



Rexplore

Integration of advanced and innovative solutions drawn from Machine Learning, Semantic Technologies, and Human-Computer Interactions

More info: <http://technologies.kmi.open.ac.uk/rexplore/>

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Vision

Empowering a new research paradigm in which researchers and companies will be assisted by software capable of applying data-driven methodologies on a machine-readable description of research knowledge. The aim is expanding the conceptual horizon of researchers and combining human creativity with the data mining ability of computers.

Recent Research Lines

- Automatic generation of large scale taxonomy of scientific knowledge
- Creation of innovative analytics and visualization for supporting researchers and companies
- Early detection of Research Topics
- Identification and forecasting of technologies

Collaborations

- Springer Nature
- Elsevier
- Linknovate

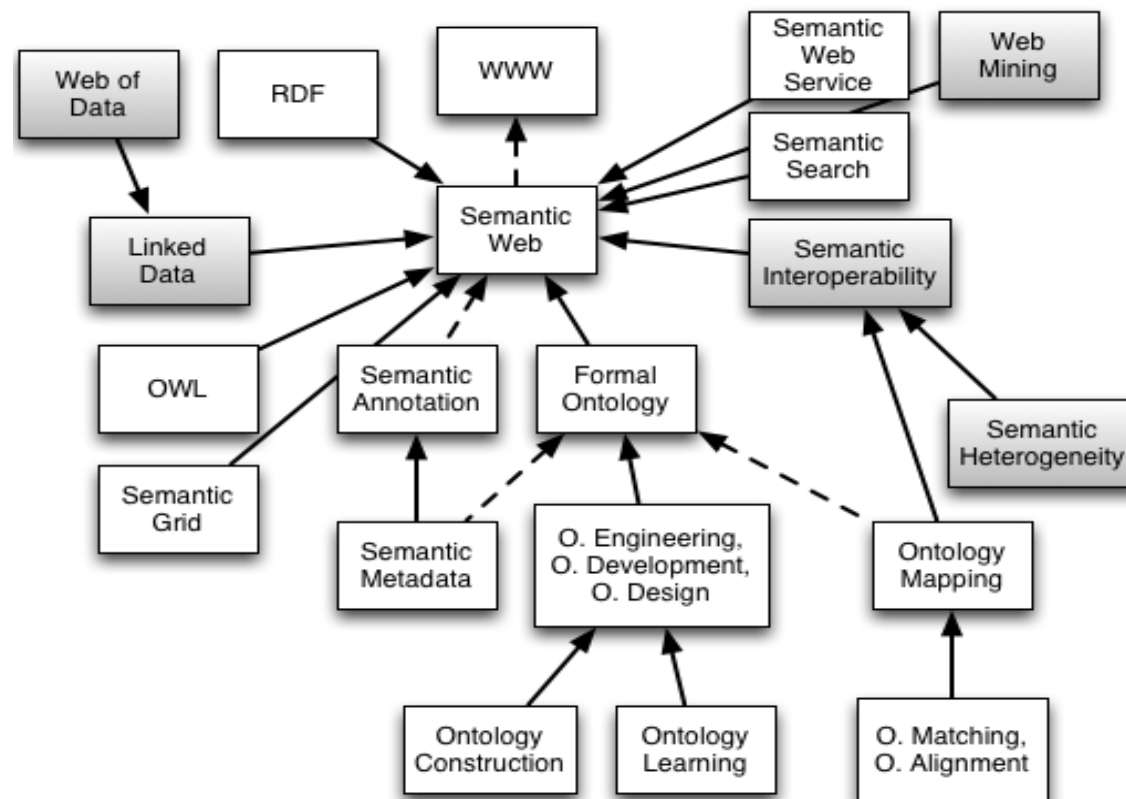
Building ontologies of research topics



For **making sense of academic data** is very useful to have an comprehensive and up-to-date ontology of research topics.

