COMP6250
Social Media and Network Science

The Social Semantic Web

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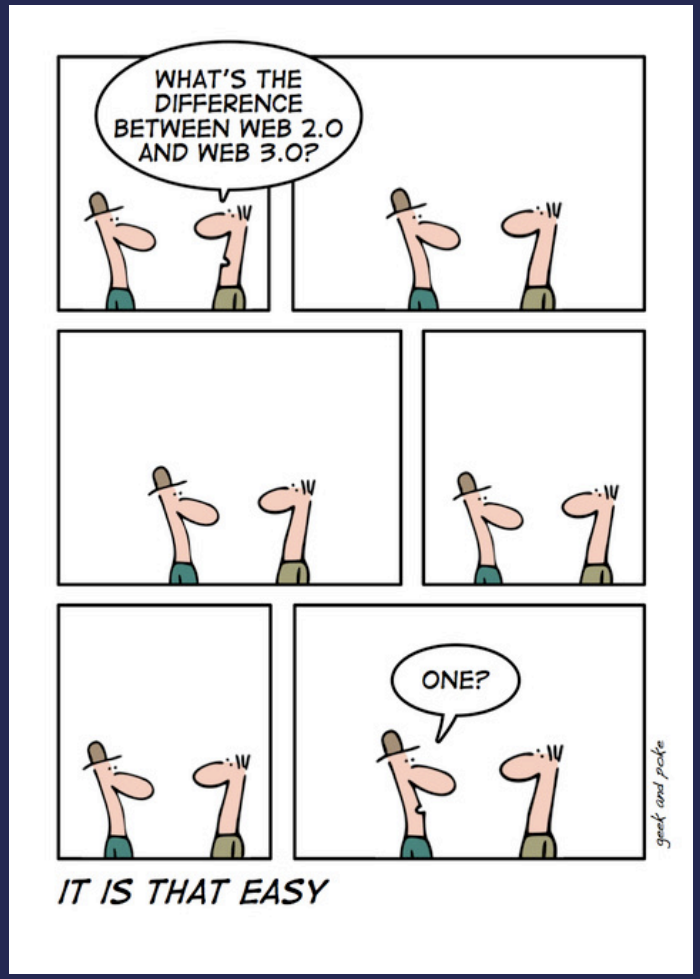
The narrative

- Semantic Web Technologies
  - The Web of data and the semantic Web are part of the next stage of Web evolution
  - What are the affordances of linked data/semantic Web technologies
- The Social Semantic Web
  - What is the social semantic Web vision?
  - How do online social networks relate to those affordances
- Socio-technical systems on the Web

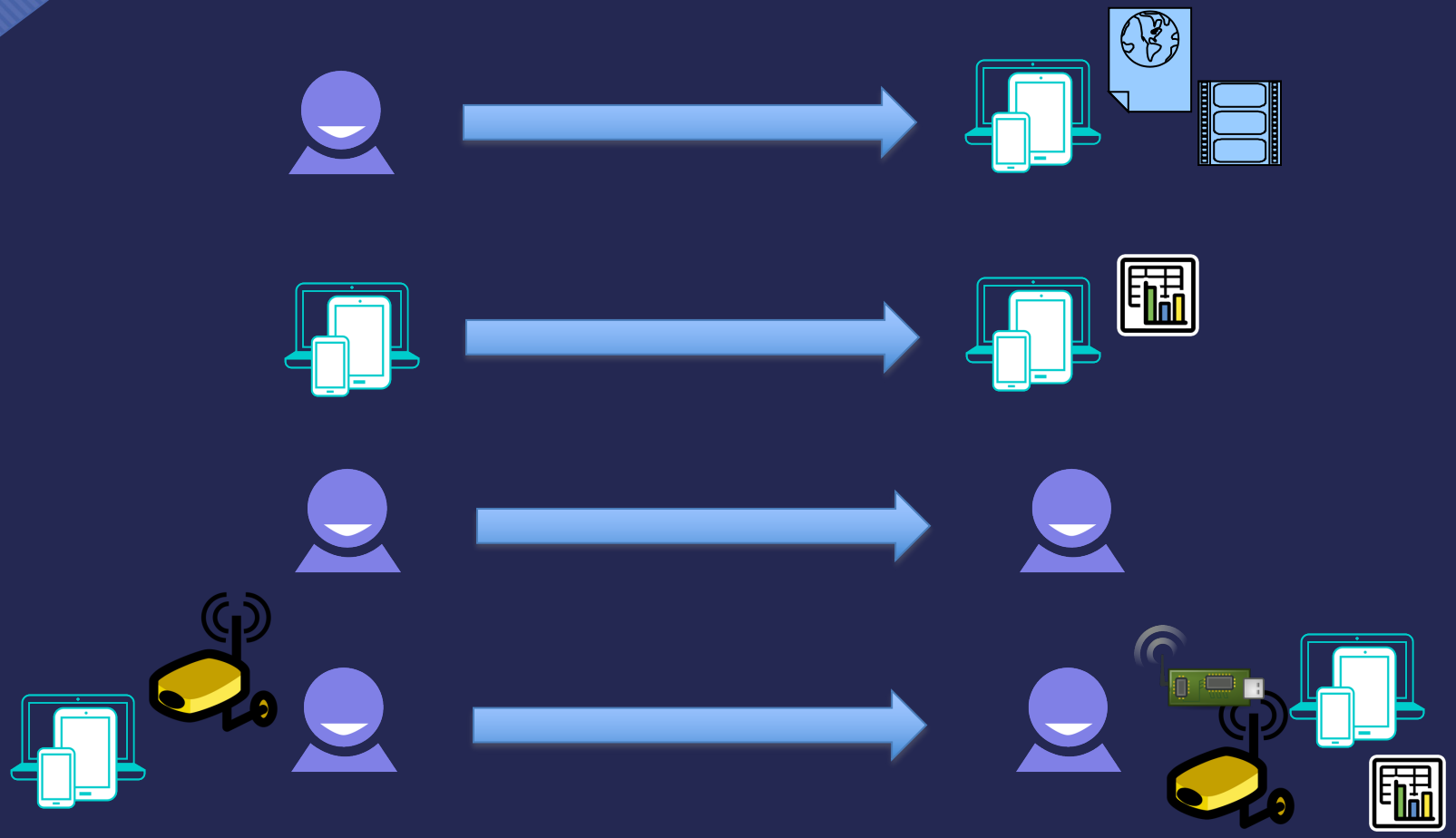
The narrative

Semantic Web Technologies

semantic web = web of (linked) data = web 3.0?



Communication on the Web



Machine Processing – Bandwidth – Interoperability – Integration

Proposal for a Semantic Web

Let's give "meaning" to the content on the Web and to all information added to it

… in this way, machines will be able to process Web resources on our behalf

… and we can make existing services more "intelligent" or provide new services that can improve our everyday lives

From "*Data*" to "*Information*"

From "*Information*" to "*Knowledge*"

From "*Knowledge*" to "*Wisdom*"

Semantic Web Promise

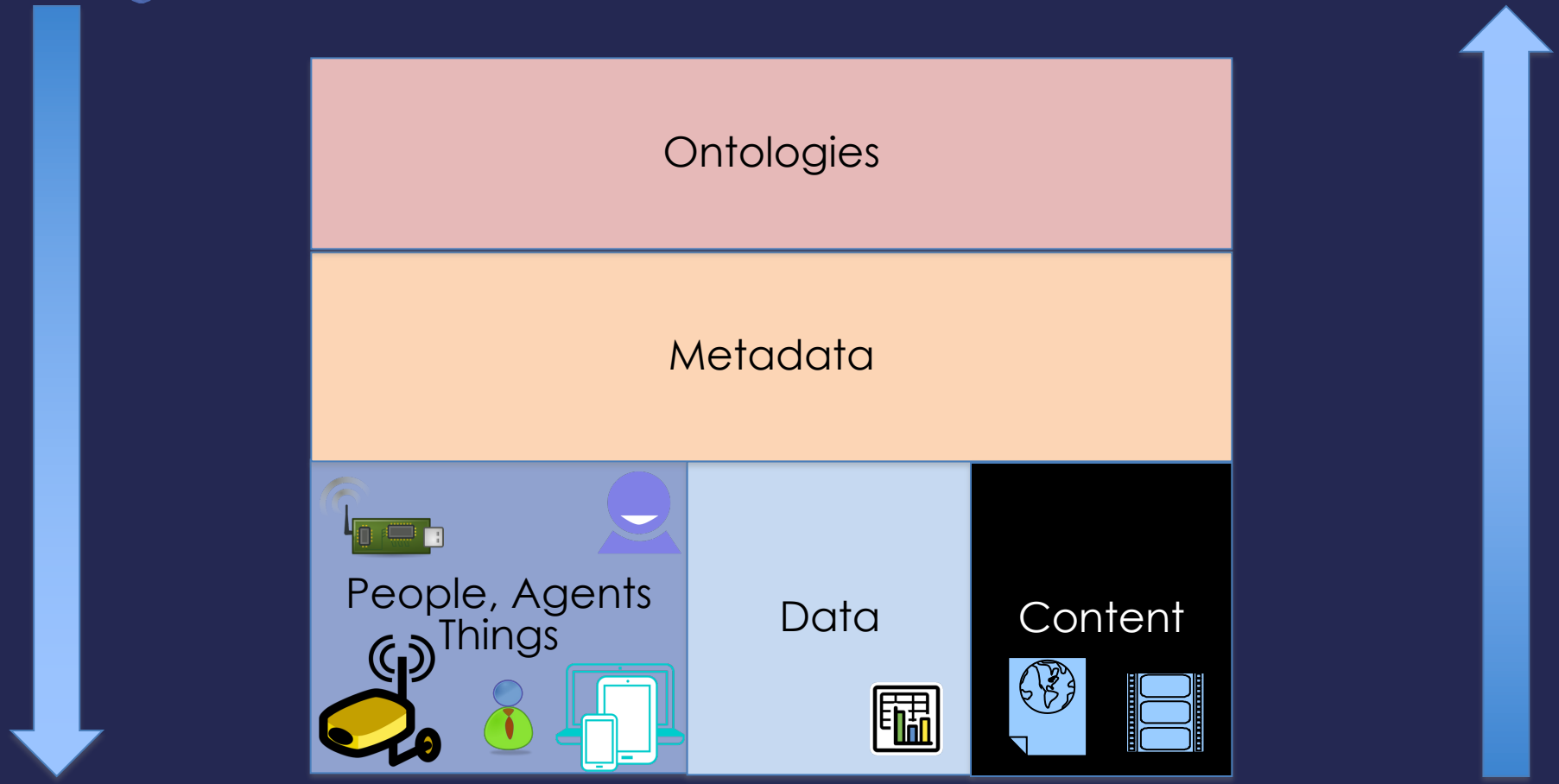
... The Semantic Web will bring structure to the meaningful content of Web pages, creating an environment where software agents roaming from page to page can readily carry out sophisticated tasks for users ...

Tim Berners-Lee, James Hendler and Ora Lassila, "The Semantic Web", Scientific American, 17-5-2001

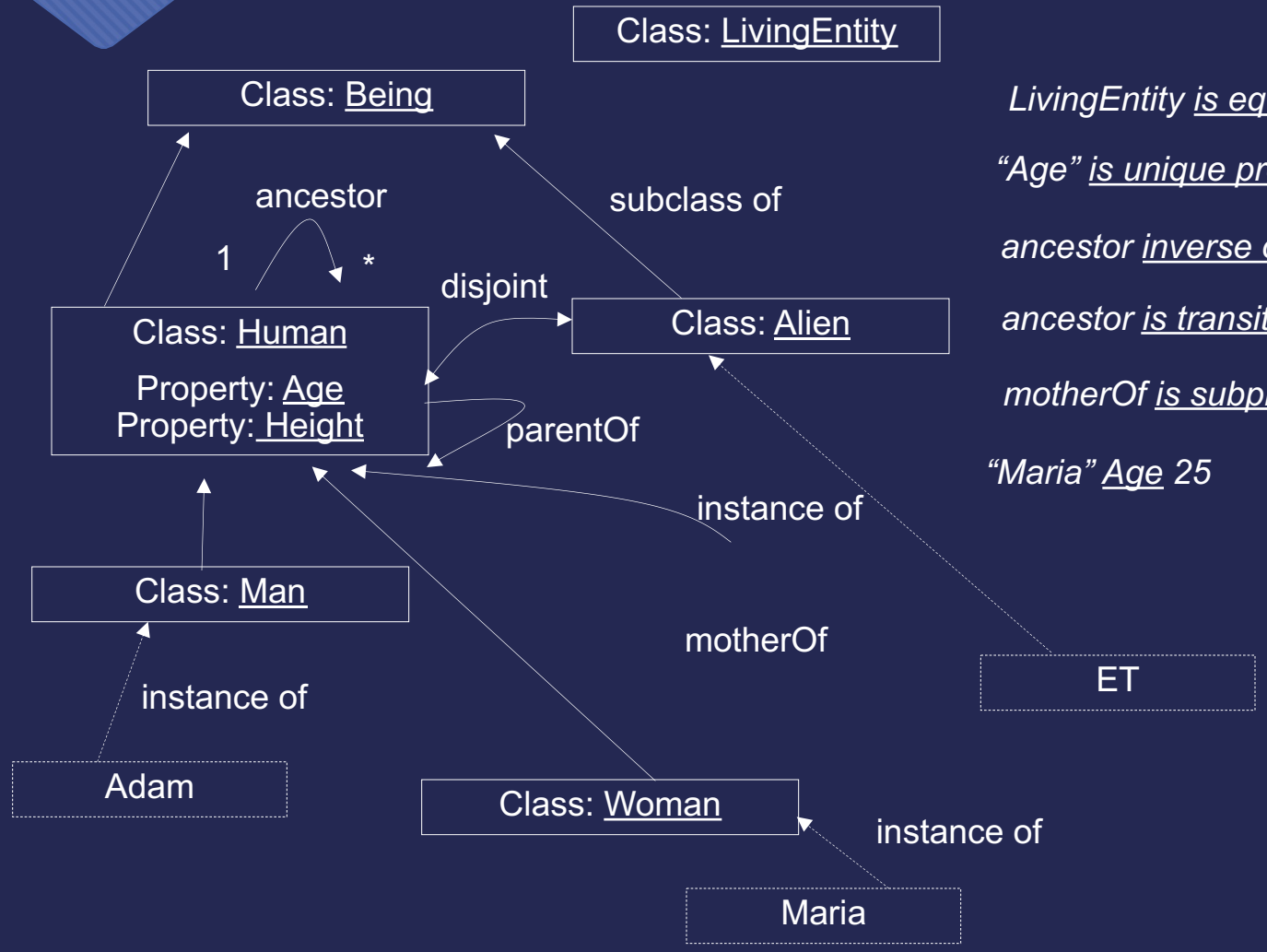
... The Semantic Web is a vision: the idea of having data on the Web defined and linked in such a way that it can be used by machines not just for display purposes, but for automation, integration and reuse of data across various applications ...

