

EnTag

Enhanced Tagging for Discovery

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Introduction and demonstration



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Project context

- Partners
 - UKOLN
 - University of Glamorgan
 - STFC
 - Intute
 - Non-funded
 - OCLC Office of Research, USA
 - Danish Royal School of Library and Information Science
- Funders: JISC
- Period: 1 Sep 2007 -- 31 Oct 2008



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Purpose

- Investigate the combination of controlled and folksonomy approaches to support resource discovery in repositories and digital collections
- Aim
Investigate whether use of an established controlled vocabulary can help improve social tagging for better resource discovery



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Objectives

- Investigate indexing aspects when using only social tagging versus when using social tagging with suggestions from a controlled vocabulary
- Investigate above in two different contexts: tagging by readers and tagging by authors
- Investigate influence of only social tagging versus social tagging with a controlled vocabulary on retrieval



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Overall approach

- Main focus:
 - free tagging with no instructions
versus
 - tagging using a combined system and guidance for users
- Two exploratory demonstrators
 - **Intute digital collection** <http://www.intute.ac.uk>
 - Major development
 - Tagging by reader
 - DDC
 - **STFC repository** <http://epubs.cclrc.ac.uk/>
 - Complementary development
 - Tagging by author



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Intute demonstrator: searching

EnTag Project ST

Current Location: Document Search and Browsing Page Current User: [Log Out](#) [Help](#) [Post-Task Questionnaire](#)

Filter By: Everyone's Tags

Main Tag Cloud

- [efms Migration Report](#)
- [European Integration](#)
- [European Integration and the State](#)
- [German Unification Case Study](#)
- [Institute of European Affairs \(IEA\)](#)
- [Ministry of Foreign Affairs and European Integration](#)
- [Republic of Croatia](#)
- [Osteuropa-Netzwerk](#)
- [Trans European Policy Studies Association](#)
- [Uneasy Allies: British-German Relations and European Integration since 1945](#)
- [Versailles Treaty \(1919\)](#)
- [Voices from the wall: Personal stories about the fall of the Berlin wall](#)
- [English or Croatian Enlargement](#)
- [european integration bureau](#)
- [Insurgency in the Muslim World](#)
- [leadership dialogue transnational environment](#)
- [108_108 journals_14 countries_1869-1883_1948](#)
- [1956_1960s political movements_1989-1994](#)
- [1990-1996_1998 publications_2001-2008](#)
- [2002 elections_2005_2nd edition book_4205 Issues](#)

Taggers

- Adamcok_Adviya_Alex_Alicohn_Alonso
- Amy878_Bozwell_Cehbeh_Clkern_Clare
- Dji_Donnie1_Emloff_Eve_Gautam_Gemma
- Gigi131_Gkr365_Jay_John_Katy_Kkrish
- Laura82_Liam_Logic_Louise_Matt_Maubry
- Maz_Megan11_Meng_Mike_Mikeg_Mouz
- Noel_Palmexo_Plemai_Proximo_Randvar
- Ricey_Rkanani_Shannon_Squelci_Tato

Search For Documents

Enter your search terms

Displaying Documents Tagged by: Alex

Results

Title (Click to Open)	Description	Tags	Add Tags
50th anniversary of the 1956 Hungarian revolution: Canadian Embassy	This site has been created by the Canadian Embassy in Hungary to commemorate the 50th anniversary...	1956, Canada, Canadian Embassy in Hungary, commemoration, Hungarian Revolution, Links, refugees	Tag
Canadian Defence and Foreign Affairs Institute	The Canadian Defence and Foreign Affairs Institute (CDFAI) is an independent research institute wh...	archives, Canada, conferences, courses, defence, foreign affairs, journalism, media, newsletter, obama, polls, Relations - US - Canada, research, submissions, turkey	Tag
Canadian Dimension	Canadian Dimension is a left wing Canadian journal that examines world events from a Socialist pe...	academic journal, blog, Canada, Canadian Dimension, left-wing perspective, NDP - New Democratic Party of Canada	Tag
Canadian Illustrated News 1869-1883	This site offers access to a searchable database of almost 4,000 images and cartoons taken from t...	1869-1883, archives, Canada, Canadian Illustrated News, Library and Archives Canada	Tag
Canadian Pamphlets and Broadsides	This site provides access to the full-text of over 500 pre-1930s Canadian pamphlets and broadside...	archives, Canada, Canadian Pamphlets and Broadsides Online Collection, database, pre-1930, Thomas Fisher Rare Book Library, University of Toronto	Tag
Canadian Parliamentary Review: Revue Parlementaire Canadienne	Canadian Parliamentary Review publishes information on Canadian legislation and the activities of...	academic journal, Book Review, Canada, Canadian Parliamentary Review, Canadian Politics - Domestic, Commonwealth Parliamentary Association, Legislative Reports	Tag

1 2 3 4 5

Intute demonstrator: simple tagging

EnTag Project ST

Current Location: Document Tagging Page Current User: [Log Out](#) [Help](#) [Post-Task Questionnaire](#)

Filter By: Everyone's Tags

Main Tag Cloud

- [efms Migration Report](#)
- [European Integration](#)
- [European Integration and the State](#)
- [German Unification](#)
- [Case Study](#)
- [Institute of European Affairs \(IEA\)](#)
- [Ministry of Foreign Affairs and European Integration](#)
- [Republic of Croatia](#)
- [Osteuropa-Netzwerk](#)
- [Trans European Policy Studies Association](#)
- [Uneasy Allies: British-German Relations and European Integration since 1945](#)
- [Versailles Treaty \(1919\)](#)
- [Voices from the wall: Personal stories about the fall of the Berlin wall](#)
- [English or Croatian Enlargement](#)
- [european integration bureau](#)
- [Insurgency in the Muslim World](#)
- [leadership dialogue transnational environment](#)
- [108_108 journals_14](#)
- [countries_1869-1883_1948](#)
- [1956_1960s political movements_1989-1994](#)
- [1990-1996_1998](#)
- [publications_2001-2008](#)
- [2002 elections_2005_2nd edition book](#)
- [4205 Issues](#)

Taggers	All Alex's Tags	My Tags For This Document
Adamcok Adviya Alex Alicohn Alonso Amy878 Bozwell Cehbeh Ckkern Clare Dji Donnie1 Emloff Eve Gautam Gemma Gigi131 Gkr365 Jay John Katy Kkrish Laura82 Liam Logic Louise Matt Maubry Maz Megan11 Meng Mike Mikeg Mouz Noel Palmexo Plemai Proximo Randvar Ricey Rkanani Shannon Squelci Tato Thei75 Tom Urs1981	1869-1883 1956 2001-2008 academic journal academic paper achieve of european integration afghanistan Alphabetical Listing annual report Archive of European Integration archive archive - audio archives ARENA attitudes to european integration bibliography blog Book Review briefing	1956 Canada Canadian Embassey in Hungary commemoration Hungarian Revolution Links refugees

Document Details

Title	50th anniversary of the 1956 Hungarian revolution: Canadian Embassy
URL	http://geo.international.gc.ca/canada-europa/hungary/right_nav/1956-en.asp
Description	This site has been created by the Canadian Embassy in Hungary to commemorate the 50th anniversary of the 1956 Hungarian revolution. In addition to a listing of events, it also provides free access to some interesting full text publications about Canadian involvement in the events. These include booklets about Canadian diplomacy. There are also links to other websites from canadian organisations which include eye-witness accounts.

Add a Tag Remove Tag Return To Search Results

Intute demonstrator: enhanced tagging

EnTag Project ST

Current Location: Document Tagging Page Current User:

Log Out Help Post-Task Questionnaire

Filter By: Everyone's Tags

Main Tag Cloud

- [Do We Need Mass Immigration?](#) [Electronic Immigration Network](#)
- [Evolution of US Immigration and Refugee Policy](#) [Public Opinion, Domestic Policies and UNHCR](#) by Michael McBride (1999)
- [Immigration: United States Government Accounting Office](#) [JOLIS Why Has UK Net Immigration Increased?](#) [United Nations Peacekeeping Force in Cyprus](#)
- [1917-1991 1948-2003 info](#) [1948-2007 1964 1974 ceasefire](#) [1992 - 1995 trafficking era with the investigation commencing in 1999](#) [1994 Moscow Agreement](#) [2000-2008 2001-2008 archive](#) [2005 UK election](#) [2008 American Presidential Election](#) [2008 US presidential elections](#) [404 60th anniversary of United Nations peacekeeping](#) [9/11 9/11 academic essays](#) [9/11 Essays](#) [9/11 for High Schools](#) [9/11 papers A variety of articles on disability](#)

Taggers

- Adamcok, Adviya, Alex, Alicohn, Alonso, Amy878, Bozwell, Cehbeh, Ckkern, Clare, Dji, Donnie1, Emloff, Eve, Gautam, Gemma, Gigi131, Gkr365, Jay, John, Katy, Kkrish, Laura82, Liam, Logic, Louise, Matt, Maubry, Maz, Megan11, Meng, Mike, Mikeg, Mouz, Noel, Palmexo, Plemai, Proximo, Randvar, Ricey, Rkanani, Shannon, Squelci, Tato, Thei75, Tom, Urs1981

All Alex's Tags

- Academic Papers, advocacy, Afghan War, 2001-Armed Forces - Political activity, Arms control, Arms control - Europe, art, Asia for Educators, bibliography, british foreign policy, Buddhism - China - Tibet, buffer zone, canada, Carnegie Endowment, casualties, figures, cease fire

My Tags For This Document

- Disarmament and arms control, human rights, media, podcast, Sino-American Summits, Sino-US specialists, Taiwan - 20th century, Tiananmen Square, United States - Foreign relations - China

China - Politics and

Document Details

Title	1998 Sino-Soviet Summit by Robert S. Ross
URL	http://www.asiasociety.org/publications/sino_american_summit.html
Description	This site contains the full-text of the paper by Robert Ross which was originally published by the Asia Society, a non-profit educational institution, in June 1998. It examines US-China relations in the period after the Tiananmen Square massacre in 1989, focusing on such issues as human rights, international trade, nuclear weapons and arms control. Consideration is then turned to what the 1998 Sino-Soviet Summit hopes to achieve in these areas. An additional feature of the article is an appendix listing contact addresses for specialists on US-China relations.

Suggest Add a Tag Remove Tag Return To Search Results

Automatically suggested matches Find appropriate context(s)

- Soviet Union - Foreign relations
- African American women legislators-biography,...
- Eastern Europe-politics,...
- Kommunisticheskaja partija Sovetskogo Soiuza
- Marxism-Leninism
- Relation of federal to state, regional, provincial go...
- United States-foreign relations-Eastern Europe,...
- End of Political Science -----

Explore hierarchy around the selected context

- International relations
- Soviet Union - Foreign relations

Select/edit relevant tags

- Eastern Europe - foreign relations
- Europe, Eastern - Foreign relations - Soviet Union
- Europe, Eastern - Politics and government - 1945-1989
- Foreign relations - Eastern Europe
- Foreign relations - Russia
- Foreign relations - Soviet Union
- International relations
- Russia - foreign relations
- Russia - Foreign relations - 1894-1917
- Russia (Federation) - Foreign relations
- Russia (Federation) - Foreign relations -



Intute demonstrator user study



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Test setting and data collection

- Test setting
 - 28 UK students in political science
 - 60 documents, covering 4 topics of relevance for the students
 - 2 controlled tasks
 - 2 free tasks
 - Rotation
 - Instructions and training documents
- Data collection
 - Logging
 - Pre- and post-questionnaires



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Task example

Task 1: Simple Tagger, “European integration”

Imagine that as part of one of your courses, you are asked to write a four-page essay on the **topic of European integration**, as a joint project in groups of four. The essay should critically discuss existing theories about the creation of the European Union and its institutions. Your lecturer has instructed you to look for resources in the EnTag system. Since you will be working together with three other students, you should tag the documents you retrieve with tags that would be useful to you but would also enable other students to find those documents in EnTag and understand from your tags what the documents are about.

Go to the EnTag login page*, choose **Task 1** and **Simple Tagger Log In** and in the "Search for Documents" box enter these words: **European integration**.

