

# A Semantic MediaWiki-Empowered Terminology Registry



Qing Zou  
School of Information Studies  
McGill University, Canada

Wei Fan  
National Science Library  
Chinese Academy of Sciences, China

# Outline



- **Purposes/Goals of the project**
- **Terminology registry**
- **Semantic MediaWiki (SMW)**
- **A SMW-empowered terminology registry**
- **Future directions**

# Goals



- **Goals of the current project**
- **Long-term goals**
  - **Linked Data**
  - **Terminology Services**

# Terminology Registry



- A terminology registry lists, describes, identifies and points to sets of vocabularies available for use in information systems and services (Terminology Registry Scoping Study, 2008).

**Source:** <http://www.ukoln.ac.uk/projects/trss>

# What are in a terminology registry?



- **Metadata schemas**
- **Vocabularies**

# Existing Registries



- **DCMI Registry – Dublin Core**
- **NSDL Registry – Various metadata schema**
- **CORES Registry – Mainly metadata schema**
- ...

# Semantic MediaWiki



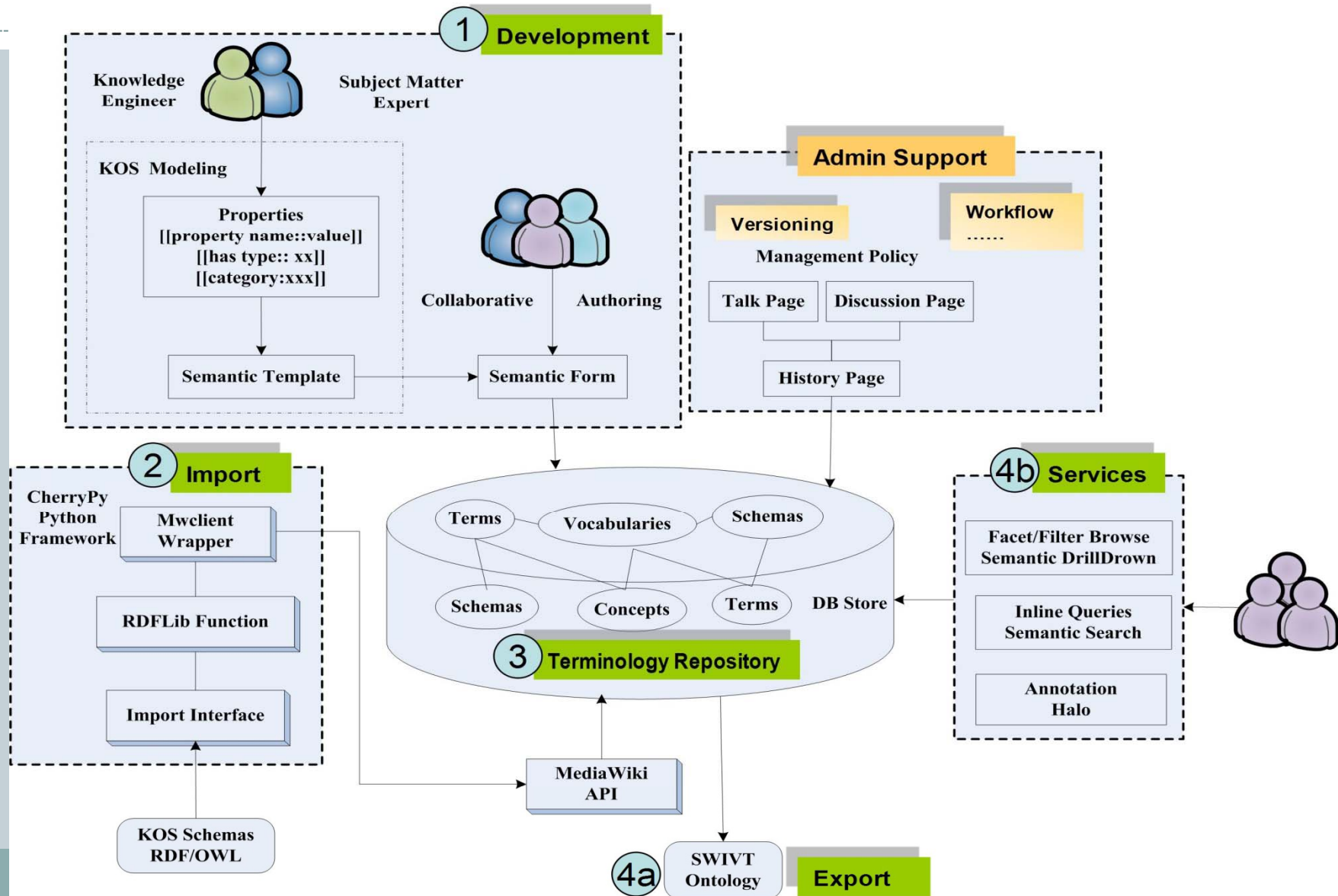
- **Semantic MediaWiki (SMW) = MediaWiki + Semantic extensions**
- **Semantic extensions:**
  - Semantic Form
  - Semantic drilldown
  - Semantic resultform
  - SMW Halo
  - Etc.