From the Semantic Web activity statement: http://www.w3.org/2001/sw/Activity

Approaches



Ontology Example



LivingEntity is equivalent to Being

"Age" is unique property

ancestor inverse of descendant

ancestor is transitive property

motherOf is subproperty of parentOf

"Maria" Age 25

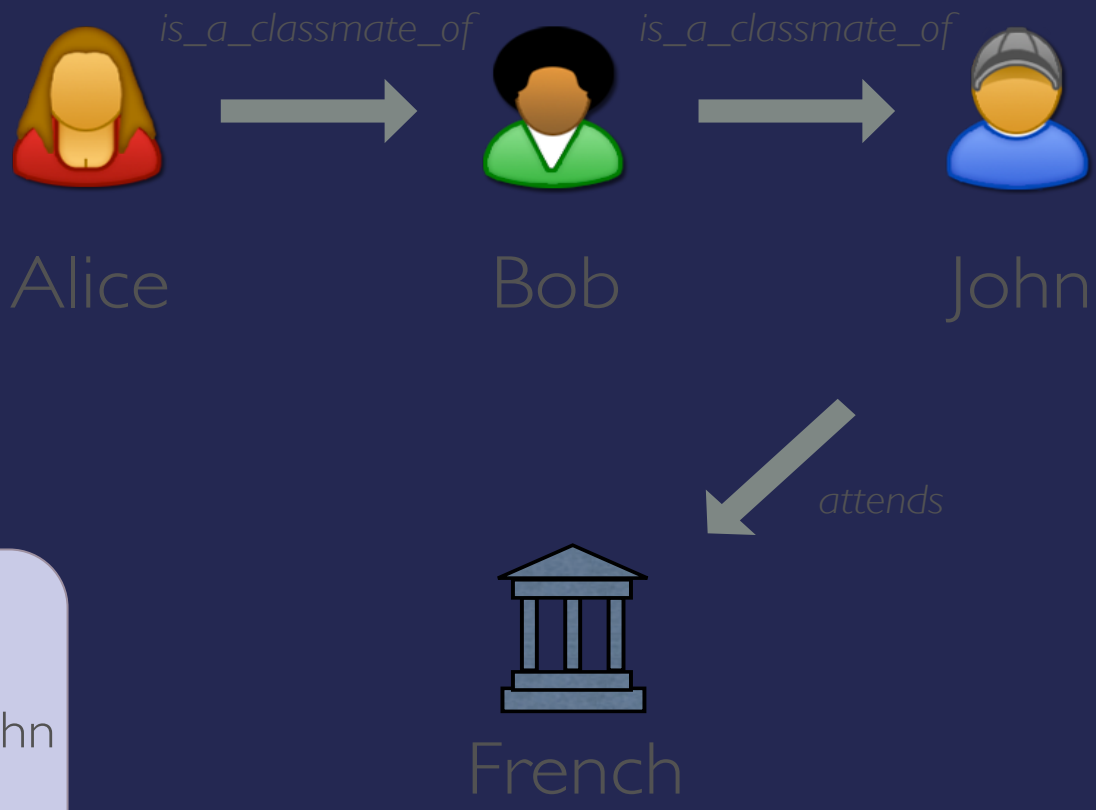
Ontologies & Knowledge Modelling

Ontology

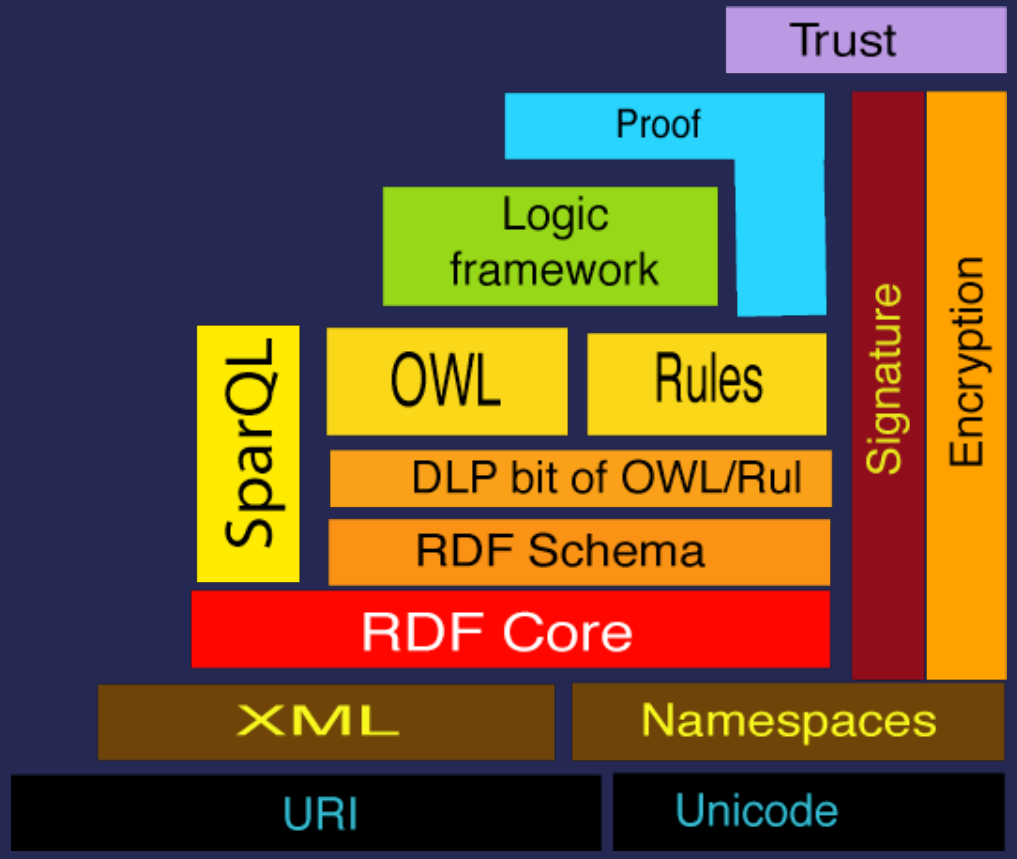
- Concepts
  - Student
  - Class
- Relationships
  - *attends*
  - *is_a_classmate_of*

Annotation/ Metadata

- Instances
  - Student: Alice, Bob, John
  - Class: French



the stack


Trust
Proof
Logic framework
SparQL
OWL
Rules
DLP bit of OWL/Rul
RDF Schema
RDF Core
Signature
Encryption
XML
Namespaces
URI
Unicode

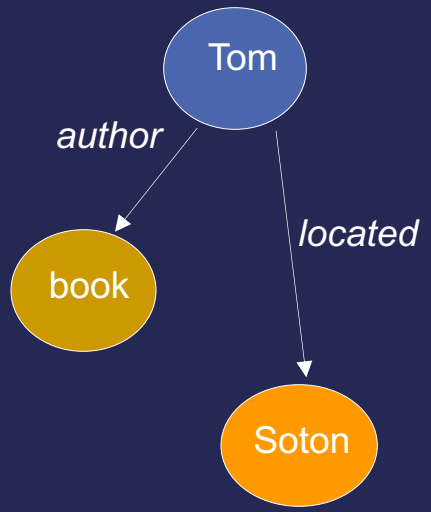
RDF Statements

Describing properties of Web resources using statements:

<subject> <predicate> <object>

or <object> = <predicate>(<subject>)

e.g.: <Tom> <*author*> <book>



<subject>: resource

<predicate>: resource property

<object>: value of resource property

URI use for: subject, predicate, object

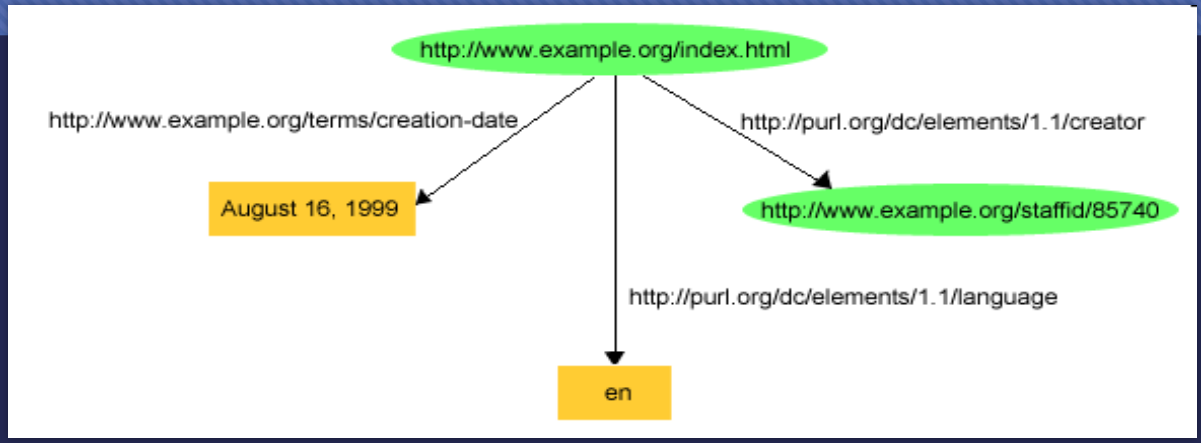
But they can be abstract concepts

No simple types

XML use

Further information: http://www.w3.org/RDF/

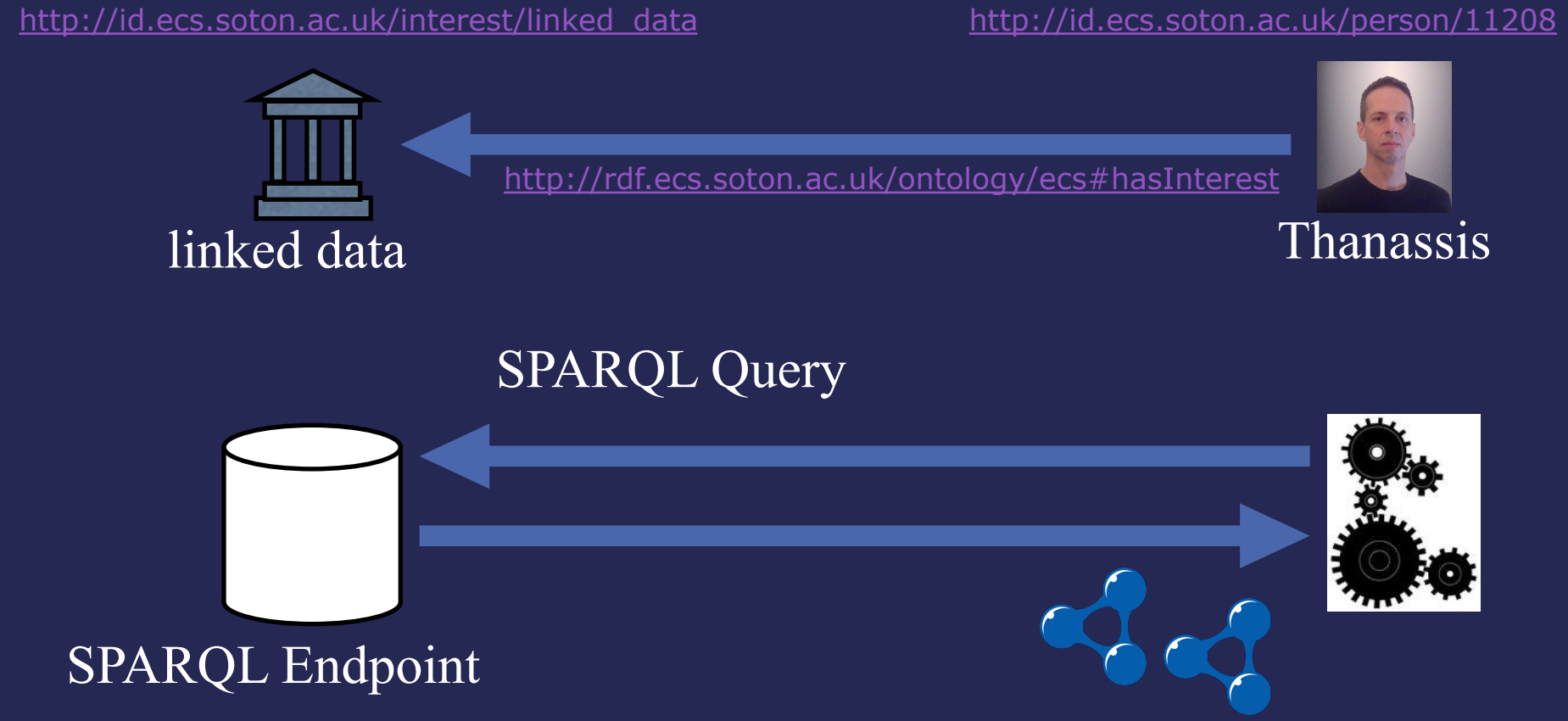
RDF Example




```
1.  <?xml version="1.0"?>
2.   <rdf:RDF xmlns:rdf=http://www.w3.org/1999/02/22-rdf-syntax-ns#
3.   xmlns:dc=http://purl.org/dc/elements/1.1/
4.   xmlns:exterms="http://www.example.org/terms/">
5.   <rdf:Description rdf:about="http://www.example.org/index.html">
6.     <exterms:creation-date>August 16, 1999</exterms:creation-date>
7.     </rdf:Description>
8.   <rdf:Description rdf:about="http://www.example.org/index.html">
9.     <dc:language>en</dc:language>
10.    </rdf:Description>
11.  </rdf:RDF>
```

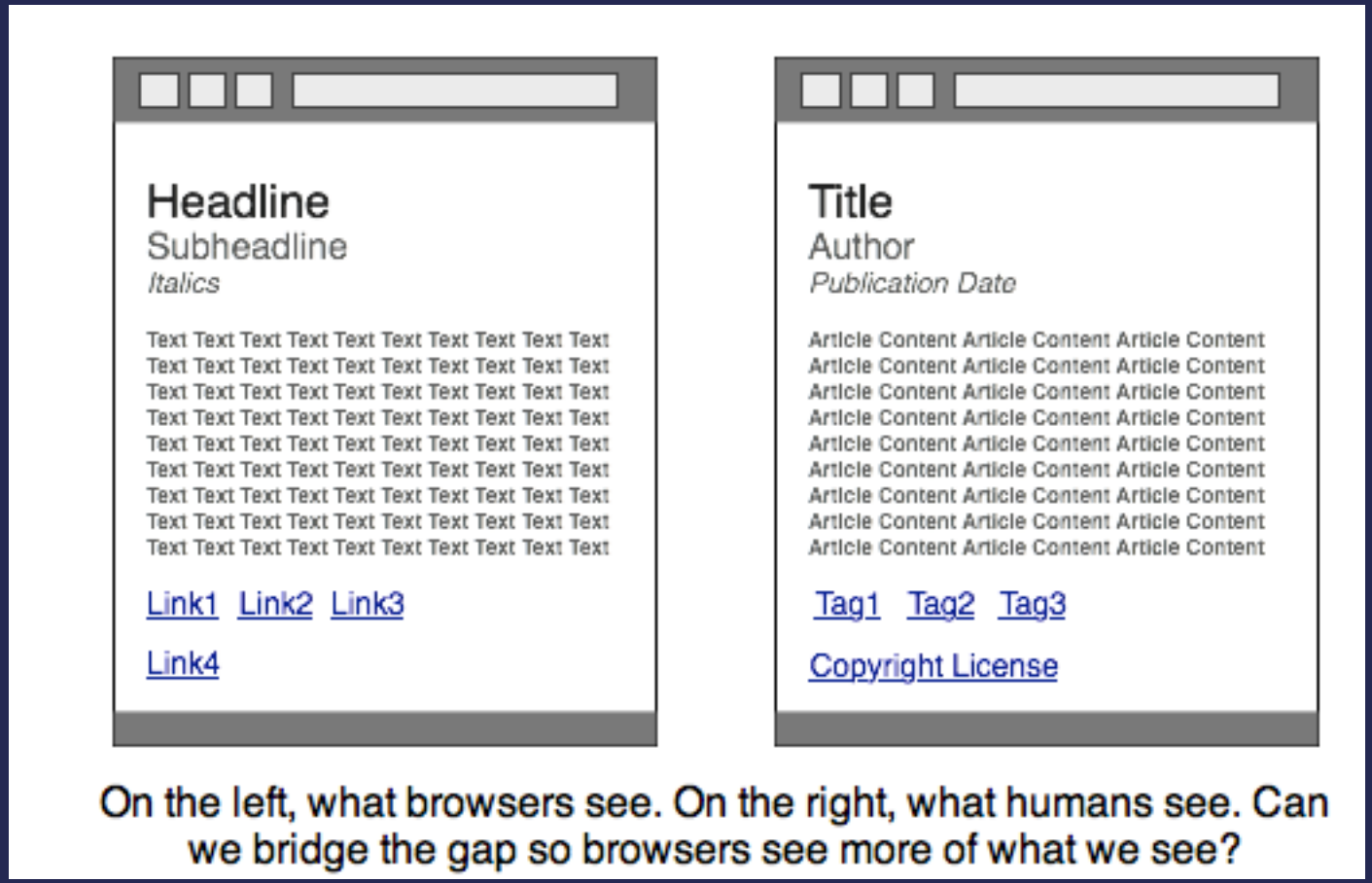
Source: W3C.ORG

RDF and SPARQL



RDFa

Embedding metadata in HTML



schema.org

schema.org

Organization of Schemas

The schemas are a set of 'types', each associated with a set of propert

Browse the full hierarchy:

- One page per type
- Full list of types, shown on one page

Or you can jump directly to a commonly used type:

- Creative works: CreativeWork, Book, Movie, MusicRecor
- Embedded non-text objects: AudioObject, ImageObject
- Event
- Health and medical types: notes on the health and medical types under MedicalEntity.
- Organization
- Person
- Place, LocalBusiness, Restaurant ...
- Product, Offer, AggregateOffer
- Review, AggregateRating

We also have a small set of primitive data types for numbers, text, etc. More details about the data model, etc. are available here.

schema.org

Custom Search

About Schemas Documentation

Welcome to Schema.org

Schema.org is a collaborative, community activity with a mission to create, maintain, and promote schemas for structured data on the Internet, on web pages, in email messages, and beyond.

Schema.org vocabulary can be used with many different encodings, including RDFa, Microdata and JSON-LD. These vocabularies cover entities, relationships between entities and actions, and can easily be extended through a well-documented extension model. Over 10 million sites use Schema.org to markup their web pages and email messages. Many applications from Google, Microsoft, Pinterest, Yandex and others already use these vocabularies to power rich, extensible experiences.

Founded by Google, Microsoft, Yahoo and Yandex, Schema.org vocabularies are developed by an open community process, using the public-schemaorg@w3.org mailing list and through GitHub.

A shared vocabulary makes it easier for webmasters and developers to decide on a schema and get the maximum benefit for their efforts. It is in this spirit that the founders, together with the larger community have come together – to provide a shared collection of schemas.

We invite you to get started!

View our blog at blog.schema.org or see release history for version 6.0.

breadth vs. depth

The value of semantic technologies on a large *scale* needs to be considered

- In addition to the value of *reasoning* using ontologies

Could we adopt a bottom-up approach starting from linked data which can be related to (layers of) ontologies later in the context of specific applications?