Then, tag the **first 15 retrieved documents**. Do only the ones you can open - if a URL is unavailable move on to the next document in the Results.

Tagging each document should on average take between **5 and 10 minutes**. Please describe as many aspects and topics as you think appropriate for the task. Remember to open the URL, but you do not need to follow further internal links within a Web site. If the document is very long, focus on its abstract, introduction, conclusion, headings and table of contents.



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Pre-study questionnaire

- 28 participants
 - Equal distribution of gender
 - Majority solid subject experience
 - Majority experienced Web users
 - Majority without Intute use
 - Half with tagging experience before but little tagging
 - A third some acquaintance with DDC



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Example of a session

- Enhanced tagging of first document in controlled task →



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Log On	
Document Search (peacekeeping)	
Open Document (http://www.cordaid.nl/Upload/publicatie/RAPPORT%20CMR.pdf)	
Dewey Suggest Button Clicked	NGO
Add Tag	NGO
Dewey Suggest Button Clicked	civil-military relations
Dewey Suggest TreeView Clicked	Foreign policy and specific topics in international relations
Dewey Hierarchy Clicked	International conflict
Dewey Suggestion Cloud Clicked	Conflict - international politics
Add Tag	Conflict - international politics
Dewey Suggestion Cloud Clicked	Foreign policy and specific topics in international relations
Dewey Suggest Button Clicked	liberia
Dewey Hierarchy Clicked	1945-
Dewey Suggestion Cloud Clicked	Liberia - History - Civil War, 1989- - Peace
Dewey Suggestion Cloud Clicked	Liberia - 20th century
Add Tag	Liberia - 20th century
Dewey Suggestion Cloud Clicked	Liberia - History - Civil War, 1989-
Add Tag	Liberia - History - Civil War, 1989-
Dewey Suggest Button Clicked	afghanistan
Dewey Hierarchy Clicked	1919-
Dewey Hierarchy Clicked	2001-
Dewey Suggestion Cloud Clicked	Afghan War, 2001-
Add Tag	Afghan War, 2001-
Dewey Suggestion Cloud Clicked	Afghan War, 2001-
Dewey Suggest Button Clicked	isaf
Add Tag	isaf
Add Tag	UNMIL
Add Tag	NATO
Dewey Suggest Button Clicked	nato
Dewey Suggestion Cloud Clicked	North Atlantic Treaty Organization
Add Tag	North Atlantic Treaty Organization
Dewey Suggest Button Clicked	development
Add Tag	development
Add Tag	cordaid
Dewey Suggest Button Clicked	cordaid
Dewey Suggest Button Clicked	civil society
Dewey Suggest TreeView Clicked	Armed services
Dewey Suggestion Cloud Clicked	Armed Forces - Political activity
Add Tag	Armed Forces - Political activity
Dewey Suggestion Cloud Clicked	Civil supremacy over the military
Add Tag	Civil supremacy over the military
Goto Searching	



Number of tags

	Simple	Enhanced
Tags in total	4022	3546
Controlled task	2025	1688
Free task	1997	1858
Tags per document (controlled)	49 (41 docs)	32 (53 docs)
Tags per document (free)	5 (374 docs)	5 (377 docs)
Tags per tagger (controlled)	72	63
Tags per tagger (free)	74	69



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Choosing a tag

Activity	Simple		Enhanced	
Typing Own Tag	3656	90.90%	2525	71.21%
Main Tag Cloud	94	2.34%	88	2.48%
Own Tag	0	0.00%	32	0.90%
Another Tagger's Tag	272	6.76%	303	8.54%
Dewey Tag			598	16.86%
In Total	4022	100.00%	3546	100.00%



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Browsing-based tagging

activity	Simple	Enhanced
Main Tag Cloud Clicked	16.78%	5.11%
Own Tag Clicked	10.26%	2.71%
Tagger Cloud Clicked	18.89%	3.65%
Taggers Tag Clicked	54.07%	14.51%
Dewey Hierarchy Clicked		3.20%
Dewey Suggest Button Clicked		28.89%
Dewey Suggest TreeView Clicked		13.70%
Dewey Suggestion Cloud Clicked		28.24%
	100.00%	100.00%



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Document parts in which tags appear



	Simple		Enhanced	
Tags in Title	502	12.48%	423	11.93%
Tags in Description	1209	30.06%	829	23.38%
Tags in URL	114	2.83%	128	3.61%
Tags in Total	4022	45.38%	3546	38.92%



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Post-task questionnaire

	Simple	Enhanced
Familiarity with tasks	majority familiar or very familiar	
Easy to choose tags	majority easy or very easy	
Satisfaction with tags assigned	majority satisfied or very satisfied	
Certainty that tags assigned correctly	majority certain or very certain	
Main Tag Cloud	helpful to half, unhelpful to half	
Clickable Names of Others	helpful to half, unhelpful to half	unhelpful to majority
Listing of Own Tags	helpful to majority	
Dewey Tree Disambiguation	n/a	helpful to majority
Dewey Hierarchy	n/a	helpful to half, unhelpful to half
Dewey/LCSH suggestions	n/a	helpful to majority



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Post-study questionnaire

- Majority enjoyed the study
- Majority thought it extremely or very easy to learn and use Simple Tagger
- Majority thought it somewhat or very easy to learn and use Enhanced Tagger
- Interface usability has high impact on use
- Majority think a similar system would be useful in real life



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Initial conclusions from Study

(Intute System: only preliminary data analysis)

- Approx 42% tags from Title and Description (Simple System) and slightly less (35%) from Enhanced System
- More tags taken from Another than Global/Own tag clouds but most from typing own tags
- Majority selected some auto suggestions (17% Enhanced tags) and considered the suggestions potentially useful in real life
- Suggestions sometimes useful and sometimes far off the mark
- Not much use of Dewey hierarchy browsing
- Users see relevance of control and consistency



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www.bath.ac.uk



Initial conclusions overall

(Intute System: only preliminary data analysis)

- Results support the potential of enhanced tagging approach

Future work:-

- Simplify user interface (less clutter, auto-completion?)
- Consider (non?) utility of global tag cloud in this context
- Consider best presentation of DDC context and hierarchies
- Refine default DDC class selections for disambiguation
- Refine selection of suggestions to reduce clearly non-relevant
- Refine the suggestion strings (not just 'raw Dewey')
- Refine the existing simple automatic classification source of possible suggestions (based on document title)

Questions:-

- Motivation for users-as-searchers
 - general/group altruism vs personalisation?



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EnTag: More info

- Further results > November 2008
- <http://www.ukoln.ac.uk/projects/enhanced-tagging/>



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Controlled subject/topical vocabulary in metadata:
developing best practices related to semantic web
usages (SKOS etc.)

THE REGISTRY AS VOCABULARY MANAGEMENT ENVIRONMENT

A Semantic Web perspective

- RDF oriented
- Linked data oriented
- ‘Vocabulary’ has more than one meaning
 - Value vocabularies (VES)
 - Class/Property vocabularies (metadata schema)
- Experience from building the NSDL metadata registry
 - <http://metadataregistry.org>
- Semantic Web Deployment Working group
 - <http://www.w3.org/2006/07/SWD/>

Vocabulary Development is a group activity

- There may be many stakeholders
- Role-based user management necessary
- Open discussion environment allowing granular focus
- The group should be able to define the process

Stability is crucial

- Vocabulary users must be able to depend on vocabulary
- Clearly articulate maintenance policy
 - What will be stable
 - What can change
 - How will changes be handled

Change is inevitable

- Versioning is essential
 - Provide an audit trail
 - Named releases
 - Timeslices and snapshots
- Provide user-configurable change notification
 - Subscriptions for vocabulary implementors
 - Notifications for implementors and development group

Limits of change

- URIs
- Deprecation vs. deletion
- Relationships
- Semantic redefinition
- When do you need to re-identify?
- Need an Admin or Editor in Chief to control?

Balancing machine and human intervention

- Data validation

- Duplicate identifiers
- Duplicate labels/terms
- Circular relationships

- Standards compliance

- What standards?
- Is human review necessary or desirable?

Identifier assignment

- Persistence
- Coherent strategy
 - Numeric vs. semantically meaningful
 - Domain assignment
- Cool URLs

Availability

- Public vs. private
 - Open vs. licensed
- Content negotiation
- Multiple serializations
 - RDF
 - XML
 - Text, others?
- Linked data support

Multi-lingual Strategy

- Coherent strategy
- Single vocabulary with multiple languages per identifier?
or
- Multiple vocabularies lexically or semantically linked?
- Management and retrieval issues affect this decision

Extending existing vocabularies

- Political and IP issues
 - Term/concept re-use or redefinition
 - Licensing/copyright issues
- Re-use of ‘orphaned’ vocabularies
 - Domain ownership
 - ‘Dead’ or no URIs
- Other ethical issues?

Registries also support discovery and re-use

- Search
 - Term-based
 - Vocabulary-level metadata-based
- Community and Federation
- Common discovery APIs
- Support for inter-vocabulary mapping
(SKOS mapping vocabulary)
- Authenticity and authority

Some documents

- Principles of Good Practice for Managing RDF Vocabularies and OWL Ontologies
 - <http://www.w3.org/2006/07/SWD/Vocab/principles>
- SKOS Use Cases and Requirements
 - <http://www.w3.org/TR/skos-ucr/>
- Best Practice Recipes for Publishing RDF Vocabularies
 - <http://www.w3.org/TR/swbp-vocab-pub/>
- Cool URIs for the Semantic Web
 - <http://www.w3.org/TR/cooluris/>

“New Dimensions in KOS”

CENDI/NKOS Workshop

September 11, 2008
Washington, DC, USA



SKOS: New Dimensions in Interoperability

Ed Summers

Jon Phipps

An international conference to share and advance knowledge and experience about standards; the technologies that build upon them, and implementation experiences.

What is it?

Simple Knowledge Organisation System(s)

- SKOS is ...
- for ***declaring*** and ***publishing taxonomies, thesauri or classification schemes***, for use in a distributed, decentralised information system (I.e. a semantic web).
- for **describing Concepts and creating relationships between Concepts and Terms**
- A practical application of **RDF**
- the application of library science to the semantic web.
 - SKOS provides a **formal language** for representing **controlled, structured vocabularies**



The SKOS data model

...views a knowledge organization system as a **concept scheme** comprising a set of **conceptual resources (*concepts*)**.

- These concept schemes and conceptual resources are identified by URIs.
- The model is multilingual and extensible

Concepts can be...

labeled with any number of strings. One label, in any given language, can be indicated as the "preferred" label for that language, and all others as "alternate" labels, "hidden" labels, or using a notation:

- **skos:prefLabel**
- **skos:altLabel**
- **skos:hiddenLabel**
- **skos:notation**



Concepts can be...

documented with any number of notes of various types. This is intended to provide an extensible framework for more specific types of notes:

- **skos:note**
- **skos:changeNote**
- **skos:definition**
- **skos:editorialNote**
- **skos:example**
- **skos:historyNote**
- **skos:scopeNote**



Concepts can be...

linked to one or more concept schemes.

- **skos:inScheme**, a property of a concept
- **skos:hasTopConcept**, a property of a **concept scheme**. (replaces skos:topConcept, a property of a **concept**)

Concepts can be...

linked to other concepts within the same concept scheme.

- Hierarchical links:

- **skos:broader** and **skos:narrower**
- **skos:broaderTransitive** and **skos:narrowerTransitive**

- Associative links:

- **skos:related**



Concepts can be...

grouped into **collections**, which can be labeled and/or ordered.

- **skos: Collection**
- **skos: OrderedCollection**
- **skos: member**
- **skos: memberList**

Concepts can be...

mapped to other concepts in ***different concept schemes***.

