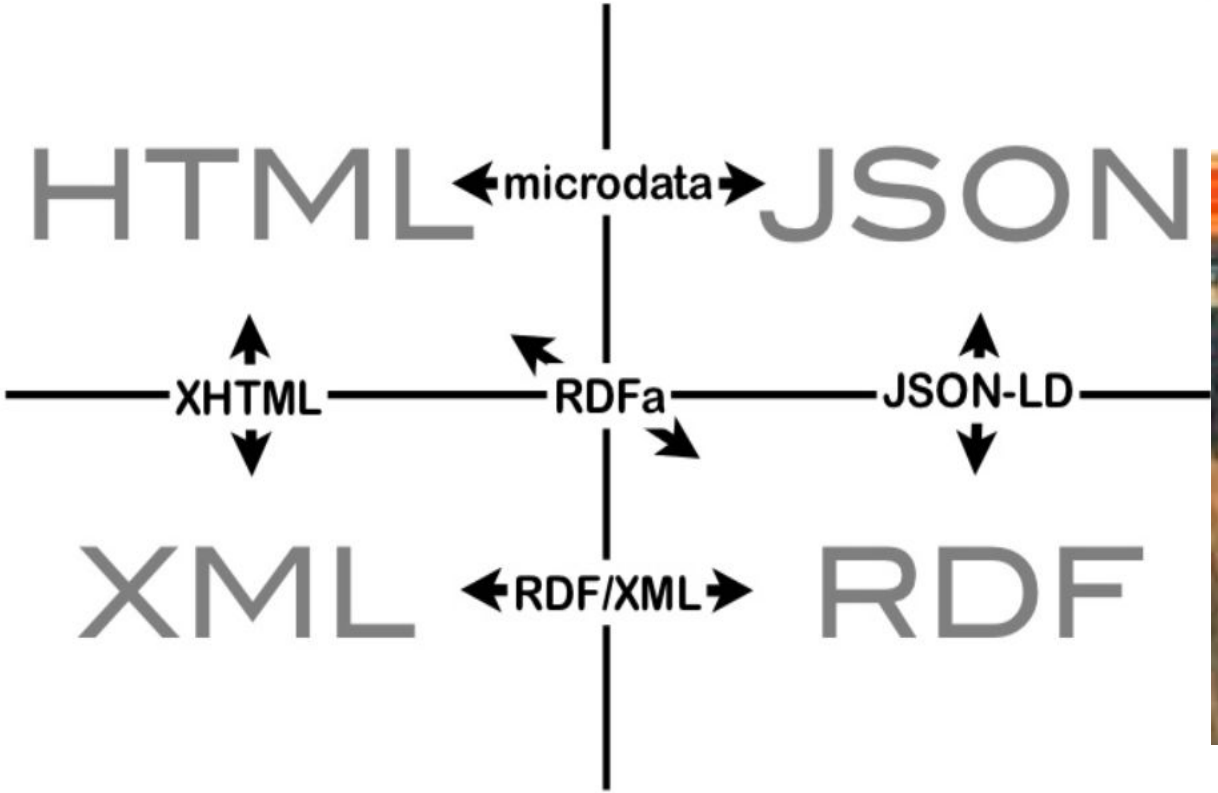
Schema.org

- Thing
  - Action
    - AchieveAction
      - LoseAction
      - TieAction
      - WinAction
    - AssessAction
      - ChooseAction
        - VoteAction
      - IgnoreAction
      - ReactAction
        - AgreeAction
        - DisagreeAction
        - DislikeAction
        - EndorseAction
        - LikeAction
        - WantAction
      - ReviewAction

