



Meaning Of A Tag: A collaborative approach to bridge the gap between tagging and Linked Data

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Tagging is widely used but ...

« A folksonomy represents simultaneously some of the best and worst in the organization of information » Adam Mathes (2004)

• Ambiguity

- A single tag can refer to various concepts
- Acronyms, ambiguous names ...
 - Paris - City or People ?
 - SWIG - Semantic Web or C++ ?

• Heterogeneity

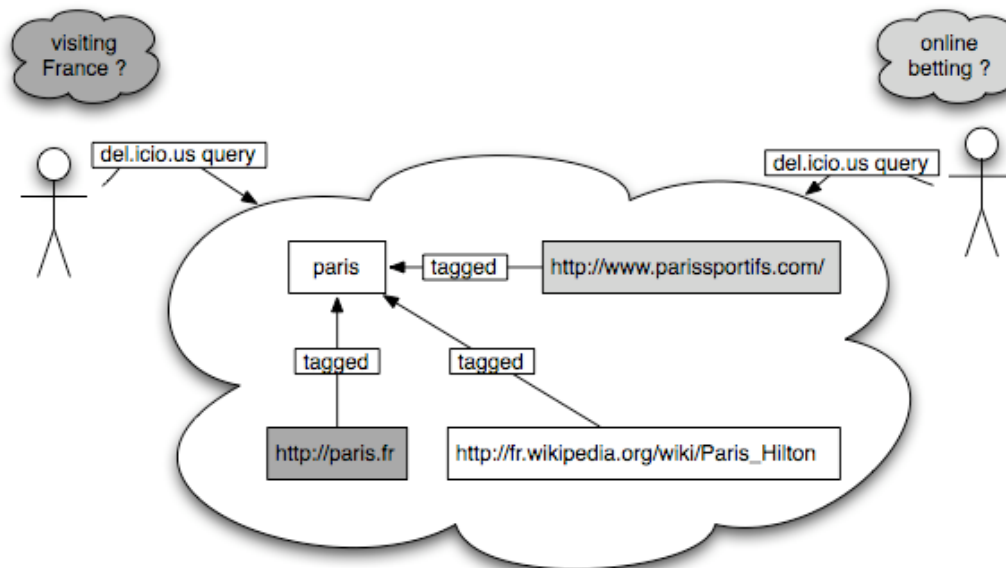
- Different tags can refer to the same concept
- Case-variation, synonymy, internationalization ...
 - Beijing, Peking - The same city
 - SemanticWeb, SemWeb, SW - The same technology

• Lack of organisation

- No relationship between tags
 - SemWeb, RDF, SPARQL - How to find one tag from another ?

... lacks of semantics

- Tags are just keywords
- They do not carry any machine-readable information
- Computers cannot understand what the users have in mind when tagging content



Tags and the Semantic Web

- The Tag Ontology provides a way to represent tags and tagging actions in the Semantic Web
 - `tags:Tag rdfs:subClassOf skos:Concept`
 - `tags:Tagging` and `tags:RestrictedTagging`
- SCOT - Social Semantic Cloud Of Tags - provides a way to model and share tagclouds between social tagging websites
 - `scot:Tagcloud sioc:taggingActivity tags:Tagging`
 - `scot:Tag scot:cooccurs_in scot:Cooccurrence`
- But... what about the *meaning* of tags ?
 - « When I tag this blog post 'Paris', I mean the French city »
- This is what MOAT is about

MOAT - Meaning Of A Tag

- MOAT - <http://moat-project.org>
- MOAT aims to provide
 - An ontology to represent *global* and *local* meaning of tags in a machine-understandable way, using URIs of LOD resources to define those meanings
 - A framework to assign and share meanings to tags in a collaborative and open way
 - A way to let tags embed themselves their semantic
 - A process to create Linked Data from simple tagging actions

Tags and their meaning

- Tagging action is usually defined as a tripartite model
 - Tagging(User, Resource, Tag)
- MOAT extends the model with the *local* meaning of a tag
 - Tagging(User, Resource, Tag, Meaning)
 - « In this tagging action 'paris' refers to the french city »
- Yet, a tag can have different *global* meanings in a folksonomy space
 - Meanings(Tag) = {(Meaning, {User})}

