Bridging Folksonomies and Ontologies For Knowledge Sharing on the Social Web

Freddy Limpens[1], Fabien Gandon[1], Michel Buffa[2]

1 : INRIA , 2 : I3S (CNRS - UNSA), Sophia-Antipolis

SoSEA 2008
First International Workshop on Social Software Engineering and Applications,
L'Aquila, Italy, September 15, 2008

Social Software

=

Interaction

Exchange

Sharing

WIKIPEDIA

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Editing Madman Muntz

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Please do not save test edits. If you want to experiment, please use the sandbox.

This page is 34 kilobytes long.

```
{{Infobox Celebrity
|name         = Earl William Muntz
|image        = Earlmuntz.jpg
|imagesize    =
|caption      = <small>"Madman" Muntz in one of his many TV advertisement performances</small>
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|birth_place  = [[Elgin, Illinois|Elgin]], [[Illinois]], <br />United States
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|death_place  = [[Rancho Mirage, California|Rancho Mirage]], [[California]], <br />United States
|occupation   = [[Electrical Engineer]]<br />[[Businessman]]<br />[[Entrepreneur]]<br />Television
Commercial Actor
|salary       =
|networth     =
|spouse       =
|children     = James Muntz<br />Tee Vee "Teena" Muntz
```

WIKIPEDIA

Editing Madman Muntz

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This page is 34 kilobytes long.

```
{{Infobox Celebrity
|name         = Earl William Muntz
|image        = Earlmuntz.jpg
|imagesize    =
```

s</small>

ited States
/>Television

Talk:Madman Muntz

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This is the talk page for discussing improvements to the Madman Muntz article.

- **Please sign and date your posts** by typing four tildes (~~~~).
- **Put new text under old text.** Click here to start a new topic.
- **New to Wikipedia?** Welcome! Ask questions, get answers.
- **This is not a forum for general discussion** about the article's subject.

- Be polite
- Assume good faith
- No personal attacks
- Be welcoming

Article policies

- No original research
- Neutral point of view
- Verifiability

Madman Muntz is a featured article; it (or a previous version of it) has been ***identified*** as one of the best articles produced by the Wikipedia community. Even so, if you can update or improve it, please do so.

This article is currently on Wikipedia's Main Page as Today's featured article.

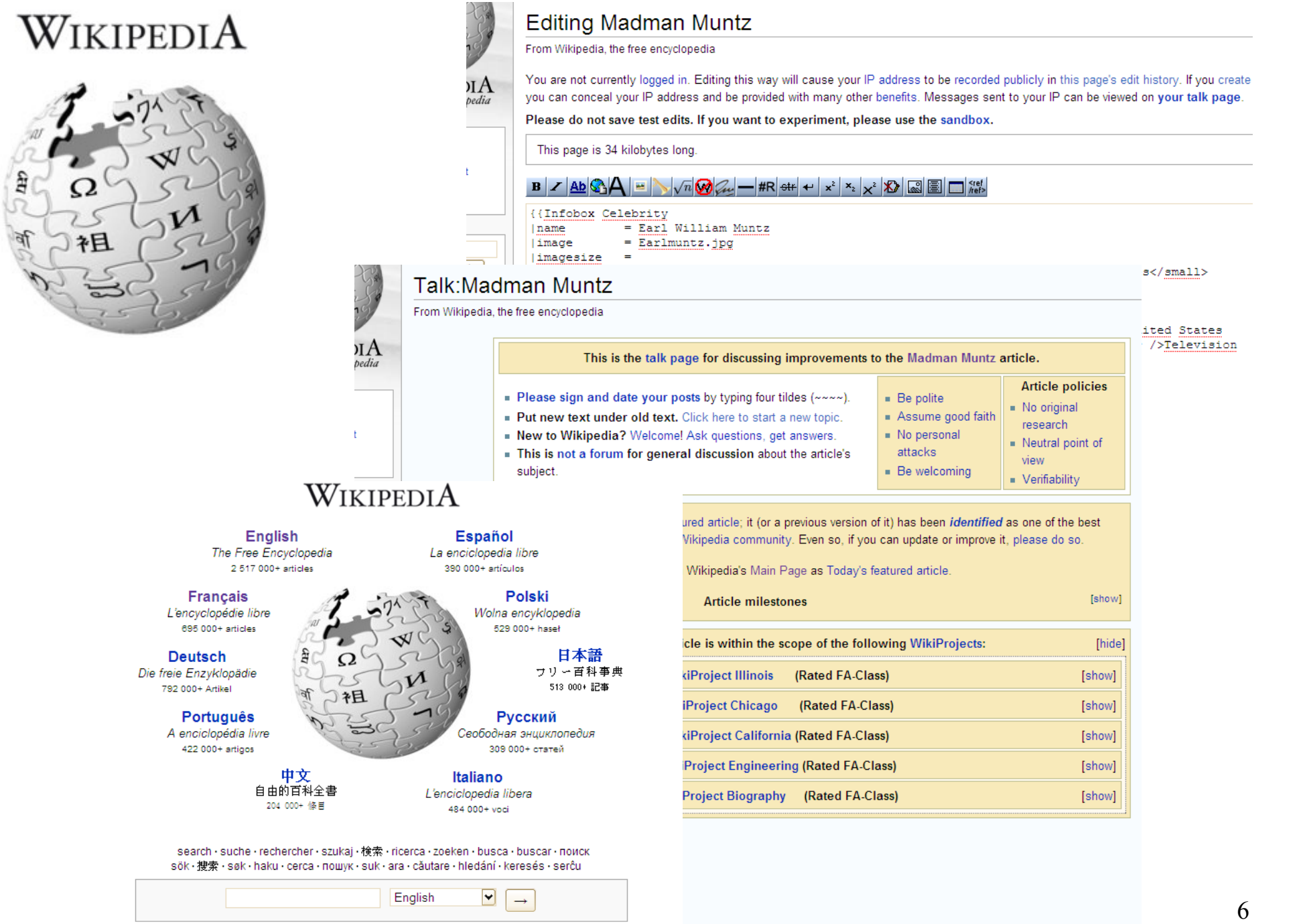
Article milestones [show]

This article is within the scope of the following WikiProjects: [hide]

WikiProject Illinois	(Rated FA-Class)	[show]
WikiProject Chicago	(Rated FA-Class)	[show]
WikiProject California	(Rated FA-Class)	[show]
WikiProject Engineering	(Rated FA-Class)	[show]
WikiProject Biography	(Rated FA-Class)	[show]

Contents [hide]

1 Suggestion!
2 Date autoformatting
3 Claim to have invented the term "TV"
4 In "Barton Fink."
5 Birth year discrepancy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{{Infobox Celebrity
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Put new text under old text. Click here to start a new topic.
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Verifiability
Article milestones
[show]
[hide]
(Rated FA-Class)
[show]
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English
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2 517 000+ articles
Español
La enciclopedia libre
390 000+ artículos
Français
L'encyclopédie libre
695 000+ articles
Polski
Wolna encyklopedia
529 000+ haseł
Deutsch
Die freie Enzyklopädie
792 000+ Artikel
日本語
フリー百科事典
513 000+ 記事
Português
A enciclopédia livre
422 000+ artigos
Русский
Свободная энциклопедия
309 000+ статей
中文
自由的百科全書
204 000+ 條目
Italiano
L'enciclopedia libera
484 000+ voci
search · suche · rechercher · szukaj · 検索 · ricerca · zoeken · busca · buscar · поиск
sök · 搜索 · søk · haku · cerca · пошук · suk · ara · căutare · hledání · keresés · serĉu
English

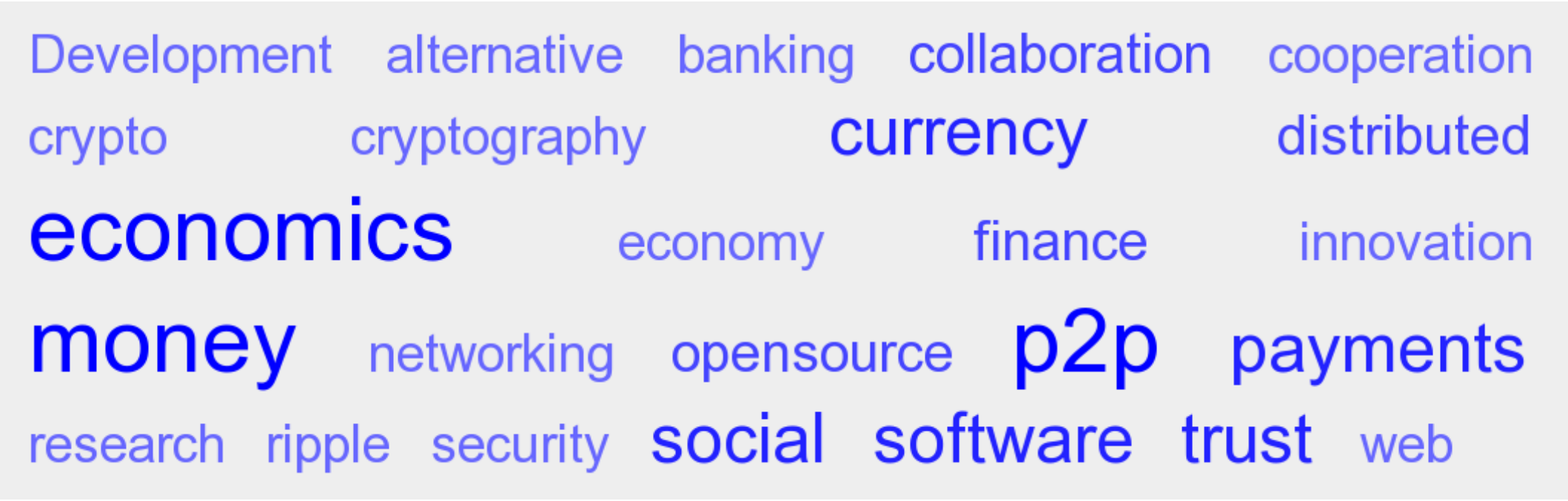
WIKIPEDIA

How to organize this wealth?

Wikipedia's contents: Lists of topics

- General reference
- Culture and the arts
- Geography and places
- Health and fitness
- History and events
- Mathematics and logic
- Natural and physical sciences
- People and self
- Philosophy and thinking
- Religion and belief systems
- Society and social sciences
- Technology and applied sciences

Social Tagging ?



Or mess

of tags ?