Encouragement for community-agreed ontologies can be more effective and flexible

Linked Data

- A bottom-up approach to a Semantic Web
- Priority on exposing data on the Web
- Aiming for 5-star linked (open) data

★ Available on the web (whatever format), but with an open license

★★ Available as machine-readable structured data (e.g. excel instead of image scan of a table)

★★★ as above (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 (http://www.w3.org/DesignIssues/LinkedData.html)

5-star linked data

SOURCE: http://www.cafepress.com/w3c_shop

Data in the web of data

- Data
  - Extracted from content/data
  - Structured data from DB, etc.
  - Originally available in linked data formats (e.g. RDF)
- Metadata
  - Extracted from content/data
  - Existing metadata, enriched
  - Originally available in linked data formats (e.g. RDF)

Linked Data & Knowledge Organisation

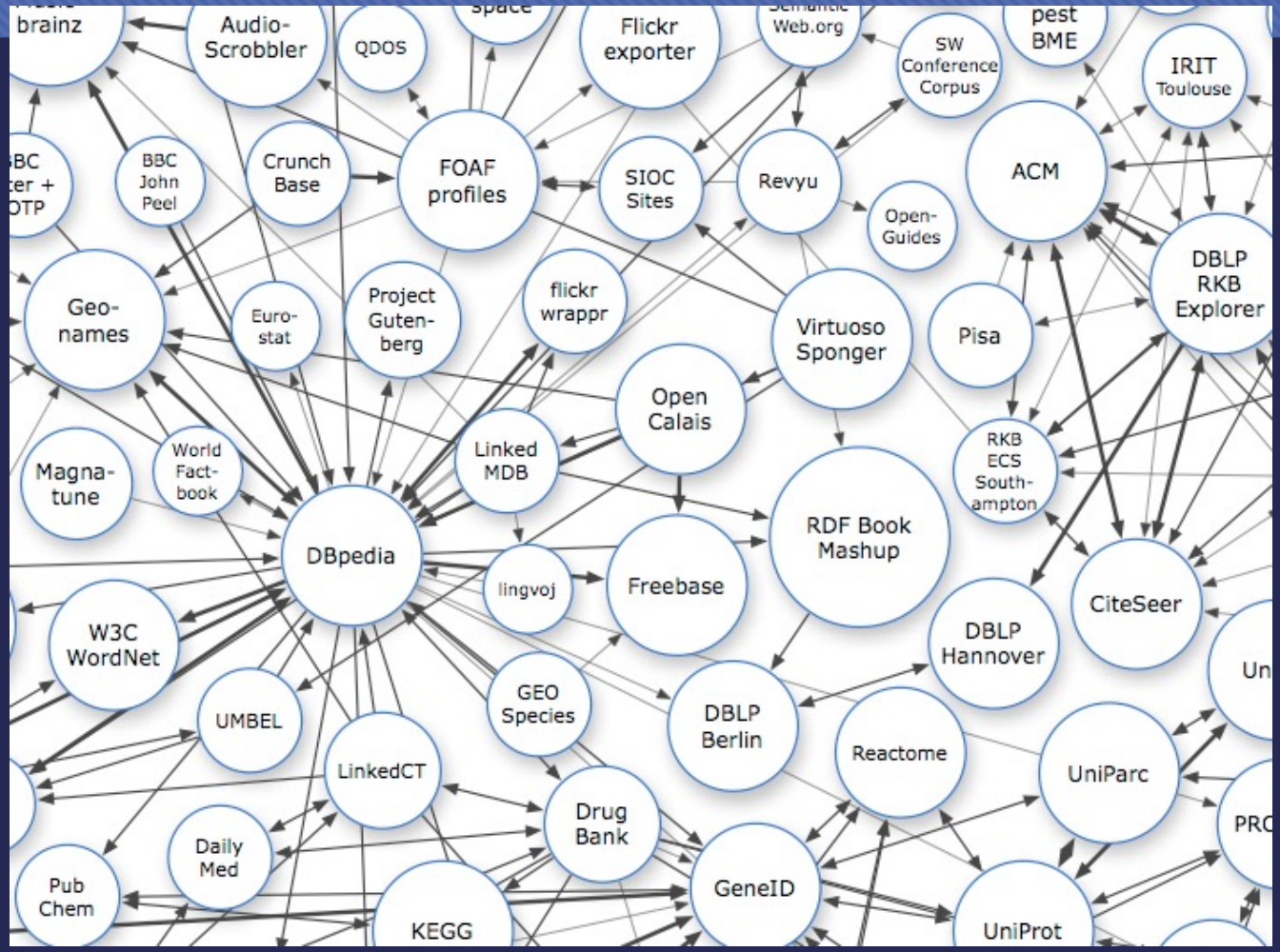
- Knowledge repositories have flourished in the Web 2.0 era
- The knowledge organisation of repositories can be described semantically
  - Which can support information searching, linking and integration
- The knowledge organisation in Wikipedia is available in DBpedia

Guidelines for Linked Data

- Use URIs as names for things
- Use HTTP URIs so that people can look up those names.
- When someone looks up a URI, provide useful information, using the standards (RDF*, SPARQL)
- Include links to other URIs, so that they can discover more things.

(Tim Berner's lee
http://www.w3.org/DesignIssues/LinkedData.html)

Linked Data Cloud



SOURCE: http://linkeddata.org/

Southampton Uni @ wikipedia.org

University of Southampton

From Wikipedia, the free encyclopedia

Coordinates: 50.93463°N 1.39595°W

The **University of Southampton** (abbreviated as ***Soton*** in post-nominal letters[4]) is a research university in Southampton, England. The university's origins date back to the founding of the **Hartley Institution** in 1862. In 1902, the Institution developed into the **Hartley University College**, awarding degrees from the University of London. On 29 April 1952, the institution was granted full university status, allowing it to award its own degrees.

The university has seven teaching campuses. The main campus is located in the Highfield area of Southampton and is supplemented by four other campuses within the city: Avenue Campus housing the Faculty of Humanities, the National Oceanography Centre housing courses in Ocean and Earth Sciences, Southampton General Hospital offering courses in Medicine and Health Sciences, and Boldrewood Campus housing an engineering and maritime technology campus and Lloyd's Register. In addition, the university operates a School of Art based in nearby Winchester and an international branch in Malaysia offering courses in Engineering. Each campus is equipped with its own library facilities. Southampton is a founding member of the Russell Group of research-intensive universities in Britain, it is also affiliated to the Port-City University League of universities in major port cities and the Worldwide Universities Network.

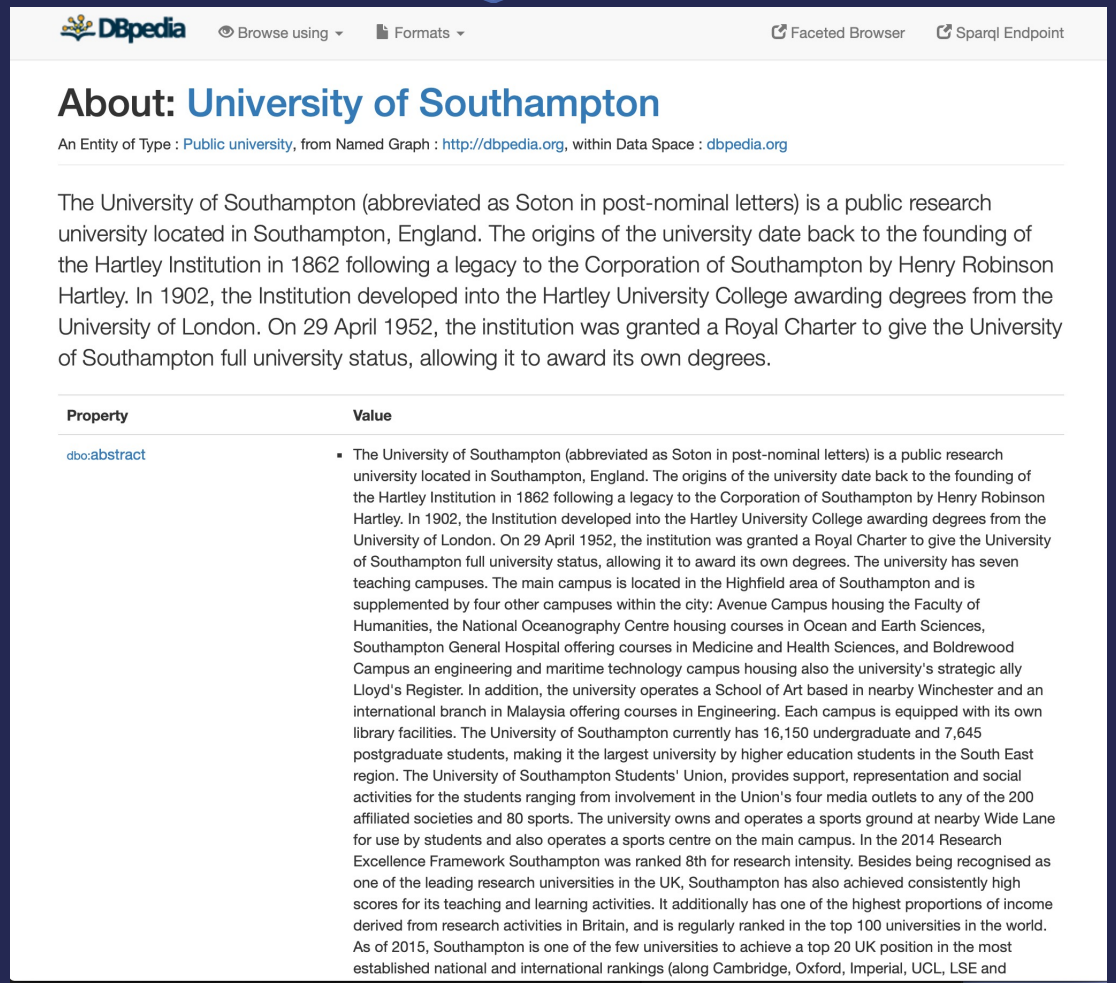
In the 2019/20 international university rankings, Southampton ranked 97th (*QS World University Rankings*),[5] 122nd (*Times Higher Education World University Rankings*),[6] 114th (*CWTS Leiden Ranking*)[7] and 101-150 (*Academic Ranking of World Universities*).[8] In the 2014 Research Excellence Framework, the university was ranked 18th in the United Kingdom for average quality of research submitted, 11th for research power and 8th for research intensity.[9] The University of Southampton currently has 15,790 undergraduate and 6,925 postgraduate students, making it the

The University of Southampton

Latin: *Universitas Sotoniensis*

Motto	Latin: *Strenuis Ardua Cedunt*
Motto in English	The Heights Yield to Endeavour[1]
Type	Research university
Established	1862 – Hartley Institution 1902 – Hartley University College 1952 – gained university status by royal charter
Endowment	£12.9 million (as of 31 July 2017)[2]
Budget	£584.0 million (2016–17)[2]
Chancellor	Ruby Wax
Vice-Chancellor	Mark E. Smith
Visitor	Jacob Rees-Mogg (as Lord President of the Council *ex officio*)

Southampton Uni @ dbpedia.org



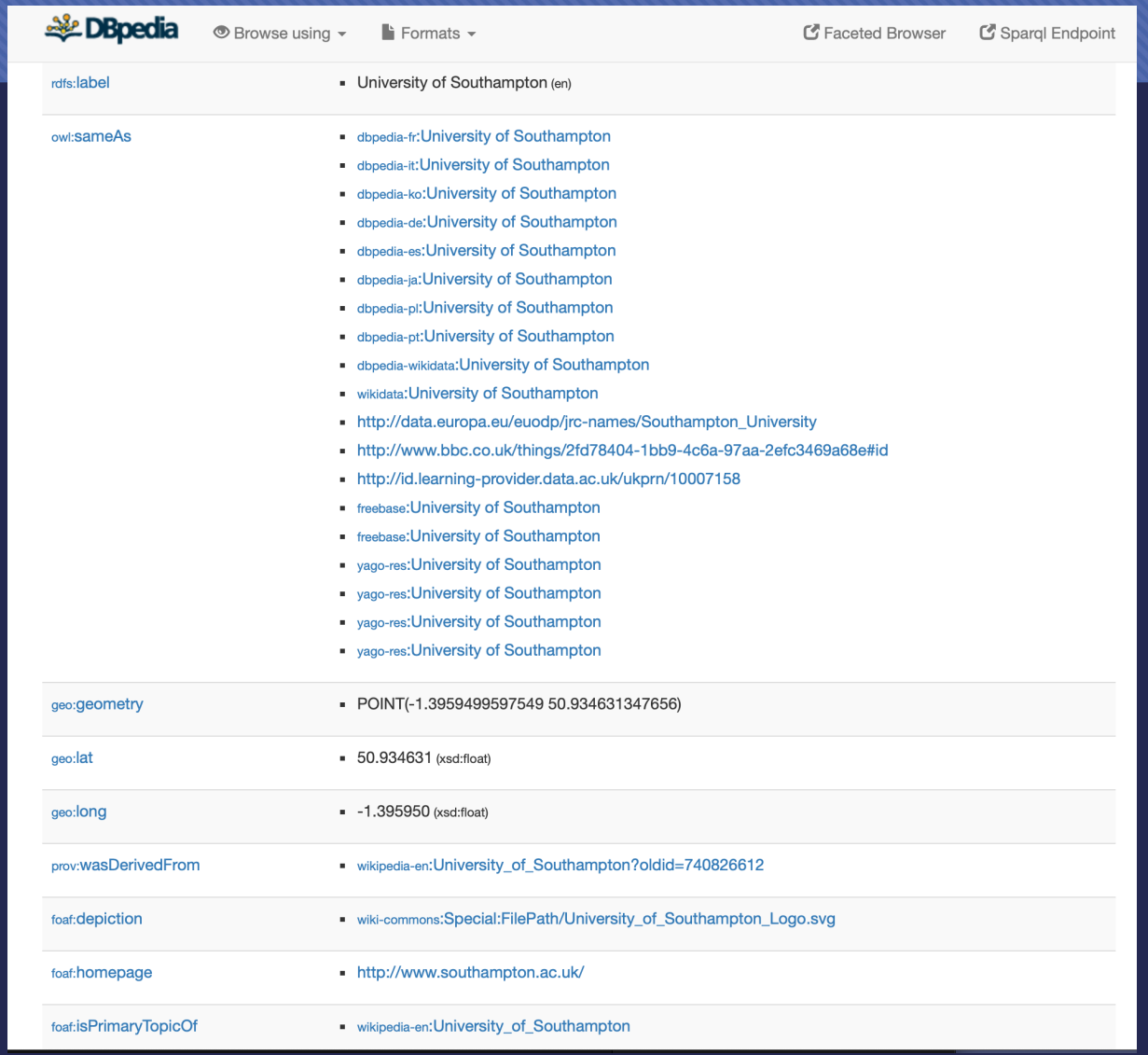
DBpedia | Browse using | Formats | Faceted Browser | Sparql Endpoint

About: University of Southampton

An Entity of Type : Public university, from Named Graph : http://dbpedia.org, within Data Space : dbpedia.org

The University of Southampton (abbreviated as Soton in post-nominal letters) is a public research university located in Southampton, England. The origins of the university date back to the founding of the Hartley Institution in 1862 following a legacy to the Corporation of Southampton by Henry Robinson Hartley. In 1902, the Institution developed into the Hartley University College awarding degrees from the University of London. On 29 April 1952, the institution was granted a Royal Charter to give the University of Southampton full university status, allowing it to award its own degrees.

Property	Value
dbo:abstract	The University of Southampton (abbreviated as Soton in post-nominal letters) is a public research university located in Southampton, England. The origins of the university date back to the founding of the Hartley Institution in 1862 following a legacy to the Corporation of Southampton by Henry Robinson Hartley. In 1902, the Institution developed into the Hartley University College awarding degrees from the University of London. On 29 April 1952, the institution was granted a Royal Charter to give the University of Southampton full university status, allowing it to award its own degrees. The university has seven teaching campuses. The main campus is located in the Highfield area of Southampton and is supplemented by four other campuses within the city: Avenue Campus housing the Faculty of Humanities, the National Oceanography Centre housing courses in Ocean and Earth Sciences, Southampton General Hospital offering courses in Medicine and Health Sciences, and Boldrewood Campus an engineering and maritime technology campus housing also the university's strategic ally Lloyd's Register. In addition, the university operates a School of Art based in nearby Winchester and an international branch in Malaysia offering courses in Engineering. Each campus is equipped with its own library facilities. The University of Southampton currently has 16,150 undergraduate and 7,645 postgraduate students, making it the largest university by higher education students in the South East region. The University of Southampton Students' Union, provides support, representation and social activities for the students ranging from involvement in the Union's four media outlets to any of the 200 affiliated societies and 80 sports. The university owns and operates a sports ground at nearby Wide Lane for use by students and also operates a sports centre on the main campus. In the 2014 Research Excellence Framework Southampton was ranked 8th for research intensity. Besides being recognised as one of the leading research universities in the UK, Southampton has also achieved consistently high scores for its teaching and learning activities. It additionally has one of the highest proportions of income derived from research activities in Britain, and is regularly ranked in the top 100 universities in the world. As of 2015, Southampton is one of the few universities to achieve a top 20 UK position in the most established national and international rankings (along Cambridge, Oxford, Imperial, UCL, LSE and



DBpedia | Browse using | Formats | Faceted Browser | Sparql Endpoint

rdfs:label	University of Southampton (en)
owl:sameAs	dbpedia-fr:University of Southampton dbpedia-it:University of Southampton dbpedia-ko:University of Southampton dbpedia-de:University of Southampton dbpedia-es:University of Southampton dbpedia-ja:University of Southampton dbpedia-pl:University of Southampton dbpedia-pt:University of Southampton dbpedia-wikidata:University of Southampton wikidata:University of Southampton http://data.europa.eu/euodp/jrc-names/Southampton_University http://www.bbc.co.uk/things/2fd78404-1bb9-4c6a-97aa-2efc3469a68e#id http://id.learning-provider.data.ac.uk/ukprn/10007158 freebase:University of Southampton freebase:University of Southampton yago-res:University of Southampton yago-res:University of Southampton yago-res:University of Southampton yago-res:University of Southampton
geo:geometry	POINT(-1.3959499597549 50.934631347656)
geo:lat	50.934631 (xsd:float)
geo:long	-1.395950 (xsd:float)
prov:wasDerivedFrom	wikipedia-en:University_of_Southampton?oldid=740826612
foaf:depiction	wiki-commons:Special:FilePath/University_of_Southampton_Logo.svg
foaf:homepage	http://www.southampton.ac.uk/
foaf:isPrimaryTopicOf	wikipedia-en:University_of_Southampton

“city” @wikipedia and @dbpedia

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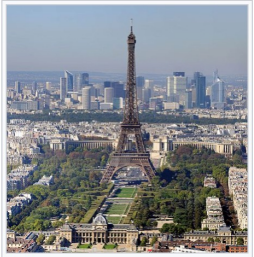
Languages
বাংলা
Cymraeg

City

From Wikipedia, the free encyclopedia

For other uses, see City (disambiguation).

A **city** is a large human settlement.[2][3] It can be defined as a permanent and densely settled place with administratively defined boundaries whose members work primarily on non-agricultural tasks.[4] Cities generally have extensive systems for housing, transportation, sanitation, utilities, land use, and communication. Their density facilitates interaction between people, government organisations and businesses, sometimes benefiting different parties in the process, such as improving efficiency of goods and service distribution. This concentration also can have significant negative consequences, such as forming urban heat islands, concentrating pollution, and stressing water supplies and other resources.