Modeling meanings, tags and tagging actions

- Defining meanings

- A need for machine-understandable meanings

- Using URIs of existing resources from LOD datasets
- 'paris'

» <http://sws.geonames.org/2988507>, http://dbpedia.org/resource/Paris_Hilton

- The MOAT Ontology - <http://moat-project.org/ns>

- Modeling tags

- Tag class, extending the Tag Ontology, mappings with SCOT in progress
- Cardinality restriction regarding the name property (=1)

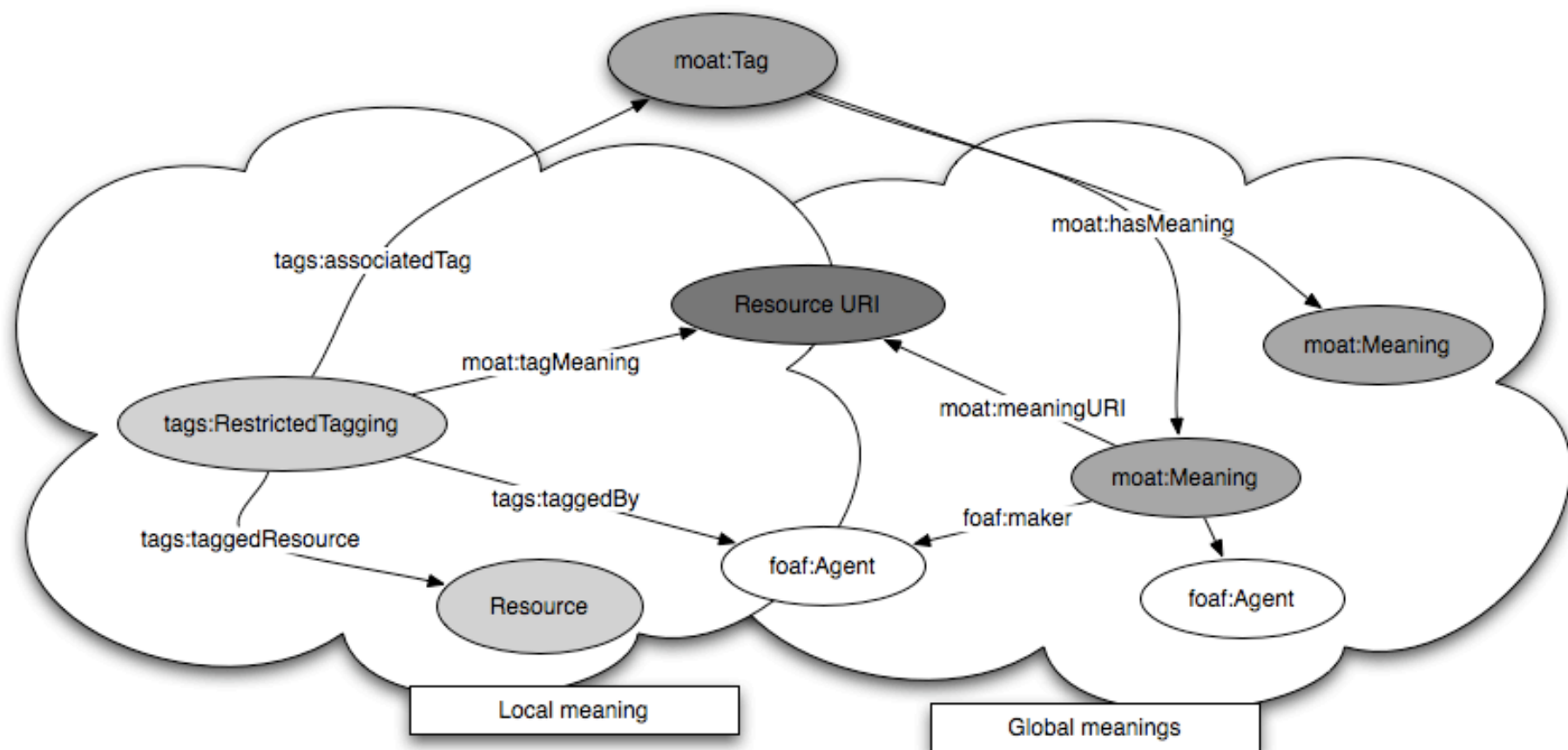
- Modeling *global* meanings of a tag

- hasMeaning property and TagMeaning class + meaningURI property
- Relies on FOAF for the user aspect - cardinality>=1

