

OPEN, LINKED, SEMANTIC DATA

AN INTRODUCTION

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I S T O S

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THE GOAL

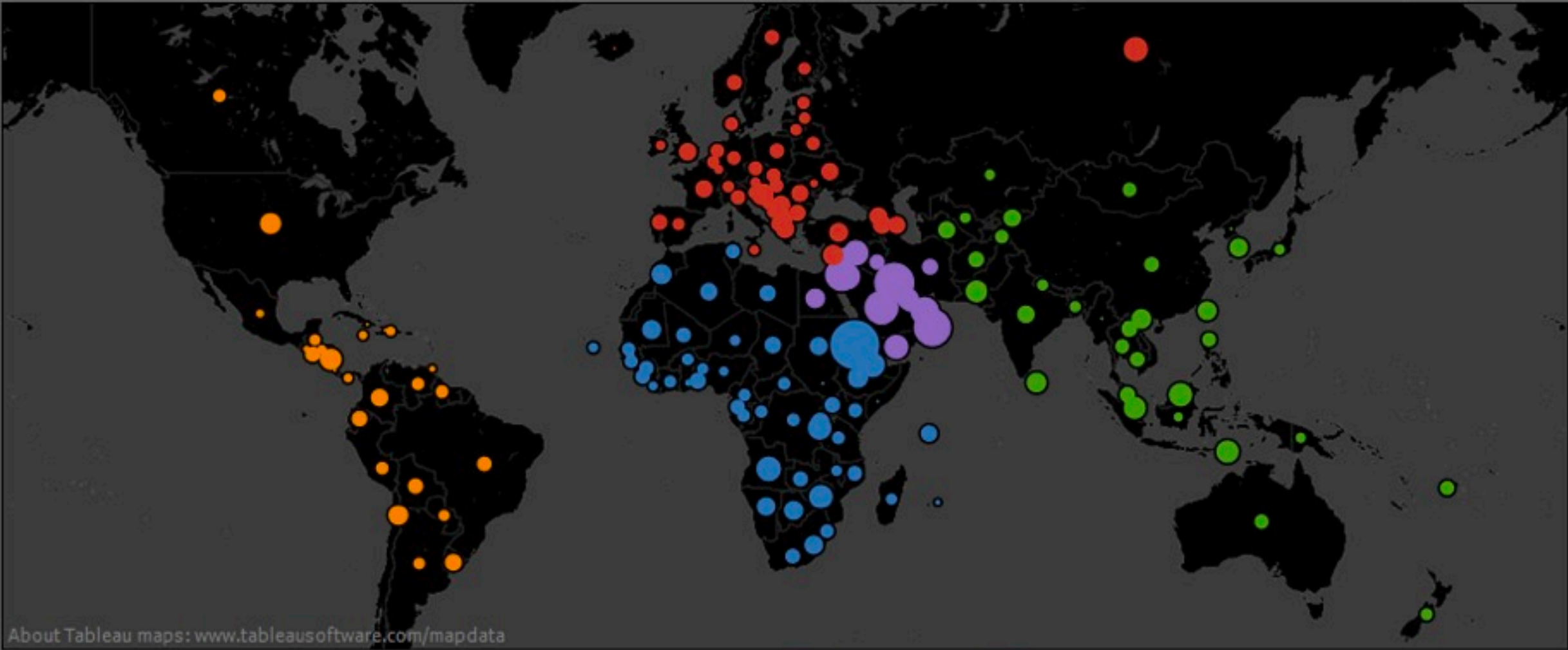
connect and explore data
to discover hidden patterns
and create new information

new information enables us to
formulate better solutions
and identify new opportunities

Global Military Spending

Show spend or % of GDP (avg pa) Military spending, % of GDP

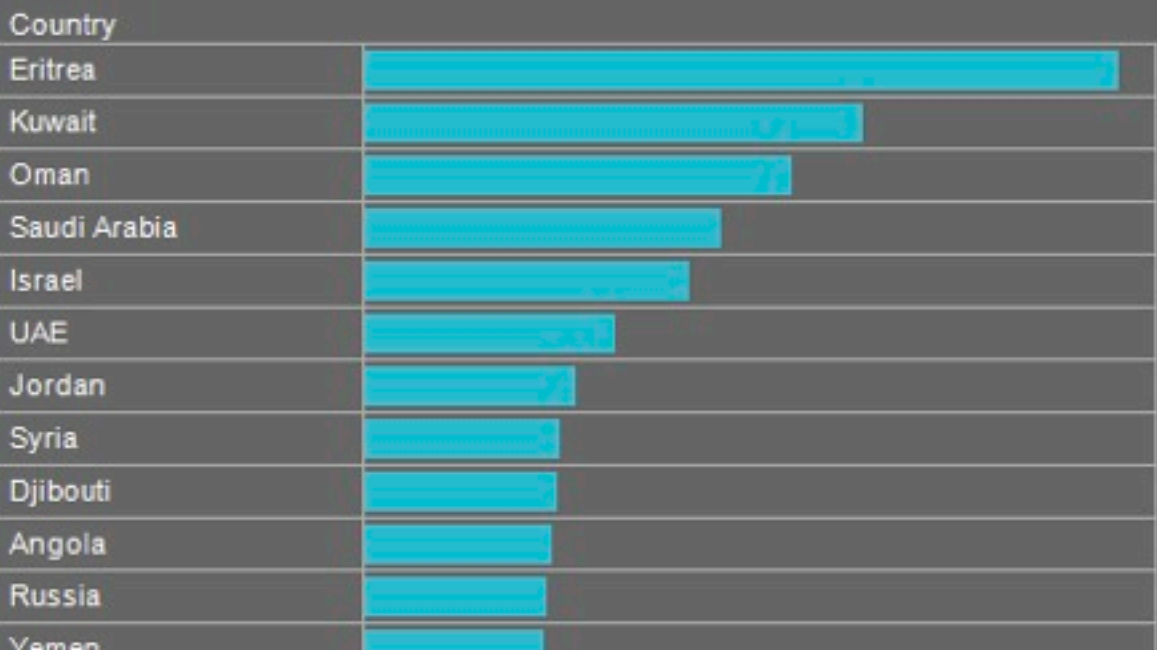
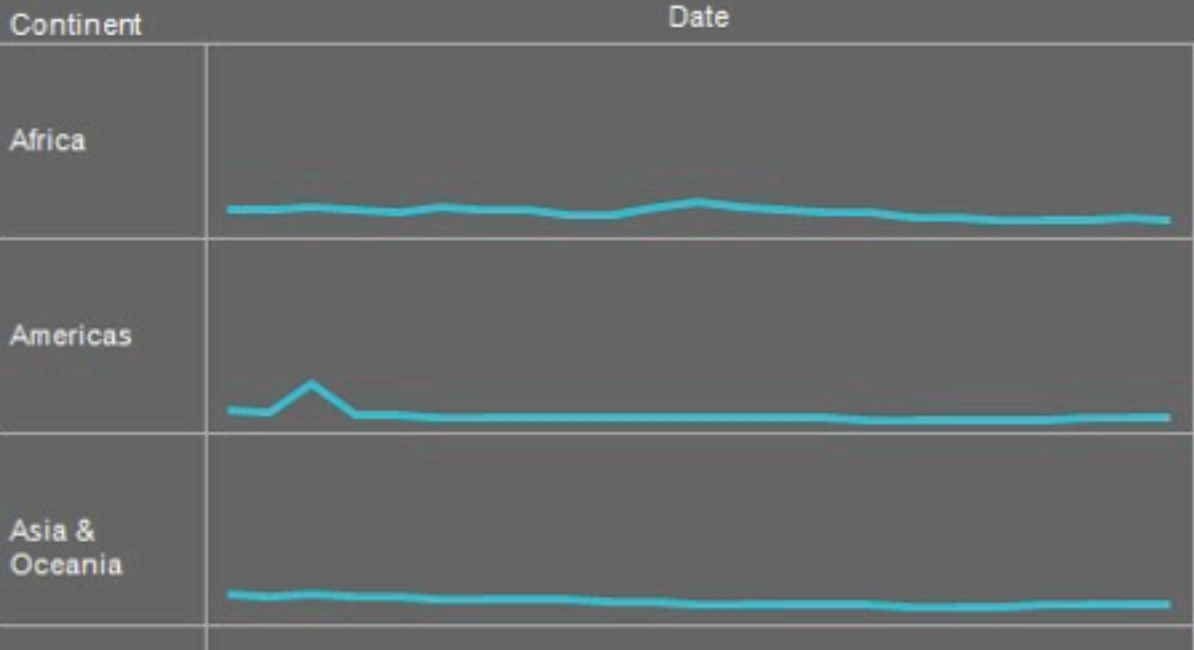
Continent Africa Americas Asia & Oceania Europe Middle East