Objectives

1. Overcoming the limits of folksonomies

Objectives

1. Overcoming the limits of folksonomies

2. Semantic Web : interoperability accross Social Platforms

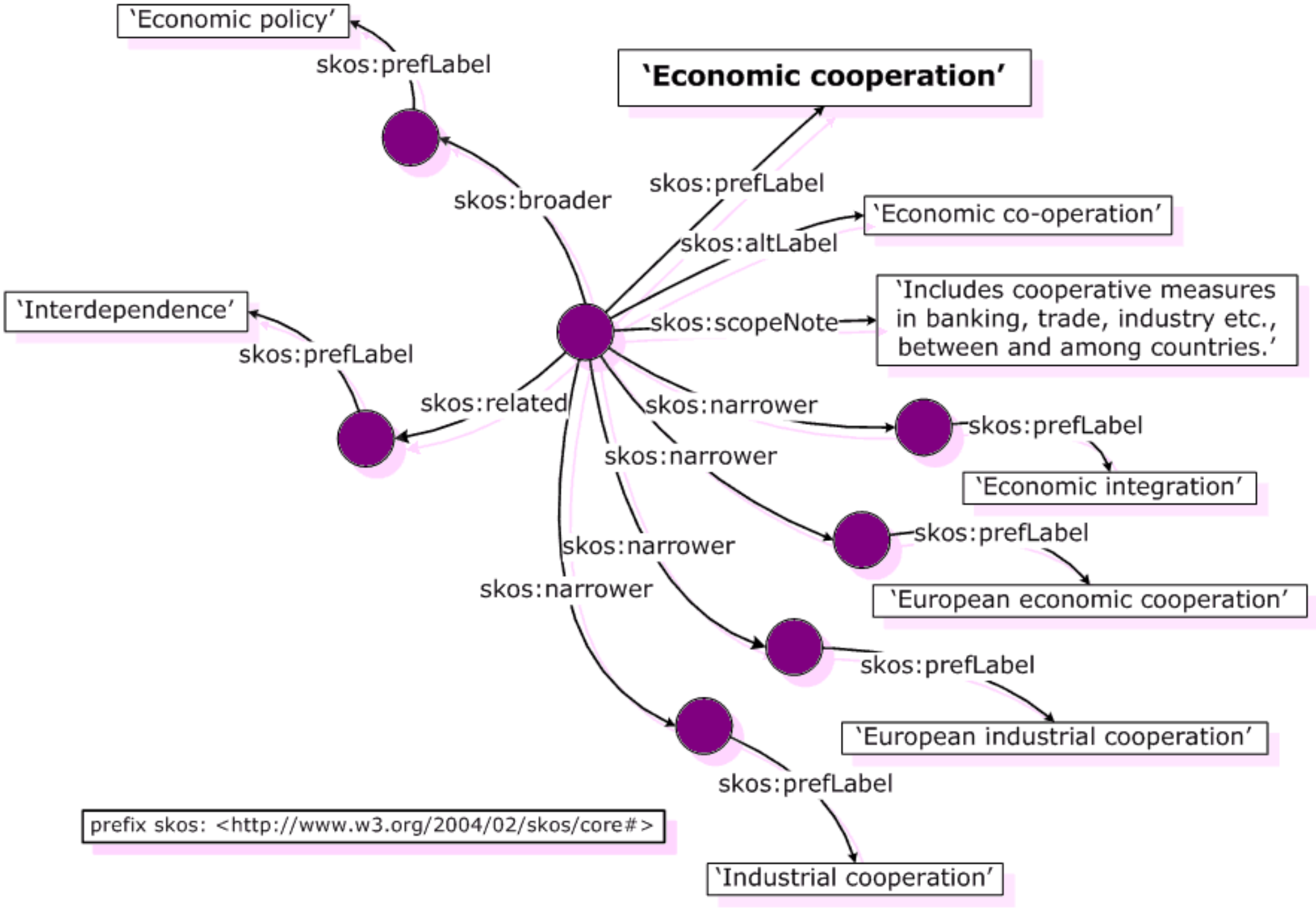
- 1 -

Organizing / Structuring

Folksonomies

From folksonomies towards ontologies

(Mika, 2007)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skos:prefLabel
'Economic cooperation'
skos:broader
skos:prefLabel
'Economic co-operation'
skos:altLabel
'Interdependence'
skos:prefLabel
skos:scopeNote
'Includes cooperative measures in banking, trade, industry etc., between and among countries.'
skos:related
skos:narrower
skos:prefLabel
'Economic integration'
skos:narrower
skos:narrower
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'European economic cooperation'
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skos:prefLabel
'European industrial cooperation'
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'Industrial cooperation'
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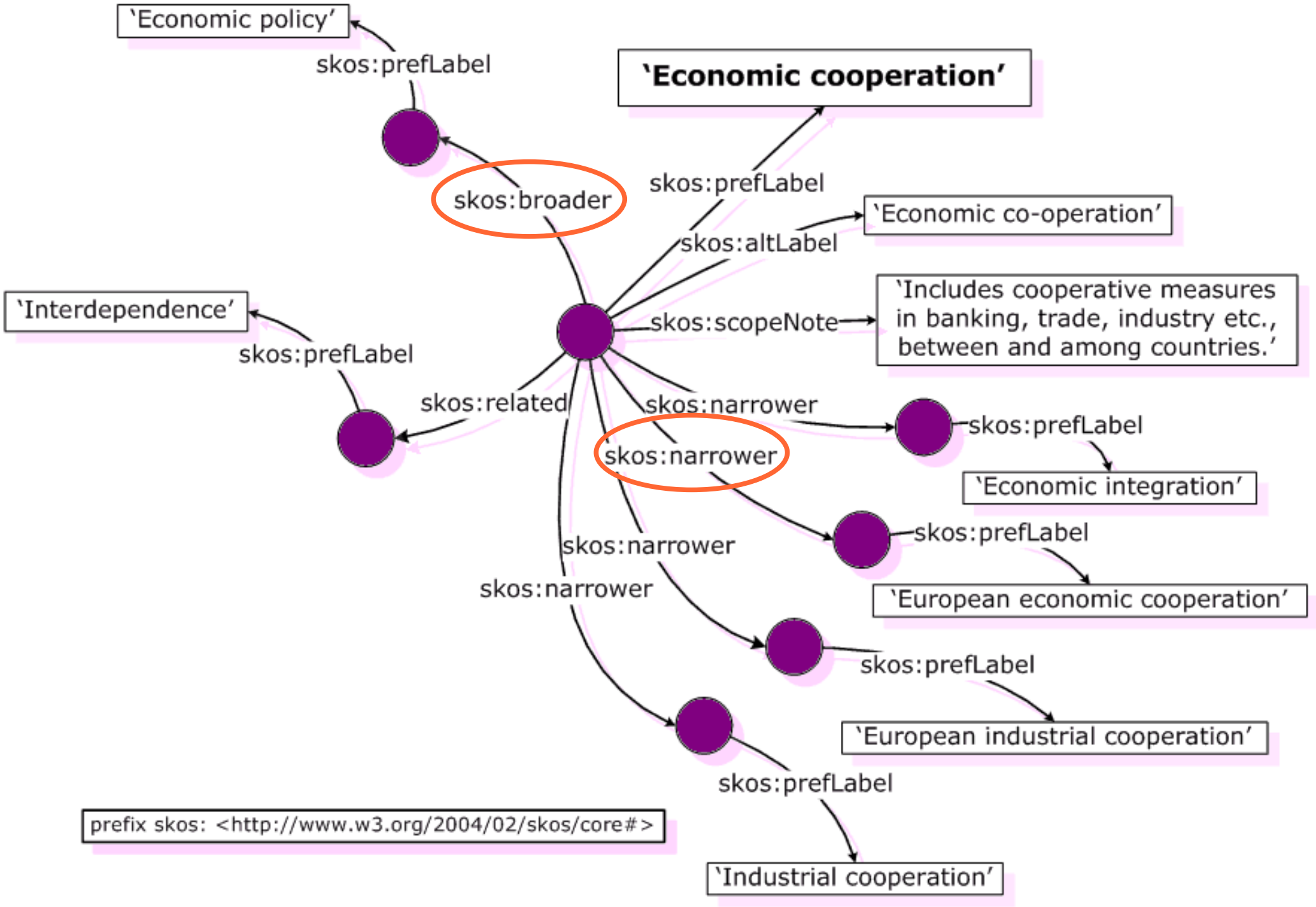
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'Economic co-operation'
skos:altLabel
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'Includes cooperative measures in banking, trade, industry etc., between and among countries.'
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skos:narrower
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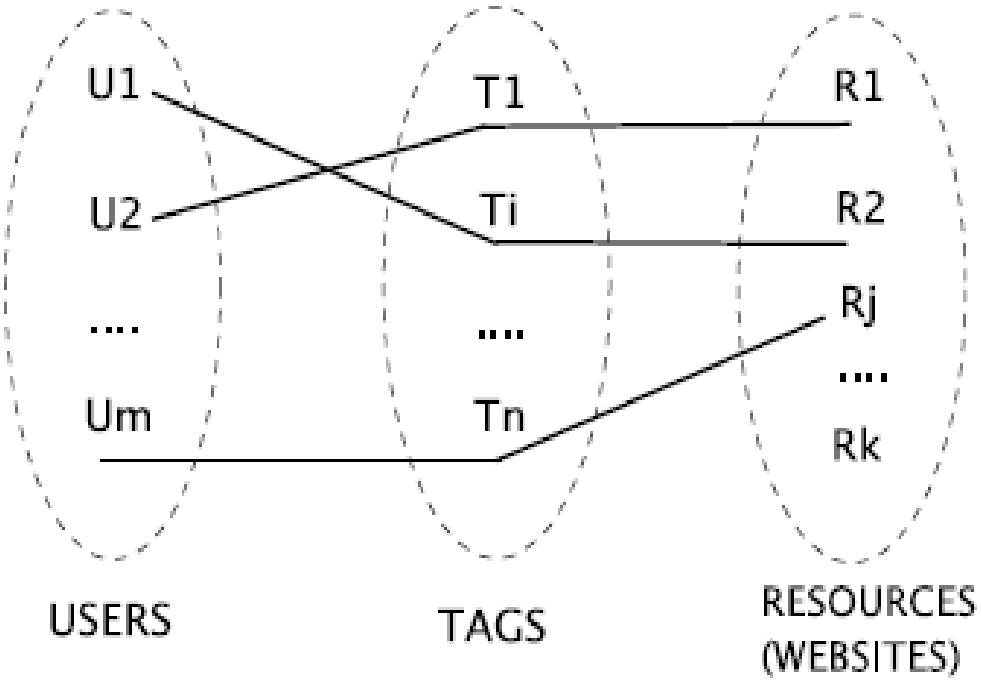
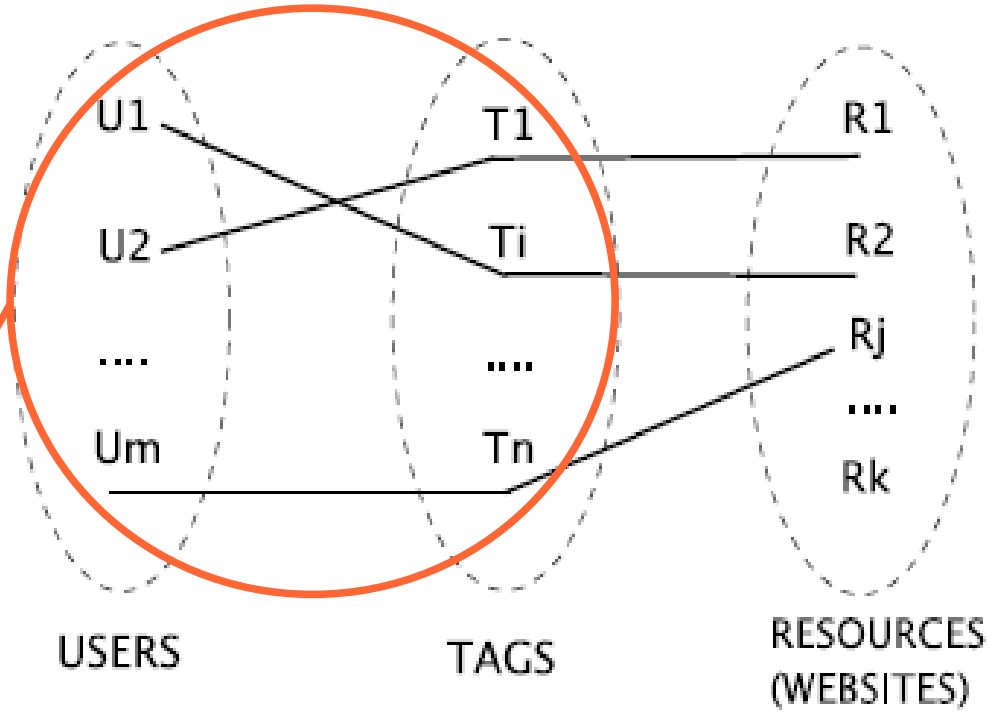
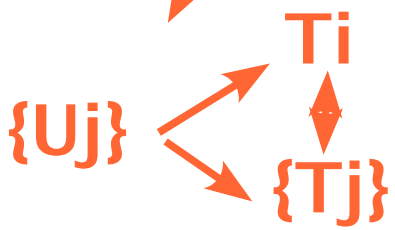
'European industrial cooperation'
skos:prefLabel
'Industrial cooperation'
prefix skos: <http://www.w3.org/2004/02/skos/core#>