- Modeling *local* meaning of a tag

- Based on the RestrictedTagging class for the Tag Ontology
- tagMeaning property to define local meaning of a tag - cardinality=1

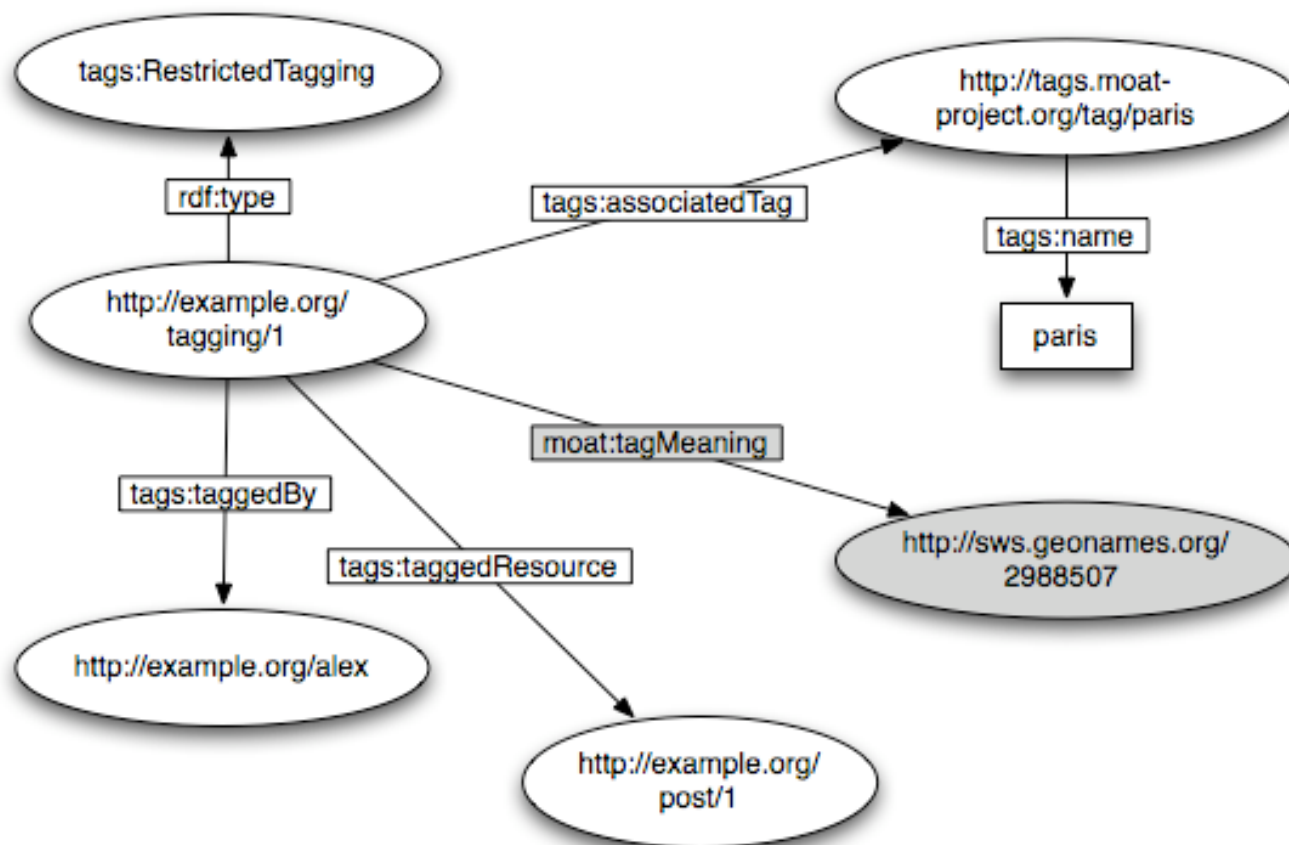
MOAT ontology diagram



MOAT data example

```
<http://tags.moat-project.org/tag/paris> a moat:Tag ;
  moat:name "paris" ;
  moat:hasMeaning [
    a moat:Meaning ;
    moat:meaningURI <http://sws.geonames.org/2988507/> ;
    foaf:maker <http://example.org/alex/>
  ] ;
  moat:hasMeaning [
    a moat:Meaning ;
    moat:meaningURI dbpedia:Paris_Hilton ;
    foaf:maker <http://myblog.net/user.rdf#me> ;
    foaf:maker <http://example.org/alex/>
  ] .
```