About Tableau maps: www.tableausoftware.com/mapdata

Click Continent to filter bar chart

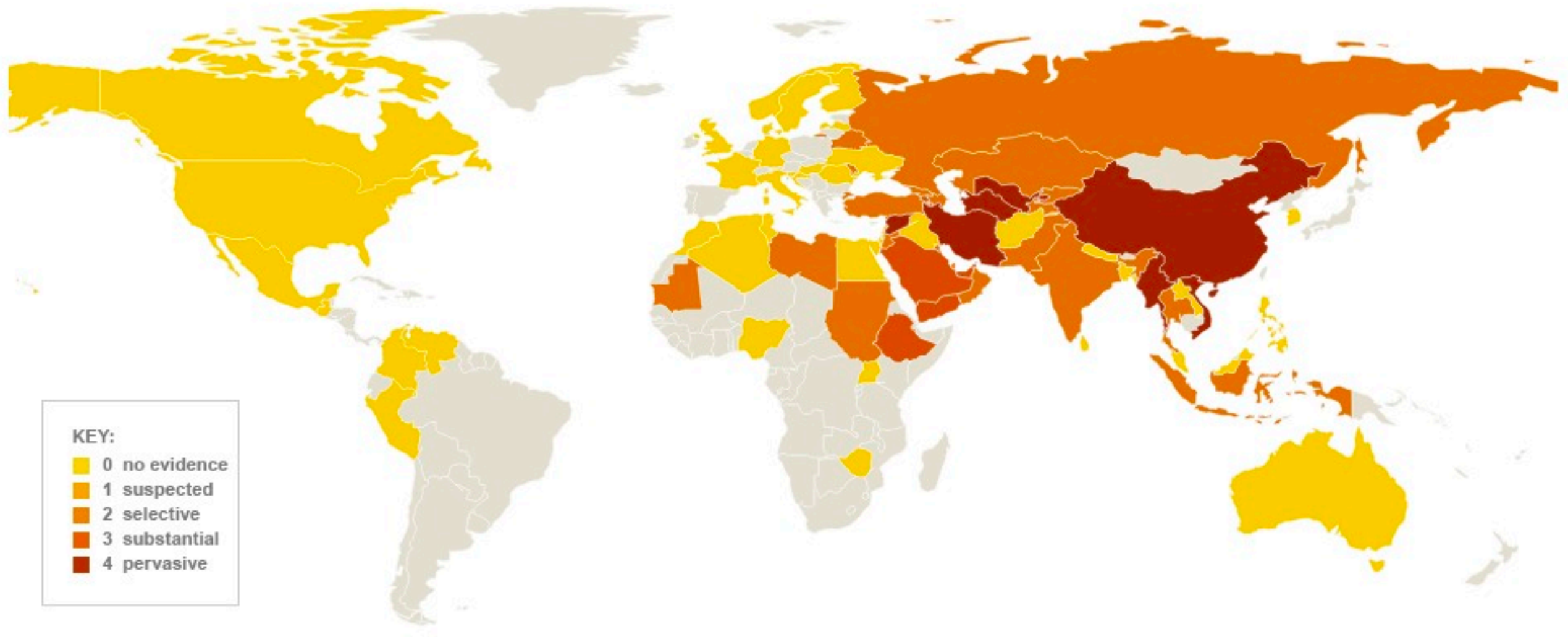
% of GDP Spend Shows average 1988-2010



Political

This category assesses interference with websites expressing views in opposition to the current government as well as content more broadly related to human rights, freedom of expression, minority rights and religious movements. A score out of four is awarded reflecting the observed level of filtering in each category.