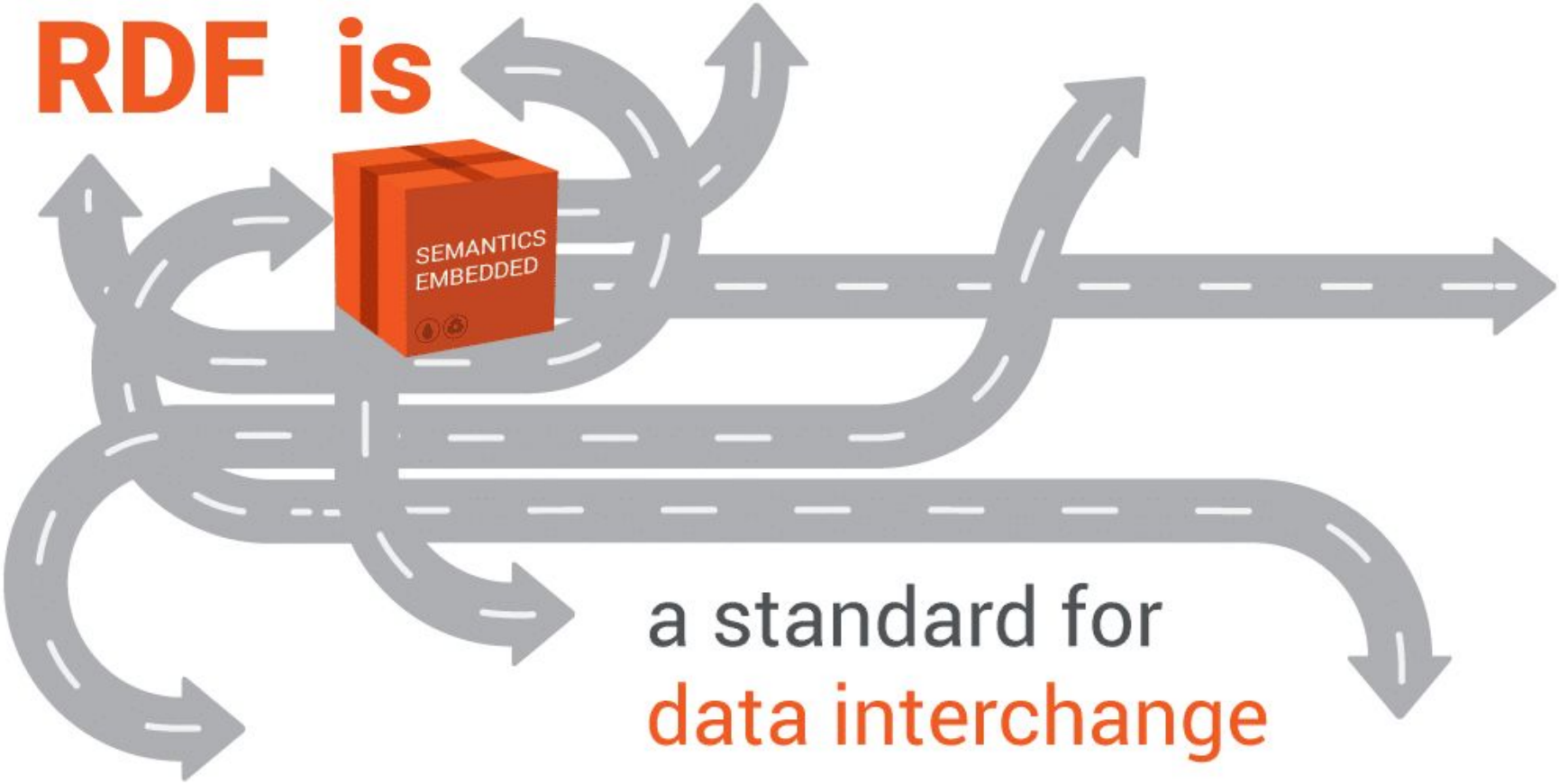
Schema.org


schema:FinancialProduct
schema:PaymentMethod
schema:StructuredValue
schema:PaymanetCard
offers
schema:Offer
businessFunction
schema:BusinessFunction
name
offeredBy
schema:Text
name
schema:BankOrCreditUnion