# What can a Semantic MediaWiki provide?



- **Semantic MediaWiki**
  - An open source platform (MediaWiki)
  - Semantic features

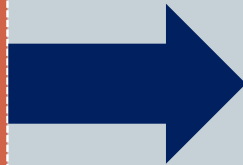
# System Design



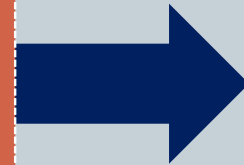
# Work Flow



Controlled  
Vocabularies/  
Thesauri



SKOS



Semantic  
MediaWiki  
Syntax

# How does it work?



| OWL or RDF                           | SMW                 | Wiki Syntax                        |
|--------------------------------------|---------------------|------------------------------------|
| OWL individual                       | Normal article page | Page name                          |
| Owl:Class                            | Category            | [[Category: <i>class</i> ]]        |
| Owl:ObjectProperty                   | Property            | [[ <i>property_name</i> ::object]] |
| Owl:DatatypeProperty                 | Property            | [[ <i>property_name</i> ::value]]  |
| Rdf:type <i>class_name</i>           | Category            | [[Category: <i>class_name</i> ]]   |
| Rdfs:subClassOf<br><i>class_name</i> | Category            | [[Category: <i>class_name</i> ]]   |

# An Example



## A thesaurus entry “Aerospace industry” (from GCCST)

|  |  |
|--|--|
| <b>Aerospace industry</b>  | A preferred term (in English) representing a concept   |
| <b>FRE:</b> Industrie de l'aérospatiale  | An equivalent in French  |
| <b>SN:</b> Economic activity dedicated to the design and manufacturing of aircraft, spacecraft and missiles. | A scope note, specifying the meaning of a preferred term or defining its usage limitations for the purpose of indexing.  |
| <b>UF:</b> Avionics, Space industry  | One or several synonyms, quasi-synonyms or spelling variants   |
| <b>BT:</b> Manufacturing industry  | One or several broader terms, preferred terms representing concepts broader in scope.  |
| <b>NT:</b> Aviation industry   | One or several narrower terms, preferred terms representing concepts narrower in scope.  |
| <b>RT:</b> Space exploration   | One or several RELATED TERMS, preferred terms that are associated in meaning with the preferred term of the record, but that are not part of the same hierarchy. |
| <b>SC:</b> EC Economics and Industry   | One or several SUBJECT CATEGORIES, that helps to determine the meaning of the descriptor in the context of the thesaurus.  |