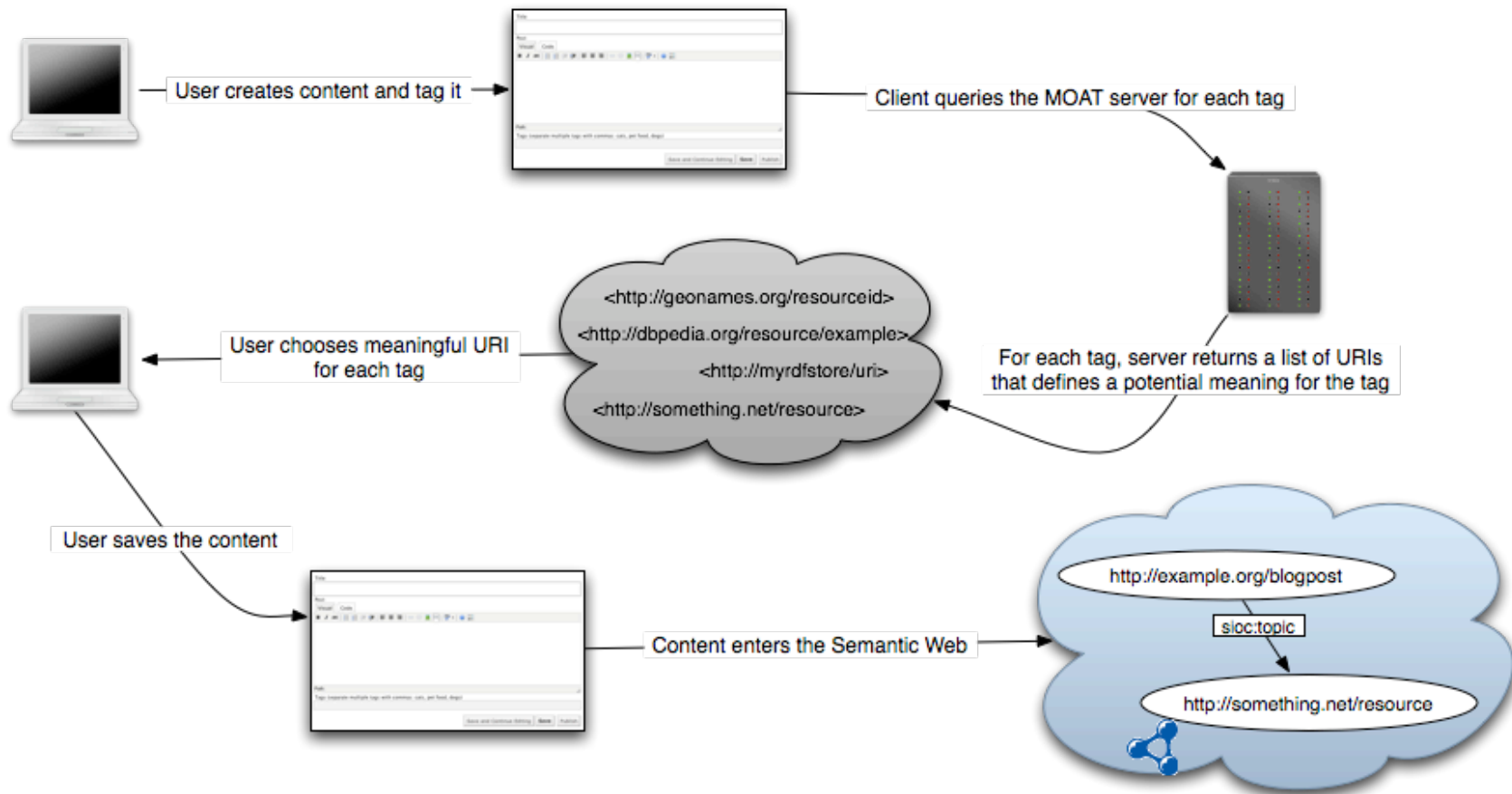
Creating Linked Data from tagging



The MOAT framework

- Goal: provide an easy way to create *local* and *global* meanings for tags
- A client-server approach
 - People subscribe to a MOAT server and install a client on their tagging software
 - When people create tagged content, client queries the server for tags meaning(s) and lets user define with new ones if needed
- A collaborative and decentralized approach
 - Anyone can benefit from user-defined meanings in a community
 - Needs only a few active users to be deployed
 - Clients can be anywhere on the web, on any platform

The MOAT framework architecture



MOAT architecture principles

- REST-ful way to exchange between a server and clients
 - Data exchanged between both is modeled in RDF
 - Each tag URI on the MOAT server is dereferencable
 - Uses content-negotiation
 - <http://tags.moat-project.org/tag/rdf>
 - Provides direct access to RDF and json output
 - <http://tags.moat-project.org/tag/rdf/json>