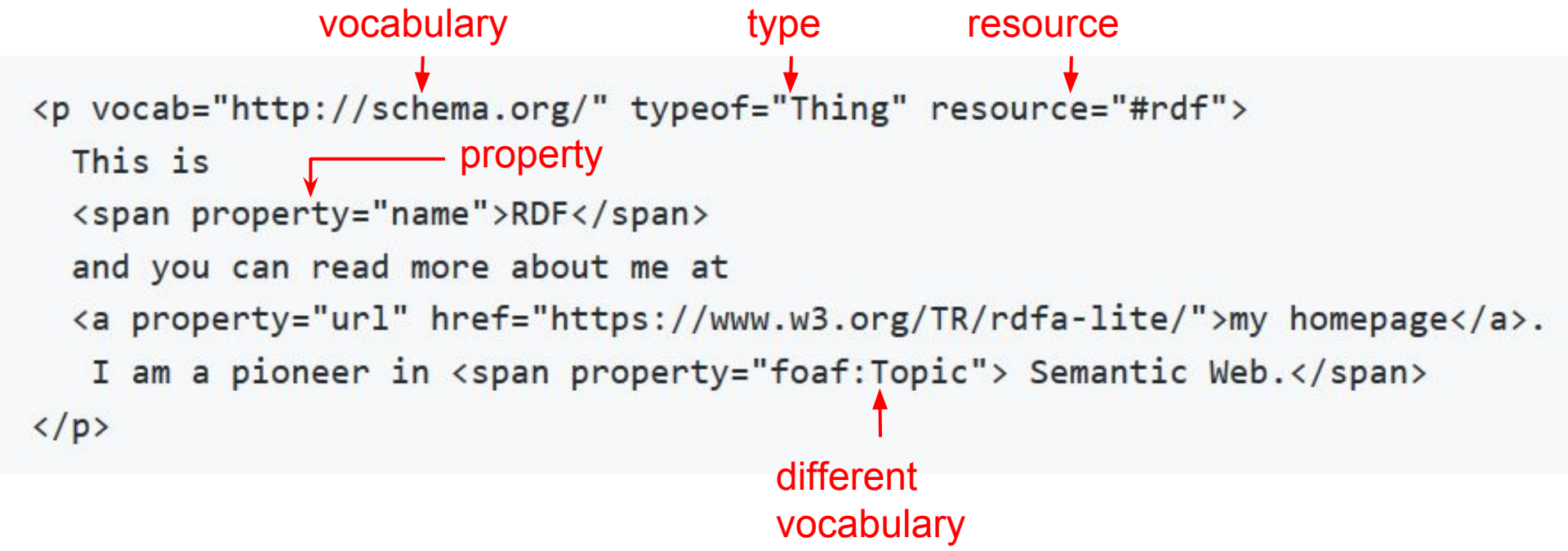
Formats and relationships



RDFa



RDFa




```
<p vocab="http://schema.org/" typeof="Thing" resource="#rdf">
  This is
  <span property="name">RDF</span>
  and you can read more about me at
  <a property="url" href="https://www.w3.org/TR/rdfa-lite/">my homepage</a>.
   I am a pioneer in <span property="foaf:Topic"> Semantic Web.</span>
</p>
```

Microdata

patatas bravas recipe

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About 519,000 results (0.49 seconds)

Directions

1. Combine potatoes, 2 cups olive oil, and 3 teaspoons salt in a large cold skillet. Heat on low and cook until potatoes are softened, 12 to 15 minutes. ...
2. Heat 3 tablespoons olive oil in a large saucepan over medium heat. ...
3. Serve patatas bravas with tomato puree and and mayonnaise for dipping.