From folksonomies towards ontologies (Mika, 2007)



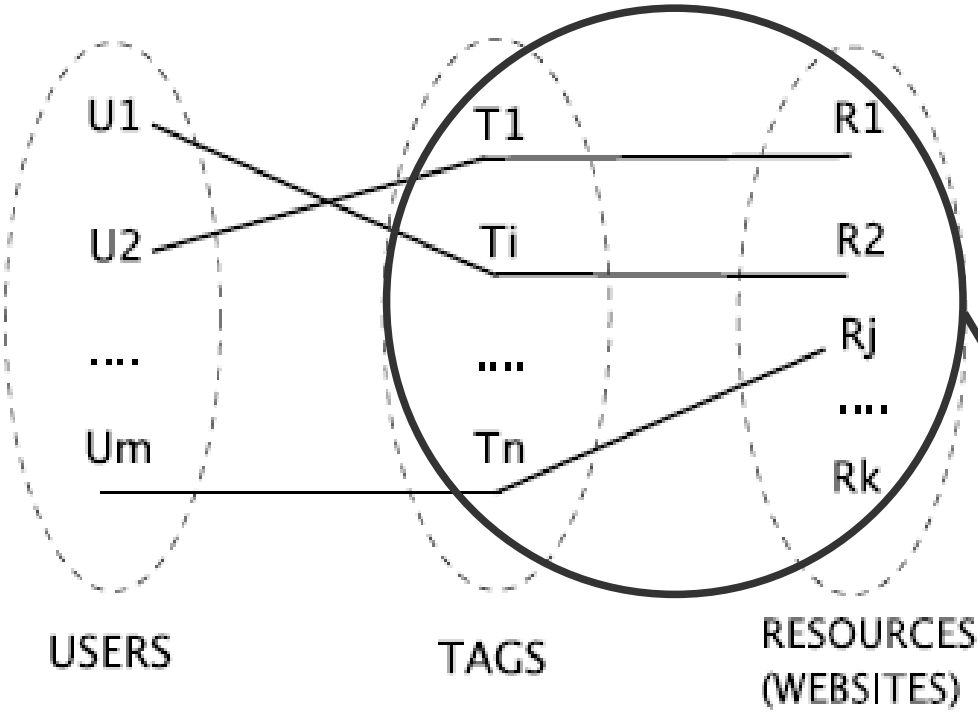
From folksonomies towards ontologies (Mika, 2007)





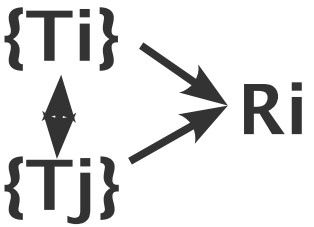
Co-User Graph :
Overlapping of community of interest

From folksonomies towards ontologies (Mika, 2007)

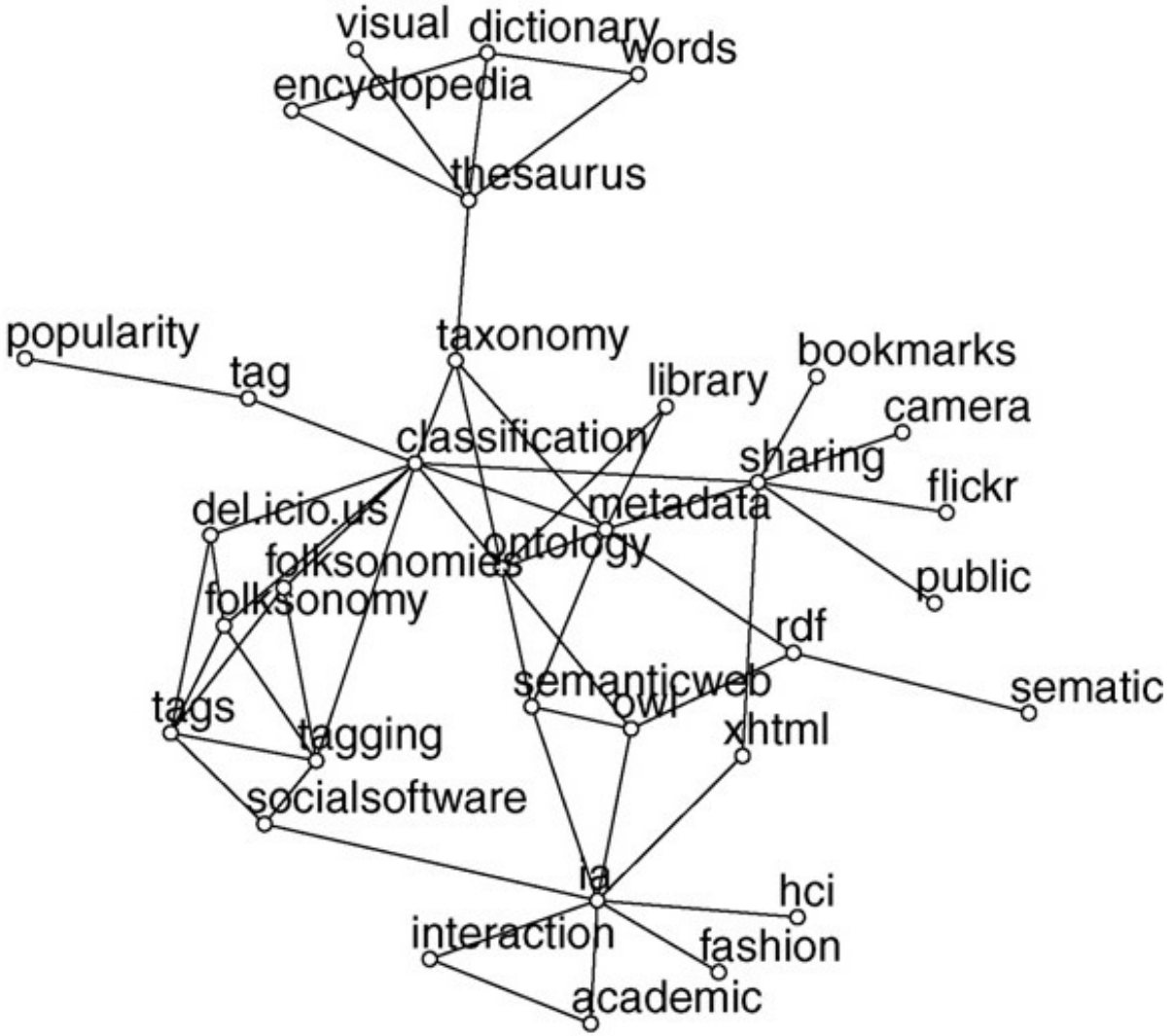


Co-Utilization Graph

Co-occurrence on Resources



From folksonomies towards ontologies (Mika, 2007)



Co-User Graph

From folksonomies towards ontologies (Mika, 2007)

Broader/Narrower relations via sub-communities of users

Broader	Narrower
mac	iphoto
java	j2ee
google	gds
search	a9, engine
linux	ubuntu, gnome
flash	actionscript
flickr	lickr, photoset
javascript	xmlhttprequest, dom, sarissa

Exploiting extra-information : Mapping with Ontologies

(Specia & Motta, 2007)

Exploiting extra-information : Mapping with Ontologies
(Specia & Motta, 2007)

1. Clusters of co-occuring tags

2. Selecting ontologies

3. Mapping between tags and ontologies

4. Infering semantic links

Exploiting extra-information : Mapping with Ontologies

(Specia & Motta, 2007)

Example of a cluster (del.icio.us) :

college

commerce

corporate

course

education

high

instructing

learn

learning

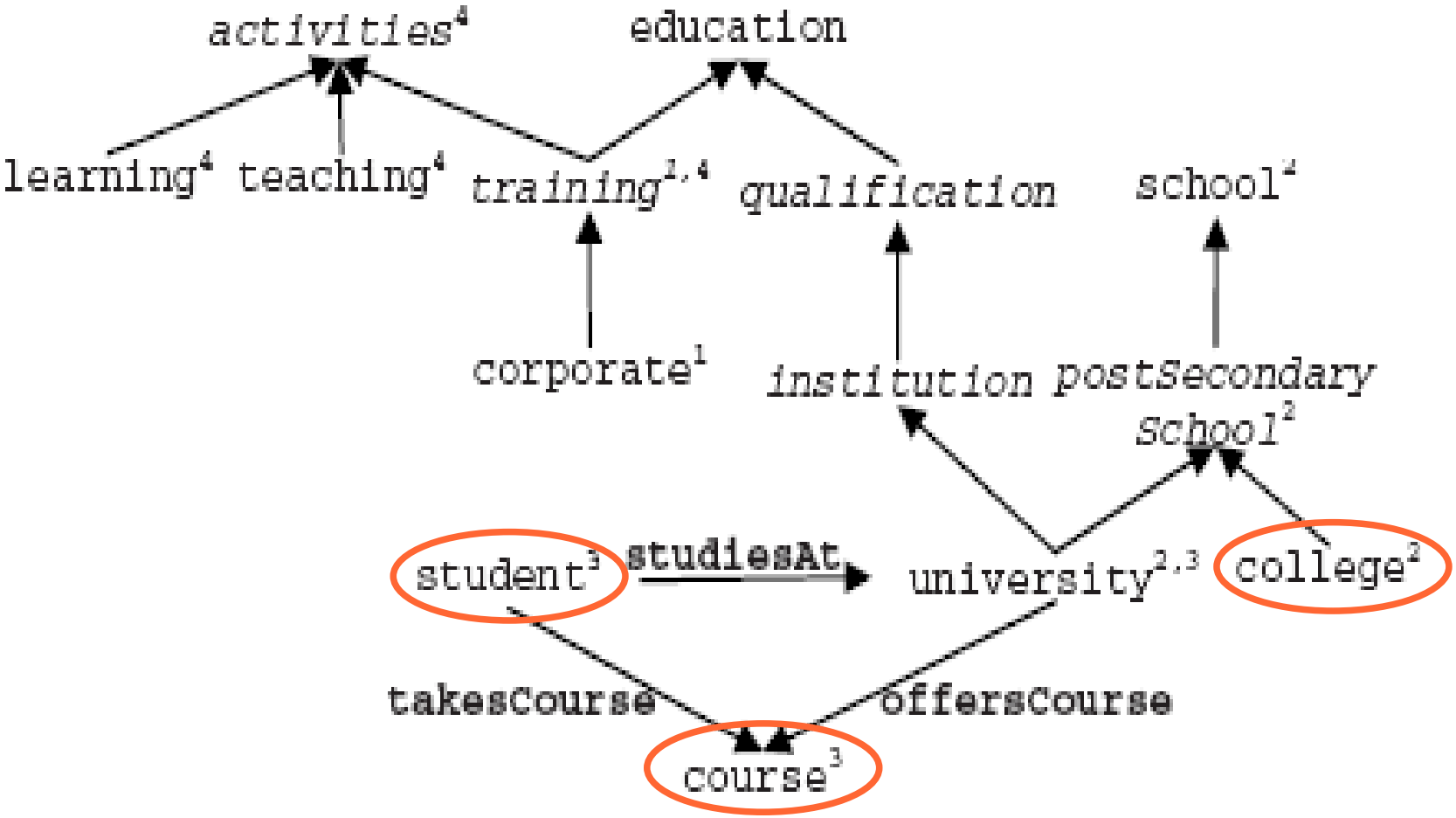
lms

school

student

Exploiting extra-information : Mapping with Ontologies

(Specia & Motta, 2007)



- 2 -

Enriching Folksonomies

Guiding Tagging with Ontologies (Passant, 2007)

Limits of tags

Variabilty of spelling and language

new_york = newyork
music = musique

Guiding Tagging with Ontologies (Passant, 2007)

Limits of tags

Ambiguity :

toread ?