- Hierarchical mapping:
 - **skos:broadMatch**
 - **skos:narrowMatch**
- Associative mapping:
 - **skos:relatedMatch**
 - **skos:closeMatch**
 - **skos:exactMatch**



skosxl...

allows labels to be resources:

skosxl:Label The skosxl:Label Class

skosxl:literalForm The literal form of the label

skosxl:prefLabel Preferred skosxl:Label

skosxl:altLabel Alternate skosxl:Label

skosxl:hiddenLabel Hidden skosxl:Label

skosxl:labelRelation Links Between skosxl:Labels

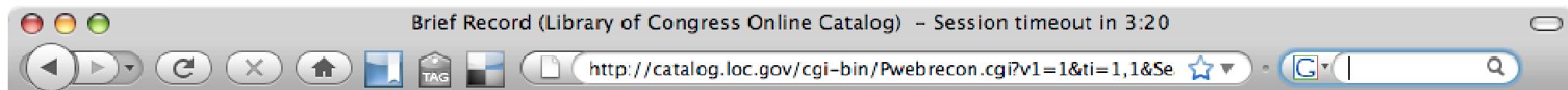
Going, going...

- Symbols:
 - **skos:prefSymbol**
 - **skos:altSymbol**
- Subject Indexing:
 - **skos:subject**
 - **skos:isSubjectOf**
 - **skos:primarySubject**
 - **skos:isPrimarySubjectOf**
 - **skos:subjectIndicator**





Brief Record (Library of Congress Online Catalog) – Session timeout in 3:20



[The Library of Congress](#)

>> [Go to Library of Congress Authorities](#)



LIBRARY OF CONGRESS ONLINE CATALOG



[Help](#)  [New Search](#) [Search History](#) [Headings List](#) [Titles List](#) [Request an Item](#) [Account Status](#) [Start Over](#)

DATABASE: Library of Congress Online Catalog

YOU SEARCHED: Keyword (match all words) = weaving web destiny

SEARCH RESULTS: Displaying 1 of 2.

[◀ Previous](#) [Next ▶](#)

[Brief Record](#)

[Subjects/Content](#)

[Full Record](#)

[MARC Tags](#)

Weaving the Web : the original design and ultimate destiny of the World...

Relevance: 

LC Control No.: 00039593

LCCN Permalink: <http://lccn.loc.gov/00039593>

Type of Material: Book (Print, Microform, Electronic, etc.)

Personal Name: [Berners-Lee, Tim.](#)

Main Title: Weaving the Web : the original design and ultimate destiny of the World Wide Web by its inventor / Tim Berners-Lee with Mark Fischetti ; [foreword by Michael Dertouzos].

Edition Information: 1st pbk. ed.

Published/Created: New York : HarperCollins Publishers, 2000.

Description: ix, 246 p. : ill. ; 21 cm.

ISBN: 006251587X (pbk.)

[CALL NUMBER](#) [TYPE](#) [SERIALS](#) [DLC](#) [2000](#)

Done



3333

Brief Record (Library of Congress Online Catalog) – Session timeout in 3:20

The Library of Congress [Go to Library of Congress Authorities](#)

LIBRARY OF CONGRESS ONLINE CATALOG

Help New Search Search History Headings List Titles List Request an Item Account Status Start Over

DATABASE: Library of Congress Online Catalog
YOU SEARCHED: Keyword (match all words) = weaving web destiny
SEARCH RESULTS: Displaying 1 of 2.

[◀ Previous](#) [Next ▶](#)

[Brief Record](#) [Subjects/Content](#) [Full Record](#) [MARC Tags](#)

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Relevance:

LC Control No.: 00039593

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Main Title: Weaving the Web : the original design and ultimate destiny of the World Wide Web by its inventor / Tim Berners-Lee with Mark Fischetti ; [foreword by Michael Dertouzos].

Edition Information: 1st pbk. ed.

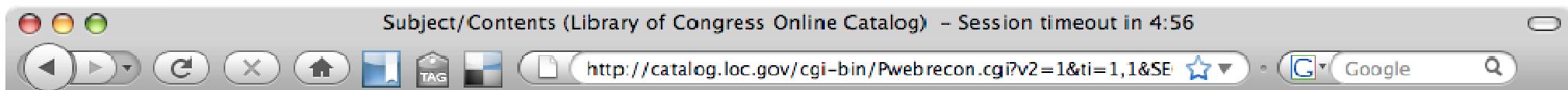
Published/Created: New York : HarperCollins Publishers, 2000.

Description: ix, 246 p. : ill. ; 21 cm.

ISBN: 006251587X (pbk.)

CALL NUMBER: T151.009.D46 2000

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Relevance:

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LCCN Permalink: <http://lccn.loc.gov/00039593>

Type of Material: Book (Print, Microform, Electronic, etc.)

Subjects: [Berners-Lee, Tim.](#)

[World Wide Web --History.](#)

LC Classification: [TK5105.888](#)

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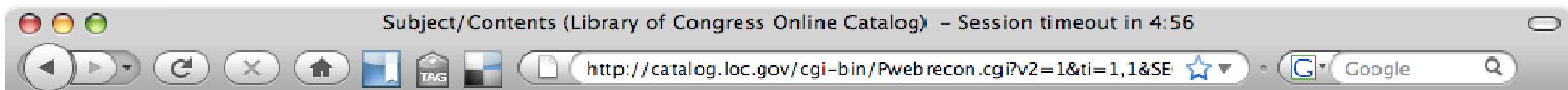
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INFORMATION FOR: World Wide Web.

Please note: Broader Terms are not currently available

Select a Link Below to Continue...

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Narrower Term: [Semantic Web,](#)

Narrower Term: [Web 2.0.](#)

Narrower Term: [WebDAV \(Standard\)](#)

Narrower Term: [WebTV \(Trademark\)](#)

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01671cz a2200337n 45000010008000000500170000800800410002503500210006603500170
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aWorld Wide Web (Information retrieval system)^A ^aWWW (World Wide Web)^A ^w
g^aHypertext systems^A ^wg^aMultimedia systems^A ^aInternet^A ^aWork cat
. : 94067520: December, J. The World Wide Web Unleashed, c1994^b(WWW, the Web, a
distributed hypermedia system, a collection of interconnected hardware, softwar
e, and networked systems, it is a concept, not a program, system, or protocol, i
t is an interface)^A ^a94234135: Brown, S. The Internet via Mosaic and World W
ide Web, c1994^b(WWW, the Web) p. 35 (Although the WWW is primarily used on a g
lobal scale as a part of the Internet, it is feasible for a two-machine network
to run the WWW client/server software)^A ^aInternet publishing handbook, c1995
:^bp. 15 (World-Wide Web system is known by its various names: WWW, W3, and Web
)^A ^aMAGS, Dec. 8, 1995:^barticle by Robert M. Metcalfe (first generation of
WWW based on Hypertext Transfer Protocol and Hypertext Transfer Markup Language
)^A ^aASTI;^aEngr. index;^aWeb. 3^A ^ajf08^bta25^A~]

Default

Default

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C)258303^+0019^ute07^v0^ash 95000541^aDLCA^cDLC^dDLC^0^aTK
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. : 94067520: December, J. The World Wide Web Unleashed, c1994^b(WWW, the Web, a distributed hypermedia system, a collection of interconnected hardware, software, and networked systems, it is a concept, not a program, system, or protocol, it is an interface)^a94234135: Brown, S. The Internet via Mosaic and World Wide Web, c1994^b(WWW, the Web) p. 35 (Although the WWW is primarily used on a global scale as a part of the Internet, it is feasible for a two-machine network to run the WWW client/server software)^aInternet publishing handbook, c1995 :^bp. 15 (World-Wide Web system is known by its various names: WWW, W3, and Web)^aMAGS, Dec. 8, 1995:^barticle by Robert M. Metcalfe (first generation of WWW based on Hypertext Transfer Protocol and Hypertext Transfer Markup Language)^aASTI;^aEngr. index;^aWeb. 3^ajf08^bta25^a]

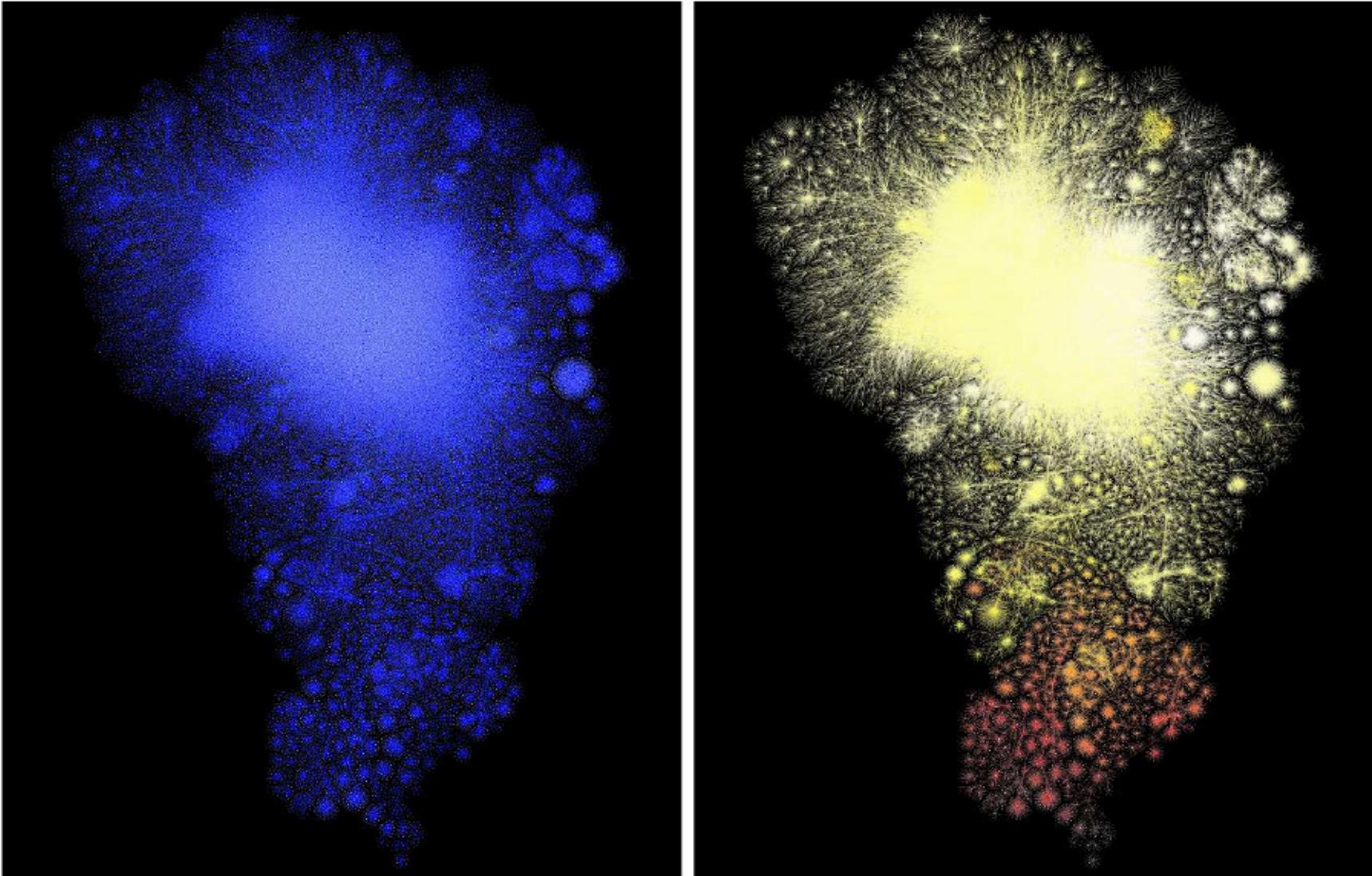


Figure 3.2: The layout computed by the IgI program shows more tangible structure. The colors of the left figure are drawn as in figure 3.1, whereas the edges in the right figures are drawn based on the distance from the root of the spanning tree used for the layout. Yellow indicates an edge close to the root and red indicates an edge far from the root. This figure shows the tree-like structure and a core-region of the LCSH graph.

