Building Chinese Linking Open Data

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Introduction - LOD

- ***What is Linked Data?***
- ***LOD – Linking Open Data***

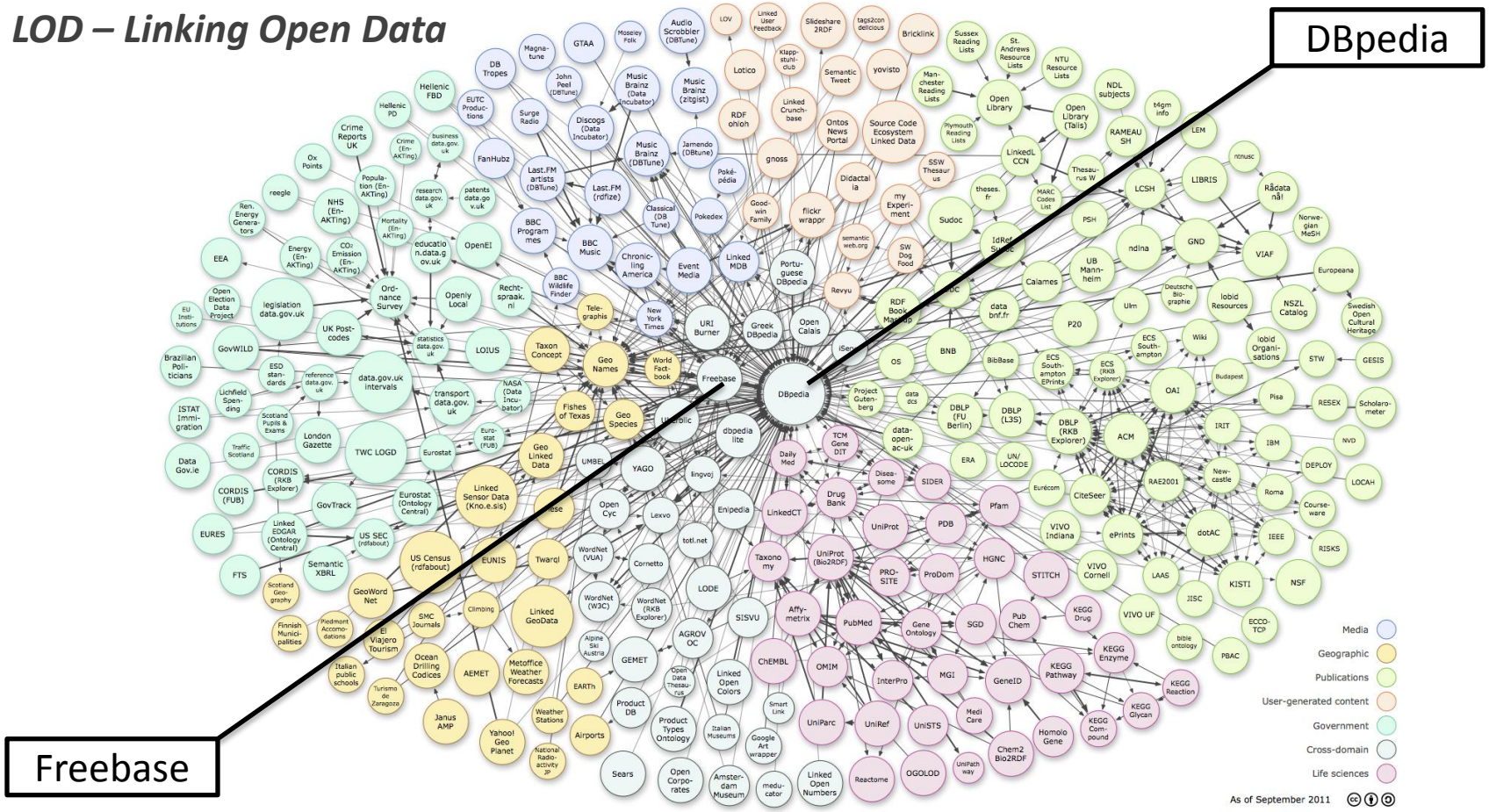


Figure: LOD Cloud Diagram as of September 2011 (Each node is a dataset)

Introduction - CLOD

- *CLOD – Chinese Linking Open Data*

- ***Problem 1: native CLOD dataset rarely exists***
  - *Only two datasets exist*
- ***Problem 2: Chinese information also rarely appears in existing multilingual LOD datasets***
  - *They are built on English with some entries translated to Chinese*
  - *Not complete and lack of real-world usage*

Objectives

Build a LOD dataset native to Chinese.