Paris is one of the most famous cities in the world.[1]

Historically, city-dwellers have been a small proportion of humanity overall, but following two centuries of unprecedented and rapid urbanisation, roughly half of the world population now lives in cities, which has had profound consequences for global sustainability.[5] Present-day cities usually form the core of larger metropolitan areas and urban areas—creating numerous commuters traveling towards city centres for employment, entertainment, and edification. However, in a world of intensifying globalisation, all cities are in different degree also connected globally beyond these regions. This increased influence means that cities also have significant influences on global issues, such as sustainable development, global warming and global health.

Other important traits of cities besides population include the capital status and relative continued occupation of the city. For example, country capitals such as Abu Dhabi, Beijing, Berlin, Cairo, Dubai, London, Moscow, Paris, Rome, Seoul, Tokyo, and Washington D.C. reflect their nation's identity. Some historic capitals, such as Kyoto, maintain their reflection of cultural identity even without modern capital status. Religious holy sites offer another example of capital status within a religion, Jerusalem, Mecca, and Varanasi each hold significance. The cities of Faiyum, Damascus, and Argos are among those laying claim to the longest continual inhabitation. In terms of relative age, the oldest cities in the Americas are Cholula near Puebla, Florés in Petén, and Acoma near Albuquerque, while the oldest capital cities in the Americas are Mexico City, Santo Domingo, and San Juan. Another example of relative age, is in the age of the oldest capital cities of the superpower and emerging superpower, they are the U.S. state capital of Santa Fe, New Mexico, and the Chinese prefecture capital of Xi'an, Shaanxi.

Contents [hide]

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DBpedia

Search DBpedia... | @ http://dbpedia.org | Esperanto

Back to old DBpedia

TAKE A TOUR

LEGEND

TYPES

Property:	Value:
rdf:type :	owl:Class
rdfs:comment :	
rdfs:isDefinedBy :	dbpedia-owl:
rdfs:label :	
rdfs:subClassOf :	dbpedia-owl:Settlement
owl:equivalentClass :	http://schema.org/City
	http://www.wikidata.org/entity/Q515
http://www.w3.org/2007/05/powder-s#describedby :	dbpedia-owl:data/definitions.jsonld
	dbpedia-owl:data/definitions.ttl
	dbpedia-owl:data/definitions.xml
http://www.w3.org/ns/prov#wasDerivedFrom :	http://mappings.dbpedia.org/index.php/OntologyClass:City
is rdf:type of:	dbpedia:Ainan,_Ehime
	dbpedia:Ashoro,_Hokkaido
	dbpedia:Canelones,_Uruguay
	dbpedia:Honbetsu,_Hokkaido
	dbpedia:Ikeda,_Hokkaido
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SPARQL queries on dbpedia

DEVELOP

GETTING STARTED DATASETS SUPPORT GITHUB

Ontology

The DBpedia Ontology is a shallow, cross-domain ontology, which has been manually created infoboxes within Wikipedia. The ontology currently covers 685 classes which form a subsump by 2,795 different properties.

With the DBpedia 3.2 release, we introduced a new infobox extraction method based on hand infoboxes to the DBpedia ontology. The mappings defined fine-granular rules on how to parse addressed weaknesses in the Wikipedia infobox system, like having different infoboxes for th names for the same property, and not having clearly defined datatypes for property values. Th the infobox ontology is much cleaner and better structured than the infobox data within the D was generated using the old infobox extraction code.

With the DBpedia 3.5 release, we introduced a public wiki for writing infobox mappings, editin the DBpedia ontology. This allows external contributors to define mappings for the infoboxes the existing DBpedia ontology with additional classes and properties.

Since the DBpedia 3.7 release, the ontology is a directed-acyclic graph, not a tree. Classes ma was important for the mappings to schema.org. A taxonomy can still be constructed by ignor is specified first in the list and is considered the most important.

Browse the current version of the Ontology as defined in the Mapping Wiki

See also the mapping statistics.

The DBpedia Ontology currently contains about 4,233,000 instances. The table below lists the classes within the ontology:

Instances per class

Class	Instances
Resource (overall)	4,233,000
Place	735,000
Person	1,450,000
Work	411,000
Species	251,000
Organisation	241,000

SPARQL Explorer for http://dbpedia.org/sparql

SPARQL:

```
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX : <http://dbpedia.org/resource/>
PREFIX dbpedia2: <http://dbpedia.org/property/>
PREFIX dbpedia: <http://dbpedia.org/>
PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
```

```
PREFIX dbo: <http://dbpedia.org/ontology/>

SELECT ?name ?birth ?person WHERE {
  ?person dbo:birthDate ?birth .
  ?person dbo:birthPlace :Southampton .
  ?person foaf:name ?name .
  FILTER (?birth < "18000101"^^xsd:date) .
}
```

Results: Browse Go! Reset

SPARQL results:

name	birth	person
"Isaac Watts"@en	"1674-07-17"^^xsd:date	:Isaac_Watts
"Richard Pococke"@en	"1704-11-19"^^xsd:date	:Richard_Pococke
"Henry Robinson Hartley"@en	"1777-11-12"^^xsd:date	:Henry_Robinson_Hartley
"Henry Robertson Hartley"@en	"1777-11-12"^^xsd:date	:Henry_Robinson_Hartley

Powered by OpenLink Virtuoso and dbpedia

dbpedia.org applications

DBpedia Applications

This page lists a number of applications (in no particular order) to get you started using DBpedia:

Conteúdos

Faceted Browsers

- Faceted Wikipedia Search – allows you to explore Wikipedia via a faceted browsing interface.

Visual Data Web

Visually Experiencing the Data Web

Home | Tools | Publications | People

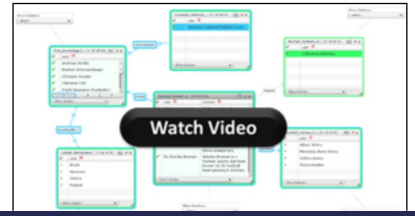
Home > Tools > gFacet

gFacet

Graph-based Faceted Exploration of RDF Data

Complex semantic querying made easy! gFacet is a new approach to explore RDF data by combining graph-based visualization with faceted filtering techniques. The facets are represented as nodes in a graph visualization and can be interactively added and removed by the users in order to produce individual search interfaces. Even multiple and distantly connected facets can be integrated in the graph facilitating the access of information from different user-defined perspectives. gFacet is based on the open source framework Adobe Flex and uses SPARQL queries to access RDF datasets.

Experience gFacet



Main Developer

- Philipp Heim

Contributors

- Thomas Ertl
- Steffen Lohmann
- Jürgen Ziegler

The narrative

The Social Semantic Web

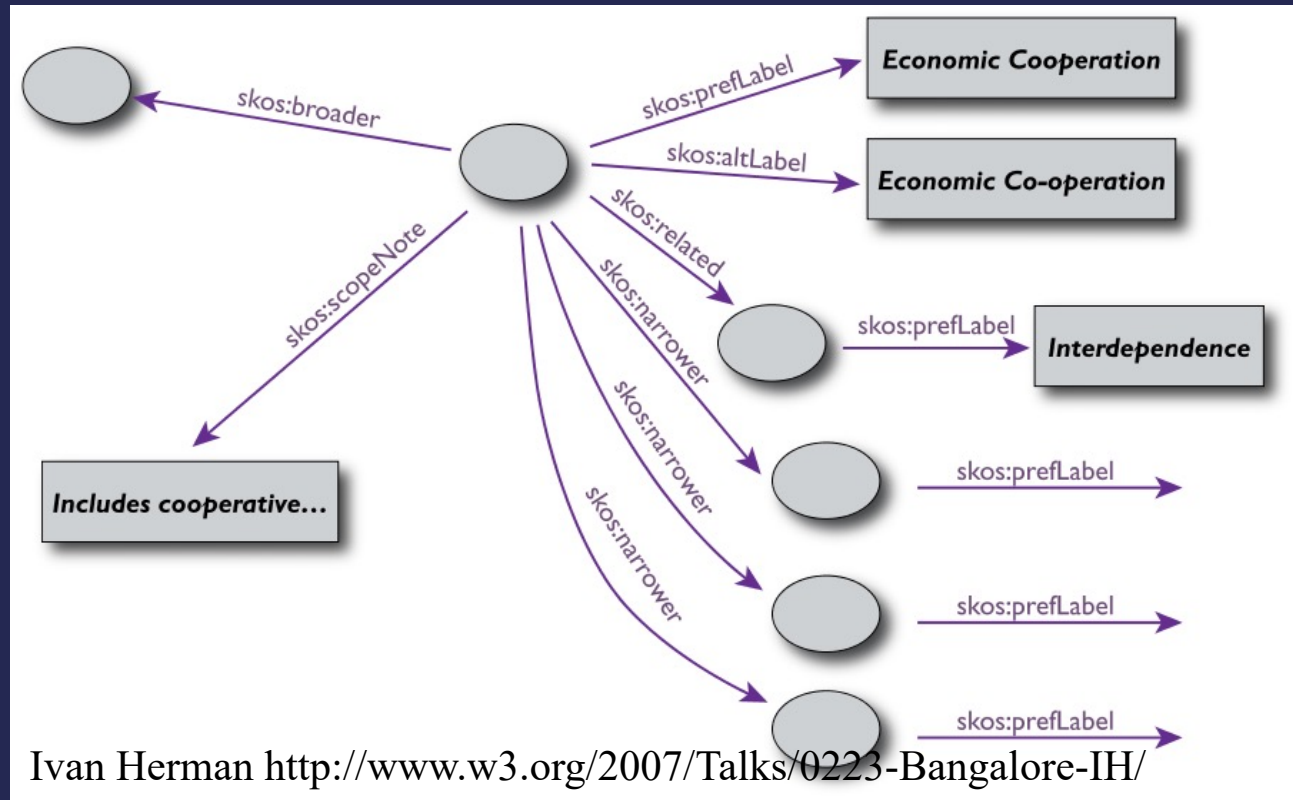
Discussion

- Are you aware of semantic Web technologies used in a social network? Which ones?
- How do semantic Web technologies add value to social networks?

Linked Data for Knowledge Organisation

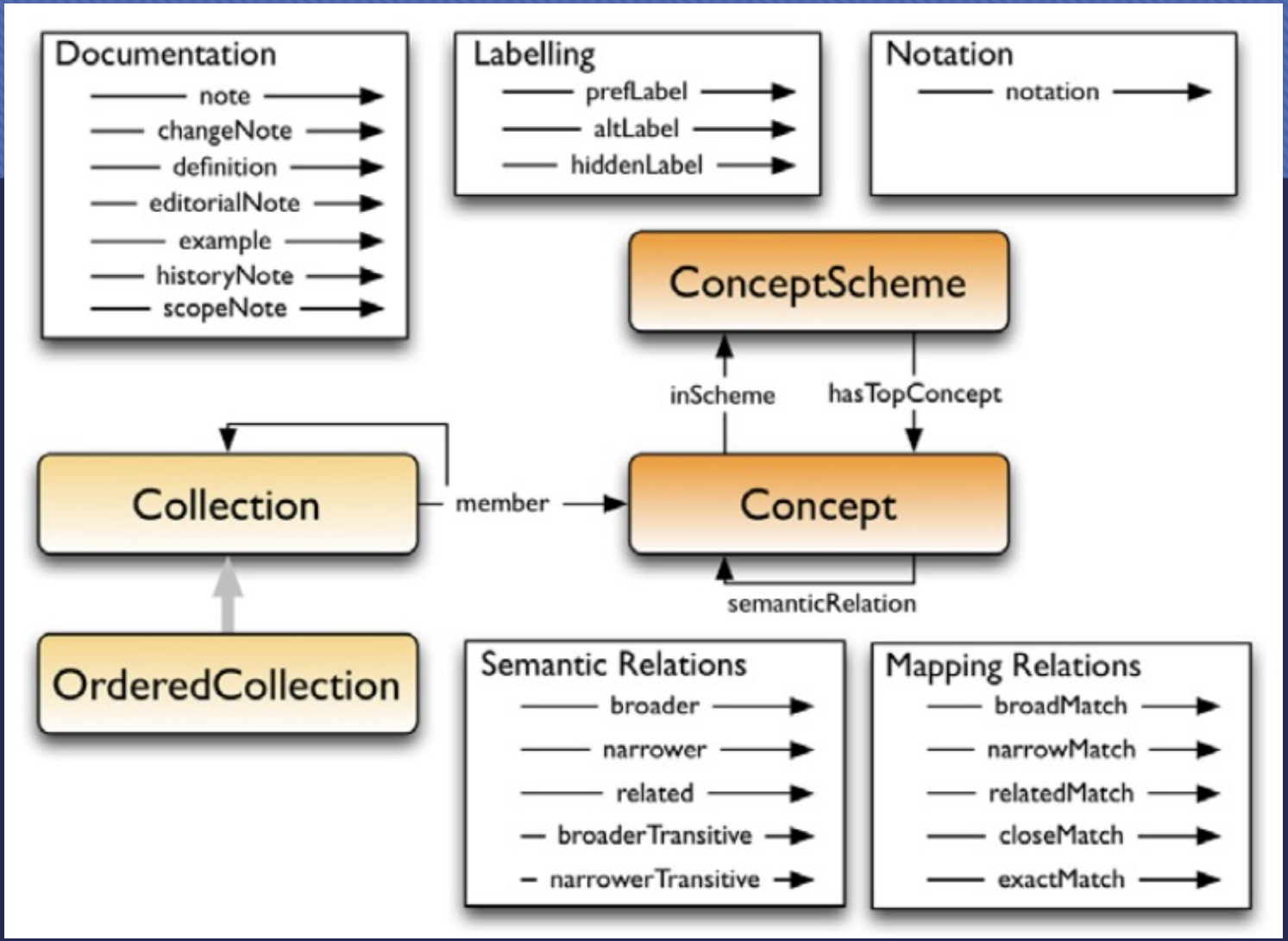
SKOS example

- SKOS is an RDF-based vocabulary to describe knowledge organisation



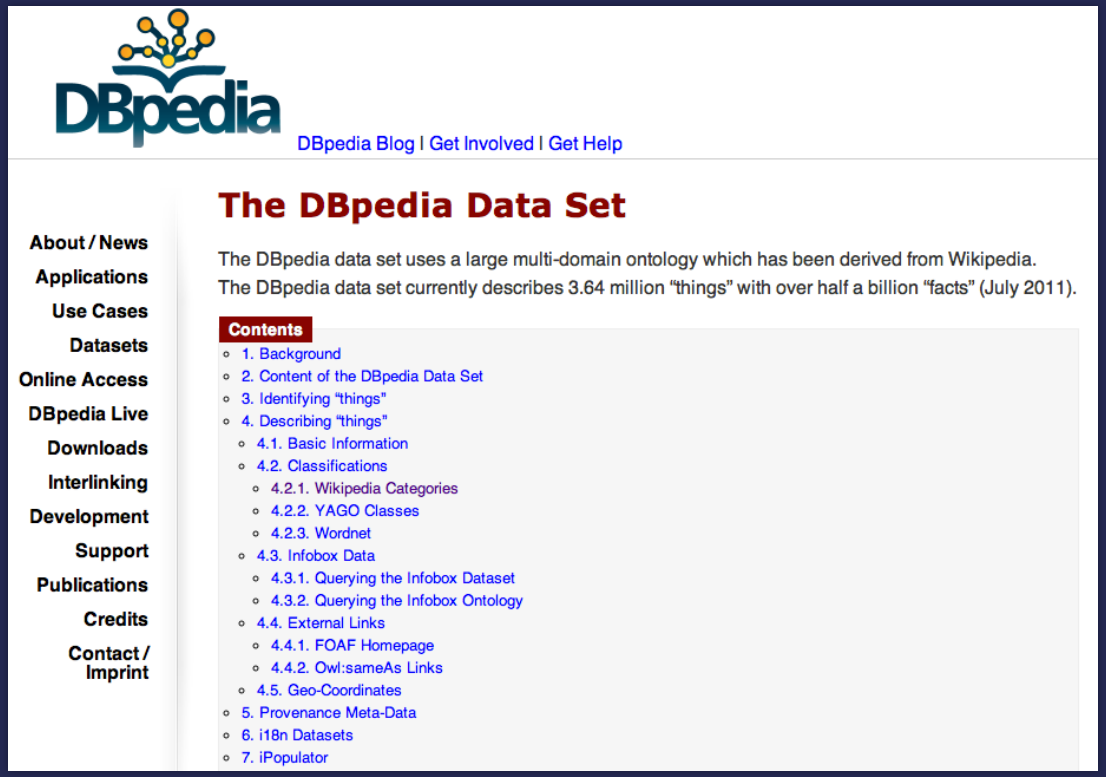
Ivan Herman http://www.w3.org/2007/Talks/0223-Bangalore-IH/

SKOS



Baker, T., Bechhofer, S., Isaac, A., & Miles, A. (2013). Key choices in the design of Simple Knowledge Organization System (SKOS). *Web Semantics: Science*. doi:10.1016/j.websem.2013.05.001

DBpedia


DBpedia
DBpedia Blog | Get Involved | Get Help
About / News
Applications
Use Cases
Datasets
Online Access
DBpedia Live
Downloads
Interlinking
Development
Support
Publications
Credits
Contact / Imprint
The DBpedia Data Set
The DBpedia data set uses a large multi-domain ontology which has been derived from Wikipedia.
The DBpedia data set currently describes 3.64 million "things" with over half a billion "facts" (July 2011).
Contents
1. Background
2. Content of the DBpedia Data Set
3. Identifying "things"
4. Describing "things"
4.1. Basic Information
4.2. Classifications
4.2.1. Wikipedia Categories
4.2.2. YAGO Classes
4.2.3. Wordnet
4.3. Infobox Data
4.3.1. Querying the Infobox Dataset
4.3.2. Querying the Infobox Ontology
4.4. External Links
4.4.1. FOAF Homepage
4.4.2. Owl:sameAs Links
4.5. Geo-Coordinates
5. Provenance Meta-Data
6. i18n Datasets
7. iPopulator

Dbpedia metadata extraction

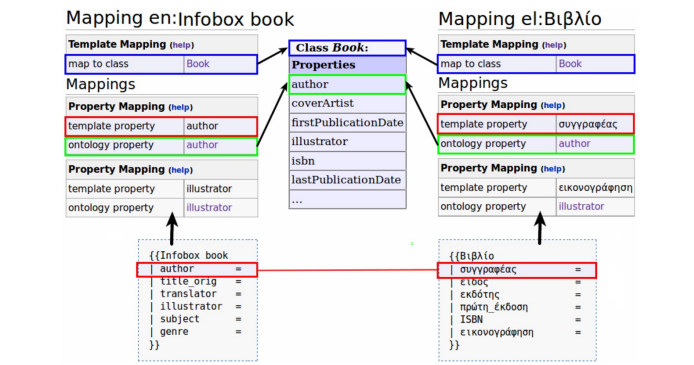


Fig. 2. Depiction of the mapping from the Greek and English Wikipedia templates about books to the same DBpedia Ontology class [24].