- <http://lcsh.info/sh95000541#concept>



World Wide Web

Use For: W3 (World Wide Web), WWW (World Wide Web), Web (World Wide Web), World Wide Web (Information retrieval system),

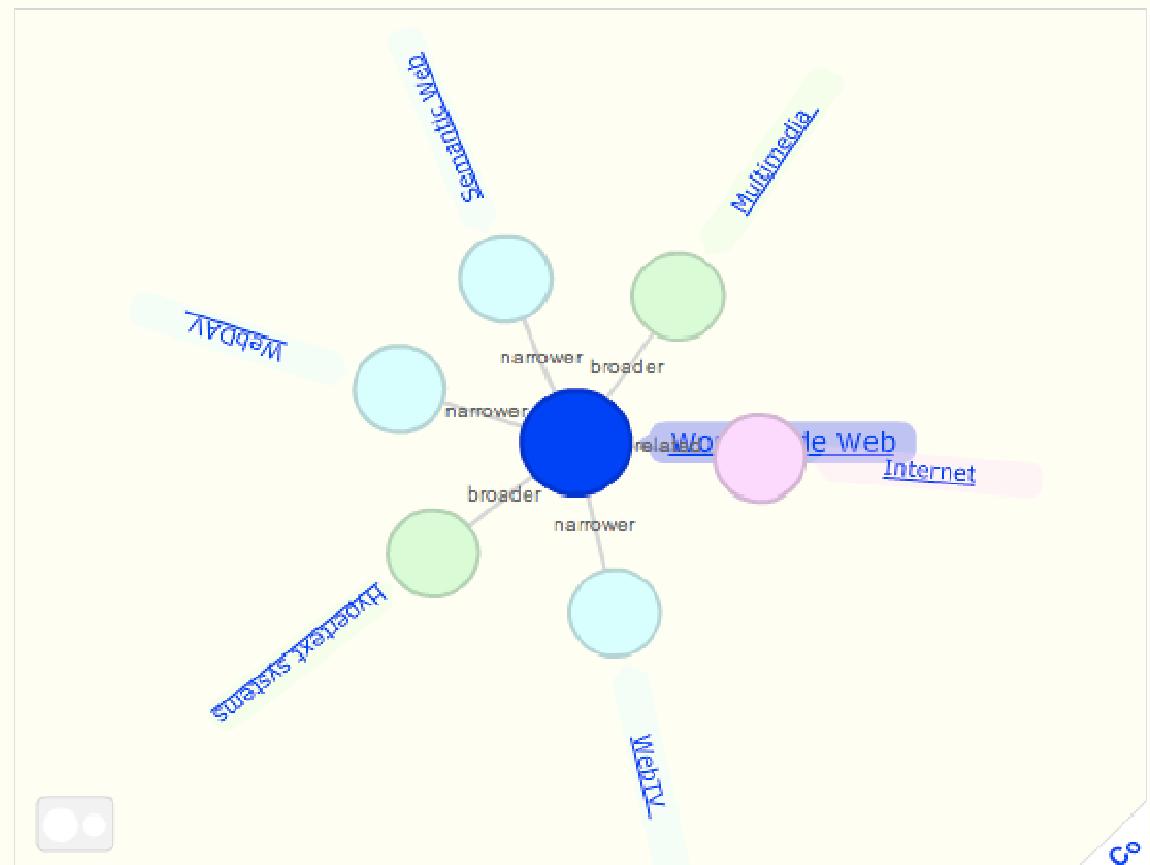
Broader Terms: Hypertext systems, Multimedia systems,

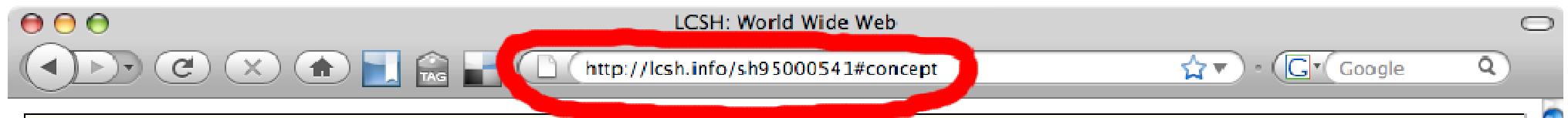
Narrower Terms: Semantic Web, WebDAV (Standard), WebTV (Trademark),

Related Terms: Internet,

Editorial Notes:

- 94234135: Brown, S. The Internet via Mosaic and World Wide Web, c1994 (WWW, the Web) p. 35 (Although the WWW is primarily used on a global scale as a part of the Internet, it is feasible for a two-machine network to run the WWW client/server software)
- ASTI; Engr. index; Web. 3
- Internet publishing handbook, c1995: p. 15 (World-Wide Web system is known by





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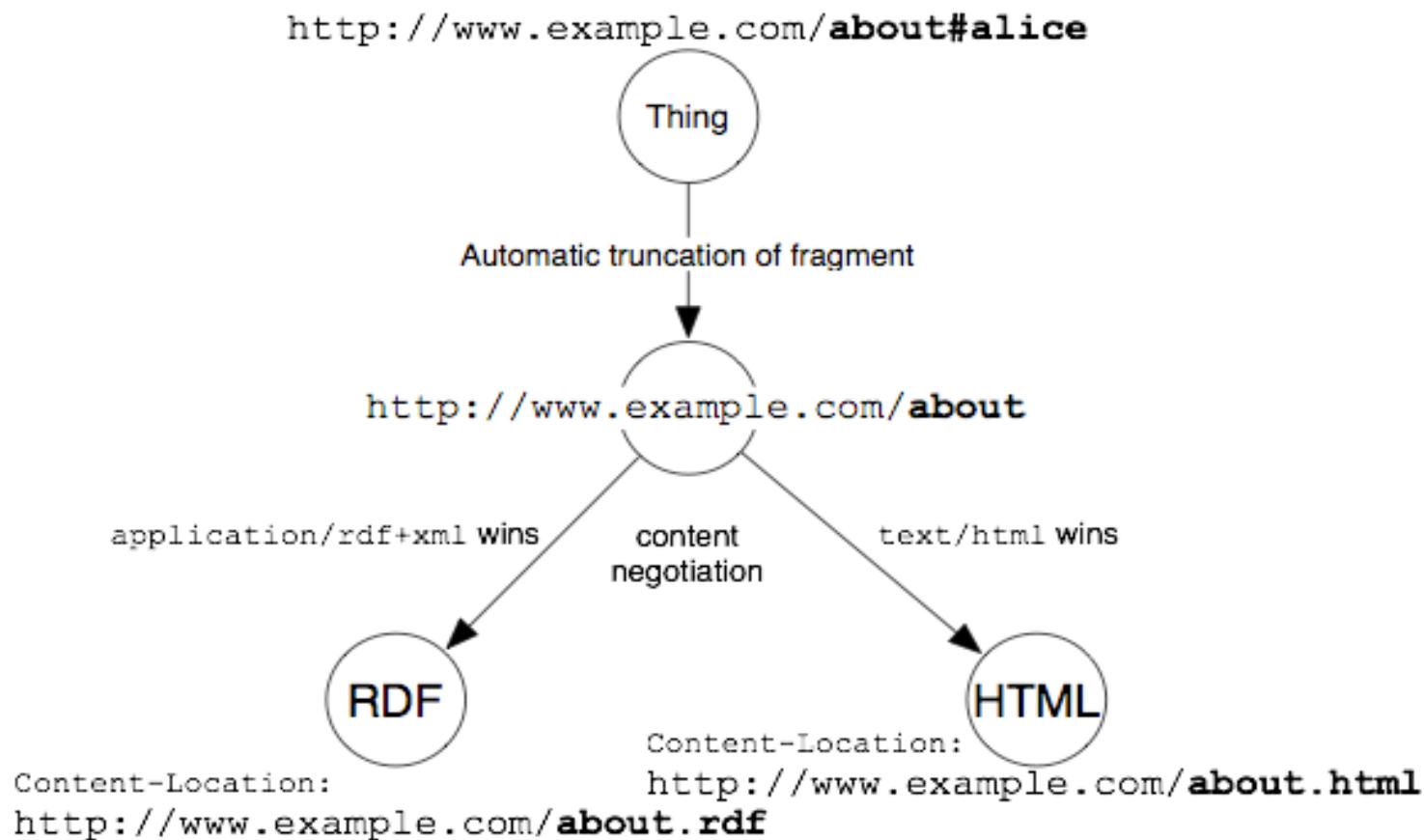
Default

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 xmlns:skos="http://www.w3.org/2004/02/skos/core#"
>
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 <skos:broader rdf:resource="http://lcsh.info/sh92002381#concept"/>
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4-28</dcterms:created>
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001-10-01T09:56:06</dcterms:modified>
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skos:altLabel>
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Default

Default

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix dcterms: <http://purl.org/dc/terms/> .  
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .  
  
<http://lcsh.info/sh95000541#concept>  
    dcterms:created "2000-04-28"^^<http://www.w3.org/2001/XMLSchema#date> ;  
    dcterms:modified "2001-10-01T09:56:06"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;  
    a skos:Concept ;  
    skos:altLabel "W3 (World Wide Web)"@en, "WWW (World Wide Web)"@en, "Web (World Wide Web)"@en, "World Wide Web (Information retrieval system)"@en ;  
    skos:broader <http://lcsh.info/sh88002671#concept>, <http://lcsh.info/sh92002381#concept> ;  
    skos:inScheme <http://lcsh.info/> ;  
    skos:narrower <http://lcsh.info/sh2002000569#concept>, <http://lcsh.info/sh2003001415#concept>, <http://lcsh.info/sh97003254#concept> ;  
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```

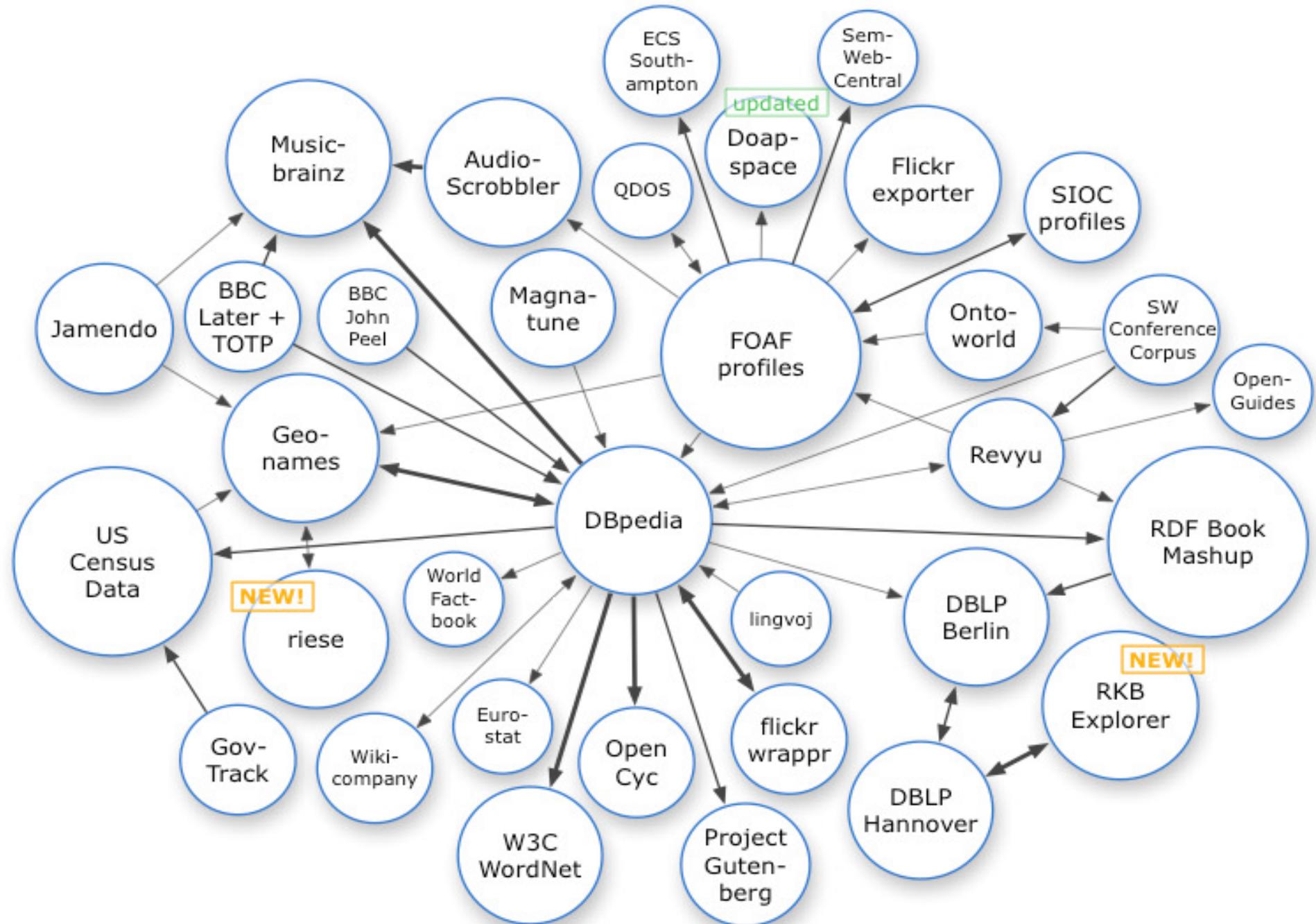


- Cool URIs for the Semantic Web
- <http://www.w3.org/TR/cooluris/>



- Yeah, but so what ...