Authentic Patatas Bravas Recipe - Allrecipes.com
https://www.allrecipes.com/recipe/228954/authentic-patatas-bravas/

Microdata

```
<dl itemscope
   itemtype="http://schema.org/Book"
   itemid="urn:isbn:0-330-34032-8">
<dt>Title
<dd itemprop="name">The Reality Dysfunction
<dt>Author
<dd itemprop="author">Peter F. Hamilton
<dt>Publication date
<dd><time itemprop="datePublished" datetime="1996-01-26">26 January 1996</time>
</dl>
```

Scope

Type

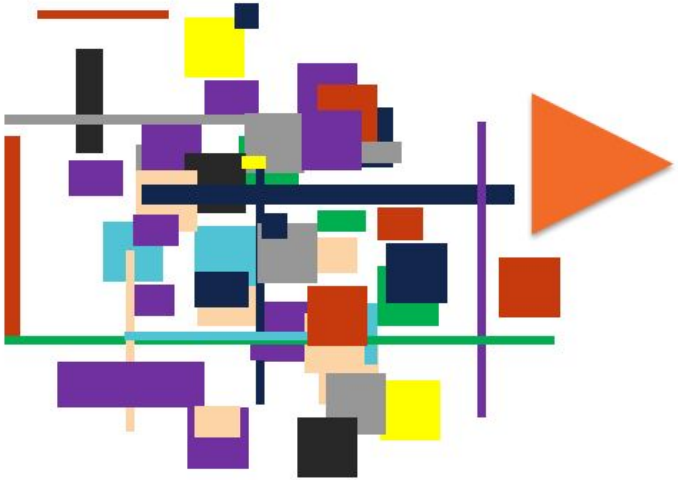
Global Id

Property

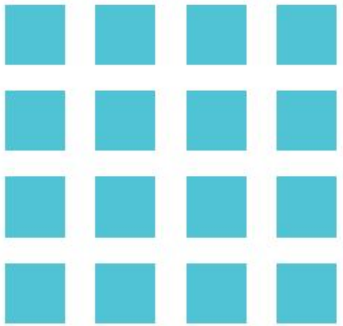
JSON-LD

What does JSON-LD do?

Unstructured Data



Structured Data



"Data is messy and disconnected. JSON-LD organizes and connects it, creating a better Web."

JSON-LD example

```
<script type='application/ld+json'>
{
 "@context": {
   "@vocab": "http://www.schema.org/",
   "friends":{
       "@container": "@list"
   }
  },
 "@type": "Person",
 "familyName" : "Doe",
 "address": {
   "@type": "postalAddress",
   "addressLocality": "Barcelona",
   "addressCountry": "Spain"
 },
 "friends": ["Chuck Norris", "Bill Gates"]
}
</script>
```