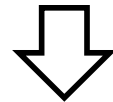
Unfortunately, **human crafted** classifications **evolve too slowly** and tend to be **too coarse-grained**.

Ontology learning is the answer.

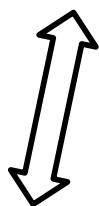


Klink-2

Input keywords

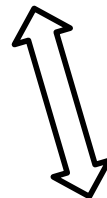


Statistical Inferences



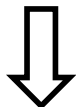
*skos:broaderGeneric
contributesTo*

Clusterization

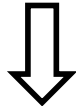


Disambiguation

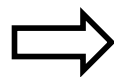
skos:relatedEquivalent



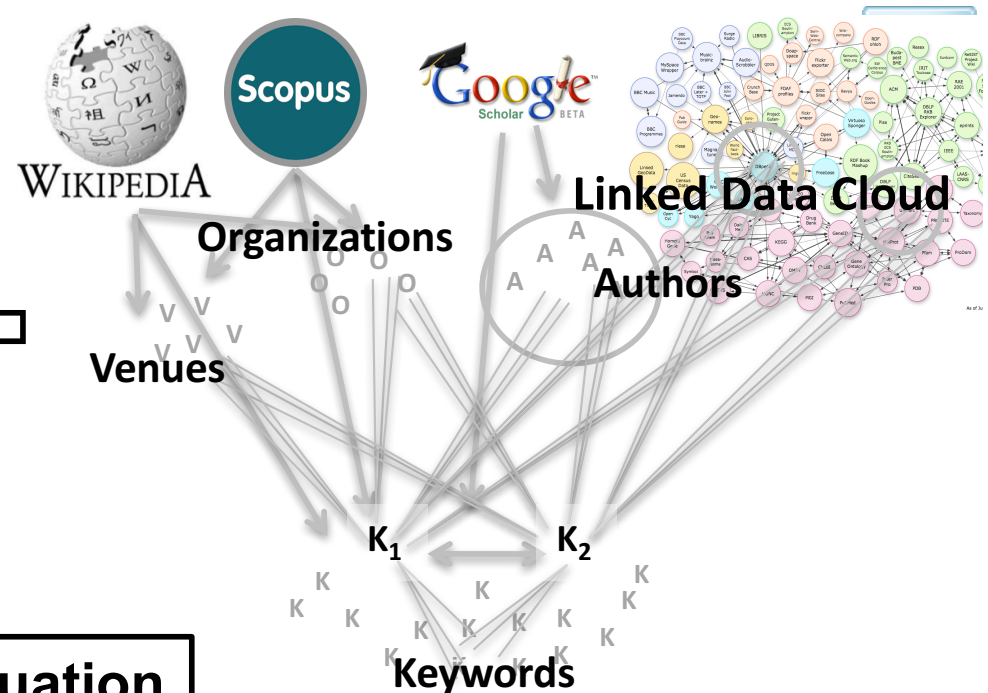
Filtering



Triples generation



```
<!-- http://kmi.open.ac.uk/technologies/rexplorer/ontologies/BiboExtension#semantic_web -->  
<owl:NamedIndividual rdf:about="http://kmi.open.ac.uk/technologies/rexplorer/ontologies/  
BiboExtension#semantic_web">  
  <rdf:type rdf:resource="http://kmi.open.ac.uk/technologies/rexplorer/ontologies/  
BiboExtension#Topic"/>  
  <skos:broaderGeneric rdf:resource="http://kmi.open.ac.uk/technologies/rexplorer/ontologies/  
BiboExtension#semantic_web_services"/>  
  <skos:broaderGeneric rdf:resource="http://kmi.open.ac.uk/technologies/rexplorer/ontologies/  
BiboExtension#semantic_web_technologies"/>  
  <skos:broaderGeneric rdf:resource="http://kmi.open.ac.uk/technologies/rexplorer/ontologies/  
BiboExtension#web_ontology_language"/>  
  <skos:broaderGeneric rdf:resource="http://kmi.open.ac.uk/technologies/rexplorer/ontologies/  
BiboExtension#semantic_web_applications"/>  
  <skos:broaderGeneric rdf:resource="http://kmi.open.ac.uk/technologies/rexplorer/ontologies/  
BiboExtension#semantic_description"/>
```



Osborne, F. and Motta, E., 2015. Klink-2: integrating multiple web sources to generate semantic topic networks. In ISWC 2015, Bethlehem, USA.