SKOS Documentation

- **W3C Semantic Web Deployment Working Group**
 - W3C Recommendation Track
<http://www.w3.org/2006/07/SWD/>
- **SKOS Use Cases and Requirements**
 - First Working Draft Published (2007-05-16)
<http://www.w3.org/TR/skos-ucr/>
- **SKOS Reference and Primer**
 - Last Call Working Draft published August 2008
<http://www.w3.org/TR/2008/WD-skos-reference-20080125/>
<http://www.w3.org/TR/2008/WD-skos-primer-20080221/>
 - W3C Recommendation by December 31, 2008
- **SKOS Web Site**
 - <http://www.w3.org/2004/02/skos/>



Links

SKOS Homepage

<http://www.w3.org/2004/02/skos/>

SKOS Primer

<http://www.w3.org/TR/2008/WD-skos-primer-20080221/>

SKOS Reference

<http://www.w3.org/TR/2008/WD-skos-reference-20080125>

SWD-WG Home Page

<http://www.w3.org/2006/07/SWD/>

SWD-WG Mailing list

<mailto:public-swd-wg@w3.org>

<http://lists.w3.org/Archives/Public/public-swd-wg/>

NSDL Metadata Registry

<http://metadataregistry.org>

Jon Phipps

<mailto:jphipps@madcreek.com>

Thanks for listening ☺

RECENT CHANGES TO SKOS

Overview

- The latest version of the SKOS vocabulary (SKOS2008) is defined in a new namespace <http://www.w3.org/2008/05/skos#>.
- The previous one (SKOS2004) is still available and valid <http://www.w3.org/2004/02/skos/core#>; however users of SKOS are encouraged to migrate towards SKOS2008.
- Typically you might hear SKOS2008 referred to as SKOS instead of SKOS Core.

Overview

- The majority of the changes in SKOS2008 involve the increased use of OWL for modeling. SKOS2008 vocabulary elements are now defined to be of type owl:Class, owl:DatatypeProperty, owl:ObjectProperty instead of rdfs:Class and rdf:Property, as they were in SKOS2004.
- Using OWL allows for more expressivity about the components of the SKOS vocabulary. (what's the best way to explain this?)

Overview

- The SKOS2008 vocabulary is much more compact: 347 triples as compared with 844 for SKOS2004.
- Interestingly SKOS2008 also uses features from the skos vocabulary itself such as `skos:changeNote` and `skos:definition`.

Overview

- The SKOS Reference is currently in Last Call, and the SWD WG are actively seeking feedback on the public-swd-wg@w3.org discussion list.
- It's very important to the w3c recommendation process that the working group get all kinds of feedback.

Concepts and Concept Schemes

- The SKOS resources `skos:Concept`, `skos:ConceptScheme`, `skos:Collection`, `skos:OrderedCollection` are now of type `owl:Class` instead of `rdfs:Class`.
- This allows `skos:Concept` to be defined as disjoint with `skos:ConceptScheme`, which is a useful way of constraining concepts so that they cannot also be concept schemes.
- In addition `skos:inScheme` is now of type `owl:ObjectProperty` instead of `rdf:Property`.

Concepts and Concept Schemes

- Both skos:TopConcept and skos:CollectableProperty were dropped.
- However skos:hasTopConcept was introduced to indicate that a concept scheme has a particular concept as a top level concept.

Labels

- The lexical labeling properties `skos:prefLabel`, `skos:altLabel`, `skos:hiddenLabel` are now of type `owl:DatatypeProperty`.
- They are also likely to be subclasses of `rdfs:Label` as they were in SKOS2004.

Documentation Properties

- The `skos:note`, `skos:changeNote`, `skos:definition`, `skos:example`, `skos:historyNote`, `skos:scopeNote`, `skos:editorialNote` were changed from being of type `rdf:Property` to `owl:ObjectProperty`.
- `skos:privateNote` and `skos:publicNote` which were marked as deprecated in SKOS2004 have been removed.
- Since they are object properties these note relationships can point at resources which have additional metadata associated with them.

Documentation properties

- In addition `skos:symbol`, `skos:prefSymbol` and `skos:altLabel` have been dropped because there were no use cases or requirements for it, so they were deemed out of scope.

Semantic Relations

- The semantic relation properties `skos:broader`, `skos:narrower` and `skos:related` have been updated to be of type `owl:ObjectProperty`.
- The `skos:broader` and `skos:narrower` properties are no longer transitive, and instead extend two new properties `skos:broaderTransitive` and `skos:narrowerTransitive`, both of which are also transitive.
- The reason for this is to allow these relations to be used in vocabularies that are less rigorous than standard thesauri, while still allowing the `narrowerTransitive` and `broaderTransitive` properties to be inferred applications that want them.
- In addition `skos:related` is no longer a sub-property of `rdfs:seeAlso`.

Semantic Relations

- Some deprecated relations such as skos:broaderGeneric, skos:broaderInstantive, skos:broaderPartitive, skos:related, skos:relatedHasPart, skos:relatedPartOf have been removed from the new namespace.

Mapping Relations

- SKOS2008 includes some new vocabulary elements for mapping concepts from one concept scheme to another: `skos:exactMatch`, `skos:broadMatch`, `skos:narrowMatch`, `skos:relatedMatch`.
- All of them are sub-properties of `skos:mappingRelation`, which has `skos:Concept` as both its domain and range.

Subjects

- SKOS2004 had vocabulary elements like skos:subject, skos:isSubjectOf, skos:isPrimarySubjectOf and skos:subjectIndicator, but they have been removed in the latest version of SKOS since they were deemed out of scope.
- Also, there are other vocabularies like DublinCore where relations of this kind are in scope.

Notations

- A new owl:DatatypeProperty skos:notation was introduced to allow concepts to be associated with notations such as classification codes. Notations are different from labels in that they tend not to be recognizable as a sequence of words in any natural language.

SKOS eXtension for Labels (skos+xl)

- XL is a separate vocabulary with its own URI namespace <http://www.w3.org/2008/05/skos-xl#>.
- The idea behind XL is to allow lexical labels to be resources, which in turn allows them to be related together.

SKOS eXtension for Labels (skos+xl)

- XL includes the `skosxl:prefLabel` `skosxl:altLabel`, `skosxl:hiddenLabel` which mirror the lexical labeling properties in SKOS proper, but are of type `owl:ObjectProperty` instead of `owl:DatatypeProperty`.
- In addition `skosxl:labelRelation` allows labels to be related together.
- The intent is for users to extend `skos:labelRelation` to build up vocabularies of relations between labels, like acronymy etc.

**Data
Metadata
Terminologies
Services
Collections**

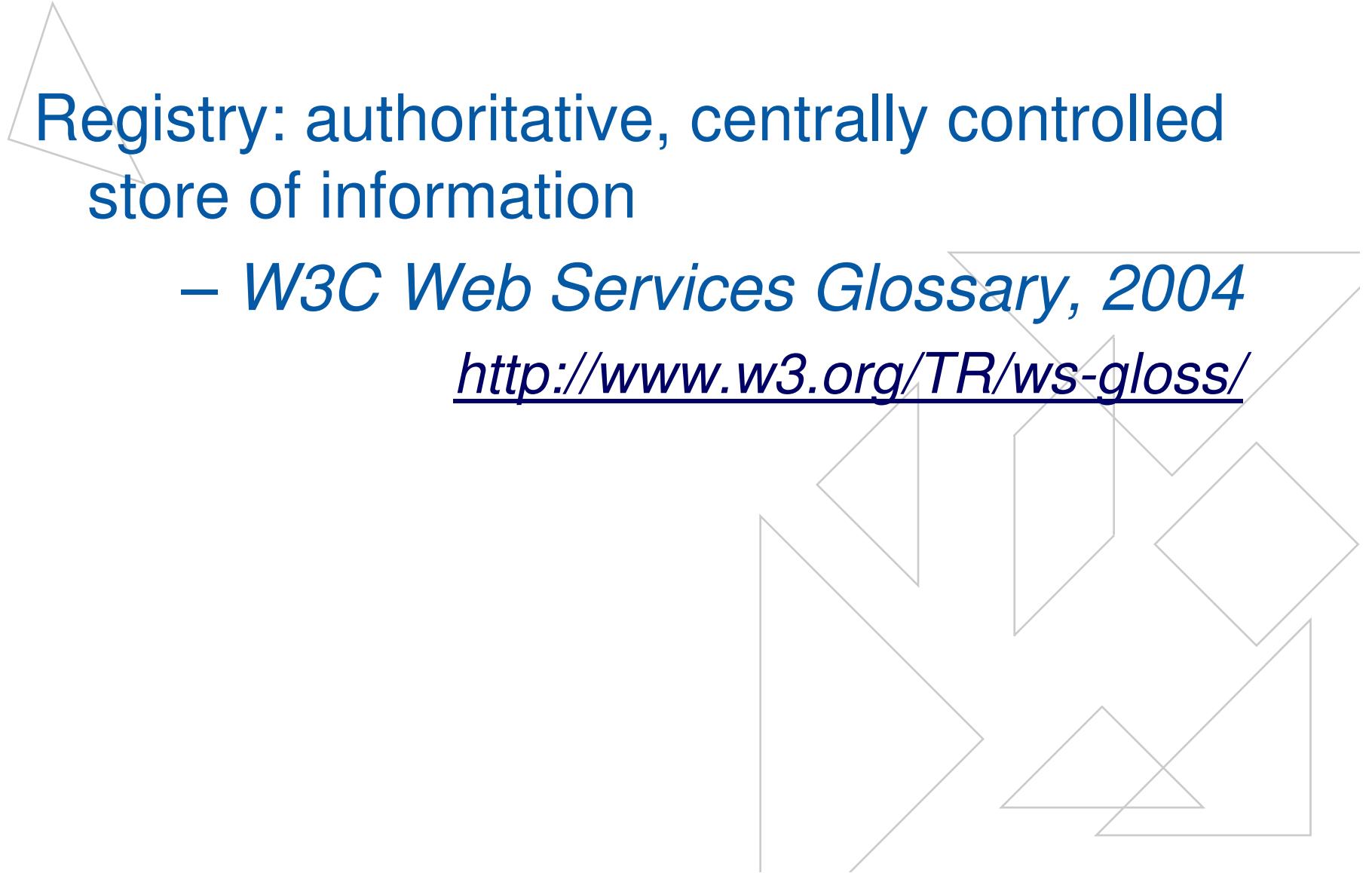
Registries

-- Synergies and Differences

Marcia Zena

DC 2008, NKOS Special Session. Berlin, September 24, 2008

Registry defined



Registry: authoritative, centrally controlled store of information

- *W3C Web Services Glossary, 2004*
<http://www.w3.org/TR/ws-gloss/>

Primary functions

- ◆ Registering
- ◆ Publishing
- ◆ Managing

- ◆ Data Storage
- ◆ User Services via a Web Interface
 - Navigation
 - Searching
 - Browsing

- M2M Services
 - ◆ Querying
 - ◆ Using an API to programmatically create, view, and modify contents
- Crosslinking
- Crosswalking
- Schema translation