RDF =? Ressource Description Framework

RDF =? Rwanda Defense Forces

Guiding Tagging with Ontologies (Passant, 2007)

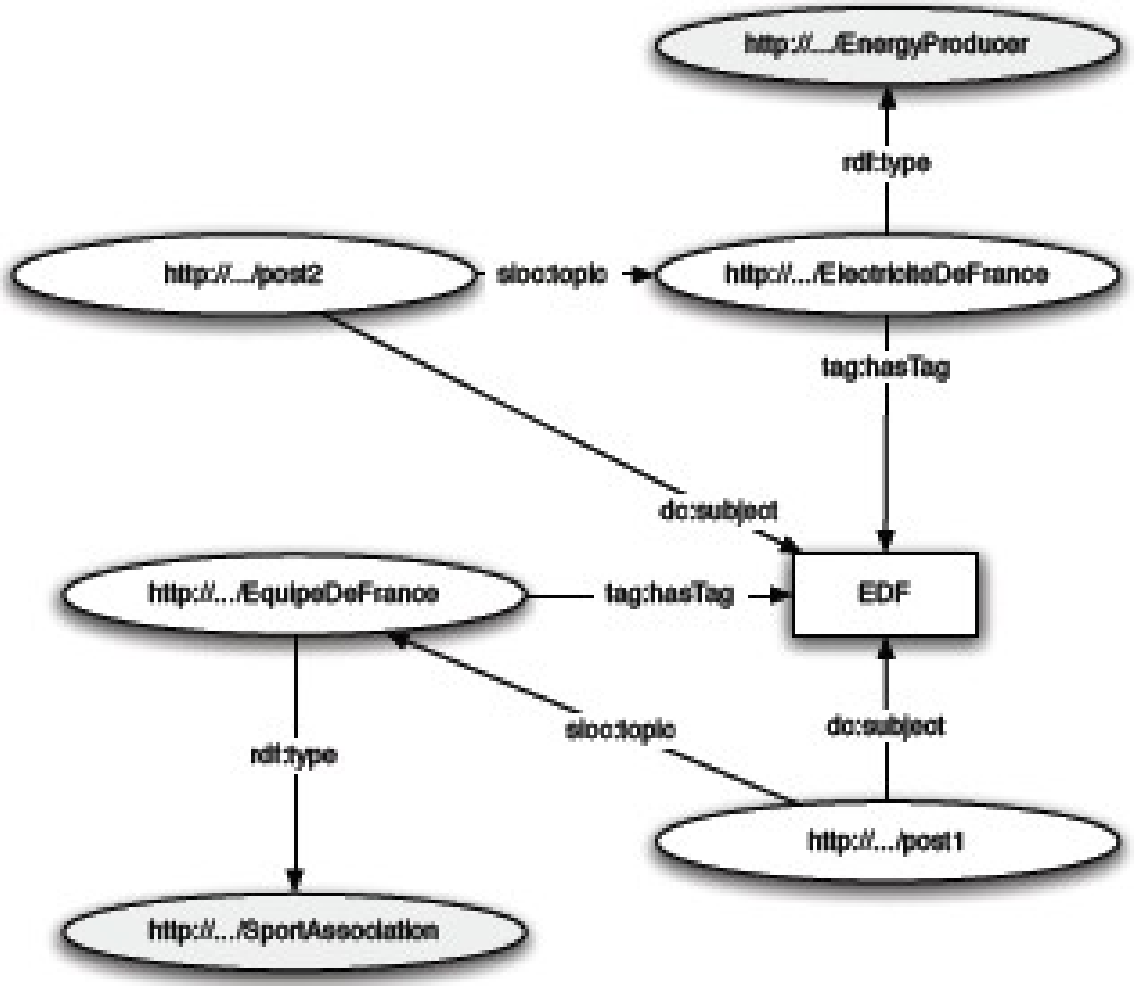
Limits of tags

« Flat » organization:

paris ? France ? Europe ? country

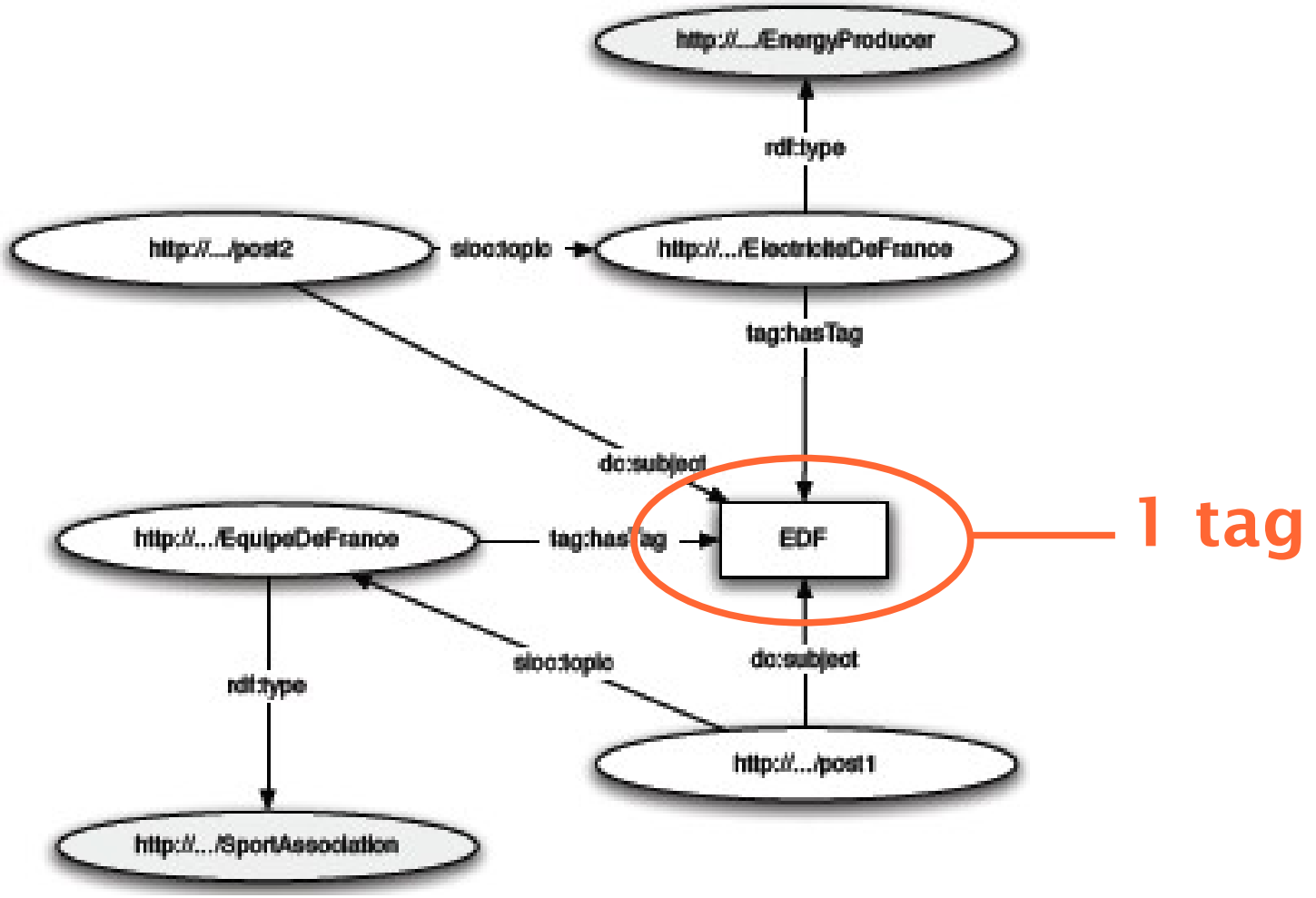
Guiding Tagging with Ontologies (Passant, 2007)

Raising ambiguity thanks to ontologies



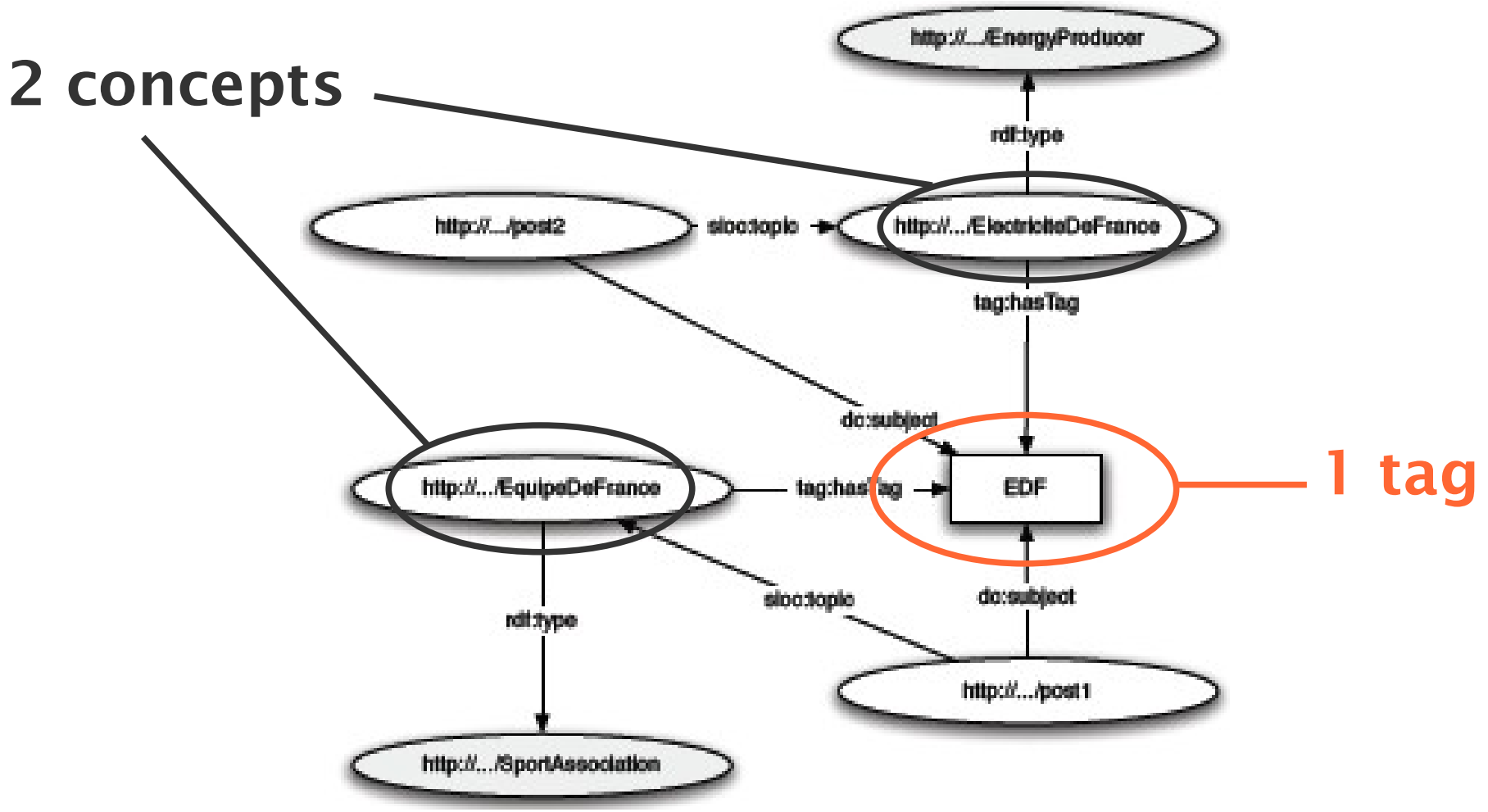
Guiding Tagging with Ontologies (Passant, 2007)