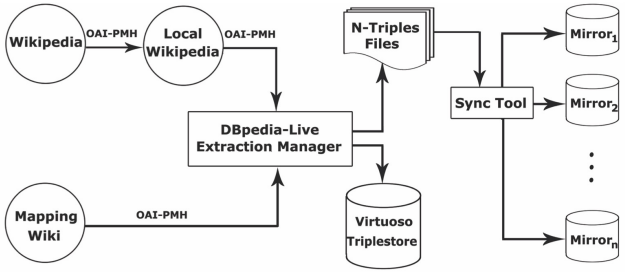


Fig. 8. Overview of DBpedia Live extraction framework.

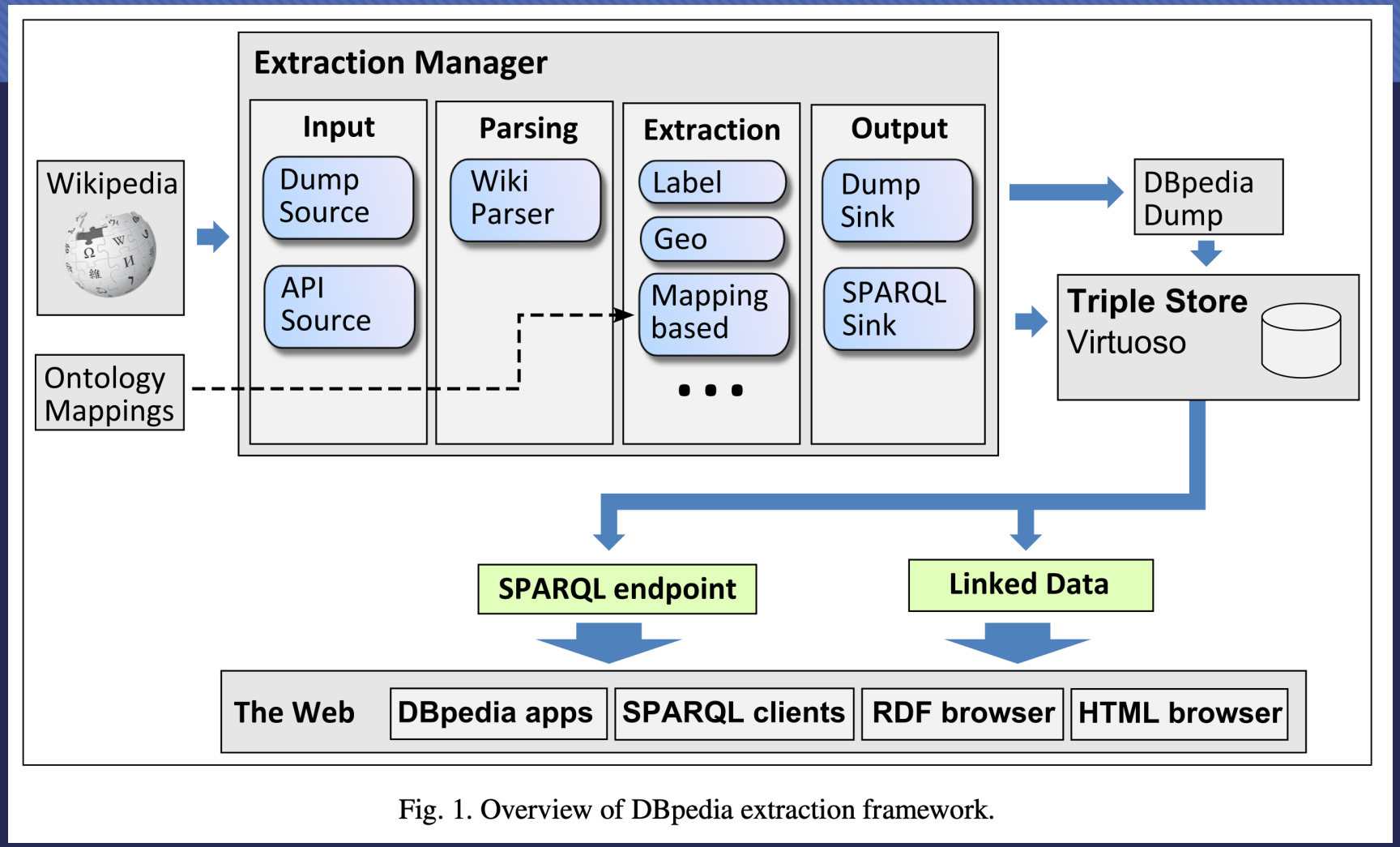


Fig. 1. Overview of DBpedia extraction framework.

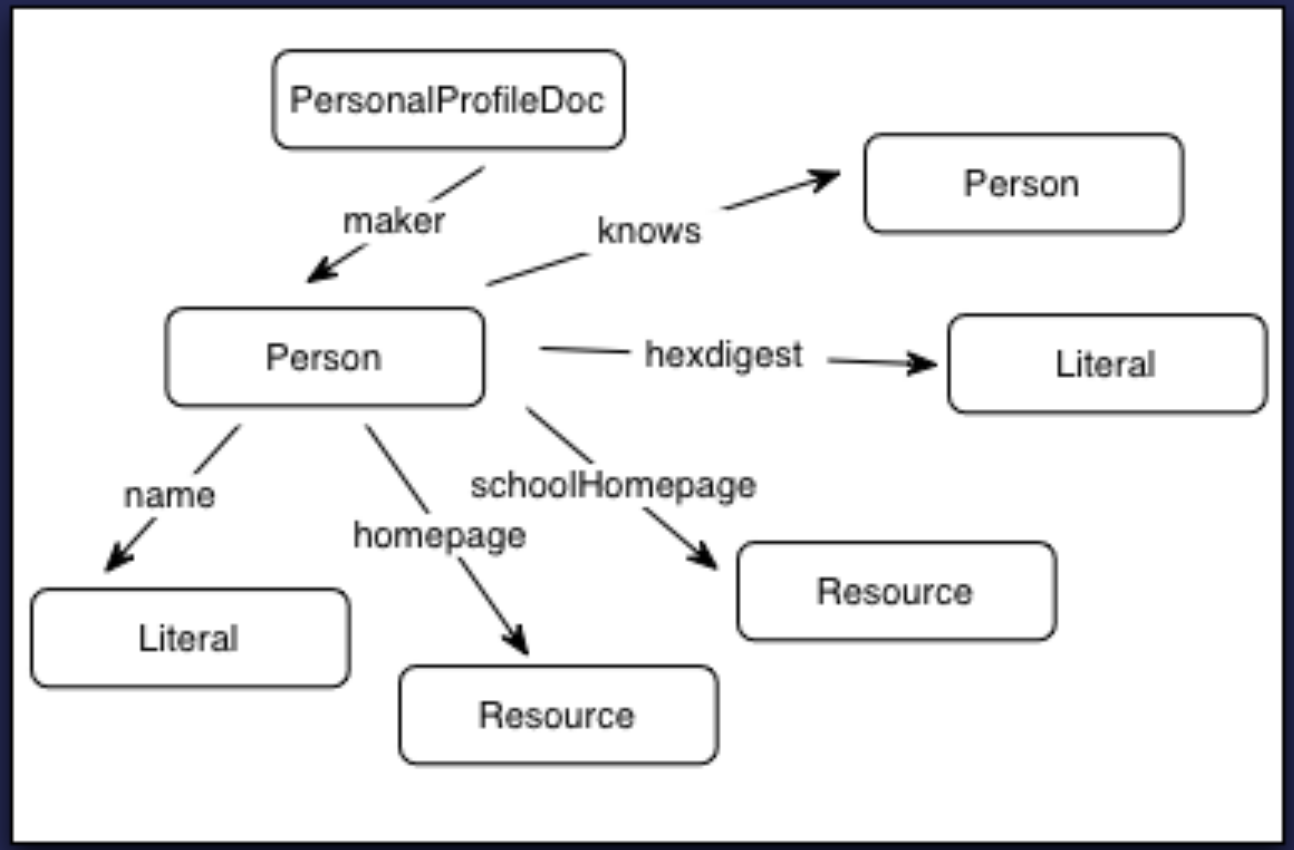
SOURCE: Lehmann, Jens, Robert Isele, Max Jakob, Anja Jentzsch, Dimitris Kontokostas, Pablo N. Mendes, Sebastian Hellmann et al. "DBpedia–a large-scale, multilingual knowledge base extracted from Wikipedia." *Semantic Web* 6, no. 2 (2015): 167-195..org

Linked Data for Social Relationships

FOAF

- Describing people
- Describing who knows whom
- A ‘horizontal’ vocabulary (not domain specific)
- Provides for aggregation of information about people from different sources
- Can be integrated with other vocabularies such as SKOS and SIOC

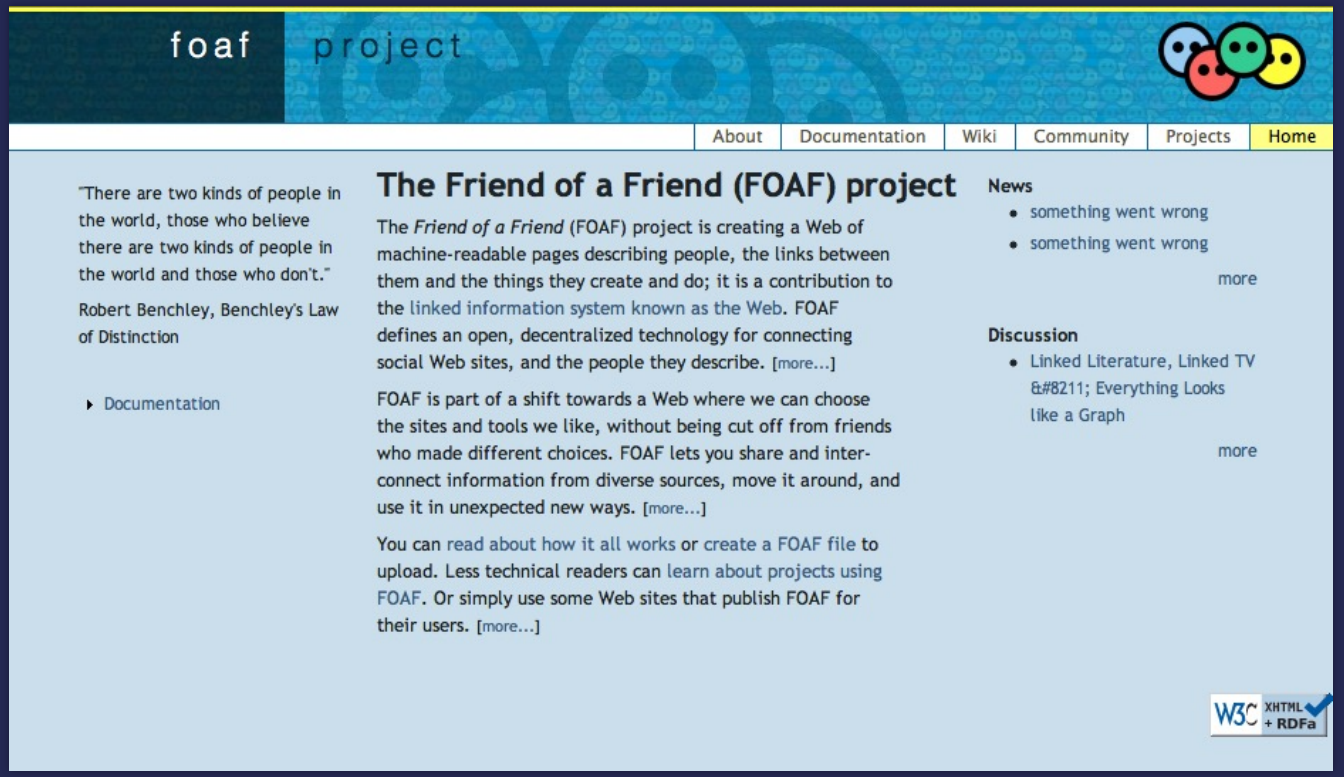
FOAF



SOURCE: http://dig.csail.mit.edu

FOAF Example

FOAF project



Online communities

- Can involve a number of people identified differently in each one
- Can discuss a number of topics that are the same or related
- Can allow for discussions to be carried out across communities

How do we bring all these together to enable knowledge discovery and collaboration?