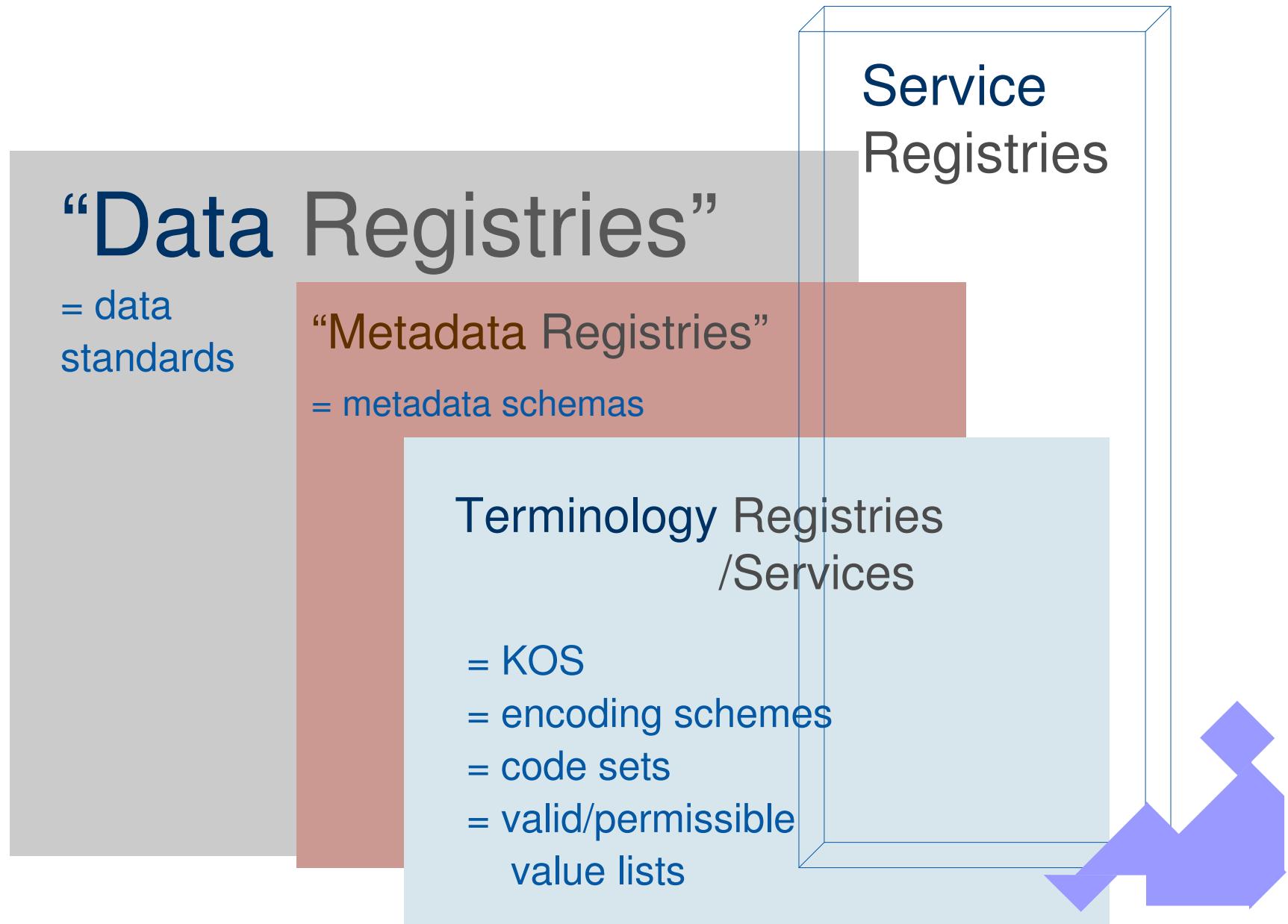
And many more



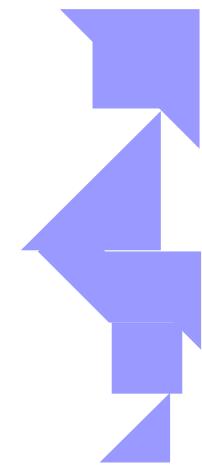
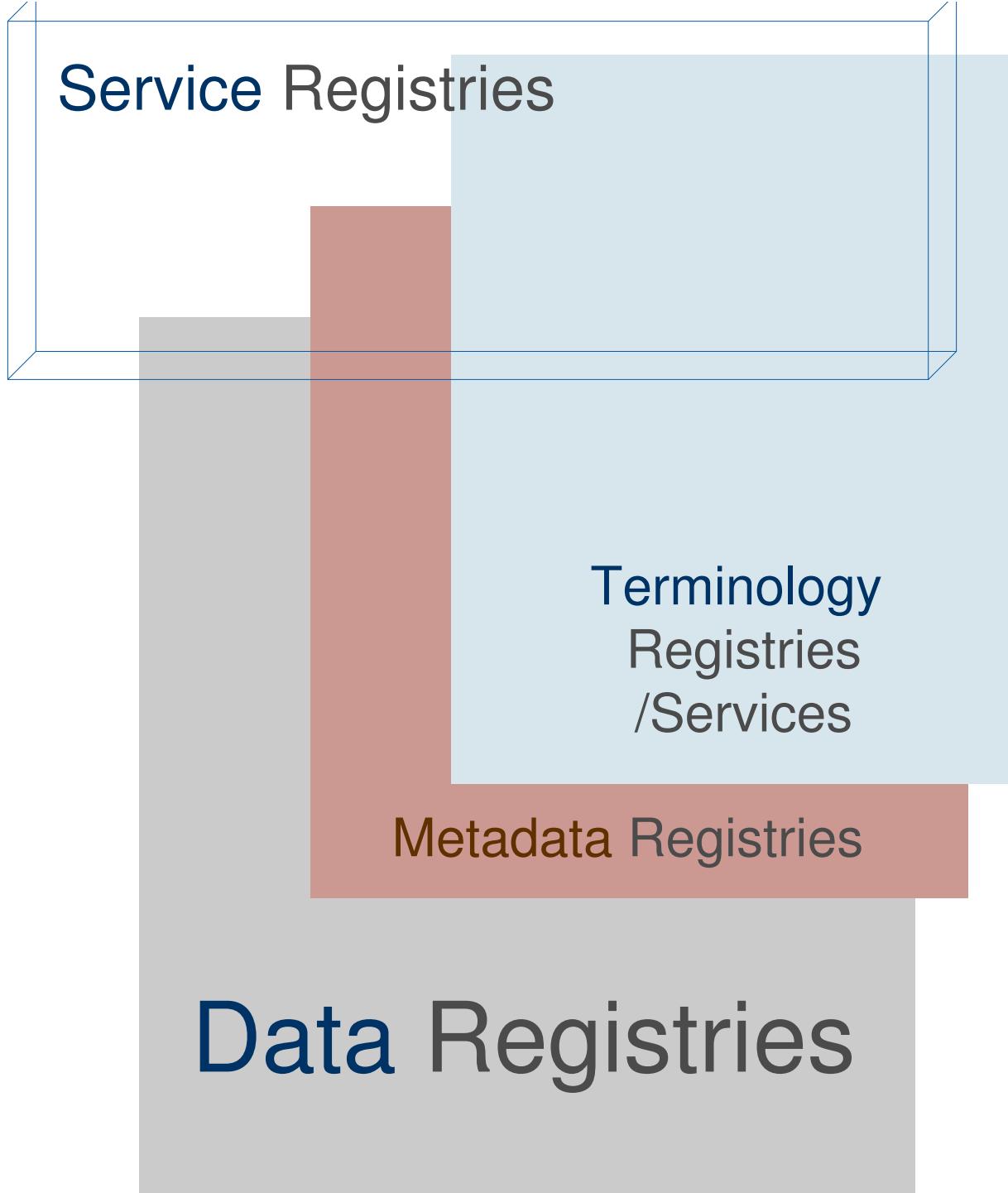
Registry Types

- ◆ Metadata [Schema] Registries
 - Elements and refinements, application profiles, schemas in different bindings ...
 - ◆ e.g., UKOLN [CORES Registry](#)
- ◆ Terminology Registries / Repositories
 - Registries for schemes' metadata only
 - Registries of the entries of vocabularies (usually accompanied by scheme's metadata)
 - ◆ e.g., [OCLC Terminologies Service](#); [BioPortal ontology repository](#)
 - Terminology services may be listed in a terminology registry or separately hosted in a service registry
- ◆ Service [/ Collection] Registries
 - “[D]atabases of descriptions of available services and, where appropriate, associated collections” -- UKOLN 2005 workshop
 - ◆ E.g., [**JISC Information Environment Service Registry \(IESR\)**](#)
- ◆ Data [Standards] Registries
 - Registries/repositories of all kinds of data standards (e.g., data dictionaries, data models, schemas, and code sets)