Some examples: Improving analytics and exploration

Info

Migrations

Related Topics

Linked Data

+

 Publications: 1 595

+

 Citations: 8 826

+

 Plot authors and publications

+

 Plot average citations vs authors and publications

+

 Explore authors

+

 Explore publications

Semantic Relationships

+

 Reload Linked Data relationships

+

 Deactivate semantic layer

+

 World Wide Web +

+

 cT - Semantic Web -

+

 bG - **Linked Data** -

+

 bG - Web of Data

+

 bG - Linked Open Data

+

 bG - Semantic Description

+

 bG - Emergent Semantics

+

 bG - Resource Description Framework

+

 bG - Web Service Discovery

+

 bG - Semantic Web Technology +

+

 bG - Web Ontology Language -

+

 bG - Semantic Web Rule Language



Osborne, F., Motta, E. and Mulholland, P. (2013) Exploring Scholarly Data with Rexplore, International Semantic Web Conference, Sydney, Australia



Some examples: The Smart Topic miner

SMART TOPIC MINER

Order

Publications ▾

- ☒ Use tree-list
- ☒ Show explanation
- ☒ Show input keyword distribution
- ☒ Advanced analytics

File input

No file chosen

Accepting only .zip, .xml and .csv

Additional keywords

Add here your additional keywords separated by comma.

Topic Granularity: 3

[\[-\] Example Springer Nature Proceedings](#)

(LNCS_9544) Semantic Techno ▾

[\[+\] Expert settings](#)

SIGNIFICANT TOPICS:

```
graph LR; Book --> CS[computer science]; Book --> S2["[lv. 2] semantics"]; Book --> S3["[lv. 3] world wide web"]; CS --> AI[artificial intelligence]; CS --> KBS[knowledge based systems]; AI --> KB[knowledge base]; AI --> LS[learning systems]; LS --> LA[learning algorithms]; S2 --> ON[ontology]; S2 --> RDF[Resource Description Framework (RDF)]; ON --> SW[semantic web]; ON --> LD[linked data]; RDF --> SW; RDF --> LD;
```