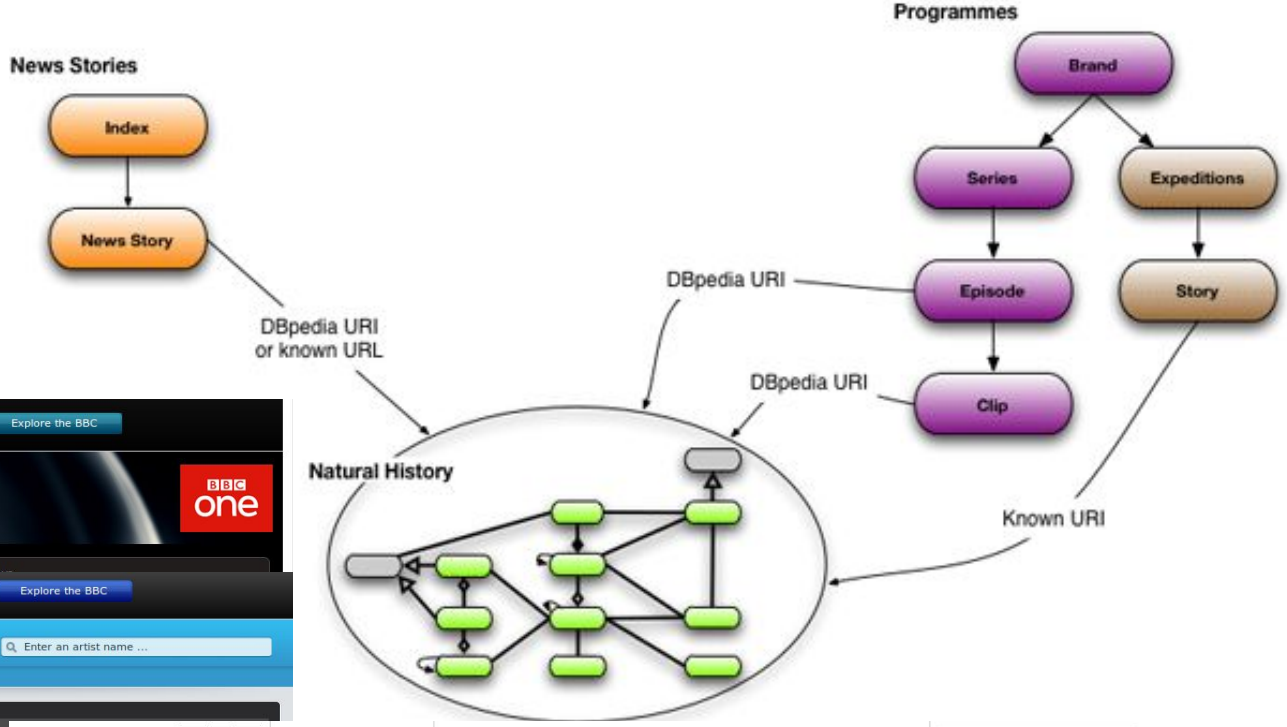
It is a script

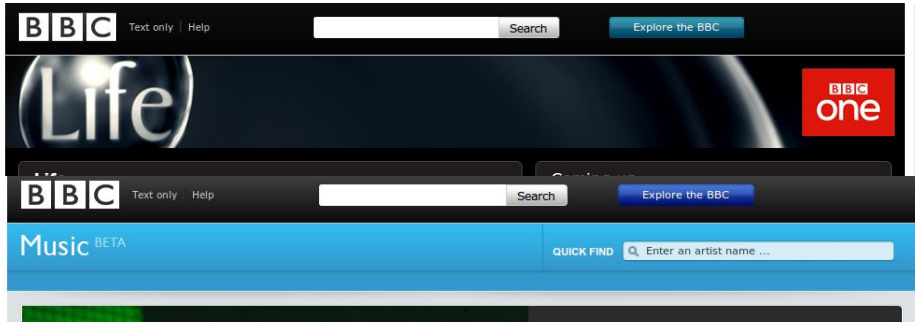
Specifies the object main information

Type

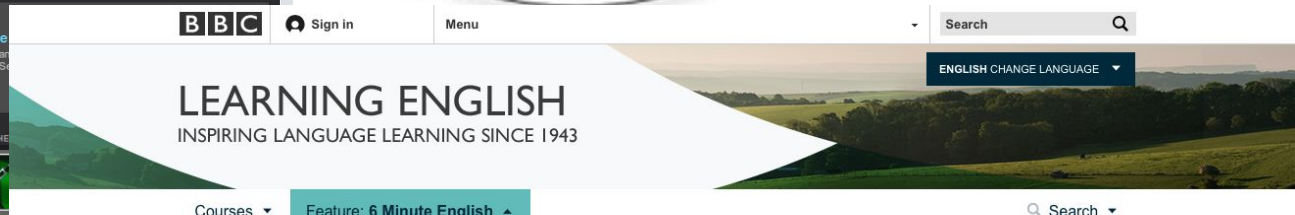
Nested object

BBC

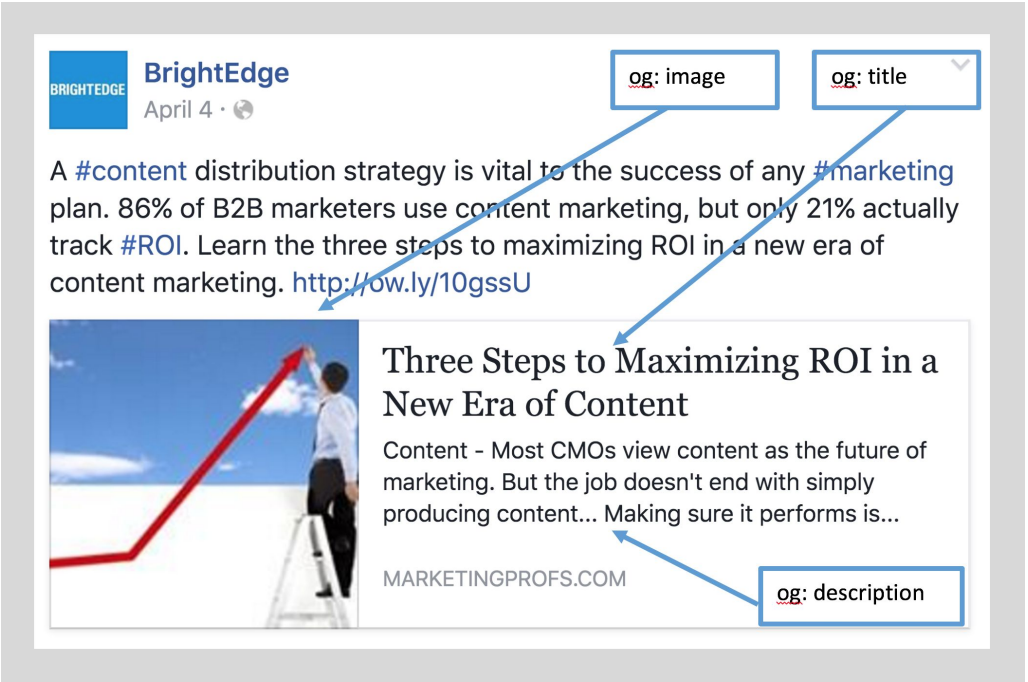

News Stories
Index
News Story
Programmes
Brand
Series
Expeditions