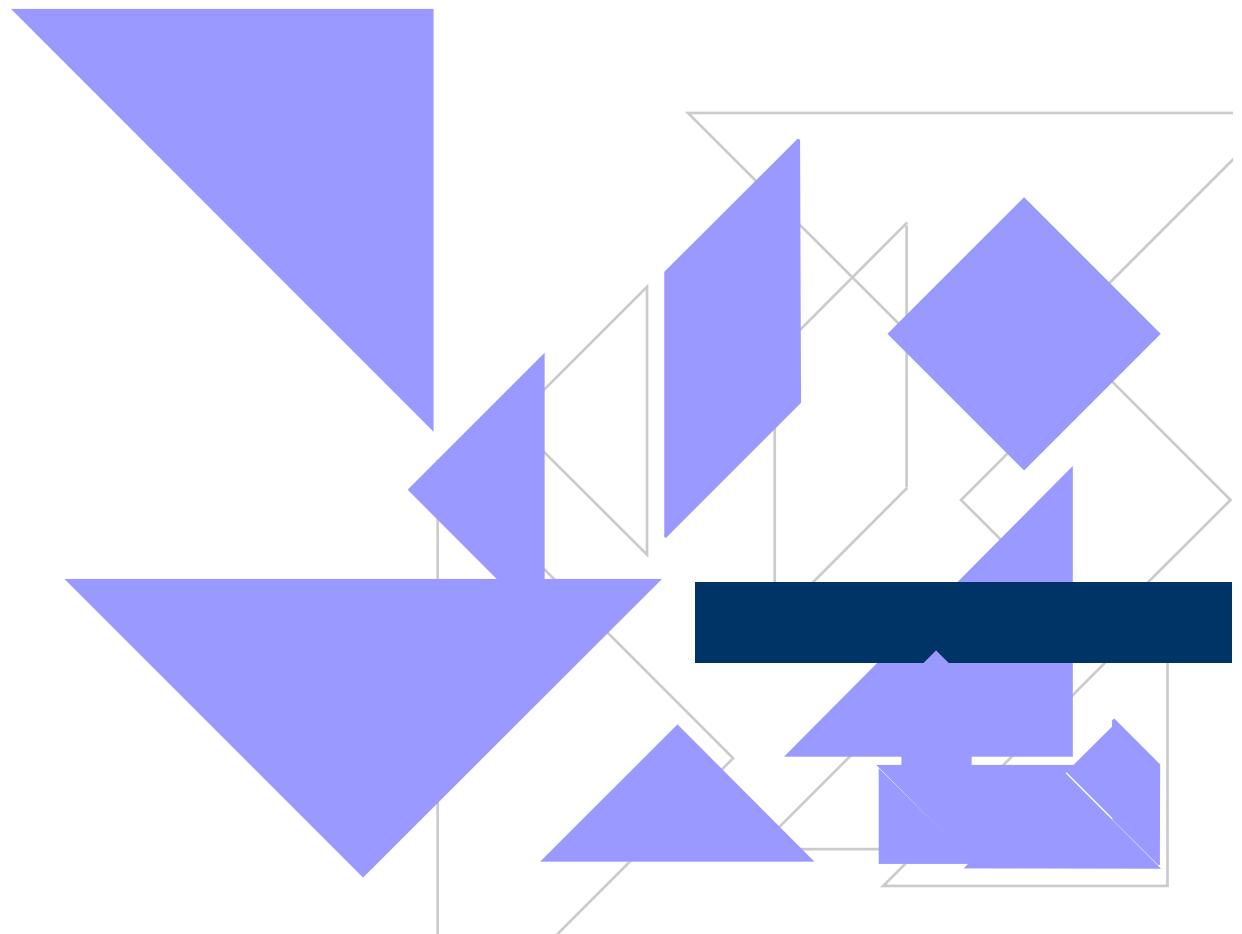
Registry Types – Perspective 1



Registry Types – Perspective 2



Metadata Registries



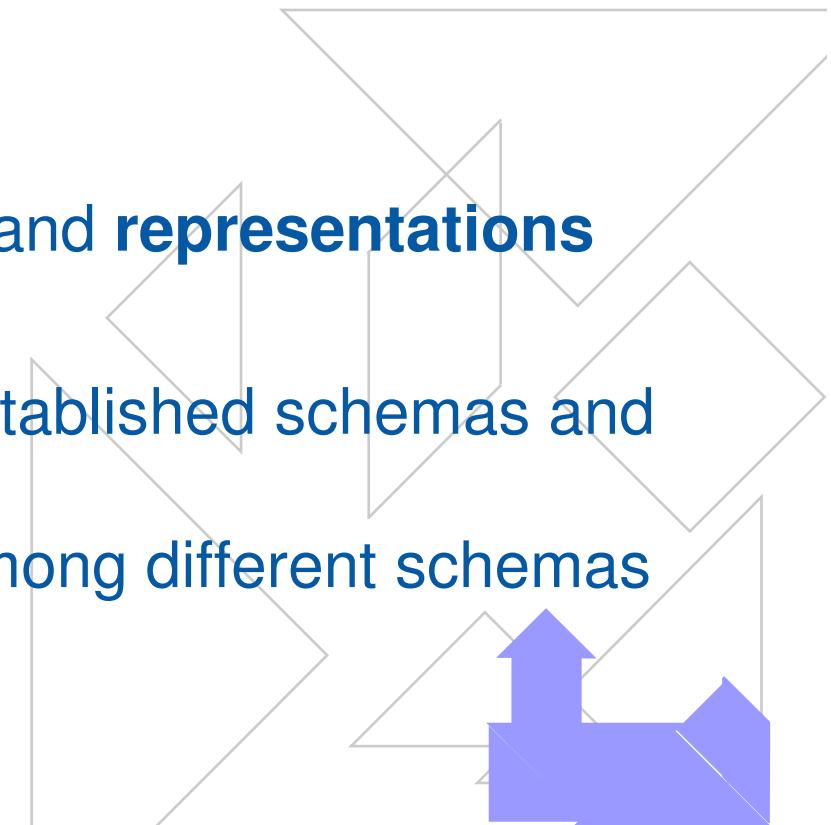
Metadata Registries

- ◆ **Purpose:**

- to collect data related to metadata schemas

- ◆ **Functions:**

- to store data elements
 - ◆ include both **semantics** and **representations**
 - to provide the means
 - ◆ to identify and refer to established schemas and application profiles
 - ◆ to crosswalk and map among different schemas



Primary functions

- ◆ Discovery of vocabularies and terms
- ◆ Verification of the status of vocabularies and terms
- ◆ Access to machine-processable descriptions of vocabularies and terms
- ◆ Location of related resources such as information on different syntactic bindings
- ◆ Navigation of the relationships between terms and vocabularies (or between terms)
- ◆ Inferencing and mapping based on knowledge of the nature of the relationships between terms
 - ◆ -- Johnston, Pete. 2004. *Functions of the IE Metadata Schema Registry*. UKLON. Available at <http://www.ukoln.ac.uk/projects/iemsr/wp2/function/>

Metadata Registries

Examples:

- ◆ Cross-domain and cross-schema registries,
 - e.g., UKOLN's [SCHEMAS Registry](#) → [CORES Registry](#)
 - [JISC IE Metadata Schema Registry \(IEMSR\)](#)
- ◆ Domain-specific, cross-schema registries,
 - e.g., UKOLN's [MEG \(Metadata for Education Group\) Registry](#)
 - [Australian Institute of Health and Welfare - Metadata Online Registry \(METeOR\)](#)
- ◆ Project-specific registries,
 - e.g. The European Library (TEL) metadata registry, whose purpose is recording all metadata activities associated with TEL
- ◆ Standard-specific registries
 - e.g., DCMI Metadata Registry

Metadata Registries

Components: (examples from CORES Registry)

◆ Registry Data Server

- an RDF application providing a persistent data store and APIs for uploading data (application profiles) to the data store and for querying its content

◆ Data Creation Tool

- supports the creation of RDF Data Sources (application-specific profiles) for use by the Registry Data Server

◆ User Website Server

- allows a human user to browse and query the data (terms and application profiles) that are made available by the IEMSR Registry Data Server

-- JISC IE Metadata Schema Registry. Phase 3 Project Plan.
<http://www.ukoln.ac.uk/projects/iemsr/documents/plan3/plan3.pdf>

CORES Registry - Microsoft Internet Explorer

http://www.cores-eu.net/registry/

Google SCHEMAS Registry

Address http://cores.dsd.sztaki.hu/

CORES Registry

Download schema creation tool
Help on using the registry

Index

Agencies: Browse - Search

Element Sets: Browse - Search

Elements: Browse - Search

Encoding Schemes: Browse - Search

Application Profiles: Browse - Search

Element Usages: Browse - Search

Sandbox registry - Index - Agencies - Element Sets - Application Profiles - Elements

© 2002 MEG Registry Project, ILRT
and UKOLN

© 2002, CORES Project, MTA
SZTAKI DSD

Elements

Name	Element Set	
Abstract	The Dublin Core Terms Element Set	Detail
Access Conditions	The RSLP Collection Description	Detail

Element:: Abstract@en-US

ID	http://purl.org/dc/terms/abstract
Name	Abstract
Definition	A summary of the content of the resource.
Comment	
Data type	string
Obligation	optional
Maximum Occurrence	unbounded
Refines	Description
Element Set	The Dublin Core Terms Element Set

Annotations	There are no annotations for this resource. Add new annotation.
Administrative metadata	List administrative metadata for this resource. (0)

Element Usages

Name	Application Profile	
Abstract	The Qualified Dublin Core Application Profile	Detail
Abstract	The British Library Application Profile	Detail

Refines

Name	Element Set	
Description	The Dublin Core Element Set v1.1	Detail

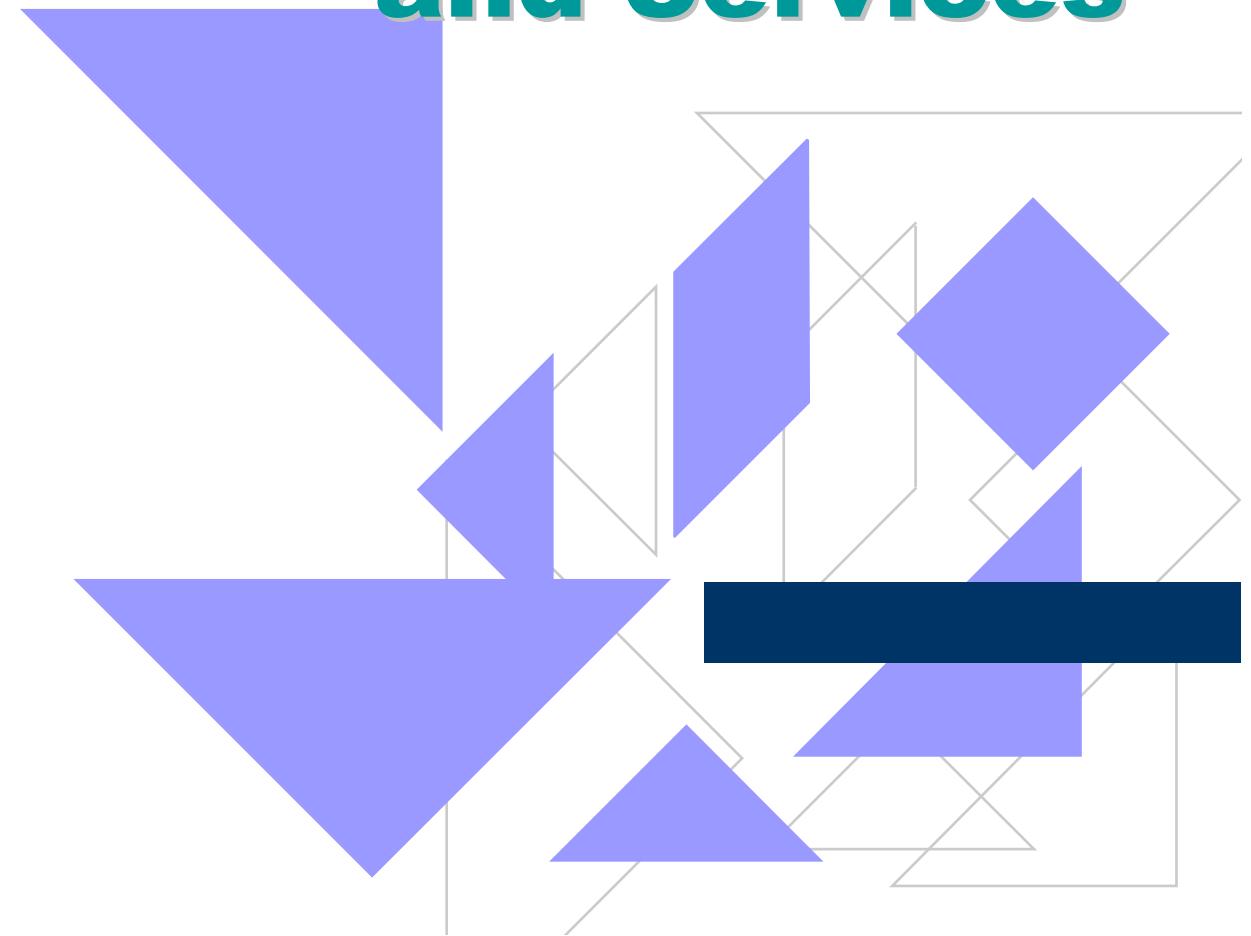
Functional Requirements for CORES Schema Creation and Registration Tool

The registry will provide access to information on

- ◆ element sets
- ◆ the elements in those element sets
- ◆ application profiles
- ◆ element usage which make up those application profiles
- ◆ encoding schemes
- ◆ values within those encoding schemes
- ◆ the agencies who own, create, or maintain these resources
- ◆ commentaries (contextual annotations) outlining deployment of the element sets, application profiles, and schemes
- ◆ links to user guidelines for the element sets and application profiles or schemes

-- Rachel Heery. 2002. <http://www.cores-eu.net/registry/d22/funcreq.html>

Terminology Registries and Services



Terminology Registries

- ◆ at a minimal level

- hold scheme information
- list, describe, identify, and point to sets of KOS and other types of vocabularies available for use in information systems and services

- ◆ at a higher level

- hold the member terms, classes, concepts, and relationships contained in a vocabulary (either monolingual or multilingual)

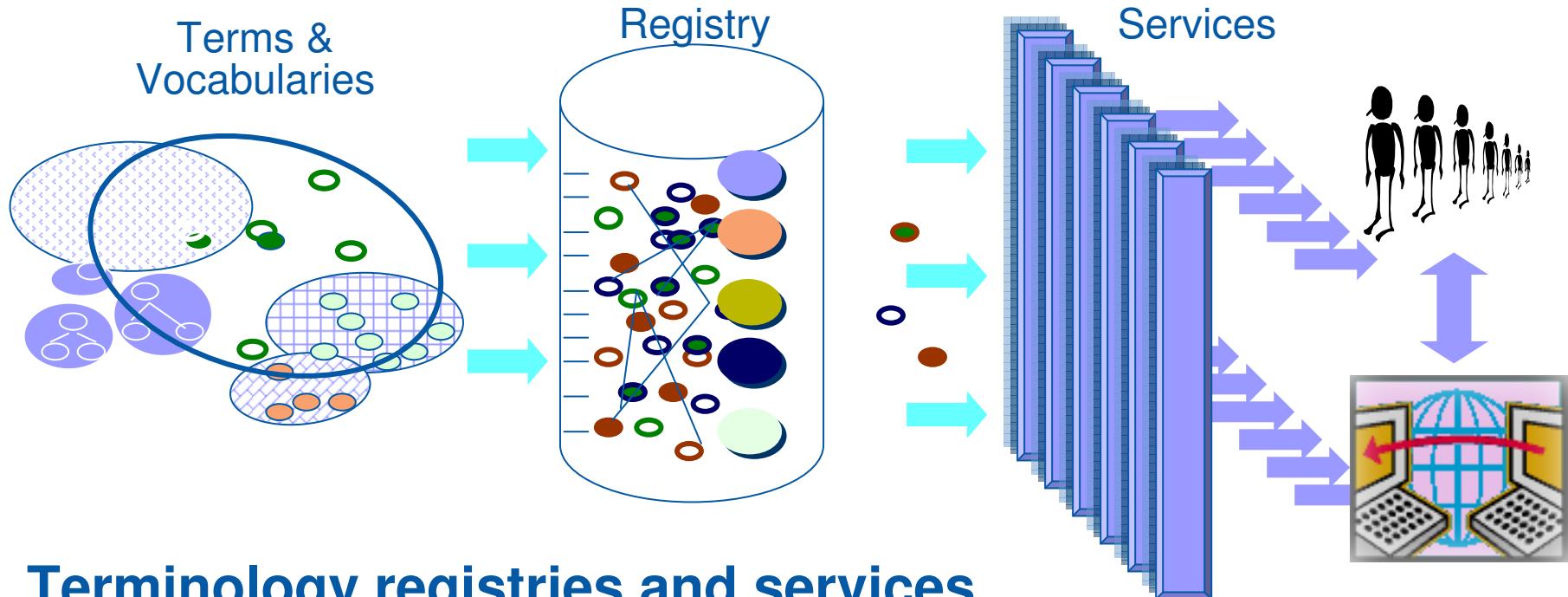
-- based on several UKOLN studies, TRSS project, etc.