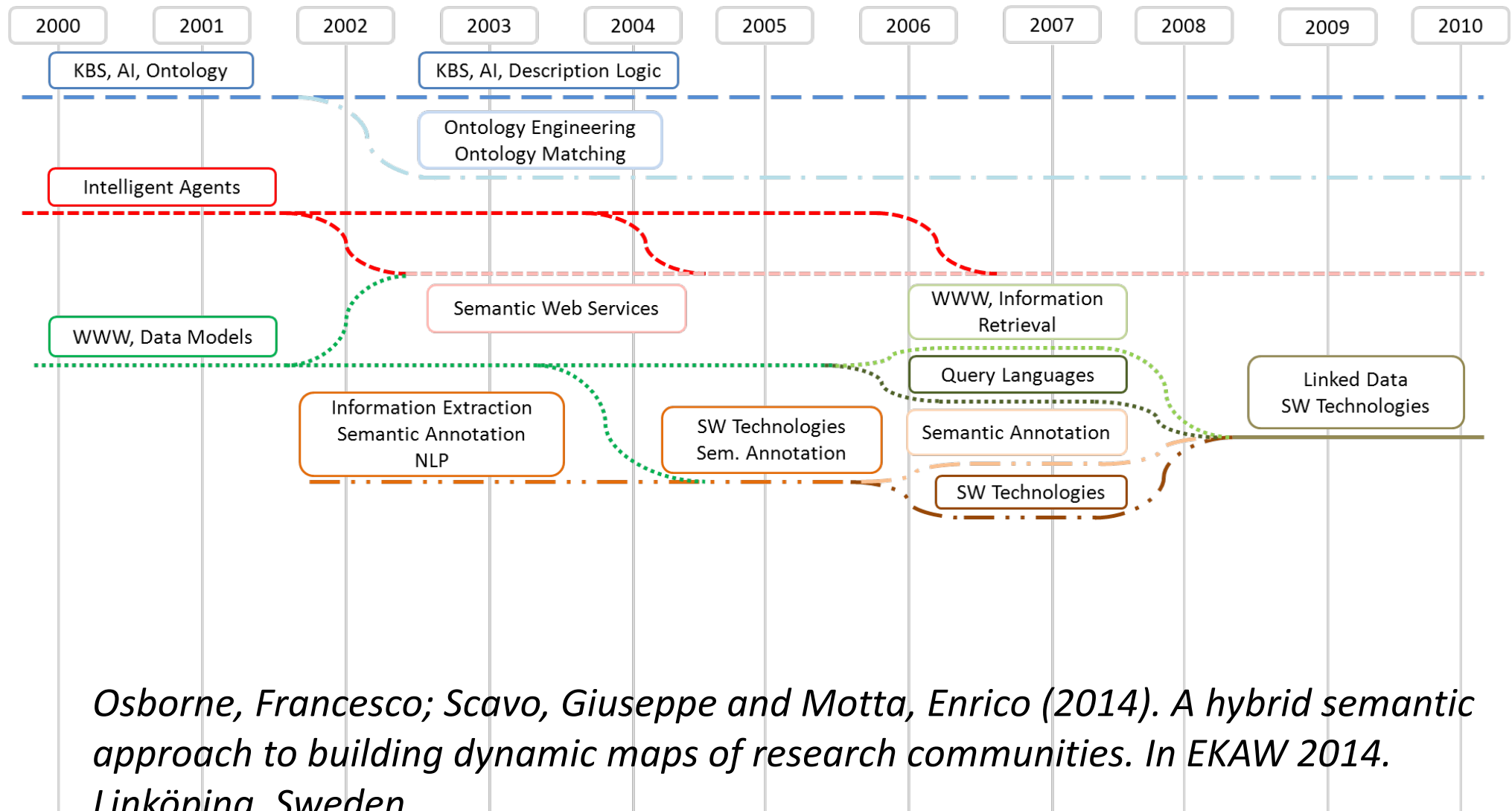
Select all	<input type="button" value="[-]"/>
computer science (21 pubs)	<input checked="" type="checkbox"/>
world wide web (16 pubs)	<input checked="" type="checkbox"/>
semantic web (14 pubs)	<input checked="" type="checkbox"/>
artificial intelligence (12 pubs)	<input checked="" type="checkbox"/>
ontology (10 pubs)	<input checked="" type="checkbox"/>
knowledge based systems (8 pubs)	<input checked="" type="checkbox"/>
Resource Description Framework (RDF) (7 pubs)	<input checked="" type="checkbox"/>

I21009 : computing methodologies (21 pubs)	<input type="checkbox"/>
I21009 > I21017 : artificial intelligence (incl. robotics) (21 pubs)	<input type="checkbox"/>
I16005 : theory of computation (10 pubs)	<input type="checkbox"/>
I16005 > I16048 : mathematical logic and formal languages (10 pubs)	<input type="checkbox"/>
I23001 : computer applications (8 pubs)	<input type="checkbox"/>
I23001 > I2301X : computer appl. in administrative data processing (8 pubs)	<input type="checkbox"/>

Osborne, F., Salatino, A., Birukou, A. and Motta, E. (2016) Automatic classification of springer nature proceedings with smart topic miner. In International Semantic Web Conference (pp. 383-399).



Some example – The Map of Semantic Web





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