Raising ambiguity thanks to ontologies



Guiding Tagging with Ontologies (Passant, 2007)

Raising ambiguity thanks to ontologies



Keeping track

of Tagging Info

Keeping track of Tagging Info

1 tag = 1 object (Gruber, 2005)

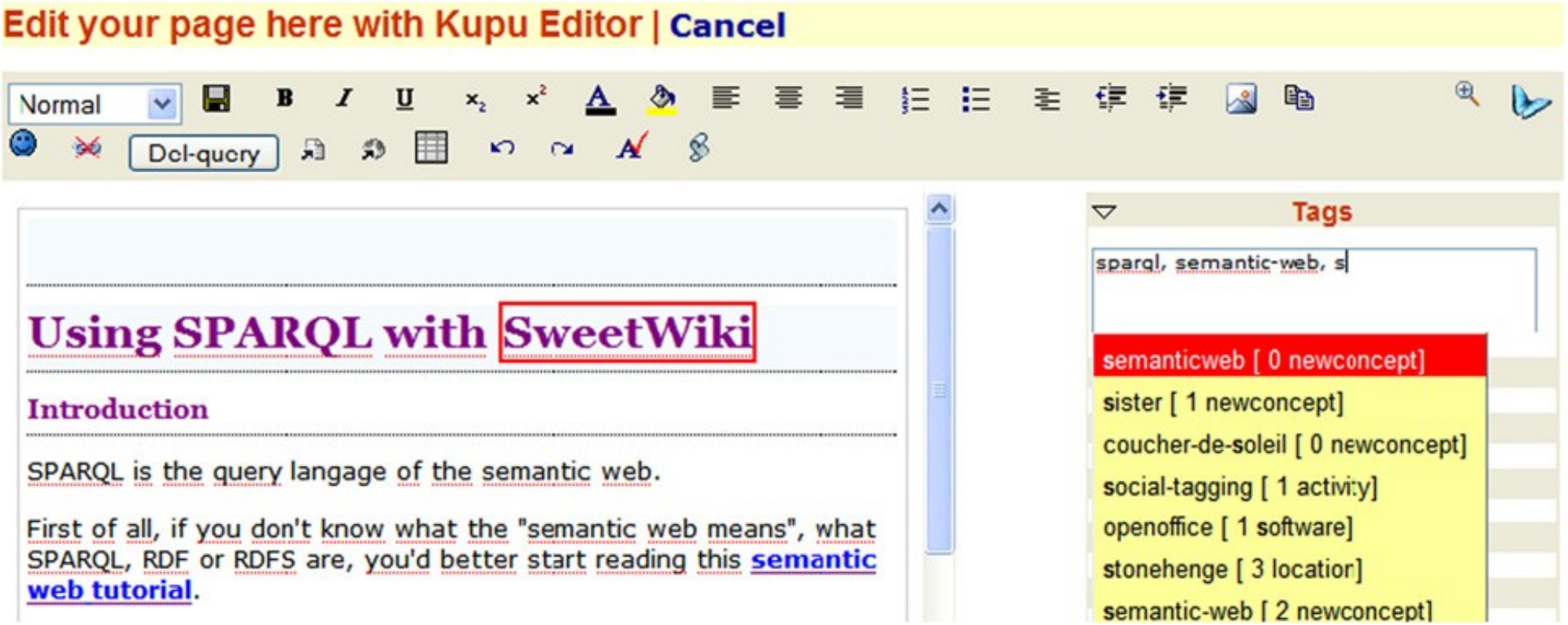
1. Tagged object
2. String of character
3. User
4. Domain of use
5. Time

Semantic Wikis

Sweet Wiki (Buffa *et al*, 2008)

Sweet Wiki (Buffa *et al*, 2008)

Editing and Tagging wiki pages



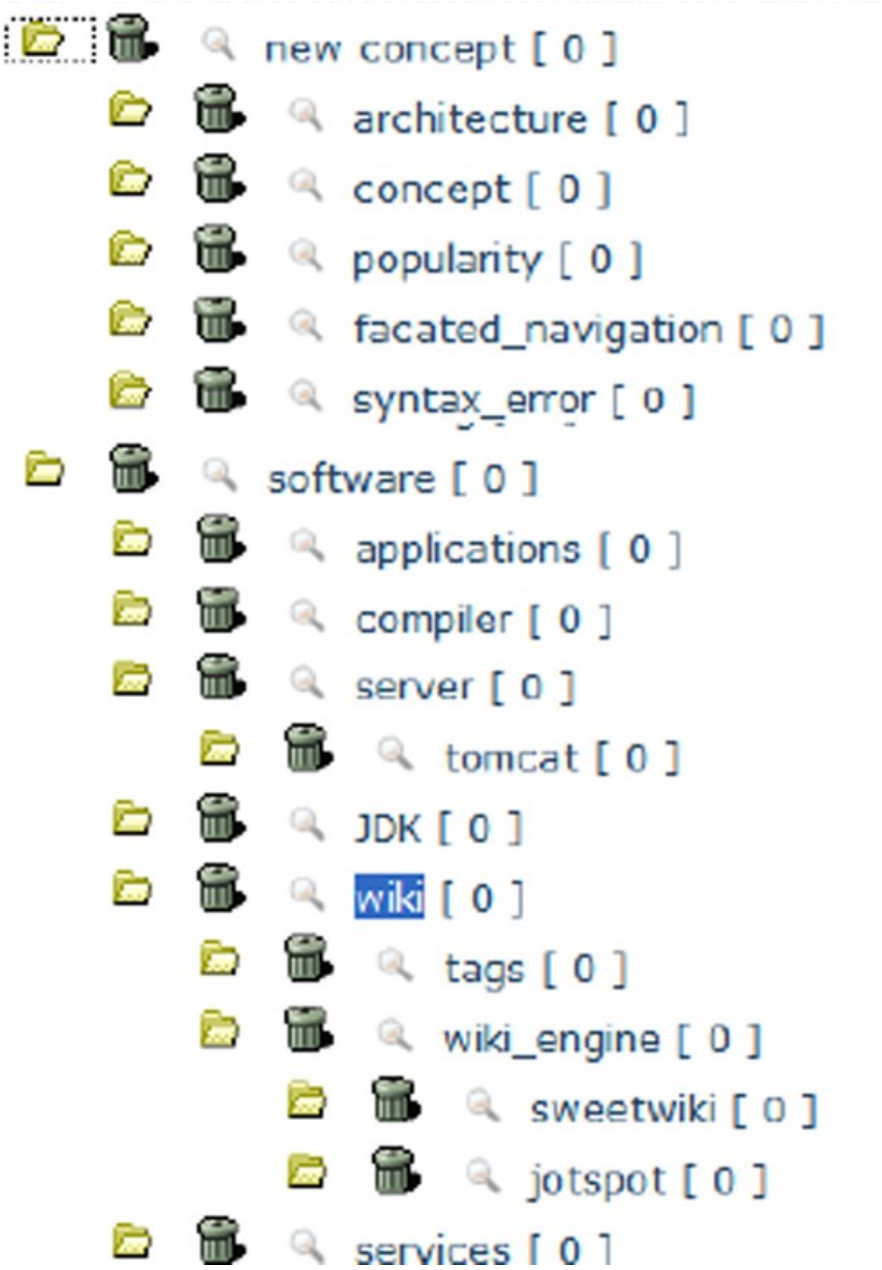
Sweet Wiki (Buffa *et al*, 2008)

```
1 new tag =
        1 new concept
```

Sweet Wiki (Buffa *et al*, 2008)

1 new tag =
1 new concept

Conceptual scheme is collaboratively editable



- 3 -

Ontologies to

Interlink Social Softwares

SIOC
(Breslin *et al*, 2005)

Semantically **I**nterlinked
Online **C**ommunities :

SIOC
(Breslin *et al*, 2005)

Semantically Interlinked Online Communities :

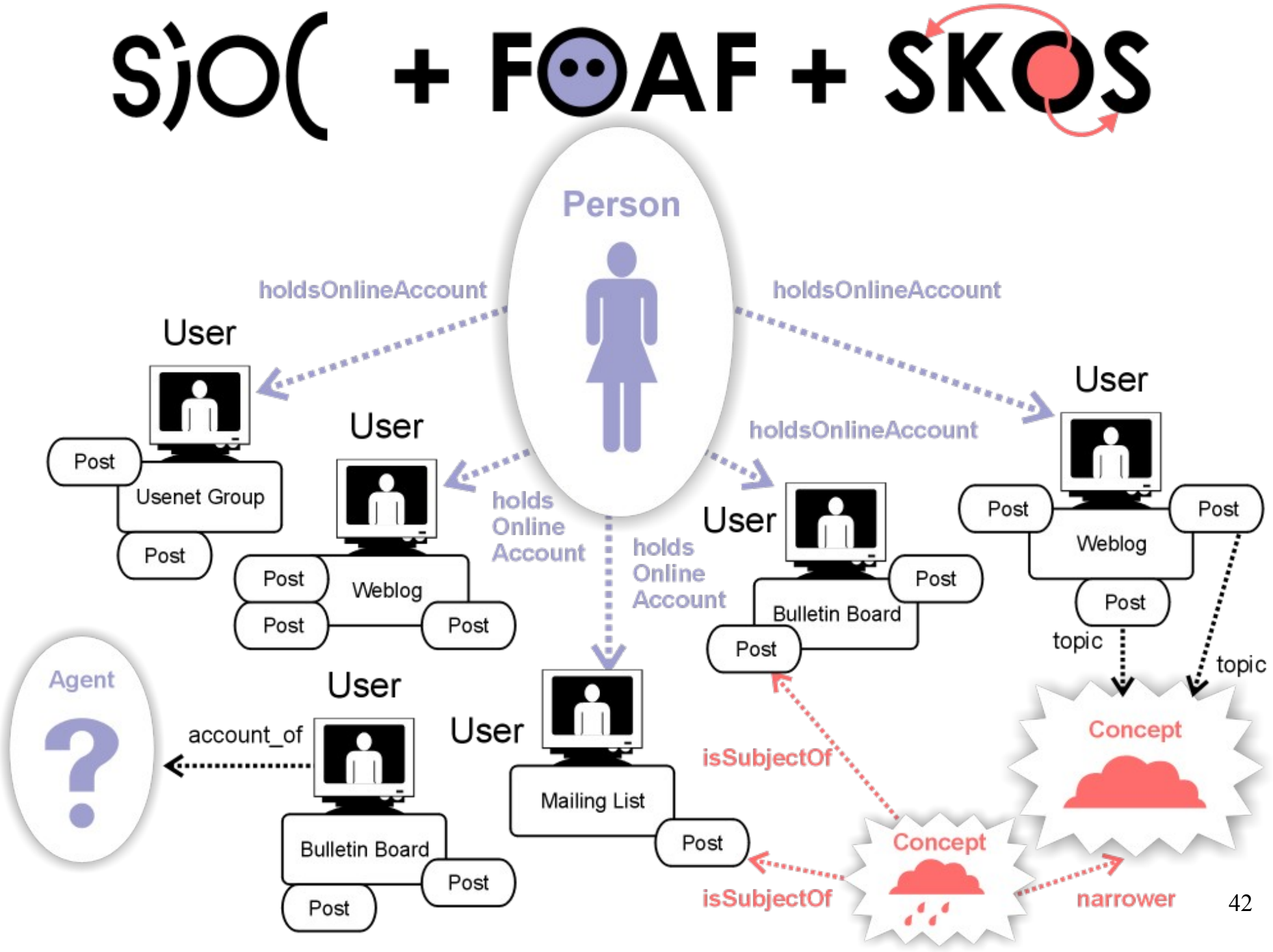
* Keeping track of social interactions

SIOC
(Breslin *et al*, 2005)