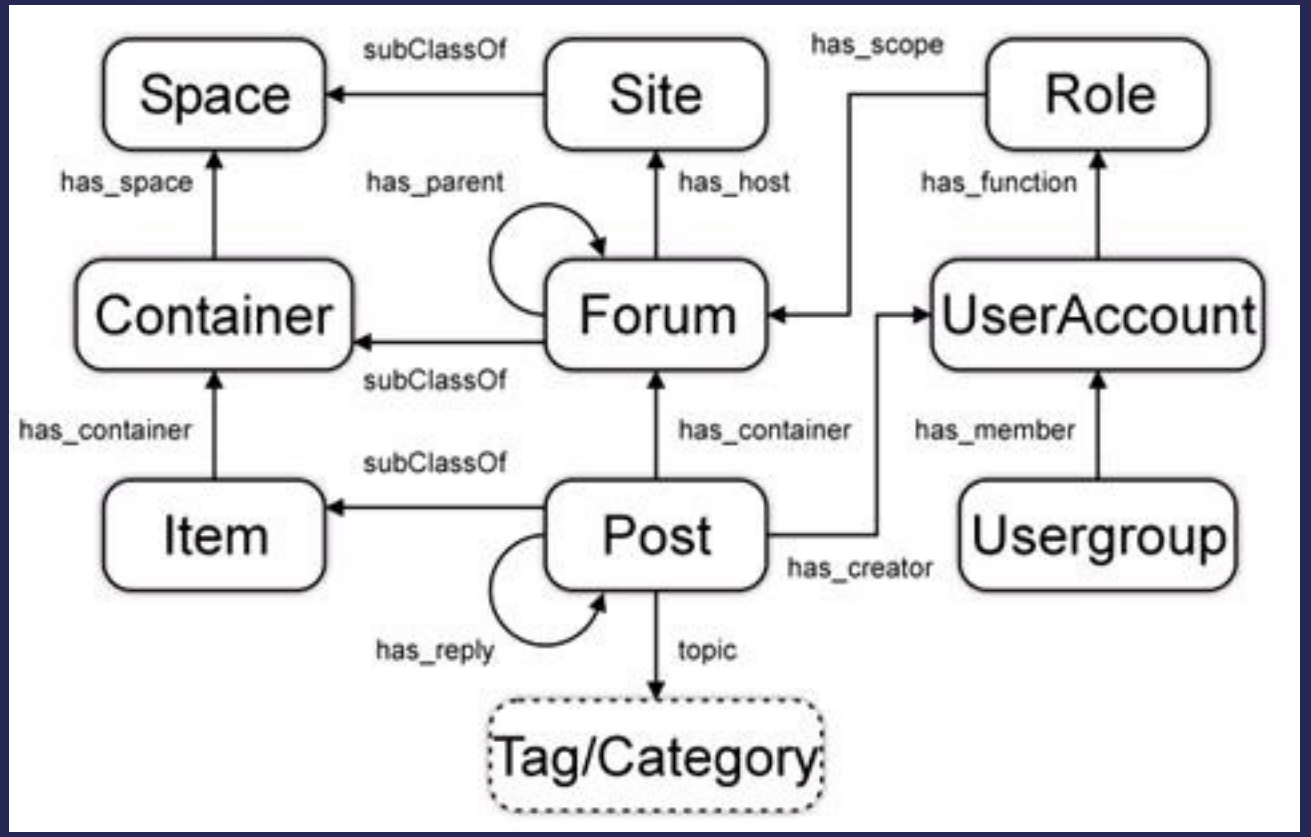
- expert finding

- following discussions and topics

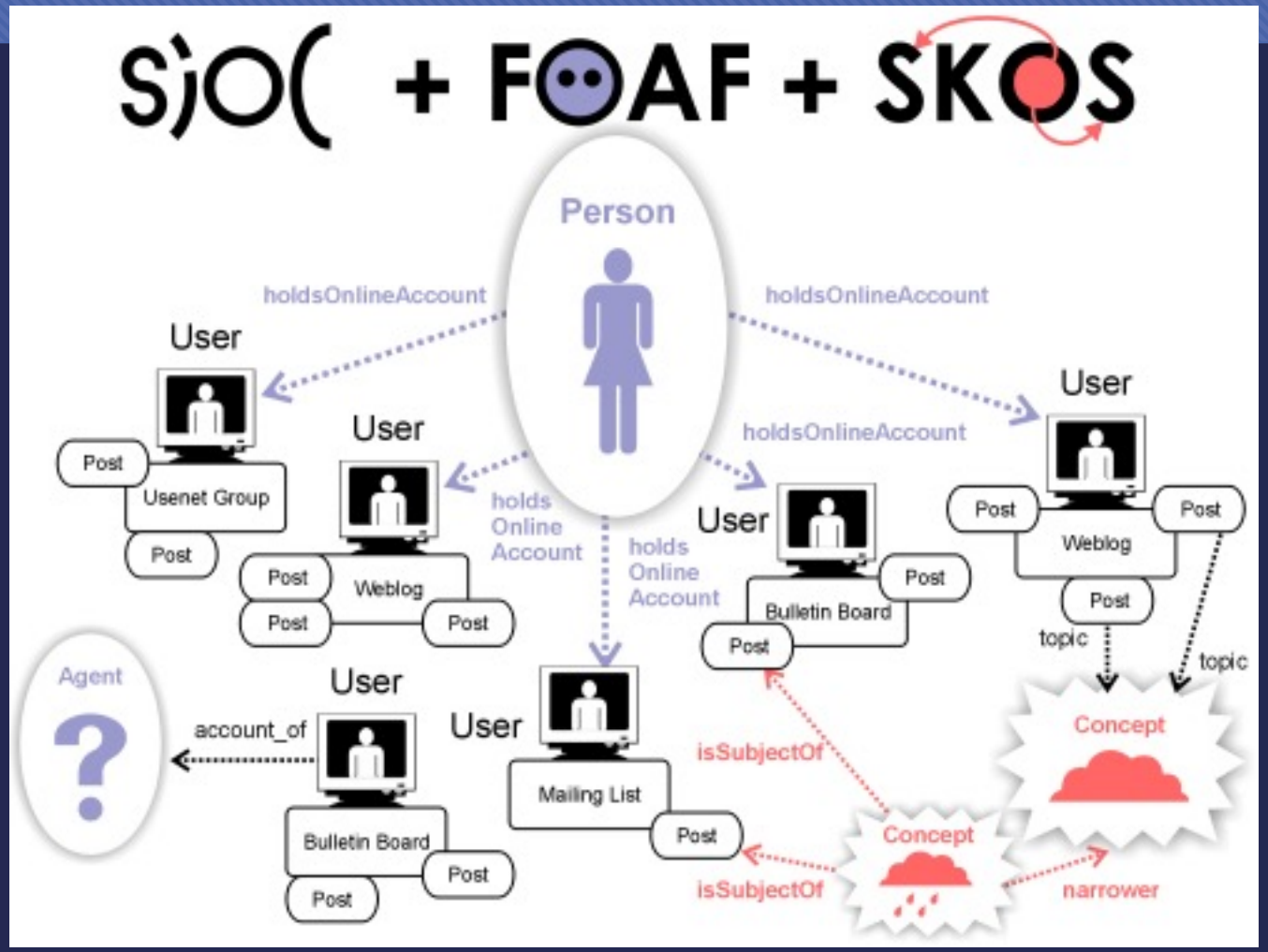
Inter-linking online communities

- Semantically-Interlinked Online Communities (SIOC)
  - An RDF-based schema for linking Community resources
  - Describing the structure and content of online for a and discussions
  - Describing the contribution of individuals
  - Possible combination with FOAF

SIOC Ontology



The SIOC project



http://sioc-project.org

Browsing SIOC info

SIOC Browser

About

Filtering

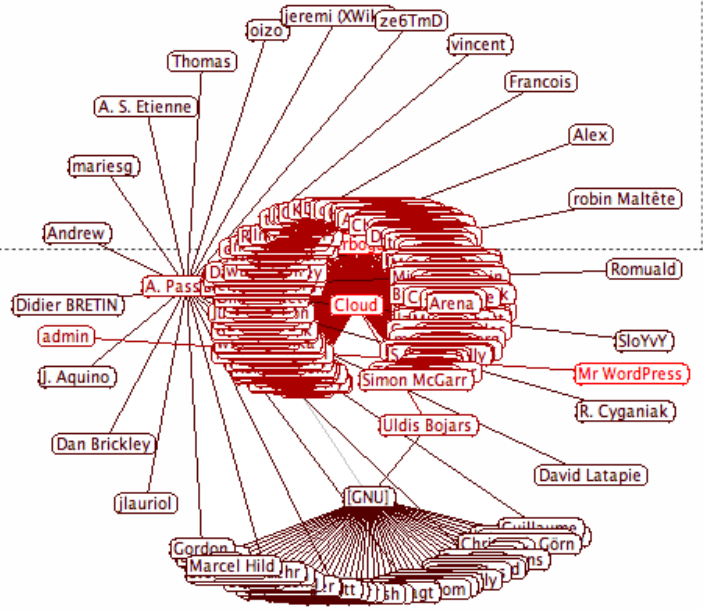
- No filtering
- Posts created last month
- Posts created last week

Query

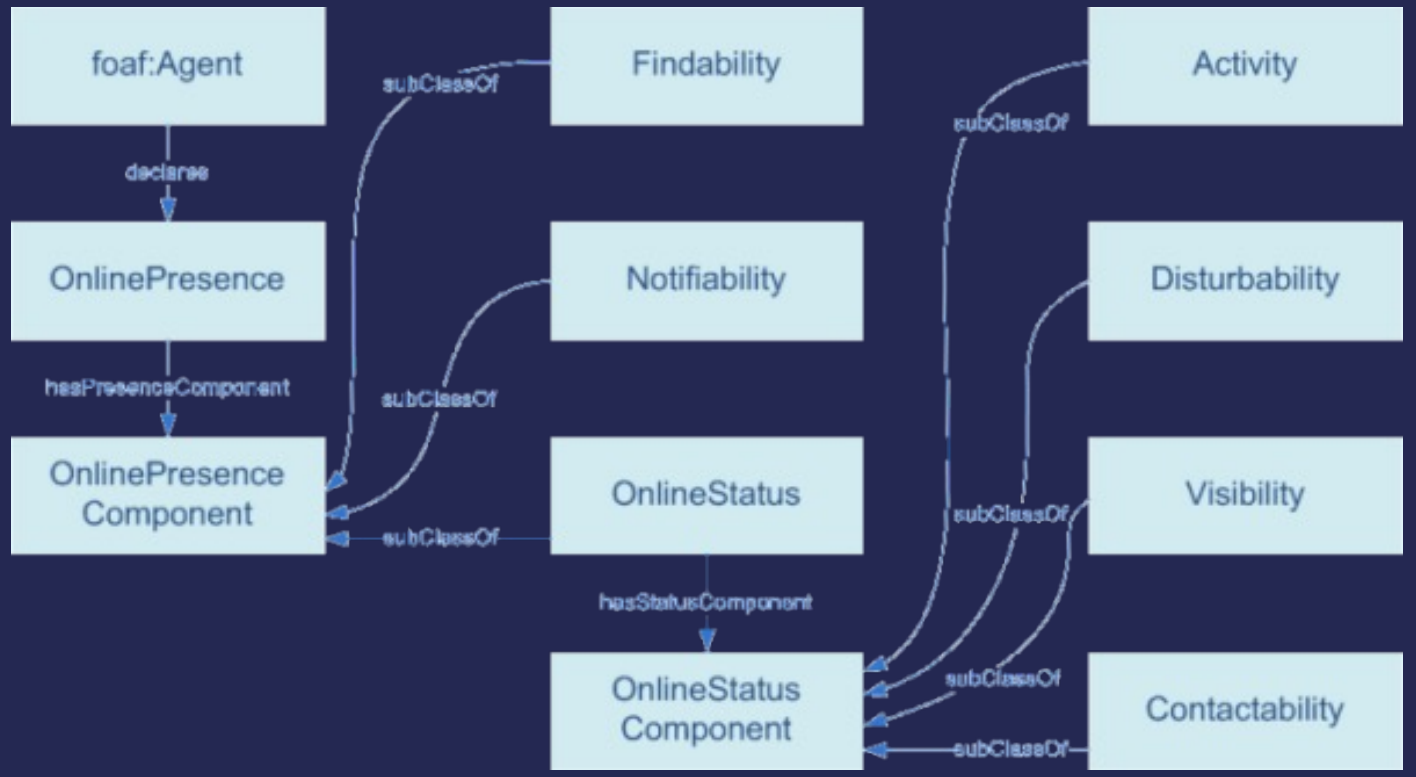
```
PREFIX sioc:    <http://rdfs.org/sioc/ns#>
PREFIX foaf:  <http://xmlns.com/foaf/0.1/>
PREFIX xsd:    <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs:  <http://www.w3.org/2000/01/rdf-schema#>
PREFIX rdf:  <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX dc:  <http://purl.org/dc/elements/1.1/>
PREFIX dcterms:  <http://purl.org/dc/terms/>
SELECT DISTINCT ?author_name ?author_sha1 ?replier_name ?replier_sha1
WHERE {
        ?_post sioc:has_reply ?_reply .
        ?_post foaf:maker ?_author .
        ?_reply foaf:maker ?_replier .
        ?_author foaf:name ?author_name .
        ?_author foaf:mbox_sha1sum ?author_sha1 .
        ?_replier foaf:name ?replier_name .
        ?_replier foaf:mbox_sha1sum ?replier_sha1 .

}
```

Results

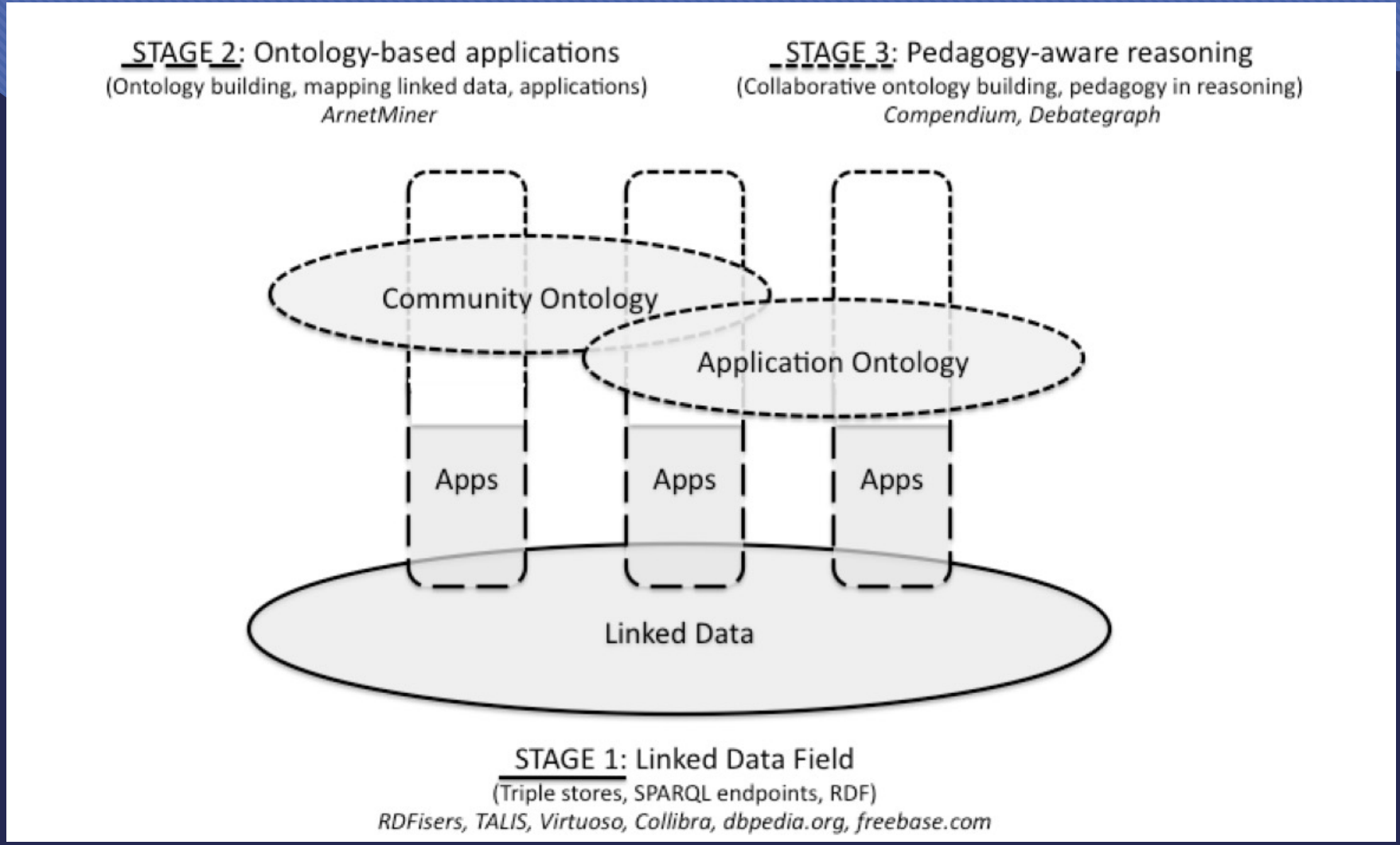
Force | Radial



OPO-Online Presence Ontology

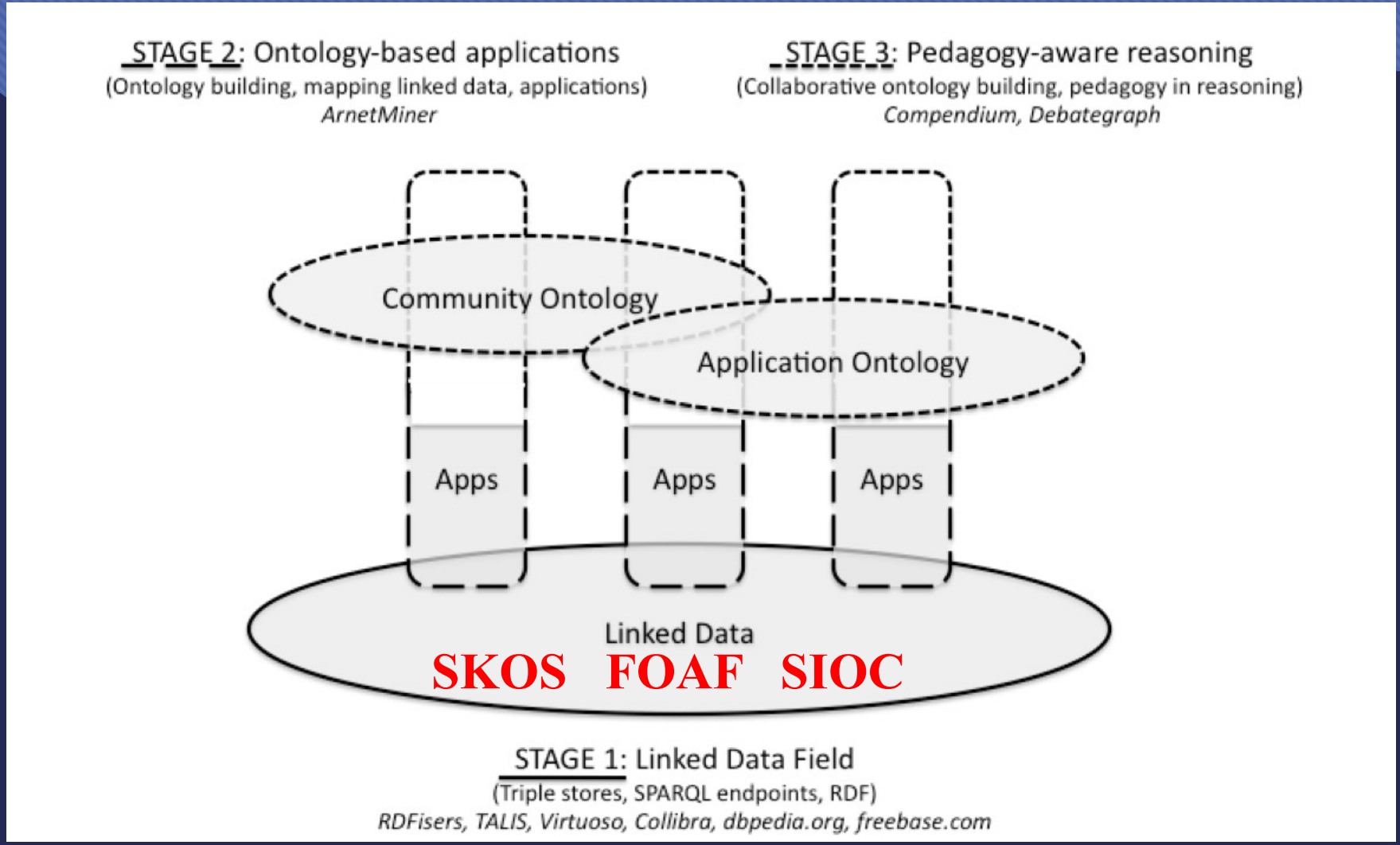


Bottom up evolution on linked data – HE



Semtech project report: http://eprints.soton.ac.uk/267534/1/semtech-report.pdf

Bottom up evolution on linked data – OSN



Semtech project report: http://eprints.soton.ac.uk/267534/1/semtech-report.pdf

A Social Semantic Web

Affordances

- Interoperation
- Meaningful data aggregation
- Leveraging the 'wisdom of the crowds' to make associations between data sources
- Collective Intelligence
- Information spaces for individuals and communities
- Better searching and matching of resources and individuals
- Leveraging Collective Intelligence

A Social Semantic Web

Challenges

- Exemplar applications to establish the value of exposing linked open data
- Safeguarding security and privacy (information triangulation risks)
- Consistent (re)use of identifiers (URIs)
- Large scale information dissemination and aggregation mechanisms

Monetization of social graph data?

Business models using Open Social Graphs is an open question

Google code Search

e.g. "adwords" or "open source"

Social Graph API (Deprecated)

Home Docs FAQ Forum Te

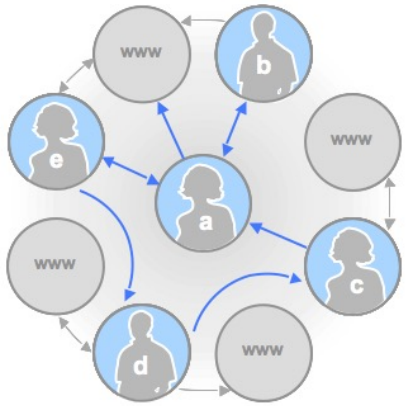
Warning: The Social Graph API has been officially deprecated as of January 20, 2012 and will be fully retired on April 20, 2012. For more information, please see the announcement.