 - Update tag description by sending an RDF file with `TagMeaning` instances to the server
 - API key to restrict updates within a community

Current implementations

- MOAT Server

- Current implementation as a PHP5 application
- Can be plugged-in on any triple-store (ARC2, 3store bindings)
- Open-source
- <http://moat-project.org/server>

- MOAT Clients

- Drupal client, features Sindice interaction
 - **Helps users to find new URI if needed**
- OpenLink Virtuoso
- <http://moat-project.org/clients>

MOAT, Drupal and Sindice

From tagging to Semantic Web

Define the meaning of your tag(s) in the current context

barcamp

New URI ?:

[Click here to find relevant URIs from Sindice](#)

paris

<http://sws.geonames.org/2988507/>

<http://sws.geonames.org/4402452/>

<http://dbpedia.org/resource/Paris>

New URI ?:

[Click here to find relevant URIs from Sindice](#)

sparql

<http://dbpedia.org/resource/SPARQL>

New URI ?:

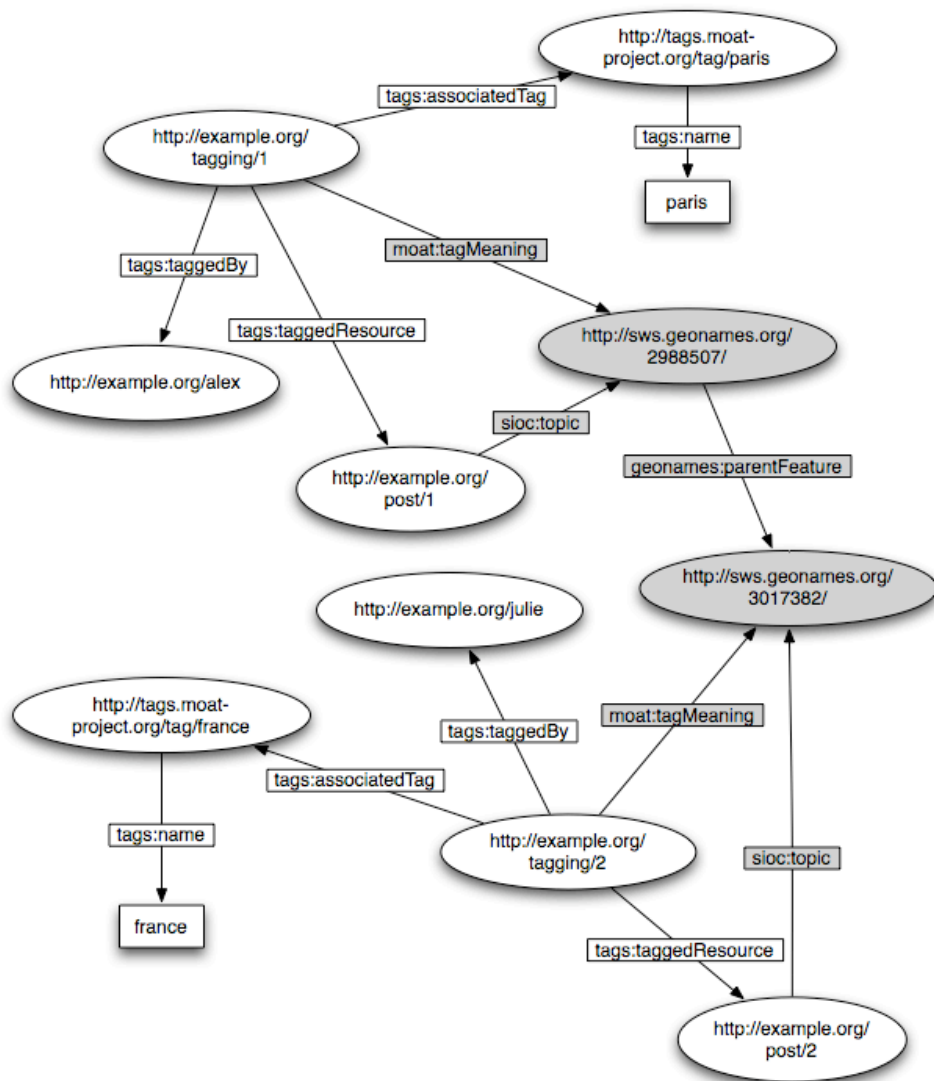
[Click here to find relevant URIs from Sindice](#)