Category: **Political**



KEY:

- 0 no evidence
- 1 suspected
- 2 selective
- 3 substantial
- 4 pervasive

Political

Social

Tools

Conflict/Security

Transparency

Consistency

The World at a Glance

Key development indicators from the World Bank

Economic Policy & External Debt

GDP (current US\$)

\$63,256,970,222,855 2010



[More indicators](#)

Health

Life expectancy at birth, total (years)

70 2010



[More indicators](#)

Education

Literacy rate, youth female (% of females ages 15-24)

87% 2009



[More indicators](#)

Environment

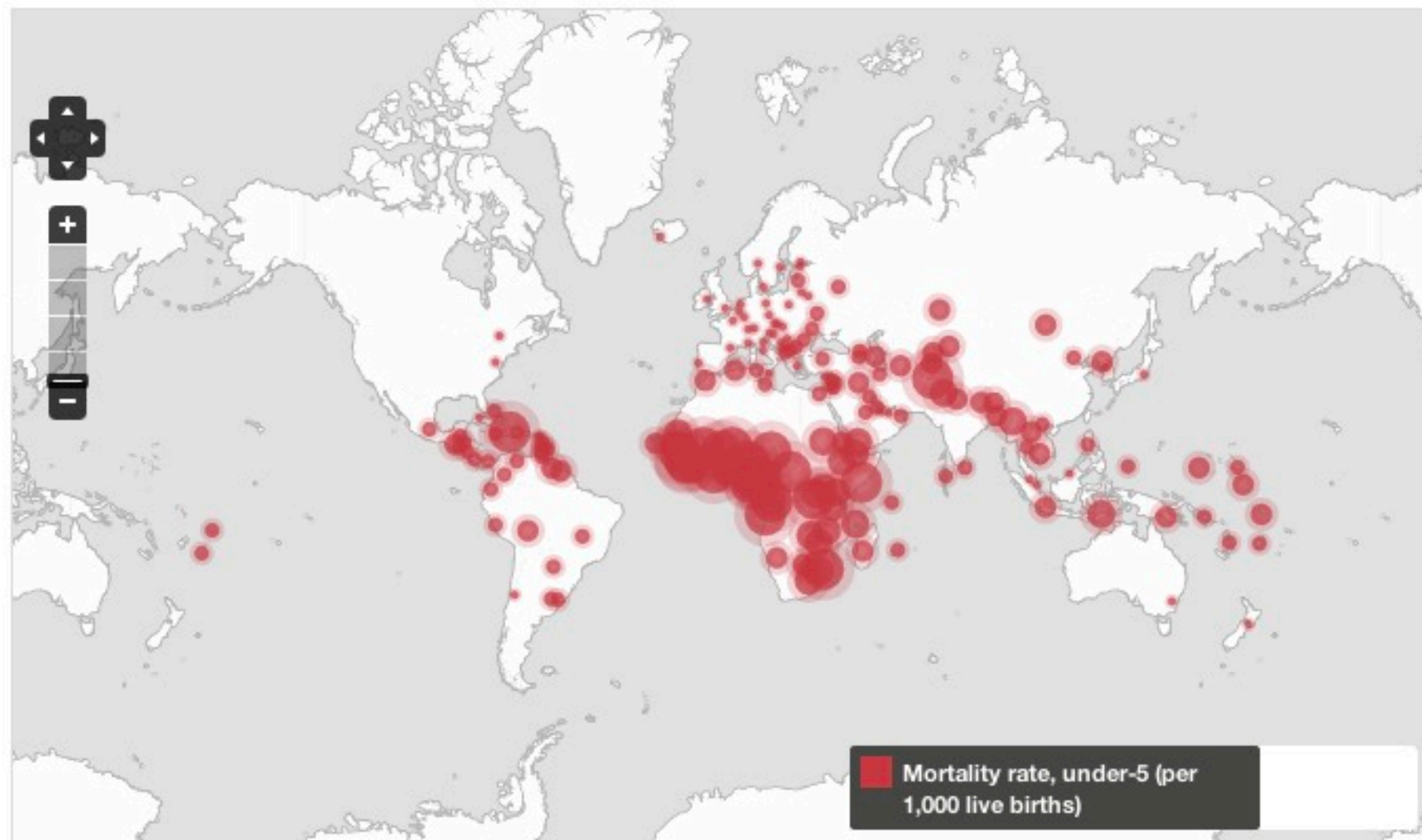
CO2 emissions (kt)

32,082,583 2008



[More indicators](#)

Indicators



■ Mortality rate, under-5 (per 1,000 live births)

Recent News Posts

The World at Your Fingertips: The New Data Finder App

16 Apr 2012

Explore, create and share development data

15 Apr 2012

Apps For Climate: Public Voting Now Open

9 Apr 2012

Opening up data on World Bank trust funds

26 Mar 2012

Accessing World Bank Open Data in Stata

15 Mar 2012

MAPPING GLOBAL MEDIA POLICY

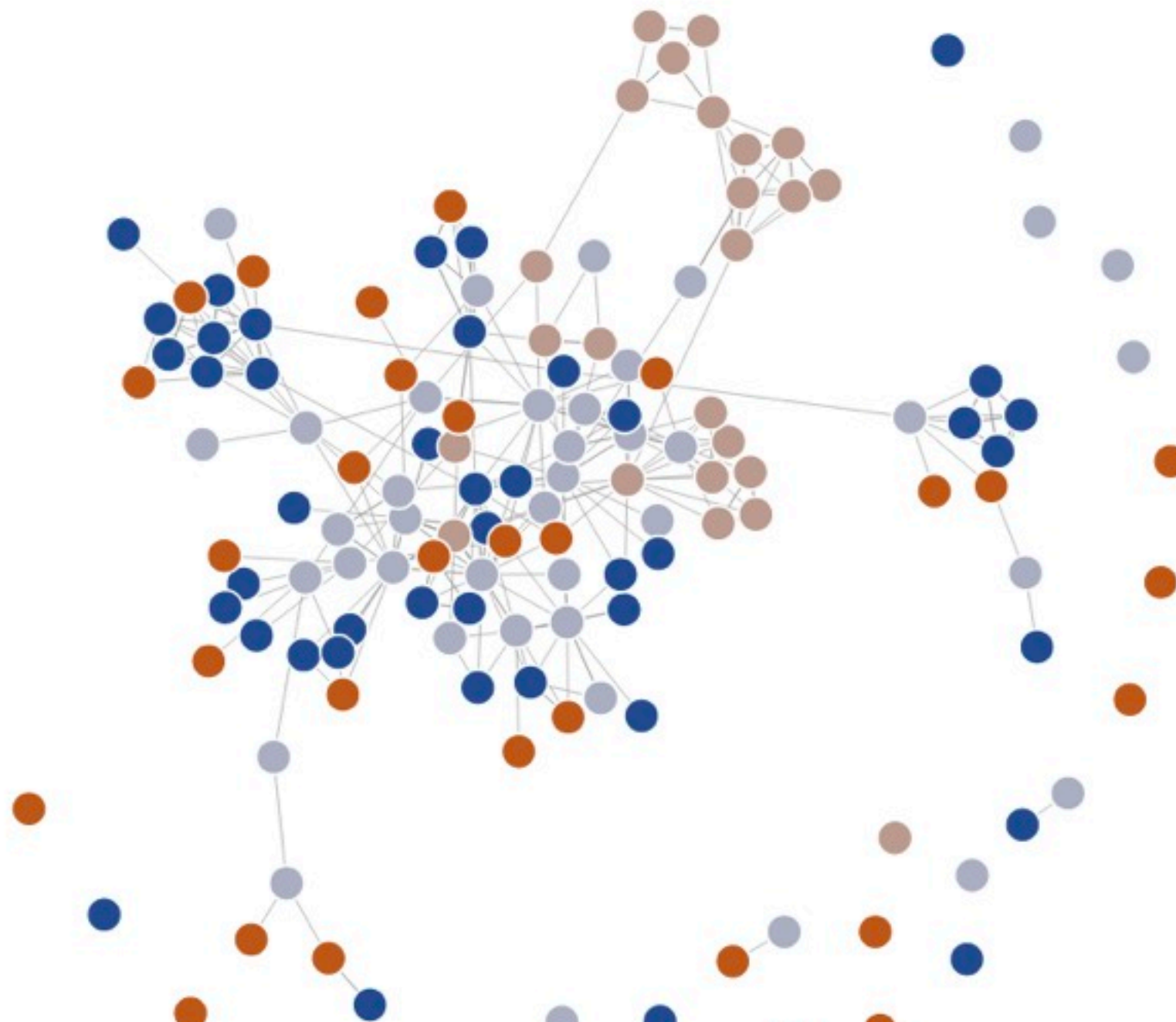
[WELCOME](#) [ABOUT](#) [GLOBAL MEDIA POLICY](#) [DATABASE](#) [VISUAL MAPS](#) [ANALYSIS](#) [EVENTS](#) [PARTNERSHIPS](#) [CONTACT](#)