Build critical mass on your website

With so many websites to join, users must decide where to invest significant time in adding their same connections over and over. For developers, this means it is difficult to build successful web applications that hinge upon a critical mass of users for content and interaction. With the Social Graph API, developers can now utilize public connections their users have already created in other web services. It makes information about public connections between people easily available and useful.

Only public data

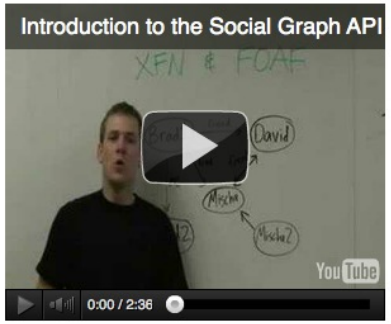
The API returns web addresses of public pages and publicly declared connections between them. The API cannot access non-public information, such as private profile pages or websites accessible to a limited group of friends.



How do I start?

1. Learn more about the Social Graph
2. Review the API Documentation
3. Try out the Example Applications

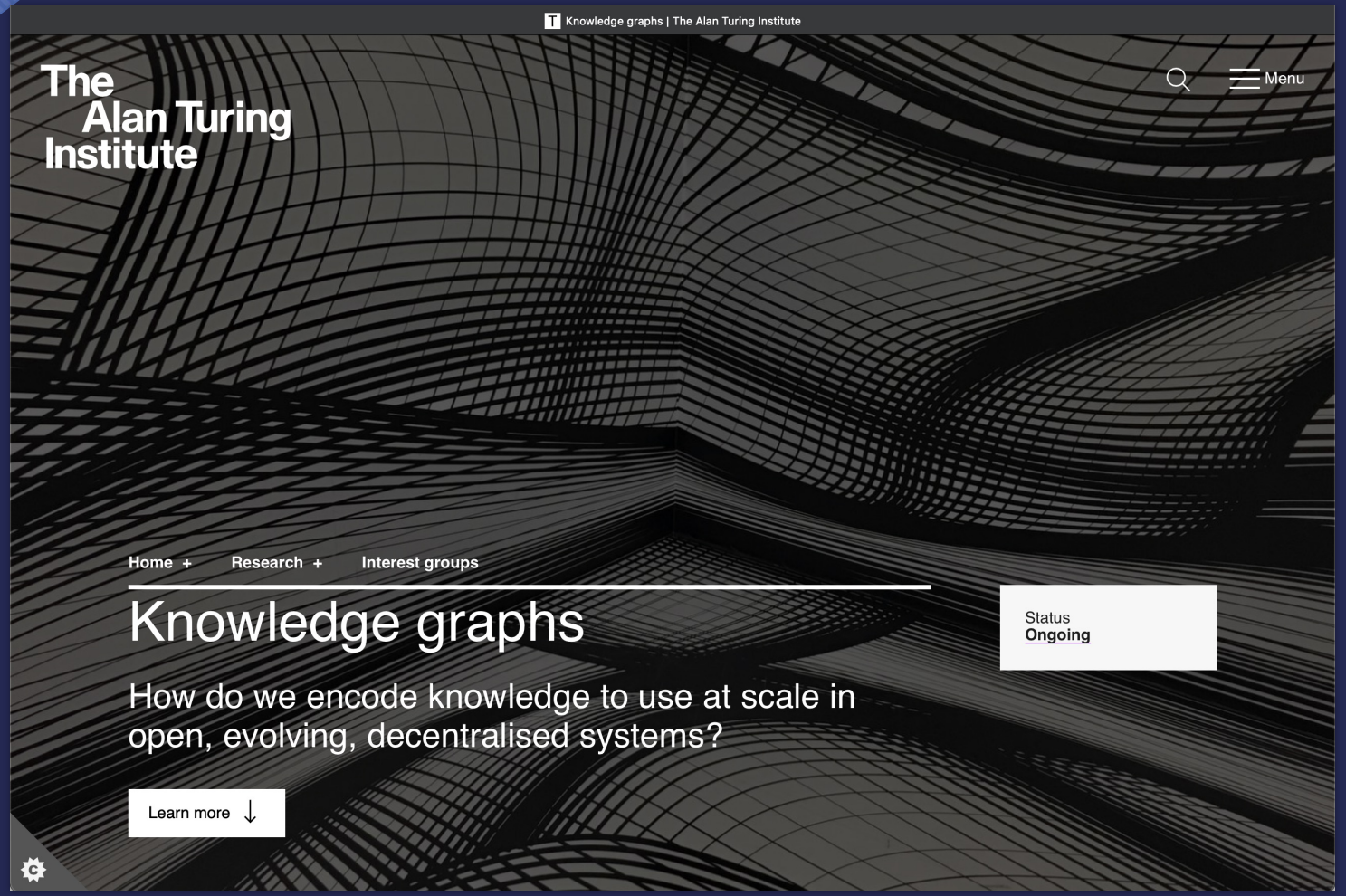
Video Introduction



Based on open standards

We currently index the public Web for XHTML Friends Network (XFN), Friend of a Friend (FOAF) markup and other publicly declared connections. By supporting open Web standards for describing connections between people, web sites can add to the social infrastructure of the web.

Knowledge Graphs



The narrative

Socio-technical systems on the Web

Sharing on the Web

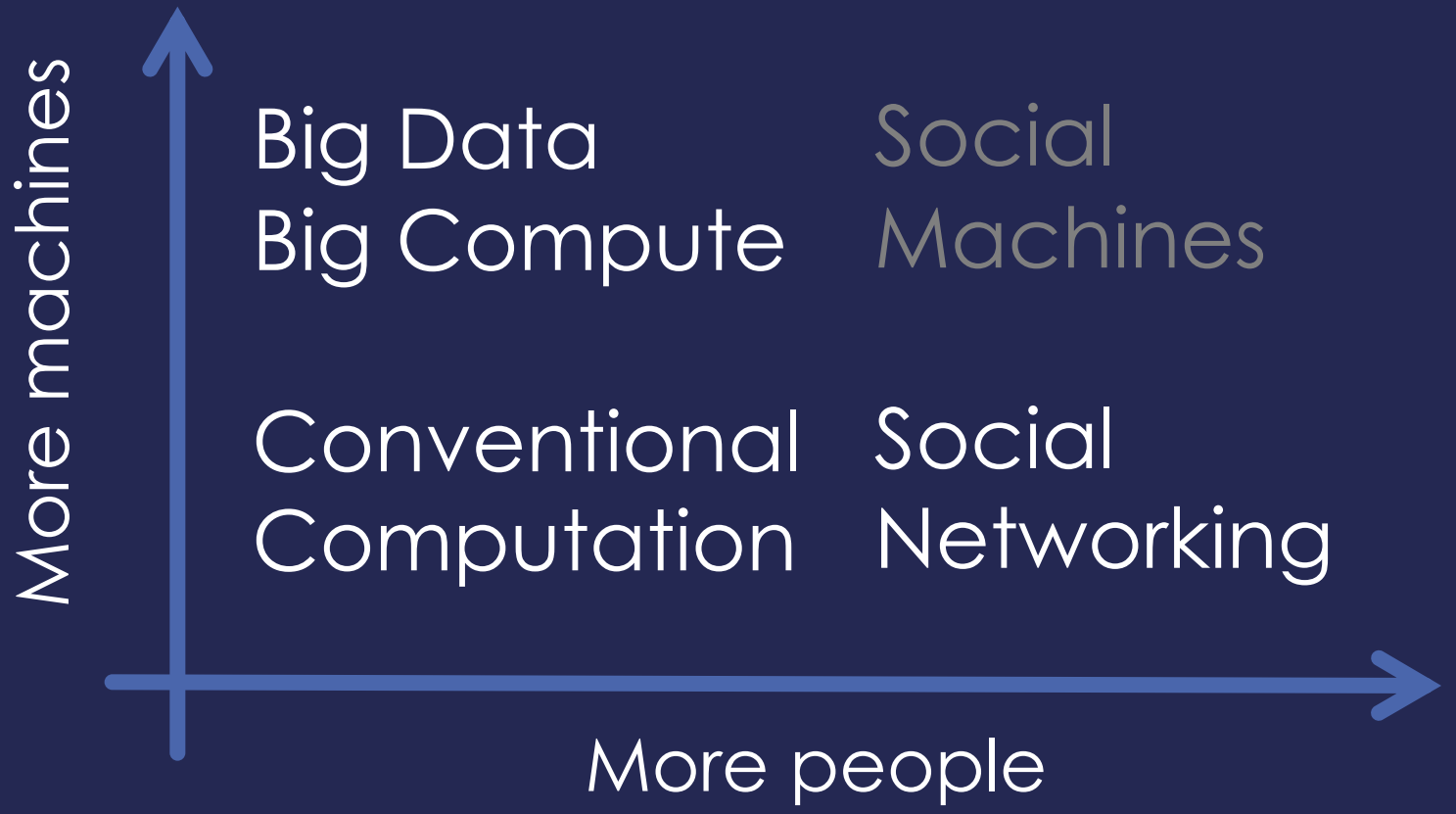
- Web 1.0/Web 2.0: Sharing content
- Web 2.0/Web 3.0: Sharing apps, data, observations (analytics)

Socio-technical systems on the Web

Real life is and must be full of all kinds of social constraint – the very processes from which society arises. Computers can help if we use them to create abstract ***social machines*** *on the Web: processes in which people do the creative work and the machine does the administration.*

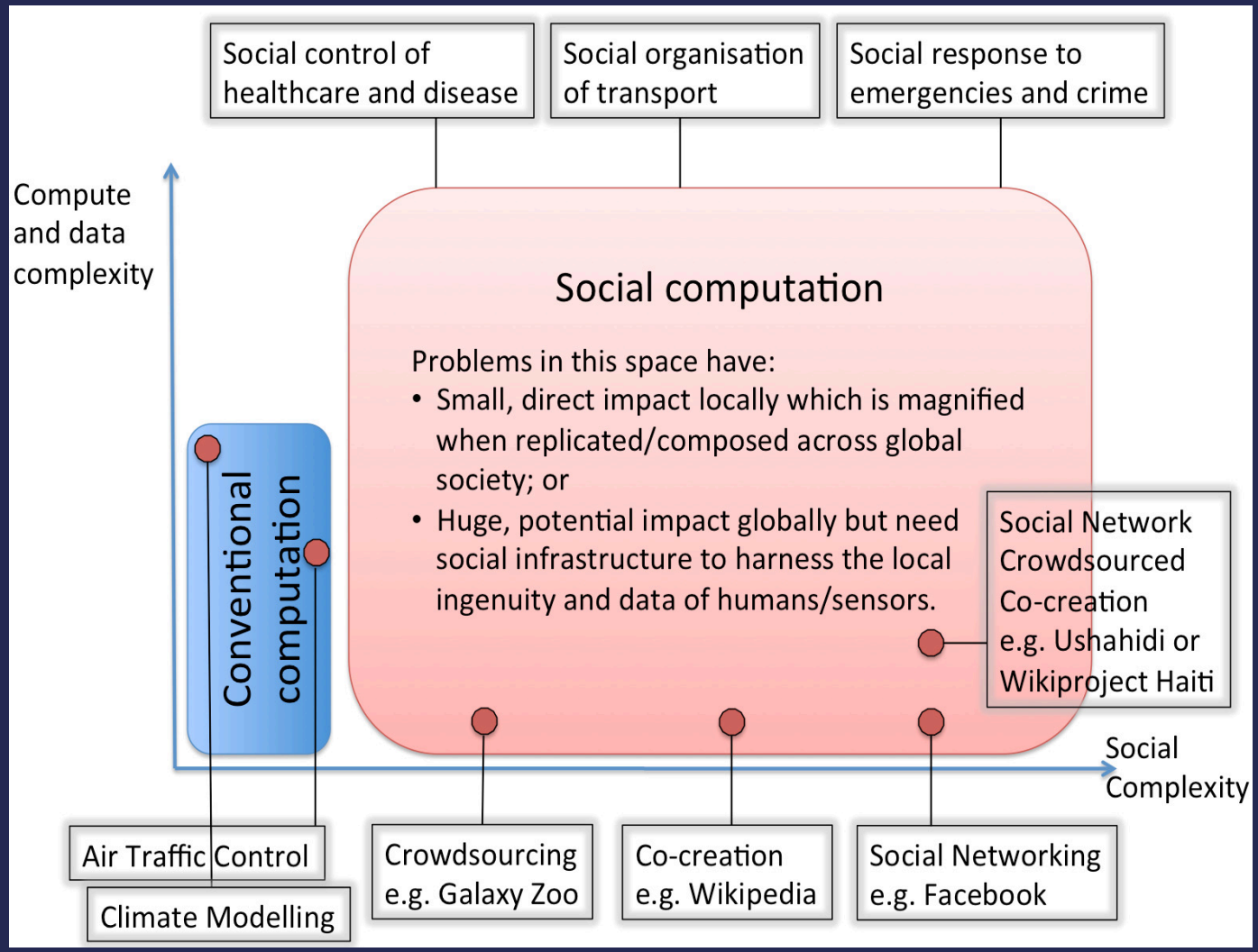
Berners-Lee & Fischetti, Weaving the Web (1999), p. 172

Social Machines in Context



Nigel Shadbolt, University of Oxford

Social Machines the New Frontier

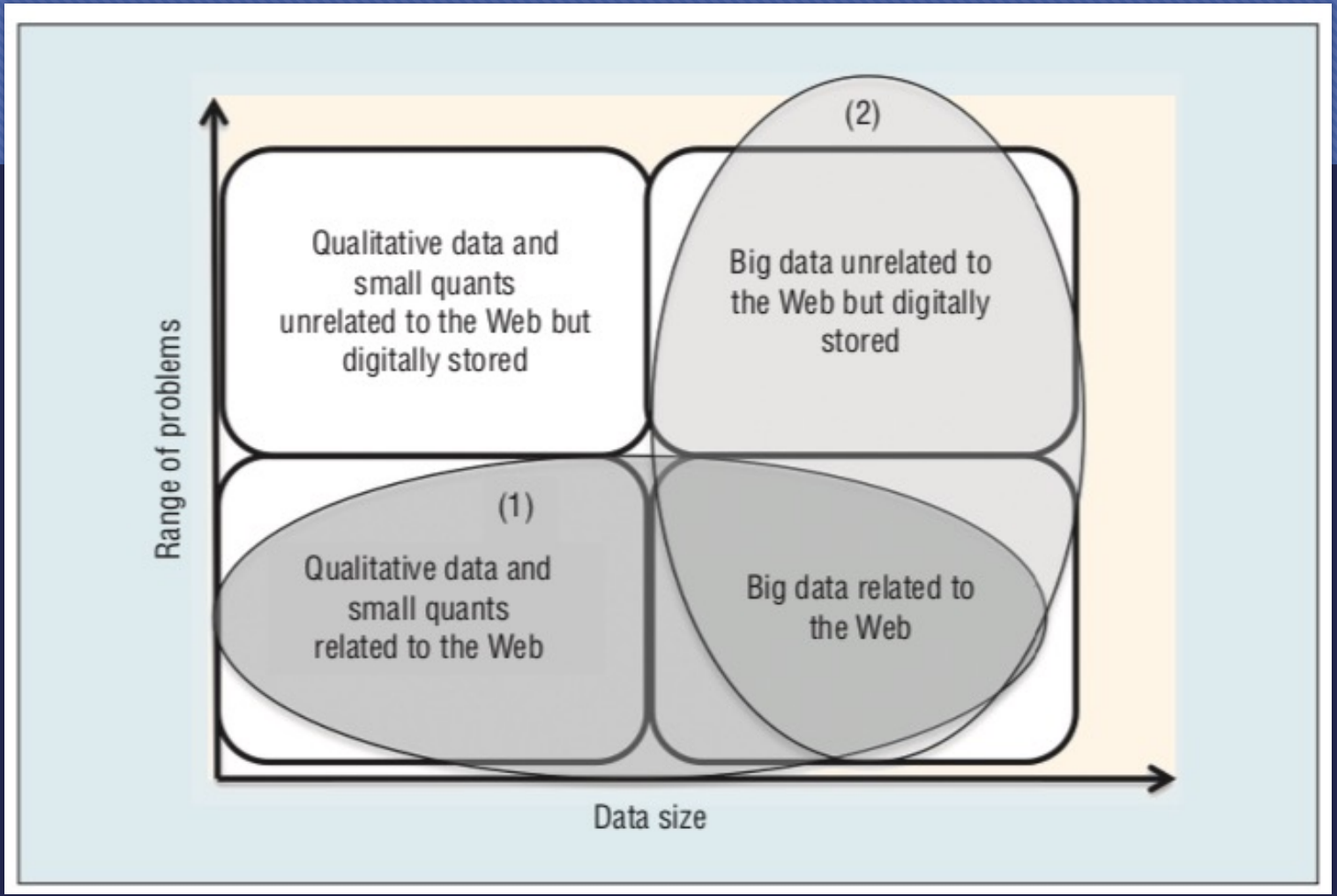


Sharing data and observations

- Sharing Datasets
- Sharing Observations (analytic applications)

EXPOSING BOTH DATASETS AND ANALYTICS

LINKING EXPLICITLY ANALYTIC TOOLS TO DATASETS USED



(1) Web Science
(2) Data Science

The Role of Data Science in Web ScienceC Phethean, E Simperl, T Tiropanis, R Tinati, W Hall
IEEE Intelligent Systems 31 (3), 102-107

Future developments: Web Observatories

Harmonisation with Other Observatories	Social Innovation	Interdisciplinary e-Science
Catalogues of Analytic and Visualisation Tools	Open Standards	Novel Analysis and Visualisation Methods
Semantic Catalogues	Harvesting and Archival	Harmonised Access