The screenshot shows a browser window titled "Sindice search". At the top, there are radio buttons for "keyword" (selected) and "uri". Below is a search input field containing "barcamp" and a "Search" button. The search results are displayed as a list of entries, each with a URL, a date, and a count of triples and bytes. The entries are:

- <http://ontoworld.org/wiki/Special:ExportRDF/Category:Barcamp>
2007-12-28 - 18 triples - 2096 b
- <http://ontoworld.org/wiki/Special:ExportRDF/Category:Barcamp>
- <http://ontoworld.org/wiki/Special:ExportRDF/Category:Vinay>
2007-12-28 - 18 triples - 2063 b
- <http://ontoworld.org/wiki/Special:ExportRDF/Category:Vinay>
- <http://www.talkdigger.com/sioc/marketing-garden.com/2007/09/22/barcamp-galway-2007/xml/>
2008-01-27 - 71 triples - 7412 b
- <http://www.talkdigger.com/sioc/marketing-garden.com/2007/09/22/barcamp-galway-2007/xml/>
- <http://www.talkdigger.com/sioc/barcamp.org/PreviousBarCamps/xml/>
2007-12-21 - 130 triples - 11896 b
- <http://www.talkdigger.com/sioc/barcamp.org/PreviousBarCamps/xml/>
- [BarCamp](#) (highlighted)
2007-10-23 - 282 triples - 10364 b
- <http://dbpedia.org/resource/BarCamp>
- <http://www.talkdigger.com/sioc/barcamp.org/xml/>
2007-12-28 - 847 triples - 80870 b
- <http://www.talkdigger.com/sioc/barcamp.org/xml/>

At the bottom of the window, there is a text input field with the placeholder "Type in the search string".

New ways to interlink RDF data



- By linking tagged content to URIs, it provides new way to connect those contents

- Helps SIOC entering the Linked Data Web

- Since sioc provides a way to represent tagged content
- `sioc:Item` and its subclasses
- `sioc:topic` property

Summary

- **MOAT is about**
 - Offering an RDF model to define the meaning(s) of tags
 - Providing a way to let tagged content enters the Linked Data Web
 - Offering a framework to collaboratively achieve this goal
- **MOAT is not about**
 - Automatic identification of URI from tag
 - Automatic disambiguation of tags
 - Ontology mining from tags
 - ... but can provide an RDF model for such algorithms

Thank you ! / Questions

<http://moat-project.org>

<http://apassant.net>