Semantically Interlinked Online Communities :

* Keeping track of social interactions

* Automatically generate semantic metadata


SIOC + FOAF + SKOS
Person
holdsOnlineAccount
holdsOnlineAccount
User
User
User
holdsOnlineAccount
Post
Usenet Group
Post
Post
Weblog
Post
Post
Post
holds
Online
Account
holds
Online
Account
User
Post
Bulletin Board
Post
Post
Weblog
Post
topic
topic
Agent
?
User
account_of
User
Mailing List
Post
Bulletin Board
Post
Post
isSubjectOf
Concept
Concept
isSubjectOf
narrower

Good practices :

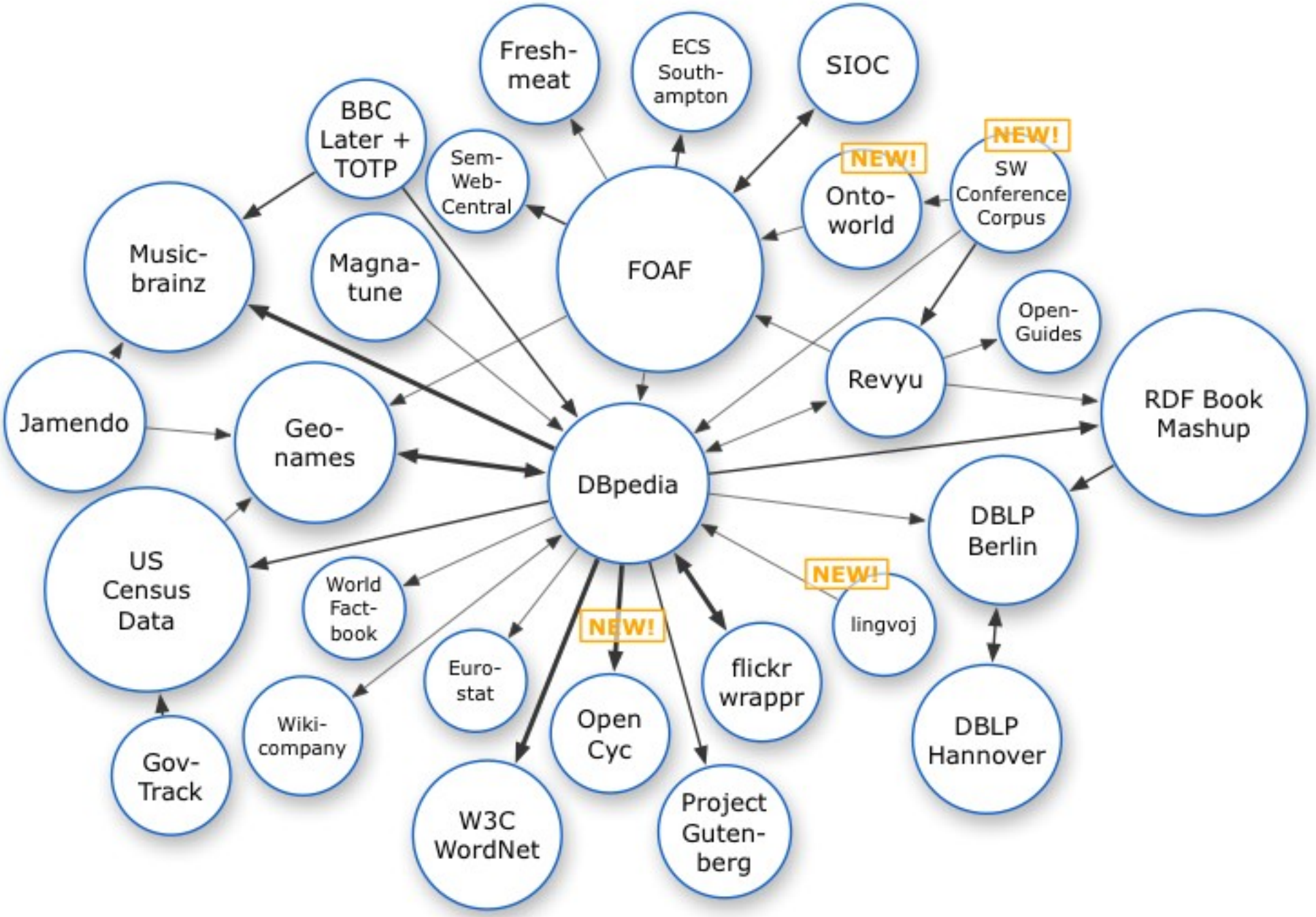
« Web of Linked Data »

(Berners Lee, 2006)

Good practices :

« Web of Linked Data »
(Berners Lee, 2006)

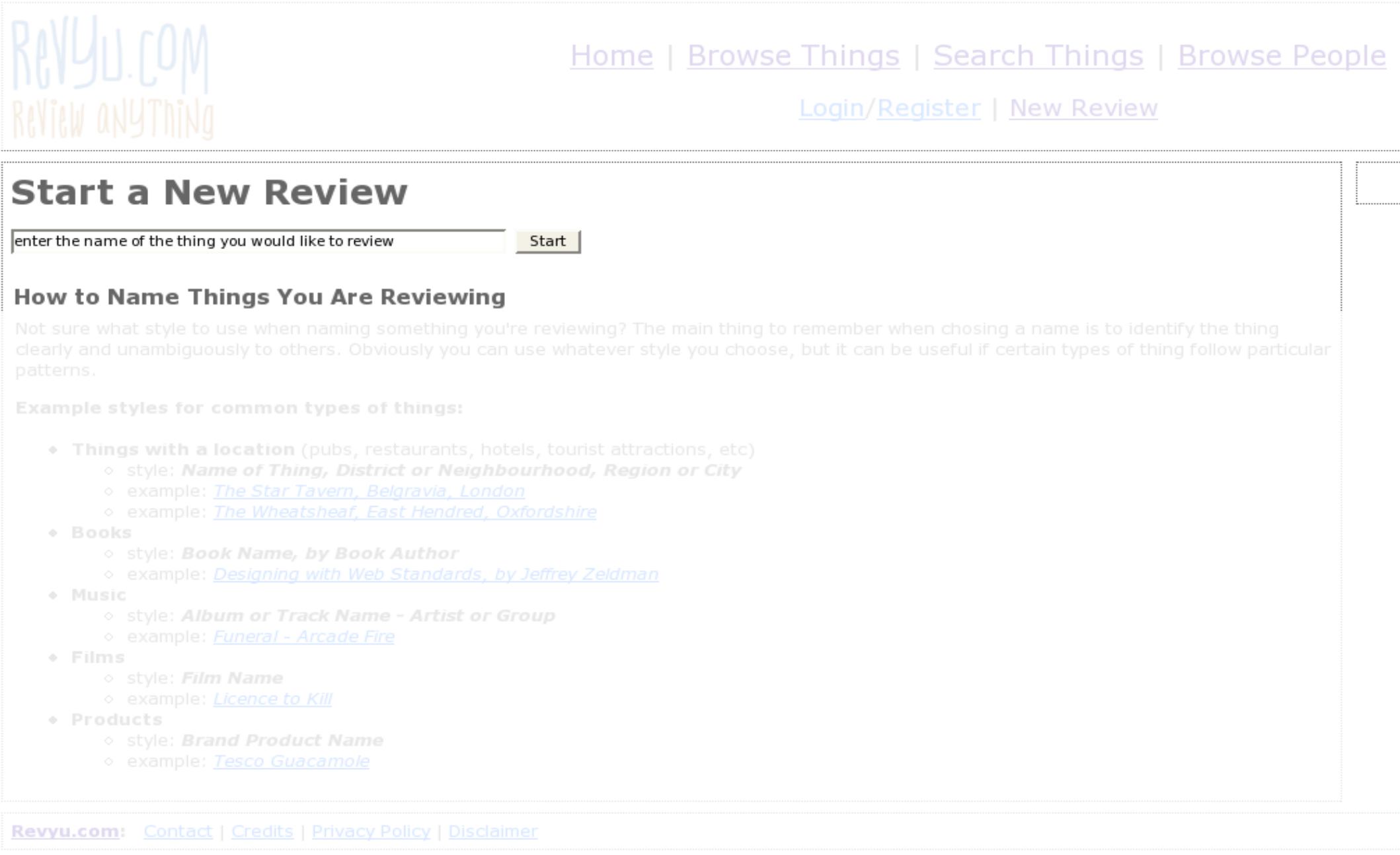
1. Http URIs to name
3. Provide extra info on each URIs
4. Linking URIs to other URIs


Fresh-
meat
ECS
South-
ampton
SIOC
BBC
Later +
TOTP
Sem-
Web-
Central
NEW!
Onto-
world
NEW!
SW
Conference
Corpus
Music-
brainz
Magna-
tune
FOAF
Open-
Guides
Revyu
RDF Book
Mashup
Jamendo
Geo-
names
DBpedia
DBLP
Berlin
US
Census
Data
World
Fact-
book
NEW!
lingvoj
Euro-
stat
NEW!
flickr
wrappr
Wiki-
company
Open
Cyc
DBLP
Hannover
Gov-
Track
W3C
WordNet
Project
Guten-
berg

Revyu

Revyu.com : sharing reviews on ...
anything
(Heath & Motta, 2007)

Anything that has a name can be reviewed



Tags...

restaurant nice cote-d-azur france gastronom

Suggestions: gastronomy

Home Page...

The official home page of *Le Pourquoi Pas* is at...

http://

Other Links...

There is also information about *Le Pourquoi Pas* at...

http://

Revyu.com (Heath & Motta, 2007)

Deriving semantics with extra source of info

ex : tag 'book'

=> Check ISBN (Amazon.com ou autre)

=> add rdf:type #Book

Conclusions

-

Perspectives

Objectives

1. Overcoming the limits of folksonomies

Organizing folksonomies

A. **Analyzing Co-occurrence patterns**
(Mika, 2005)

>> **How to augment precision of the links?**

Organizing folksonomies

B. Exploiting extra-information

(Specia & Motta, 2007)

>> How to select relevant sources ?

Objectives

1. Overcoming the limits of folksonomies

2. Semantic Web : interoperability accross Social Platforms

Guiding tagging with ontologies

(Passant 2007)

>> How to "naturally" integrate structured knowledge ?

>> Incentives to contribute ?

Tags as "shareable" objects

(Gruber 2005, Passant 2008)

>> 1 tag = 1 URI ?

>> 1 tag = 1 wiki page ?

>> 1 tag = several share-able meanings ?

Towards Inter-operability

(SIOC, Web of Linked Data)

>> Developping "viral" plugins (SIOC)

>> Combining Social applications ?

Bookmark + WikiPedia ?

Thank you !