People

Organizations

Resources

Policy Documents



OPEN DATA

- Data that is freely available for everyone to
 - access
 - use
 - and republish

OPEN PUBLIC DATA

- Objective, factual, non-personal data on which public services run and are assessed, and on which policy decisions are based, or which is collected or generated in the course of public service delivery (data.gov.uk)

GOVERNMENT AS A PLATFORM

- Allow citizens to analyze and use data in many different ways
- Influence policy based on facts

DATA QUALITY

- ★ Available on the web (whatever format), but with an open licence
- ★ ★ Available as machine-readable structured data (e.g. excel instead of image scan of a table)
- ★ ★ ★ as (2) plus non-proprietary format (e.g. CSV instead of excel)
- ★ ★ ★ ★ All the above plus, Use open standards from W3C (RDF and SPARQL) to identify things, so that people can point at your stuff
- ★ ★ ★ ★ ★ All the above, plus: Link your data to other people's data to provide context

THE SEMANTIC WAY

- Build Models
- Exchange Information
- Visualize - Analyze
- Derive new fact (calculate with knowledge)



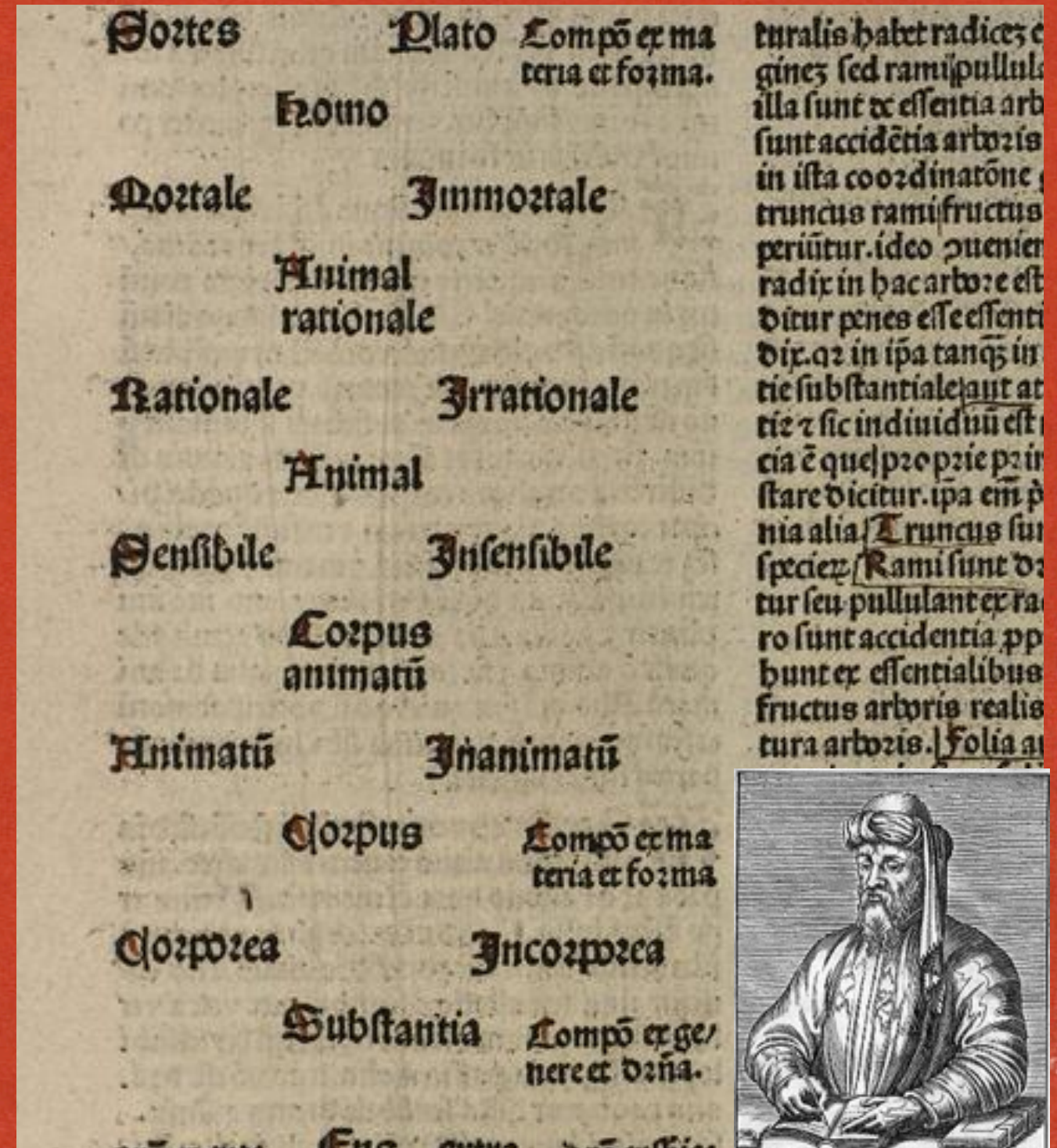
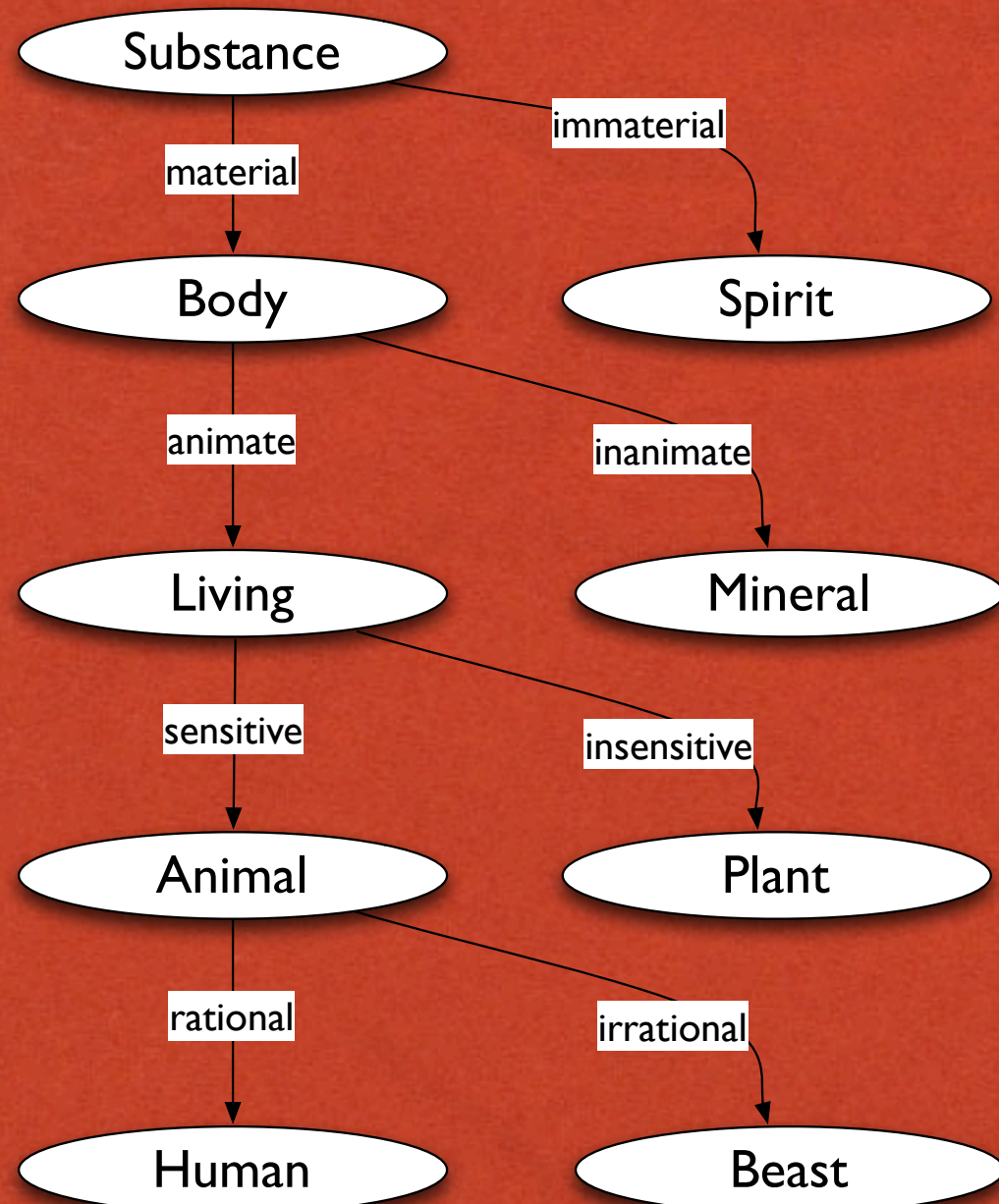
THE PROCESS

- Build an ontology or vocabulary
- State facts about domain
- Correlate facts - reduce ambiguity
- Reason about ontologies and facts

ontology is a description of knowledge about
a domain of interest

ὄντως = *that is how it is*

arbor porhyriana



234AD, Tyre (Lebanon)



knowledge on the web is modeled using
RDF, RDFs
and/or the Web Ontology Language - OWL

URI

- Uniform Resource Identifiers
 - a compact sequence of characters to identify an abstract or physical resource
 - scheme:[//authority]path[?query][#fragment]
 - e.g. <http://www.regione.sardegna.it/uri>

RDF + URI



RDF + URI



<http://www.istos.it/ronald#me>

<http://dbpedia/resource/Sicily>



<http://www.istos.it/ronald#me>

<http://www.istos.it/uri>



<http://www.istos.it/uri>

<http://dbpedia/resource/Ispica>

RDF SCHEMA

- RDF is a general way to describe structured information
- RDF Schema extends RDF to express general information about a data set
 - Resources, Classes, Literals, Datatypes, Properties
 - range, domain, subClassOf, subPropertyOf