Episode
Story
Clip
DBpedia URI
or known URL
DBpedia URI
DBpedia URI
Natural History
Known URI

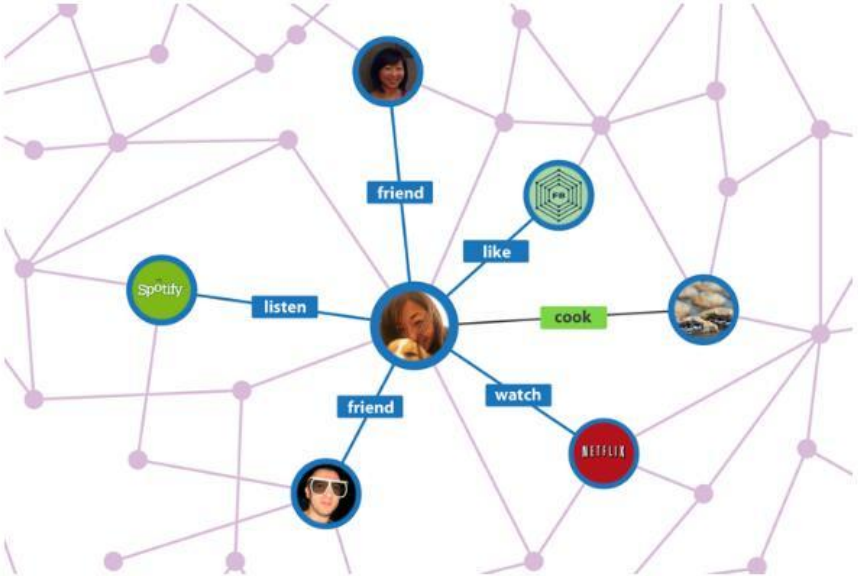

Text only
Help
Search
Explore the BBC
Life
BBC one

Text only
Help
Search
Explore the BBC
Music BETA
QUICK FIND
Enter an artist name ...
BBC 1XTRA
Watch 1Xtra Live
MORE MUSIC ON THE