Perspectives

>> Methods to select precisely the social data used for inference

>> Getting richer info about tagging

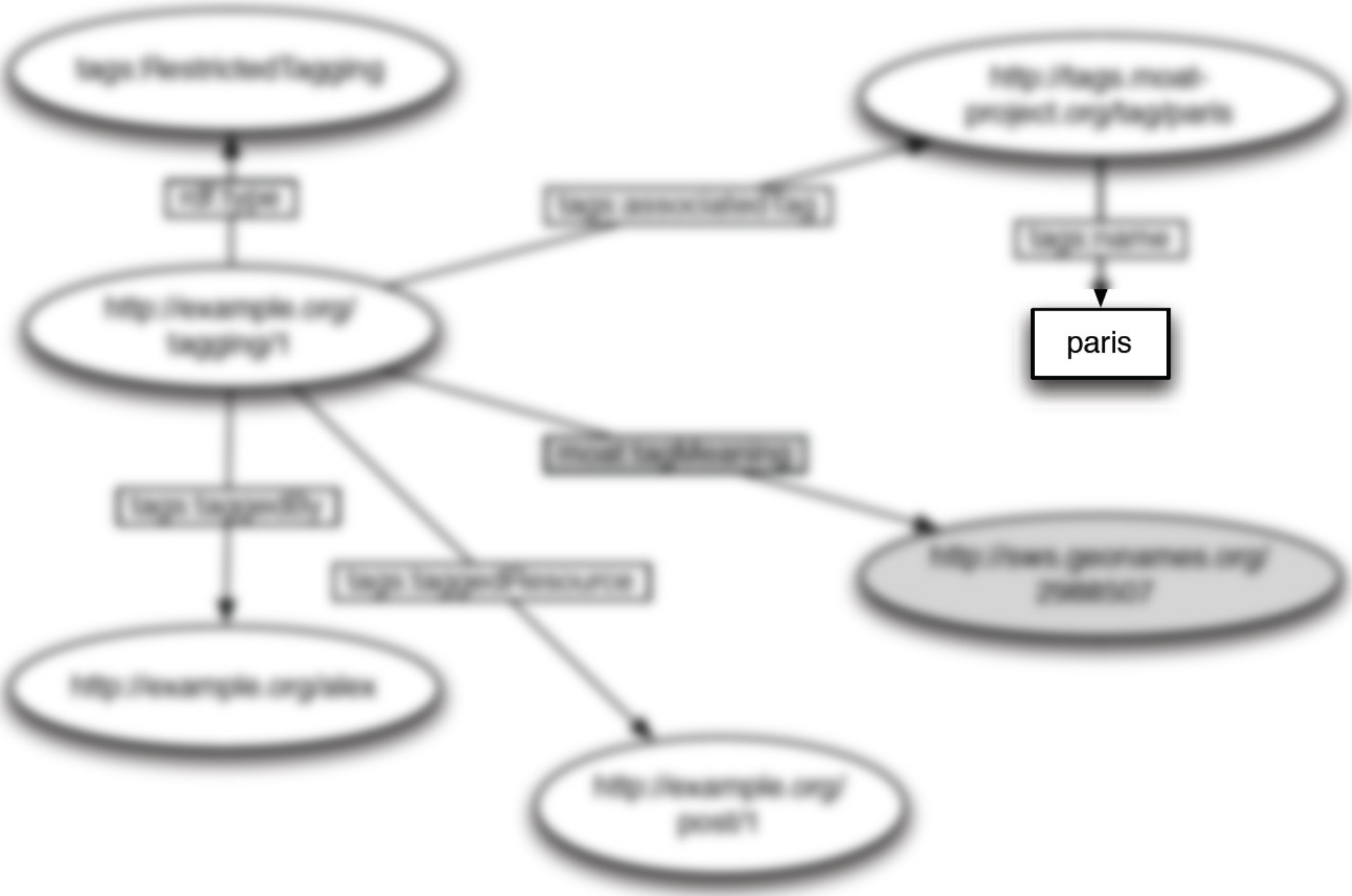
>> Exploiting acquaintance networks

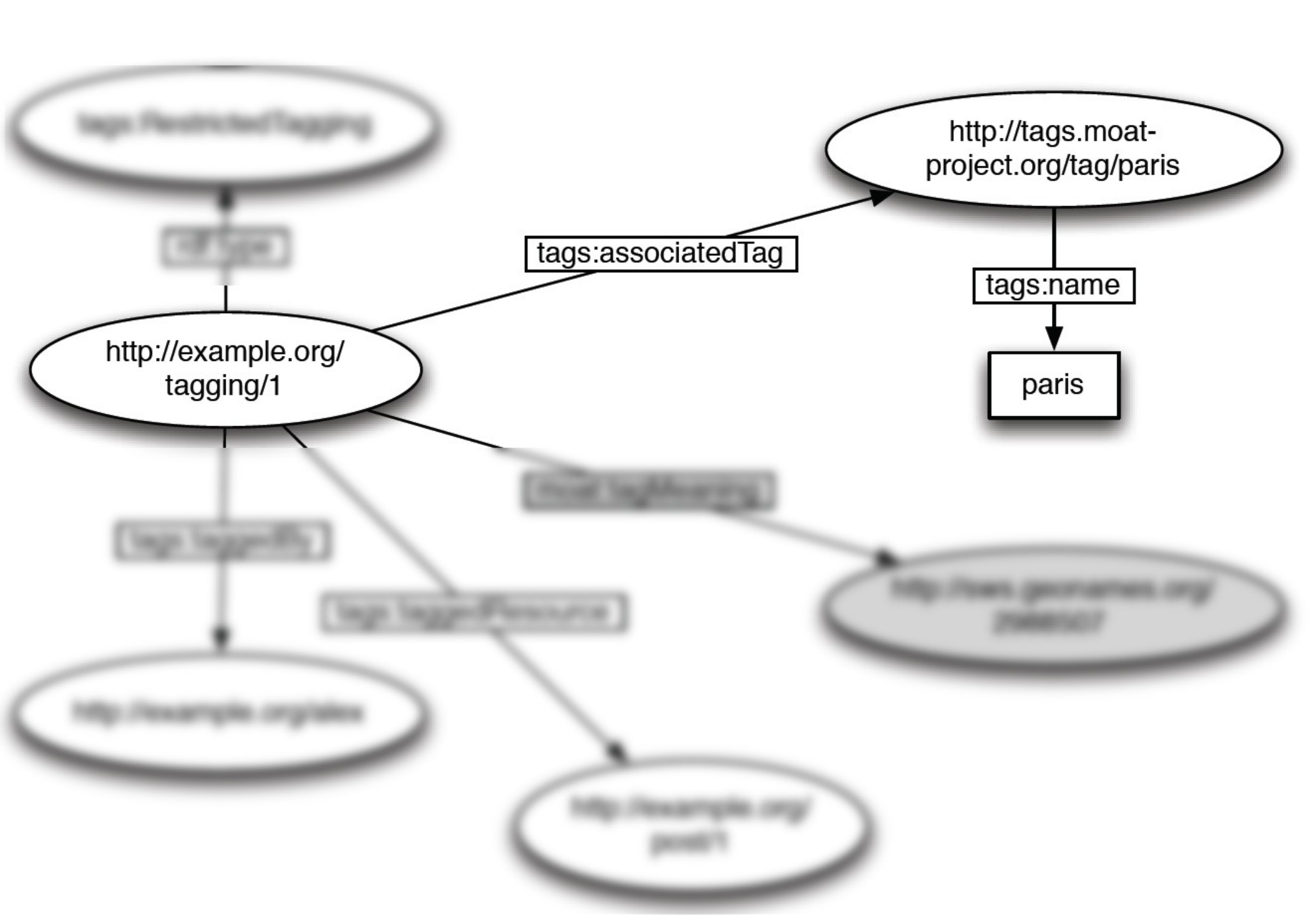
>> Tools of monitoring/tunning of automatic treatments

Keeping track of Tagging Info

1 tag = several meaning (Passant, 2008)

MOAT : Meaning Of A Tag


tags:RestrictedTagging
rdf:type
http://example.org/tagging1
tags:associatedTag
http://tags.moat-project.org/tag/paris
tags:name
paris
moat:tagMeaning
http://sws.geonames.org/2988507
tags:taggedBy
tags:taggedResource
http://example.org/alex
http://example.org/post/1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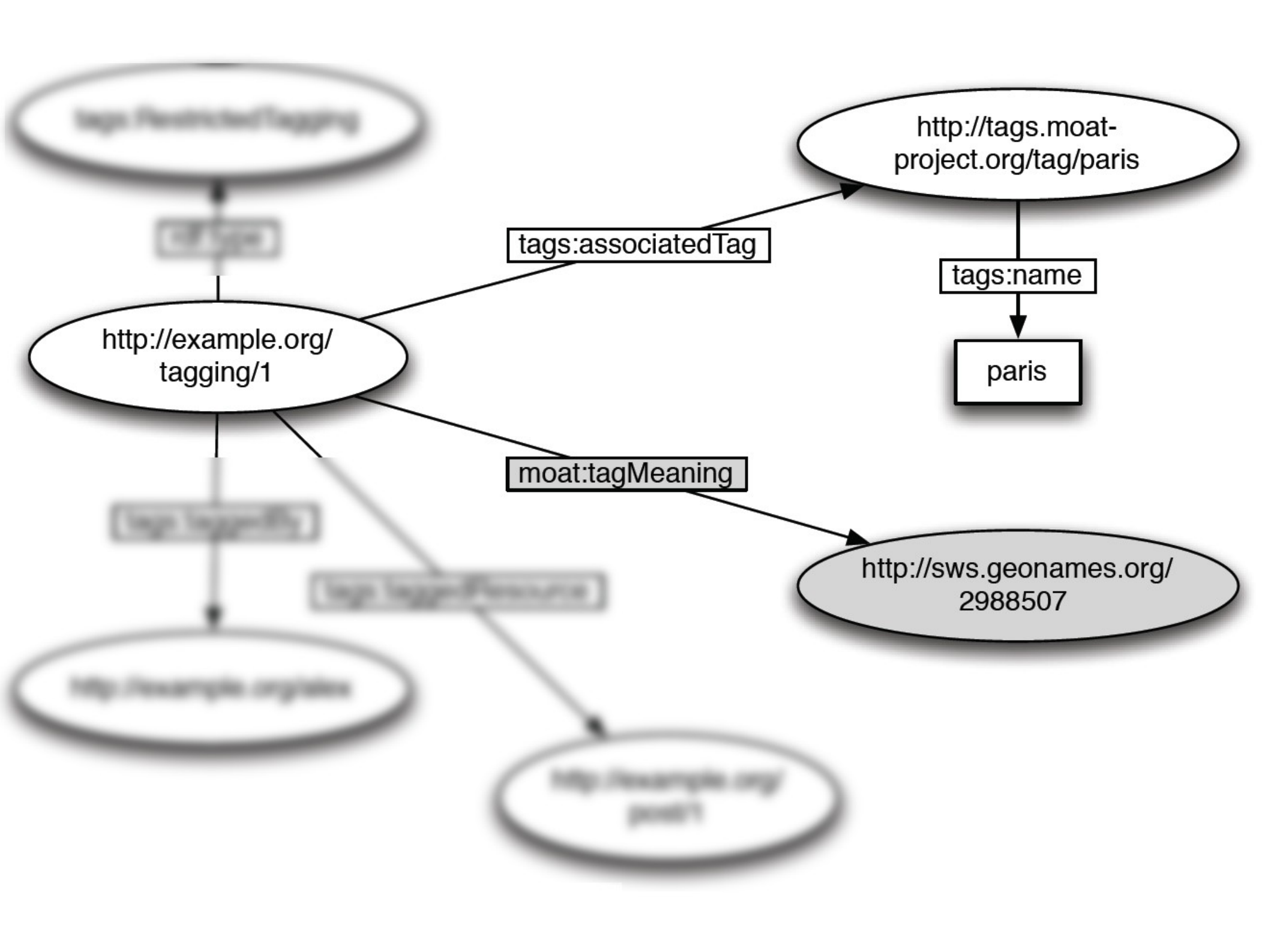
tags:associatedTag
tags:name
paris
http://example.org/tagging/1