From <http://www.thesaurus.gc.ca/default.asp?lang=En&n=0073D232-1>

# RDF => SMW



| RDF   | SMW  |
|---|--|
| <code>&lt;rdf:Description<br/>rdf:about="http://libnt2.lakeheadu.ca/cst/Aerospace industry "&gt;</code>   | <code>[[URI::<a href="http://libnt2.lakeheadu.ca/cst/Aerospace">http://libnt2.lakeheadu.ca/cst/Aerospace</a> industry]]</code>         |
| <code>&lt;skos:prefLabel xml:lang="en"&gt;Aerospace<br/>industry&lt;/skos:prefLabel&gt;</code>  | <code>[[skos:prefLabel<br/>::Aerospace industry@en]]</code>  |
| <code>&lt;skos:prefLabel xml:lang="fr"&gt;Industrie de<br/>l'aérospatiale&lt;/skos:prefLabel&gt;</code>   | <code>[[skos:prefLabel<br/>::Industrie de l'aérospatiale@fr]]</code>   |
| <code>&lt;skos:altLabel xml:lang="en"&gt;Avionics&lt;/skos:altLabel&gt;</code>  | <code>[[skos:altLabel::Avionics@en]]</code>  |
| <code>&lt;skos:altLabel xml:lang="en"&gt;Space industry&lt;/skos:altLabel&gt;</code>  | <code>[[skos:altLabel::Space industry@en]]</code>  |
| <code>&lt;skos:scopeNote&gt;Economic activity dedicated to the design and<br/>manufacturing of aircraft, spacecraft and<br/>missiles.&lt;/skos:scopeNote&gt;</code> | <code>[[skos:scopeNote::Economic activity dedicated to the design and<br/>manufacturing of aircraft, spacecraft and missiles.]]</code> |
| <code>&lt;skos:related rdf:resource="http://libnt2.lakeheadu.ca/cst/Space<br/>exploration"/&gt;</code>  | <code>[[skos:related<br/>::Category:cst:Space exploration]]</code>   |
| <code>&lt;skos:broader<br/>rdf:resource="http://libnt2.lakeheadu.ca/cst/Manufacturing<br/>industry"/&gt;</code>   | <code>[[skos:broader<br/>::Category:cst:Manufacturing]]</code>   |
| <code>&lt;skos:narrower<br/>rdf:resource="http://libnt2.lakeheadu.ca/cst/Aviation industry"/&gt;</code>   | <code>[[skos:narrower<br/>::Category:cst:Aviation industry]]</code>  |
| <code>&lt;skos:inScheme rdf:resource="http://libnt2.lakeheadu.ca/cst"/&gt;</code>   | <code>[[skos:inScheme::http://libnt2.lakeheadu.ca/cst/]]</code>  |
| <code>&lt;skos:hasTopConcept&gt;EC Economics and Industry<br/>&lt;/skos:hasTopConcept&gt;</code>  | <code>[[skos:hasTopConcept<br/>::EC Economics and Industry]]</code>  |

# URI



- [http://libnt2.lakeheadu.ca/cst/Aerospace industry](http://libnt2.lakeheadu.ca/cst/Aerospace%20industry)
- <http://libnt2.lakeheadu.ca/cst/>
- Aerospace industry

# URIs in SMW



- [http://libnt2.lakeheadu.ca/mw/Category:cst:Aerospace\\_industry@en](http://libnt2.lakeheadu.ca/mw/Category:cst:Aerospace_industry@en)
- <http://libnt2.lakeheadu.ca/mw/>
- [Category:cst:Aerospace\\_industry@en](#)

# In SMW




Category:Cst:Aerospace industry@en - Semantic Wiki - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

http://libnt2.lakeheadu.ca/mw/Category:Cst:Aerospace\_industry%40en

Category:Cst:Aerospace industry@e... Log in



category discussion view source history

## Category:Cst:Aerospace industry@en

Basic Data Mappings Visualization Factbox

- URI: [http://libnt2.lakeheadu.ca/cst/Aerospace industry](http://libnt2.lakeheadu.ca/cst/Aerospace%20industry)
- skos:prefLabel: Aerospace industry@en; Industrie de l'aérospatiale@fr
- skos:altLabel: Space industry@en; Avionics@en
- skos:scopeNote: Economic activity dedicated to the design and manufacturing of aircraft, spacecraft and missiles
- skos:related: [Category:cst:Space exploration](#)
- skos:broader: [Category:cst:Manufacturing industry](#)
- skos:narrower: [Category:cst:Aviation industry](#)
- skos:inScheme: <http://libnt2.lakeheadu.ca/cst/>
- skos:hasTopConcept: [EC Economics and Industry](#)
- type: skos:Concept

*This category currently contains no pages or media.*

Categories: [Skos:Concept](#) | [TRS.VTerm](#)

navigation

- Main Page
- Community portal
- Current events
- Recent changes
- Random page
- Help

search

Go Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link
- Browse properties

Done

# In SMW

The screenshot shows a Semantic MediaWiki page for the category **Category:Cst:436**. The page includes a navigation sidebar on the left with links like 'Main Page', 'Community portal', and 'Recent changes'. The main content area features a 'Visualization' tab that displays a diagram of relationships. The central node is **Category:Cst:436**, which is linked to several other nodes:

- URI** (black arrow): <http://libnt2.lakeheadu.ca/cst/436>
- Skos:related** (red arrow): **Category:Cst:439**
- Skos:narrower** (green arrow): **Category:Cst:438**
- Skos:broader** (blue arrow): **Category:Cst:936**
- Skos:prefLabel** (darkviolet arrows): **Industrie de l'aérospatiale@fr** and **Aerospace industry@en**
- Skos:altLabel** (gold arrows): **Space industry** and **Avionics**

A legend at the bottom left of the visualization area defines the arrow colors:

- black: URI
- red: Skos:related
- green: Skos:narrower
- blue: Skos:broader
- darkviolet: Skos:prefLabel
- gold: Skos:altLabel

# In SMW

Category:Cst:Aerospace industry@en - Semantic Wiki - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

http://libnt2.lakeheadu.ca/mw/Category:Cst:Aerospace\_industry%40en

Category:Cst:Aerospace industry@e... Log in

**category** discussion view source history

## Category:Cst:Aerospace industry@en

Basic Data Mappings Visualization **Factbox**

**Facts about Cst:Aerospace industry@en** [RDF feed](#)

- Lastmodified 28 April 2009 15:35:17 +
- Skos:altLabel Space industry@en, and Avionics@en
- Skos:broader Cst:Manufacturing industry
- Skos:hasTopConcept EC Economics and Industry
- Skos:inScheme http://libnt2.lakeheadu.ca/cst/ &nbsp; +
- Skos:narrower Cst:Aviation industry
- Skos:prefLabel Aerospace industry@en, and Industrie de l'aérospatiale@fr
- Skos:related Cst:Space exploration
- Skos:scopeNote Economic activity dedicated to the design and manufacturing of aircraft, spacecraft and missiles
- Type Skos:Concept
- URI http://libnt2.lakeheadu.ca/cst/Aerospace industry

navigation

- Main Page
- Community portal
- Current events
- Recent changes
- Random page
- Help