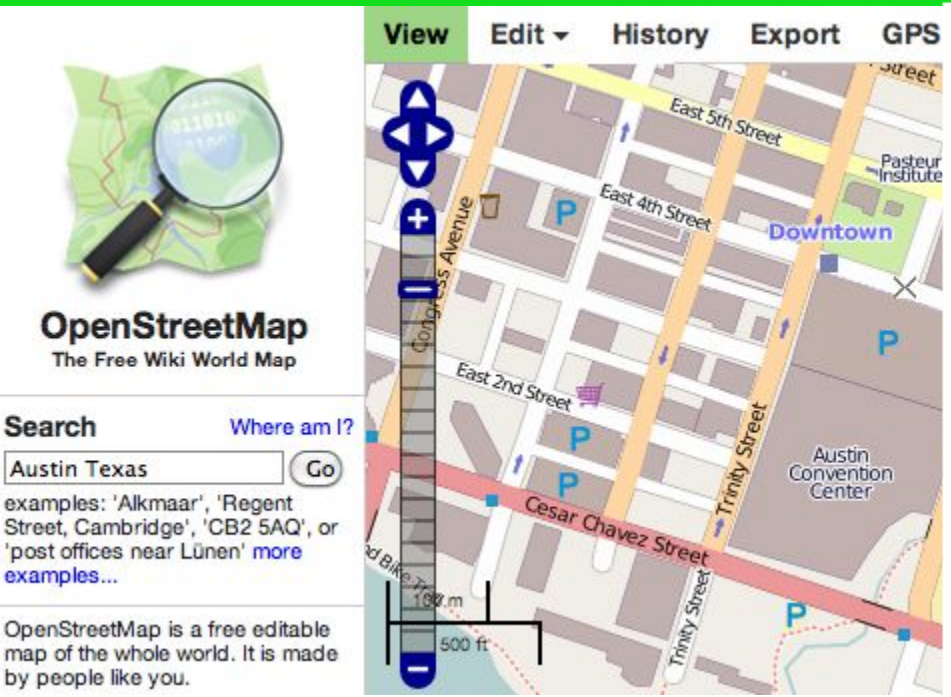

Sign in
Menu
Search
ENGLISH CHANGE LANGUAGE
LEARNING ENGLISH
INSPIRING LANGUAGE LEARNING SINCE 1943
Courses
Feature: 6 Minute English
Search