http://tags.moat-project.org/tag/paris
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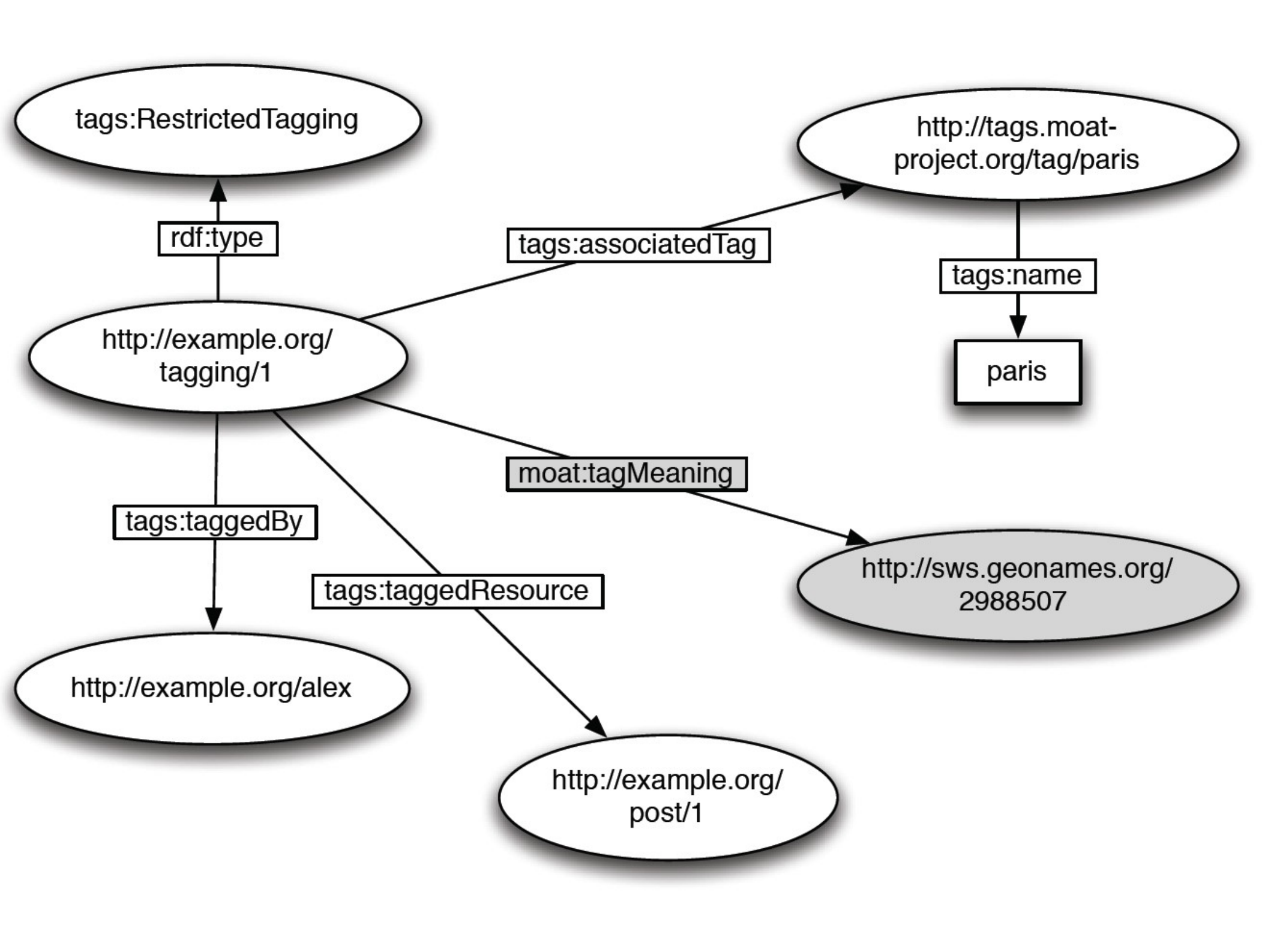
tags:name
paris
http://example.org/tagging/1
moat:tagMeaning
http://sws.geonames.org/2988507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rdf:type
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http://tags.moat-
project.org/tag/paris
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paris
moat:tagMeaning
http://sws.geonames.org/
2988507
tags:taggedBy
http://example.org/alex
tags:taggedResource
http://example.org/
post/1

Organizing folksonomies

C. Getting Users to contribute

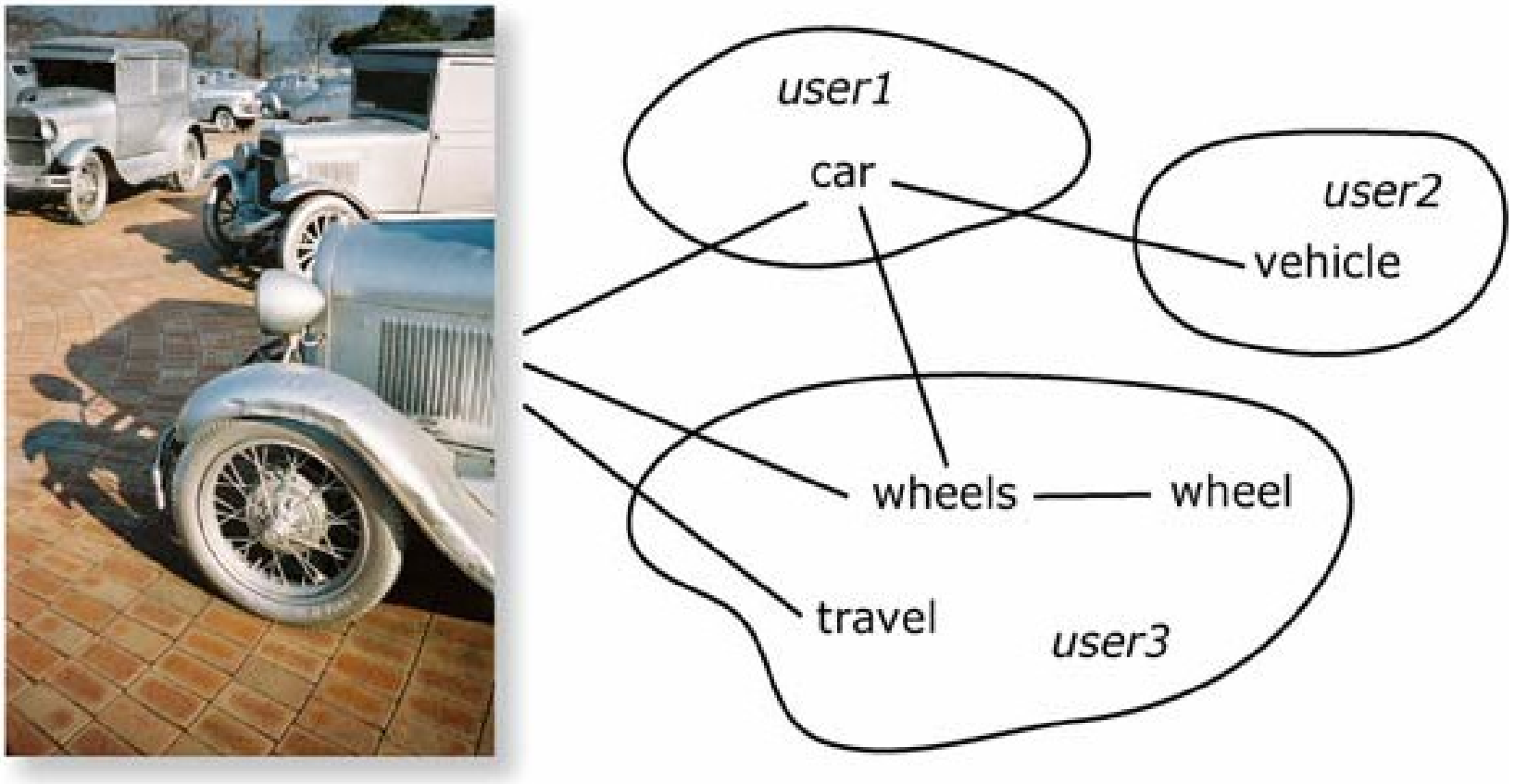
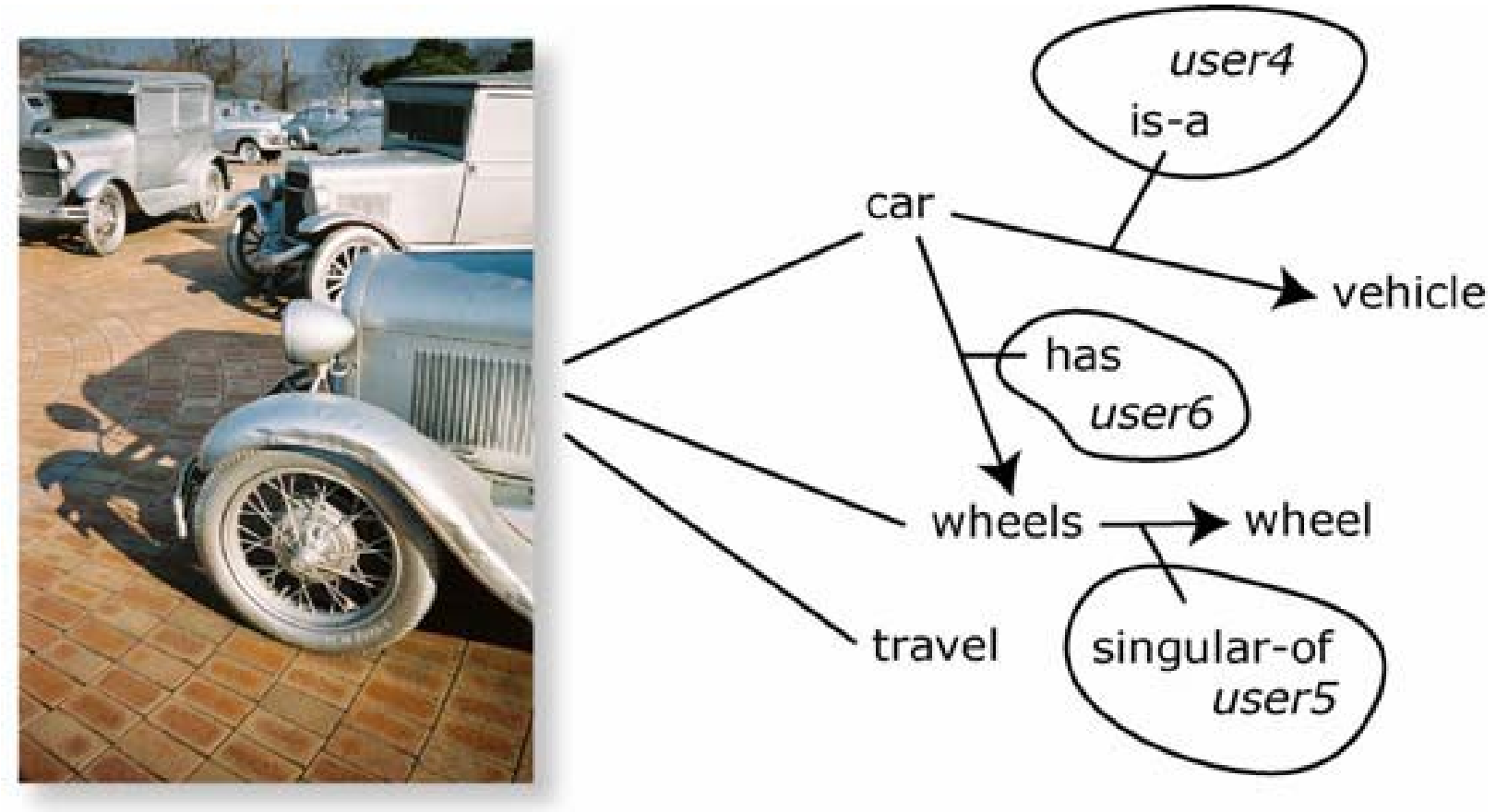
>> Games with a Purpose ?

espgame.org
ontogame.org

Tagging the Tags

(Tanasescu & Streibel, 2007)

Tagging the Tags
(Tanasescu & Streibel, 2007)



Tagging the Tags
(Tanasescu & Streibel, 2007)