Open Data Cloud

e-Science Infrastructures

Internet Archive

Open Web Analytics

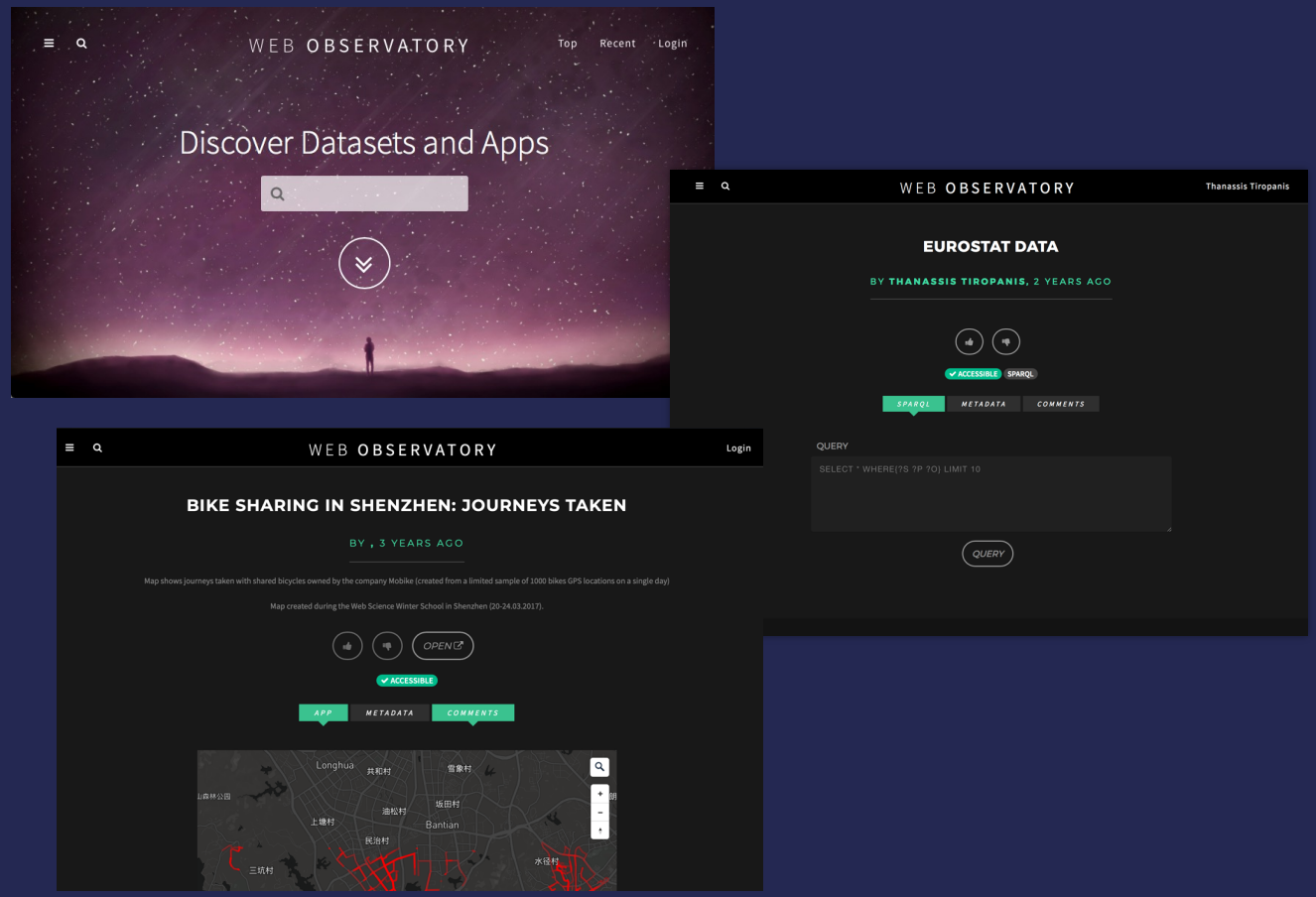
Social Media

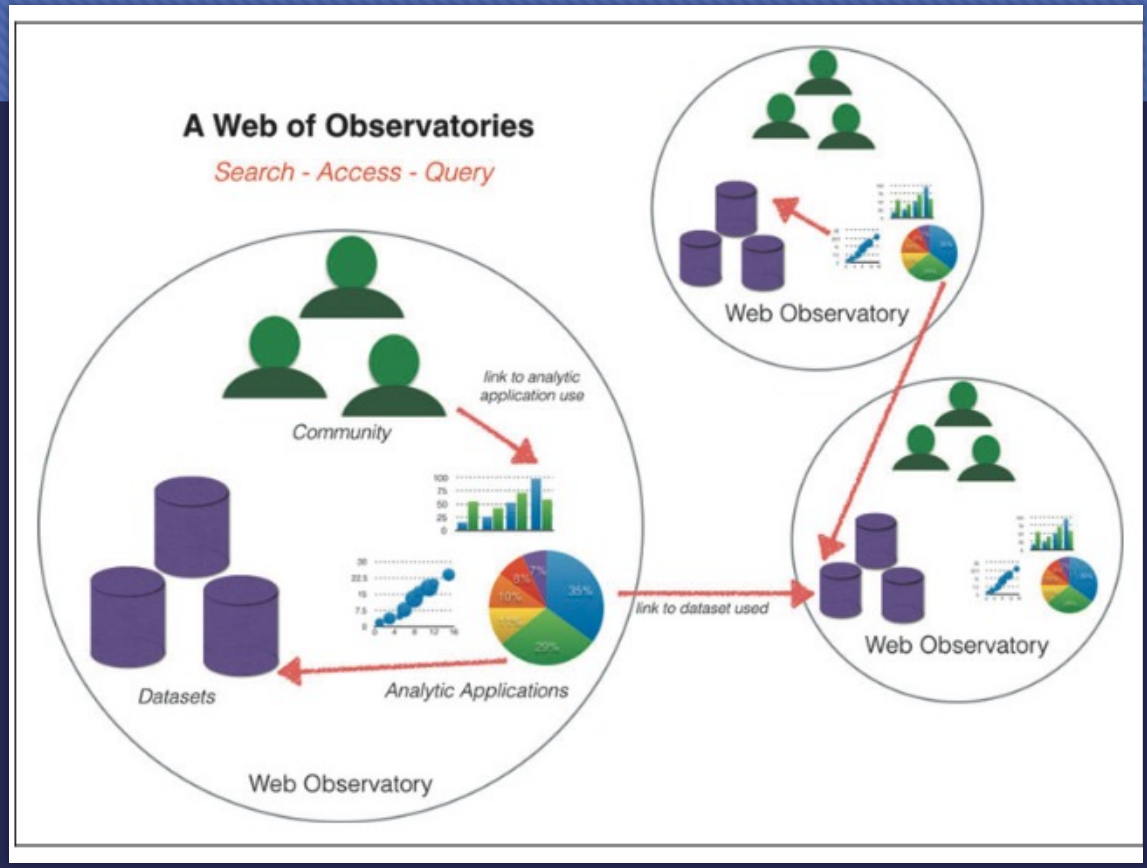
Repositories with Authorised Access

Tiropanis, T., Hall, W., Shadbolt, N., de Roure, D., Contractor, N., & Hendler, J. (2013). The Web Science Observatory. *Intelligent Systems, IEEE*, *28*(2), 100–104. doi:10.1109/MIS.2013.50

Southampton Web Observatory

http://wobs.soton.ac.uk
https://github.com/soton-wob

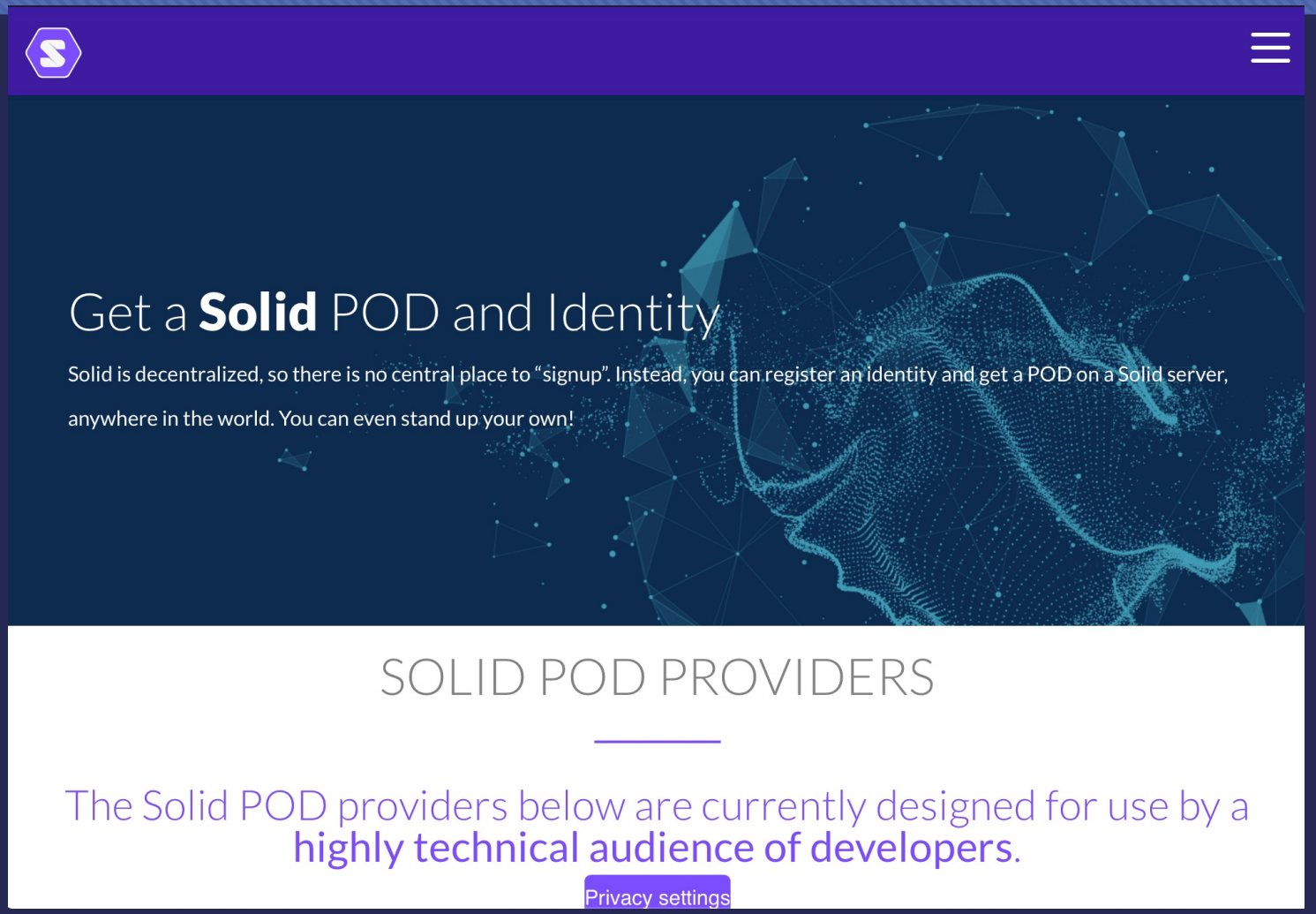




Tiropanis, Thanassis, Hall, Wendy, Hendler, Jim and de Larrinaga, Christian (2014) The Web Observatory: A Middle Layer for Broad Data. Big Data, 2, (3), 129-133. (doi:10.1089/big.2014.0035)
http://eprints.soton.ac.uk/369910/

SOLID – Social Linked Data

- SOLID is a suite of technologies and conventions for developing decentralized social applications on the Web of Linked Data.
  - https://solid.mit.edu
  - https://github.com/solid/solid-spec
  - https://solid.inrupt.com
- It enables a new generation of applications that rely not on a central datastore but on the use of personal online datastores (pod).
- Users of an application (e.g. social networking application) need to provide consent for access and use of their personal datastore.
- Pods can be stored on secure cloud.



SOLID Platforms

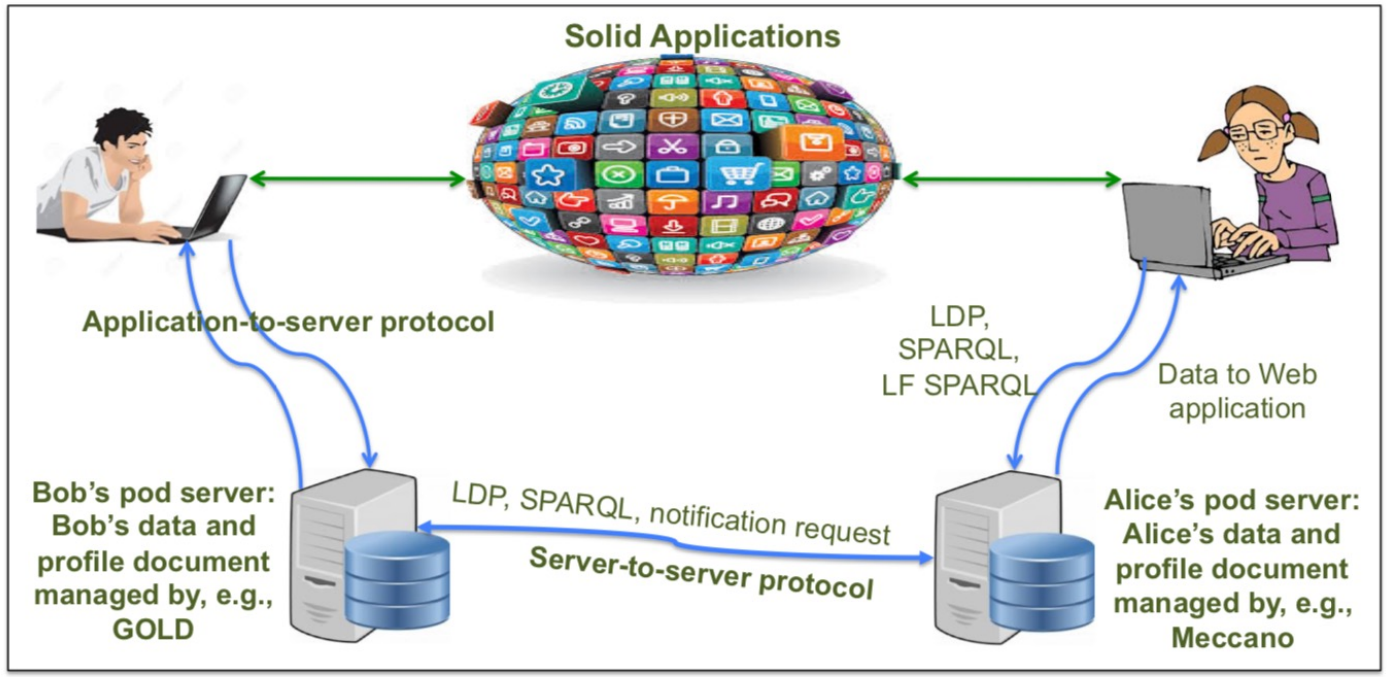


Figure 1: The Solid platform. A user stores their data in a personal online datastore (pod) that resides on a pod server. The user controls their identity using an RDF profile document stored in their pod. To use a Solid application, the user loads the application from an application provider. The application obtains the user's pod from the identity profile. It then follows links from the profile to discover data on the user's pod, as well as on other pods, performing authentication when needed.

SOURCE:

Essam Mansour, Andrei Vlad Sambra, Sandro Hawke, Maged Zereba, Sarven Capadisli, Abdurrahman Ghanem, Ashraf Aboulnaga, and Tim Berners-Lee. 2016. A Demonstration of the Solid Platform for Social Web Applications. In Proceedings of the 25th International Conference Companion on World Wide Web (WWW '16 Companion). International World Wide Web Conferences Steering Committee, Republic and Canton of Geneva, Switzerland, 223-226. DOI: https://doi.org/10.1145/2872518.2890529

Lessons learned

- Understanding the evolution of the Web leading to the Social Semantic Web
- Understanding of the Semantic Web and Linked Data vision and how Ontologies, RDF and SPARQL are related to it.
- Understanding of the affordances and challenges of a Social Semantic Web.
- The relationship of SKOS, FOAF and SIOC to the Social Semantic Web.
- Familiarity with the main concepts of data sharing architectures and SOLID.

- Breslin, J. G., Passant, A., Decker, S. (2010) The Social Semantic Web. Springer. http://socialsemanticweb.net/
- Antoniou, G., Harmelen, F. v. (2008) A Semantic Web Primer, 2nd Edition. The MIT Press. http://www.ics.forth.gr/isl/swprimer/
- Allemang, D., Hendler, J. (2008) Semantic Web for the Working Ontologist . Morgan Kaufmann. http://workingontologist.org/
- Tiropanis, T., Hall, W., Shadbolt, N., de Roure, D., Contractor, N., & Hendler, J. (2013). The Web Science Observatory. *Intelligent Systems, IEEE*, *28*(2), 100–104. doi:10.1109/MIS.2013.50 http://eprints.soton.ac.uk/354604/
- Tiropanis, Thanassis, Hall, Wendy, Hendler, Jim and de Larrinaga, Christian (2014) The Web Observatory: A Middle Layer for Broad Data. Big Data, 2, (3), 129-133. (doi:10.1089/big.2014.0035) http://eprints.soton.ac.uk/369910/
- Baker, T., Bechhofer, S., Isaac, A., & Miles, A. (2013). Key choices in the design of Simple Knowledge Organization System (SKOS). *Web Semantics: Science*. doi:10.1016/j.websem.2013.05.001
- Essam Mansour, Andrei Vlad Sambra, Sandro Hawke, Maged Zereba, Sarven Capadisli, Abdurrahman Ghanem, Ashraf Aboulnaga, and Tim Berners-Lee. 2016. A Demonstration of the Solid Platform for Social Web Applications. In Proceedings of the 25th International Conference Companion on World Wide Web (WWW '16 Companion). https://doi.org/10.1145/2872518.2890529