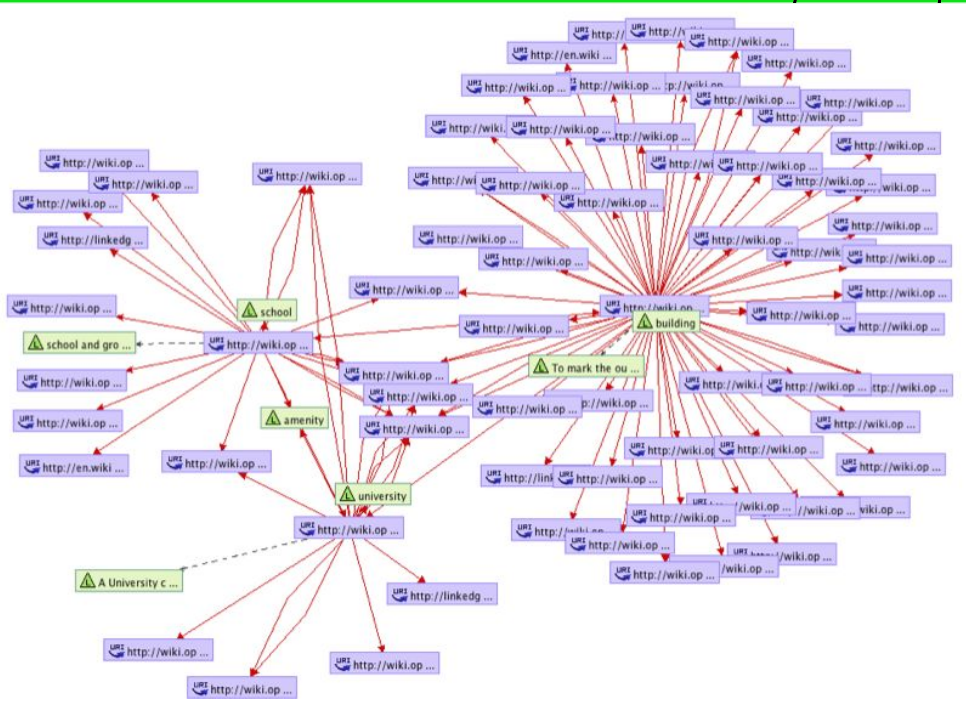
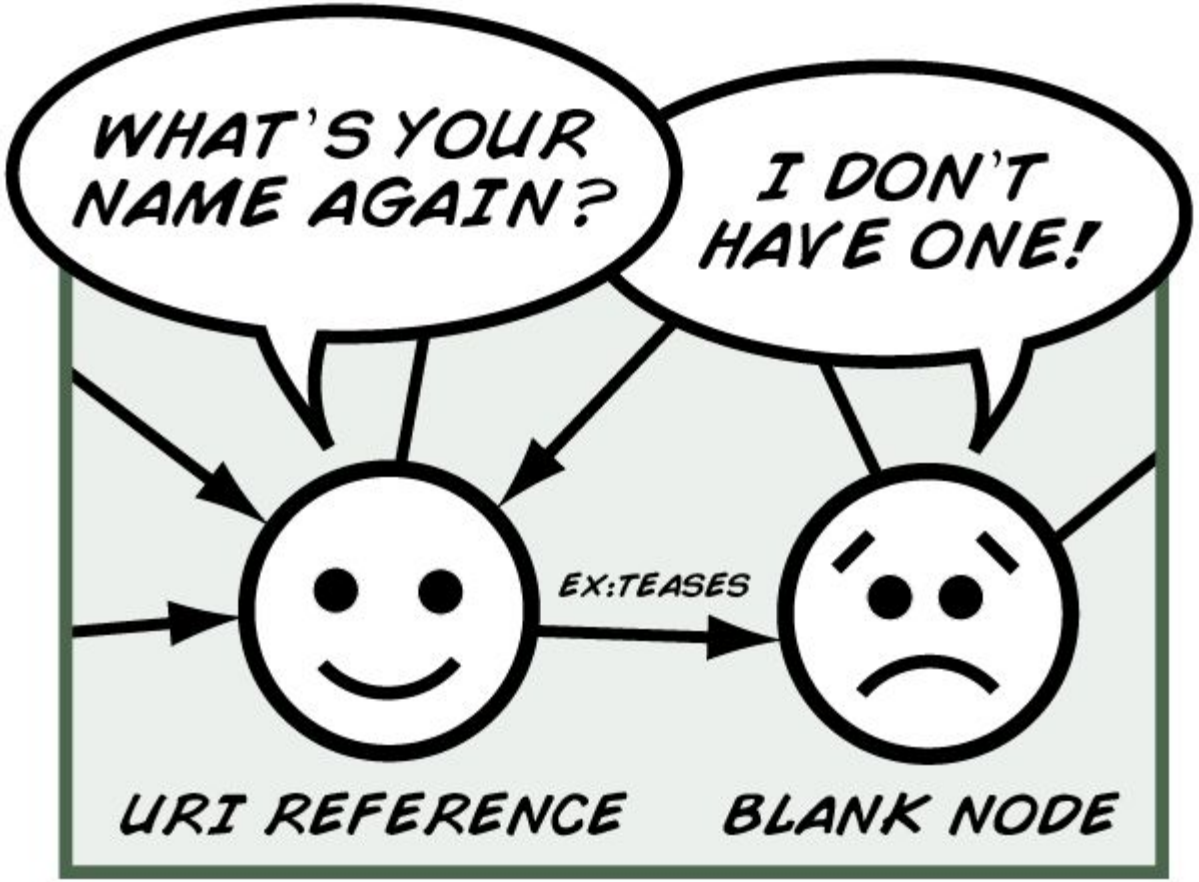
Facebook Open Graph





OpenStreetMap Semantic Network





Instead of Conclusion