search

Go Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link
- Browse properties

Done



# Import Utility



KOS Schema/Vocabulary  
rdf format



Import Interface

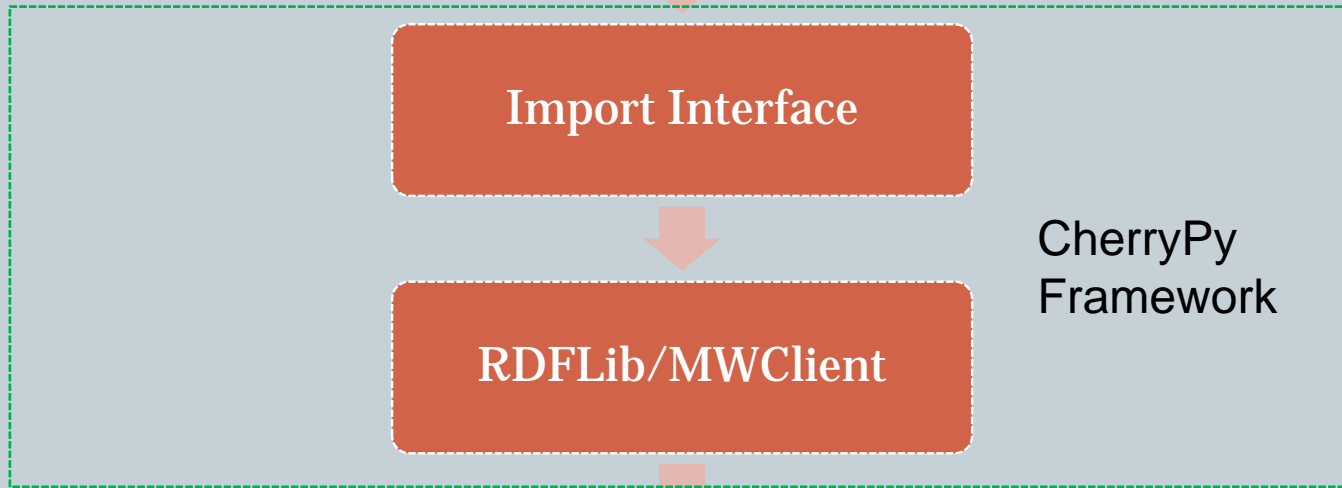


RDFLib/MWClient

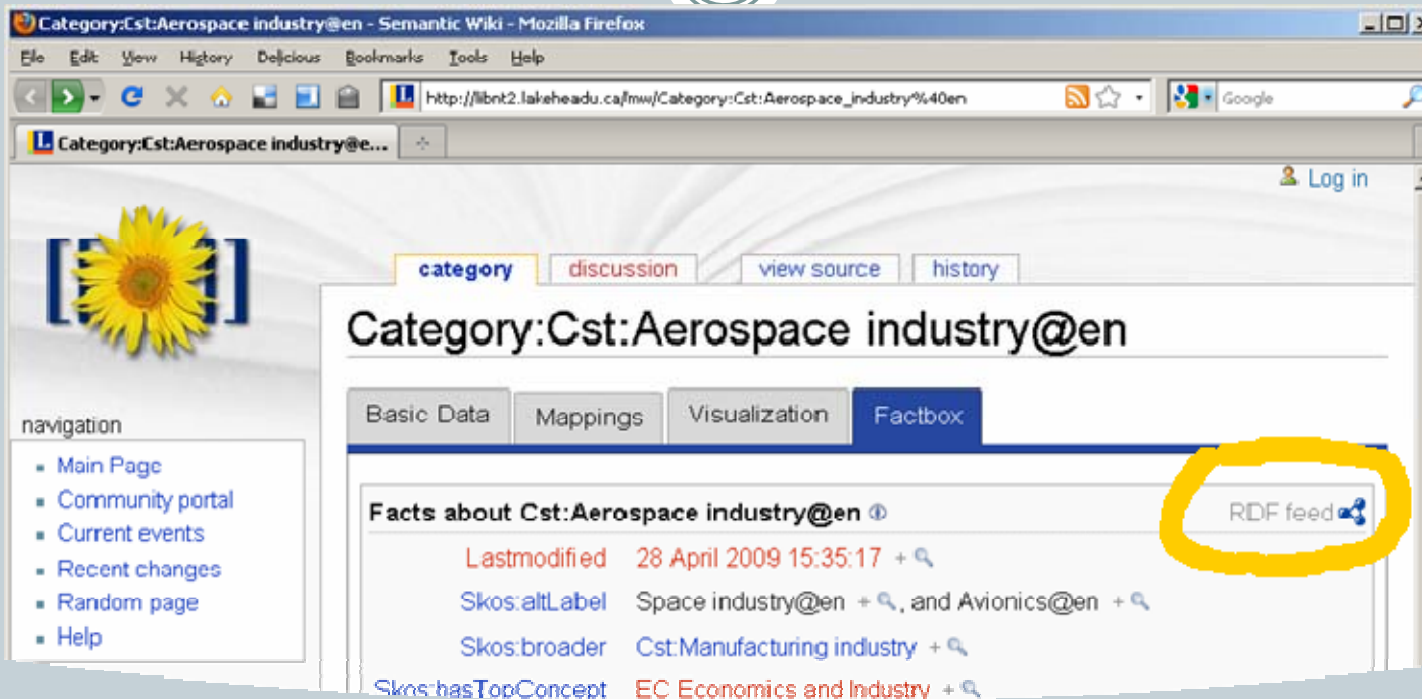


Semantic MediaWiki

CherryPy  
Framework



# Export



- `curl -L -H "Accept: application/rdf+xml"`  
`http://libnt2.lakeheadu.ca/mw/Category:cst:Aerosp`  
`ace%20industry@en`

# What are resources in this terminology registry?



- **Schema**
  - OWL, RDF, RDFS, DC, SKOS
- **Vocabulary –**
  - Government of Canada Core Subject Thesaurus (GCCST)

# Future work



- **Administration support**
- **Version management**

# Future work



- **Better export function**
- **Terminology Services**
- ...



**Questions?**

**Thanks**