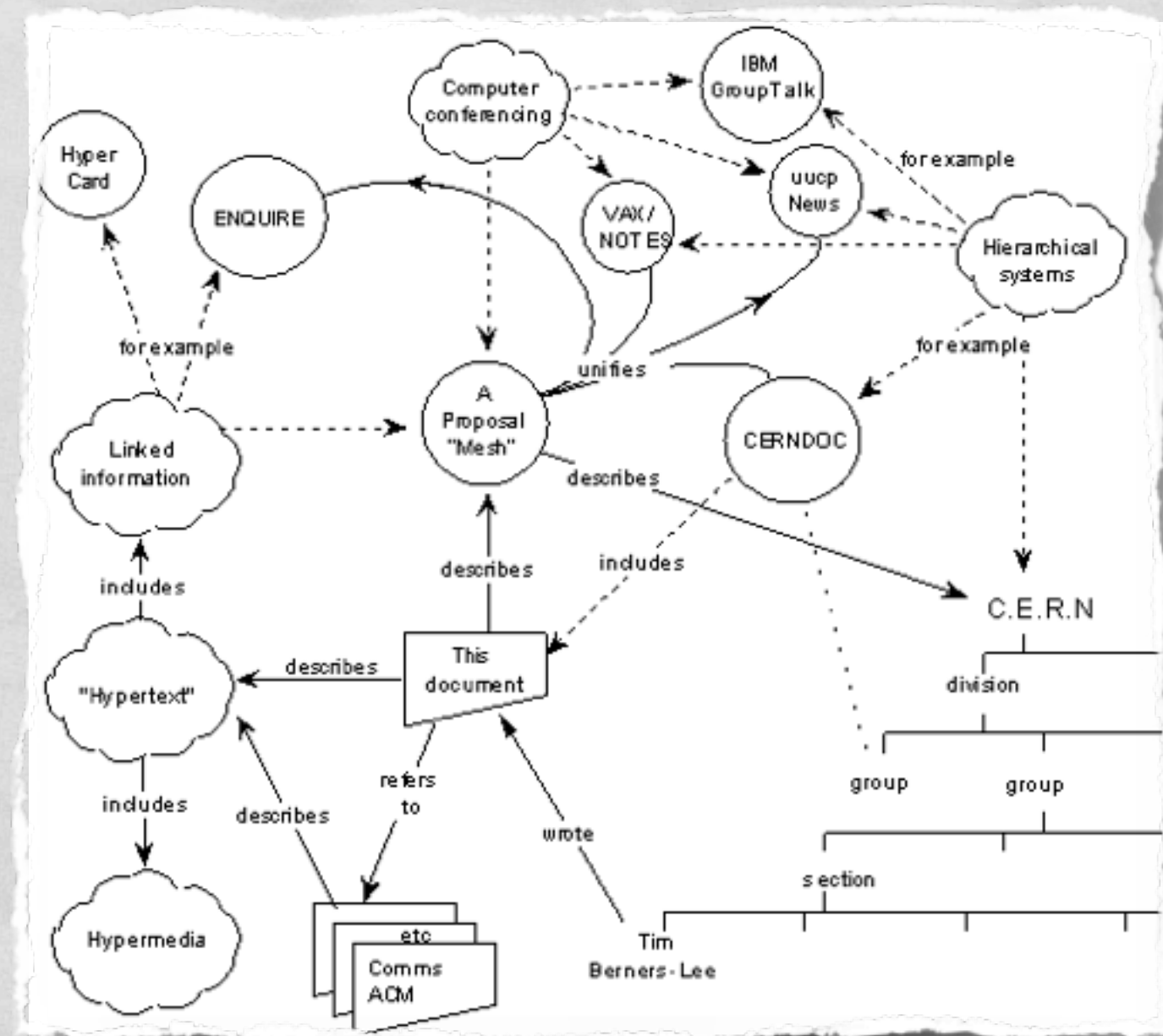
RDFS SERIALIZATIONS

- N3, N-Triples, Turtle
 - Human readable, limited software support
- RDF XML
 - takes advantage of tools to parse XML
- RDFa - enables RDF to be embedded in HTML