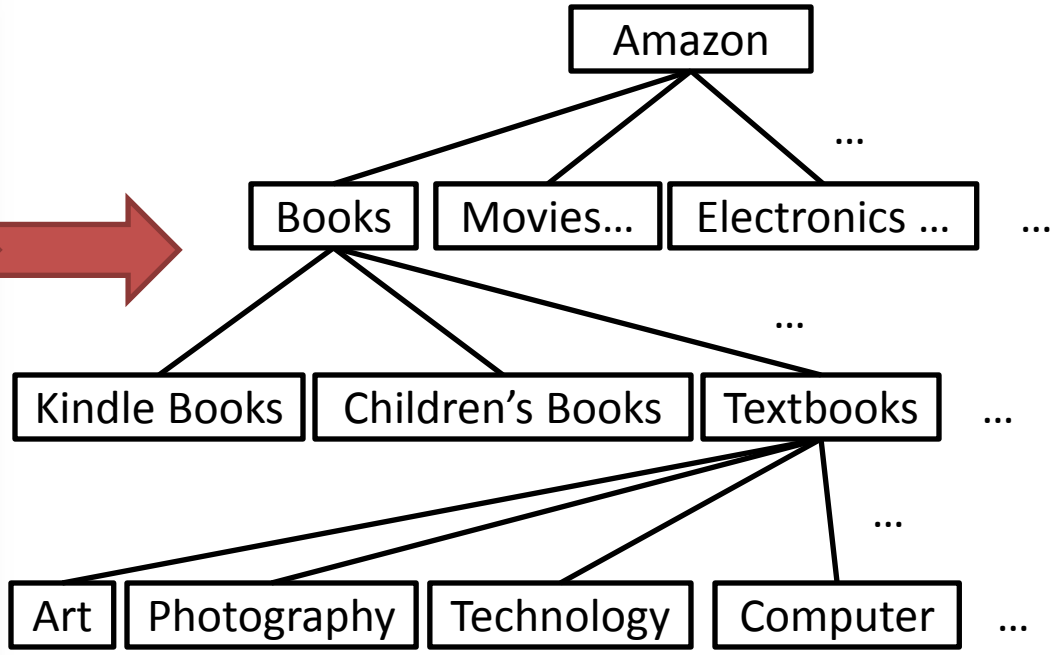
Two representative problems:

1. ***How to discover synonyms***
2. ***How to merge ontologies***

Methodology

1. *Category Extraction*
2. *Category Representation*
3. *Synonym Discovery*
4. *Ontology Merging*

Methodology – Category Extraction



We have extracted

Category hierarchy from **50** Chinese sites, then **50** trees (**ontologies**) have been built.

e.g.: 淘宝网，亚马逊（中国），维基百科（中文），互动百科……

Methodology – Category Representation

Three ways to represent a category:

1. *String of the name*
2. *Related category*
3. *Related category frequency*

e.g.:

1. 南京
2. 南京：江苏 **地区** 中国历史文化名城 **香烟品牌** 石头城 古都 …
3. 南京：江苏 8 地区 8 中国历史文化名城 1 香烟品牌 1 石头城 1 古都 1 …

Methodology – Synonym Discovery

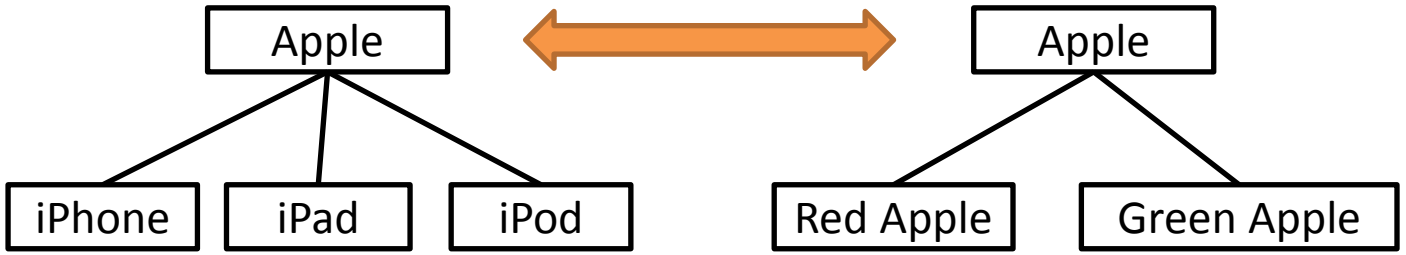
Three algorithms to estimate how two words are similar to each other

1. ***BOWISim:*** *based on Levenshtein distance*
2. ***BORCSSim:*** *based on Jaccard similarity*
   (work on Related category)
3. ***BORCVSim:*** *based on cosine similarity*
   (work on Related category frequency)

e.g.: *New York City vs. NYC*

Methodology – Ontology Merging

- ***To determine the `owl:sameAs` relationship, synonym is not enough to combine two nodes together.***
- e.g.:



- ***So we also need to inspect their* context information**

Novelty & Conclusion

We have built a LOD dataset native to Chinese

Two problems have been solved:

1. ***How to discover synonyms***
2. ***How to merge ontologies***

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