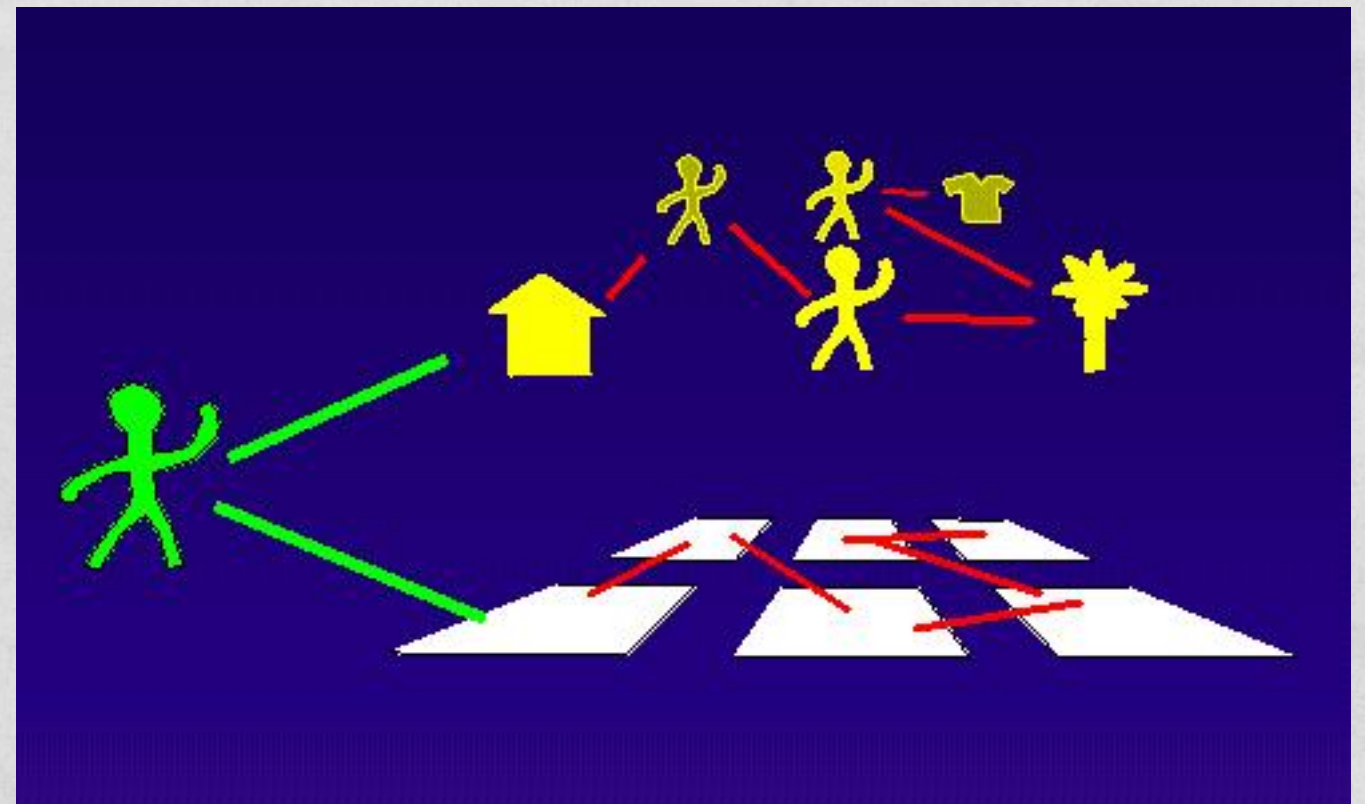
EXCHANGING INFORMATION

WWW 0.1

the original web was
thought of with
ontological
information at its
heart

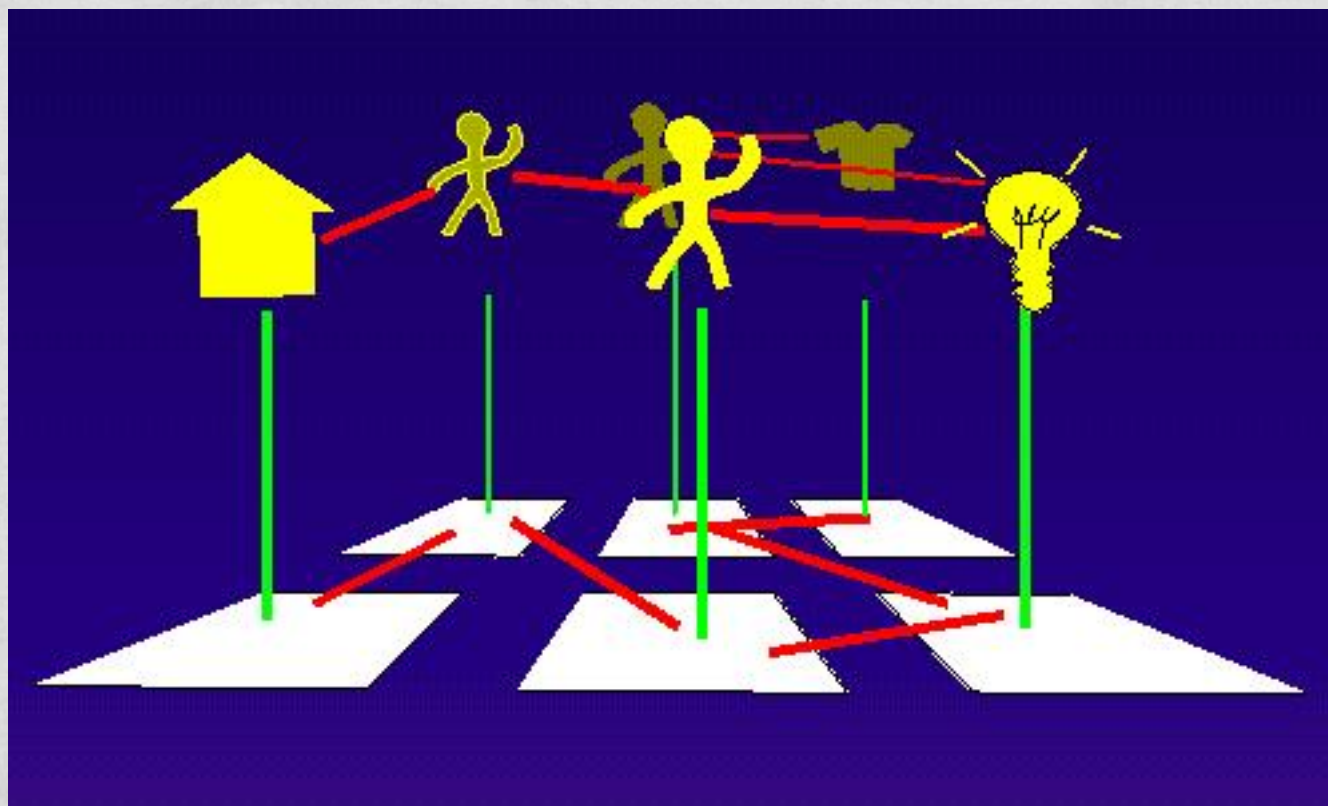


THE PROBLEM



<http://www.w3.org/Talks/WWW94Tim/>

THE SEMANTIC WEB



the semantic web provided tools but
not enough method - the linked data
effort tries to rectify this

EXCHANGE MORE
INFORMATION
THE LINKED DATA EFFORT

1. Use URIs as names for things
2. Use HTTP URIs so that people can look things up
3. Provide useful info using standards (Sparql)
4. Include links to other URIs

SPARQL

- Protocol and RDF Query Language
- Graph pattern matching
 - Uses RDF triples but they may be variables
- The reply is the RDF graph equivalent to the subgraph described


```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
```

```
SELECT ?name ?email
```

```
WHERE {  
  ?person a foaf:Person.  
  ?person foaf:name ?name.  
  ?person foaf:mbox ?email.  
}
```

endpoint: world-wide web

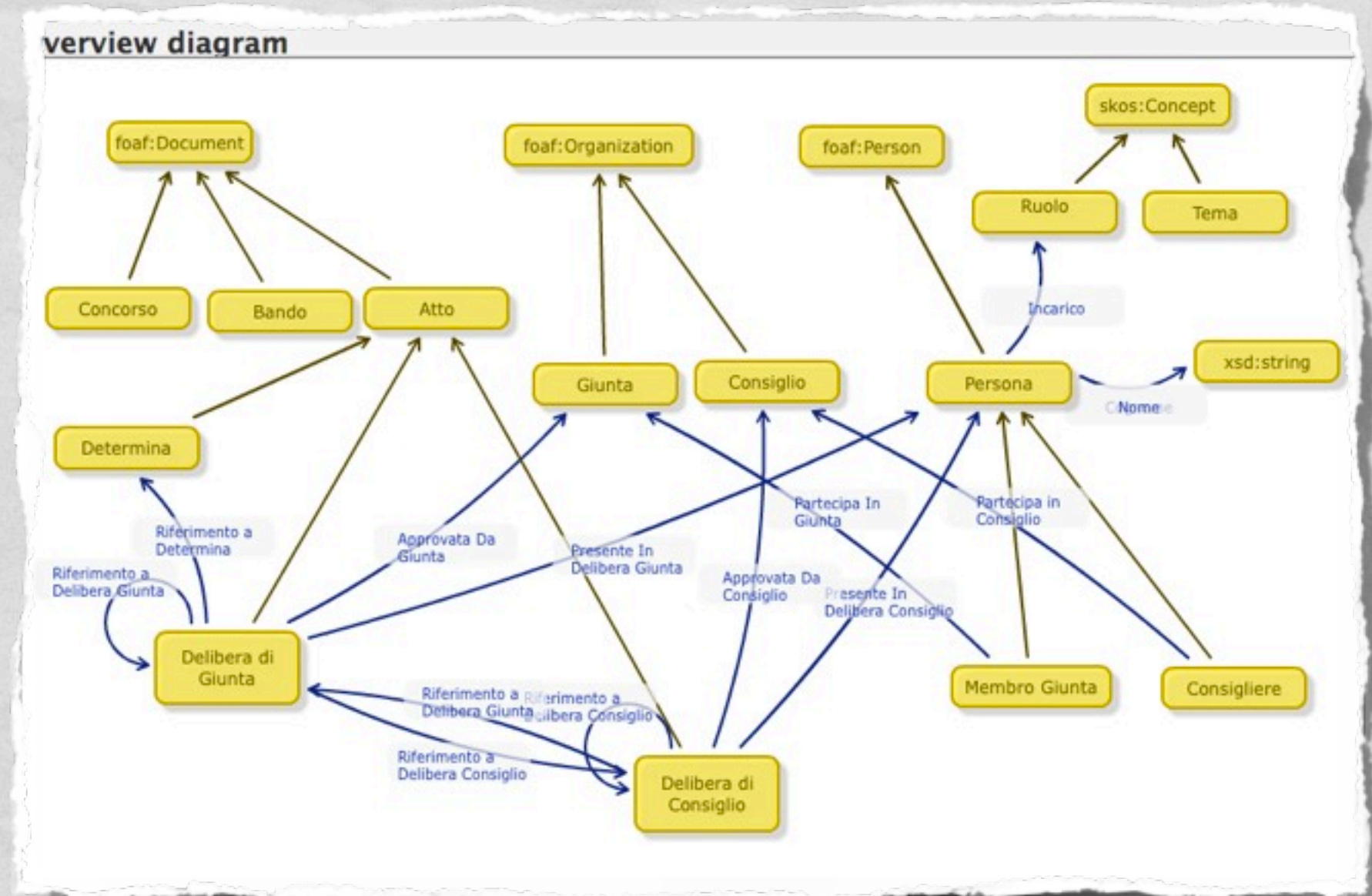
names and e-mails of every person in the world!



CARBONIA-IGLESIAS

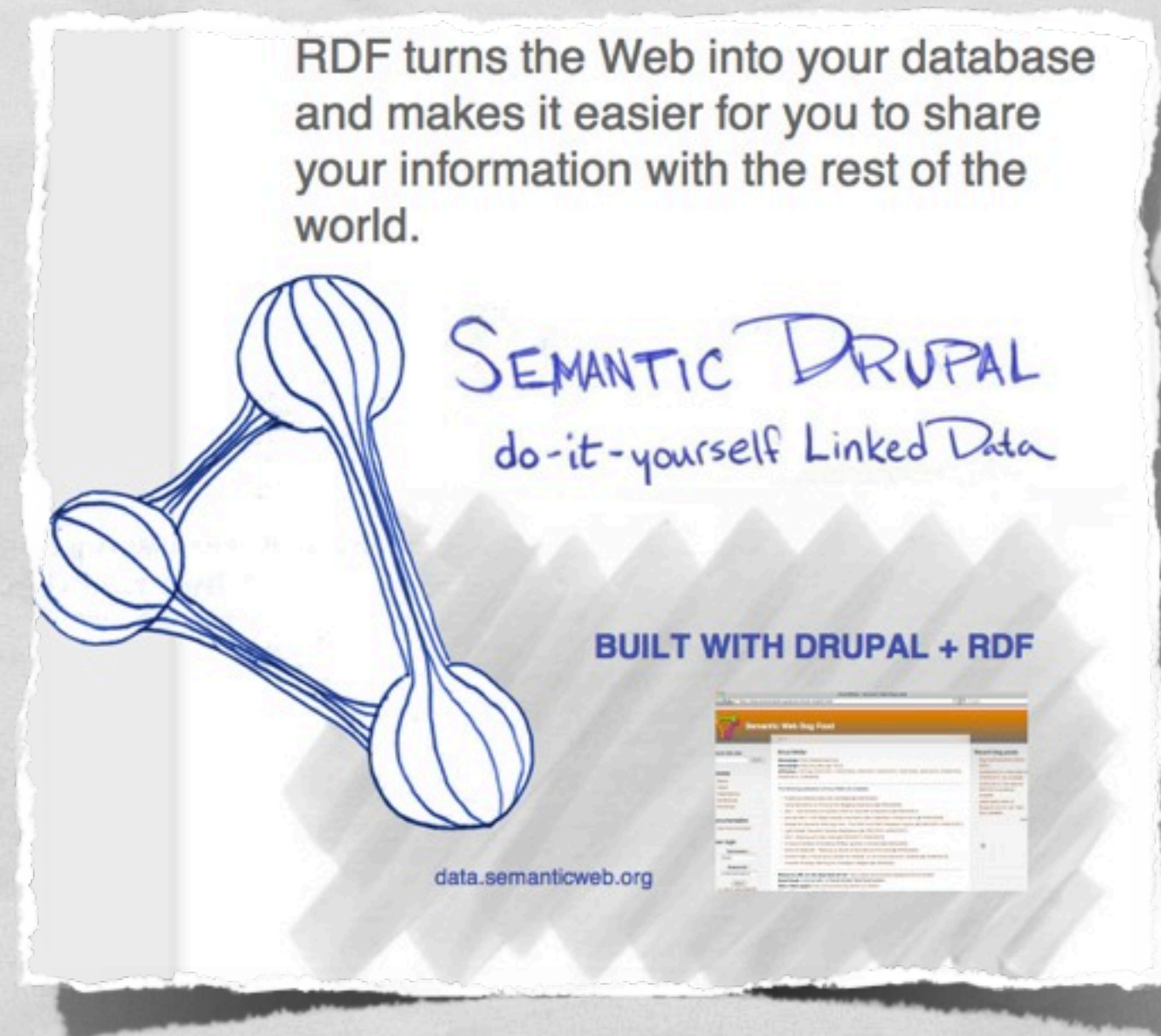
ONTOLOGIAPA.IT

- Ontologia per descrivere Determine, Delibere, Concorsi, Bandi, etc



DRUPAL 7 FOR SEMANTIC ANNOTATION

- Annotation happens in the background
- User does not need to be aware of complexities



LOOKING AHEAD

- Technology and tools are getting there
- Data needs to remain open
- Spread the word - Annotate!



QUESTIONS

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