Terminology Services

- ◆ Web services based on terminology are used for automatic classification, term expansion, disambiguation, translation, and semantic reasoning.

A simplified illustration



Terminology registries and services

- registering machine-accessible KOS
- mapping among concepts/terms
- making KOS content available in different kinds of tools via terminology (web) services

Terminology Registries and Services (1): HILT



<http://hilt.cdlr.strath.ac.uk/index.html>

Dennis Nicholson, University of Strathclyde



High-Level Thesaurus

Welcome to the website of the High-Level Thesaurus Project (HILT). The HILT project, which is now in phase IV, aims to research, investigate, pilot, and develop solutions for, problems pertaining to cross-searching multi-subject scheme information environments.

HILT uses and experiments with a variety of terminologies. The project team is grateful to editors and agencies for allowing HILT to use their terminologies for research. Terminological data served by HILT demonstrators or pilots is derived from the terminologies listed below; however, terminology editors and agencies may not be held responsible for any errors found in data served by HILT demonstrators or pilots.

Acknowledgements:

[Art and Architecture Thesaurus \(AAT\)](#), The J. Paul Getty Trust.

[CAB Thesaurus](#), CABI

[Dewey Decimal Classification \(DDC\)](#), OCLC

[Global Change Master Directory \(GCMD\) \(Science Keywords\)](#), NASA

[HASSET Thesaurus](#), UK Data Archive at the University of Essex

[Integrated Public Sector Vocabulary \(IPSV\)](#), e-Government Unit (UK)

[Joint Academic Coding System \(JACS\)](#), Universities and Colleges Admission Service (UK)

[JITA Classification Schema](#), E-Prints in Library and Information Science (E-LIS)

[Library of Congress Subject Headings \(LCSH\)](#), Library of Congress (USA)

[Medical Subject Headings \(MeSH\)](#), National Library of Medicine (USA)

[National Monuments Record Thesaurus \(NMR\)](#), English Heritage

[UNESCO Thesaurus](#), UNESCO and the University of London Computer Centre

Site menu:

[Home](#)

[HILT IV](#)

[HILT III](#)

[HILT M2M FS](#)

[HILT II \(archived\)](#)

[HILT I \(archived\)](#)

Dissemination

[Contact](#)

Quick links

- [HILT III demonstrators](#)
- [HILT M2M demonstrators](#)
- [HILT II pilot terminologies server](#)
- [Terminology acknowledgements](#)
- [HILT usage statistics](#)

Large structured vocabularies, each containing thousands of controlled terms/classes and the relationships among terms/classes.

- JISC
- SKOS Core
- SWDWG
- SRU
- ISCC

The HILT terminologies server aims to identify JISC services and/or collections likely to have resources relevant to any subject query you may have. The process has three steps:

1. You enter your search term (or browse the subject hierarchy)
2. HILT looks for the best matches for your subject and
3. You choose the most appropriate subject.
4. HILT tells you about possible services or collections that can be used (if it can). It also allows you to connect through

HILT III pilots and demonstrators...

[HILT SOAP client demonstration](#)

[HILT SRW client demonstration \(HILT II emulation using SRW and SKOS Core\)](#)

[HILT SRW client 'scheme specific browse' demonstrator \(using SKOS Core\)](#)

[GoGeo! keyword search demonstrator](#)

...or browse by category

[Arts & recreation](#) → [Architecture](#), [Arts](#), [Drawing & decorative arts](#), [Graphic arts](#), [Landscaping & area planning](#), [Music](#) ...

[Computers, information & general reference](#) → [Associations, organizations & museums](#), [Bibliographies](#), [Computers, Internet & systems](#), [Encyclopedias & books of facts](#), [Journalism, publishing & news media](#), [Library & information science](#) ...

[History & geography](#) → [Biography & genealogy](#), [Geography & travel](#), [History](#), [History of Africa](#), [History of Asia](#), [History of Europe \(ca. 500 A.D.-\)](#) ...

[Language](#) → [Classical & modern Greek languages](#), [English & Old English languages](#), [French & related languages](#), [German & related languages](#), [Italian, Romanian & related languages](#), [Language](#) ...

[Literature](#) → [American literature in English](#), [Classical & modern Greek literatures](#), [English & Old English literatures](#), [French & related literatures](#), [German & related literatures](#), [Italian, Romanian & related literatures](#) ...

[Philosophy & psychology](#) → [Ancient, medieval & eastern philosophy](#), [Astrology, parapsychology & the occult](#), [Epistemology](#), [Ethics](#), [Logic](#), [Metaphysics](#) ...

[Religion](#) → [Christian denominations](#), [Christian pastoral practice & religious orders](#), [Christian practice & observance](#), [Christianity & Christian theology](#), [Church organization, social work & worship](#), [History of Christianity](#) ...

[Science](#) → [Animals \(Zoology\)](#), [Astronomy](#), [Biology & life sciences](#), [Chemistry](#), [Earth sciences & geology](#), [Fossils & prehistoric life](#) ...

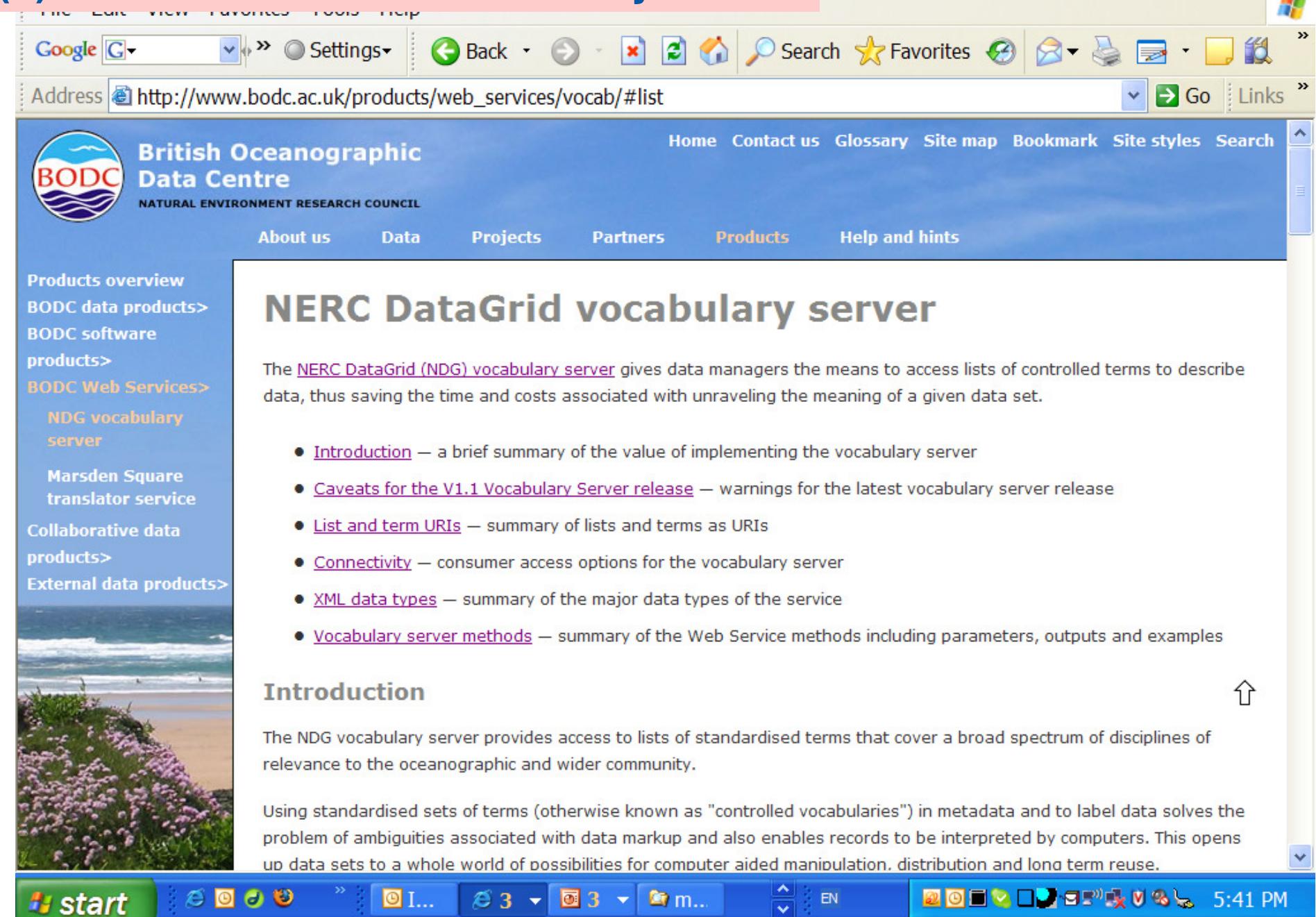
HILT phase I: mapping between schemes

HILT phase II: terminologies server

HILT phase III: M2M pilot demonstrator

HILT phase IV: transition to service testbed and future requirements study

(2): BERC DataGrid Vocabulary Server



(2): BERC DataGrid Vocabulary Server

Internet Explorer



File Edit View Favorites Tools Help



Google G



Go



Bookmarks



1001 blocked



Settings

Address <http://vocab.ndg.ngdc.ac.uk/>



Go

Links

- [vocabServer.jsp](#) — includes whatListsCat, whatLists, verifyTerm, searchVocab and getList

Version 1.1

The WSDL is available at

- http://vocab.ndg.ngdc.ac.uk/1.1/VocabServerAPI_dl.wsdl (Document/literal wrapped)

Available clients:

- Method calls
 - [whatLists](#) (catalogue of lists available on server)
 - [getList](#) (access to a specified list, including subsets)
 - [searchVocab](#) (search for occurrences of text strings in entries)
 - [verifyTerm](#) (metadata entry checker)
 - [whatListsCat](#) (catalogue of list categories available on the server)
 - [getMap](#) (access to full mappings between lists)
- Semantic search client
 - [getRelated](#)

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5:42 PM

(2): OCLC Terminology Services



United States

a worldwide library cooperative

Terminology Services

Projects

- Terminology Services
- Terminologies Services Pilot
- DCMI Type Vocabulary Resource
- GSAFD Vocabulary Resource
- MeSH Vocabulary Resource
- MeSH Sample Vocabulary Resource
- NGL Vocabulary Resource
- info:kos Application Notes
- Project-Related Standards
- Project-Related RSS Feeds

Terminology Services

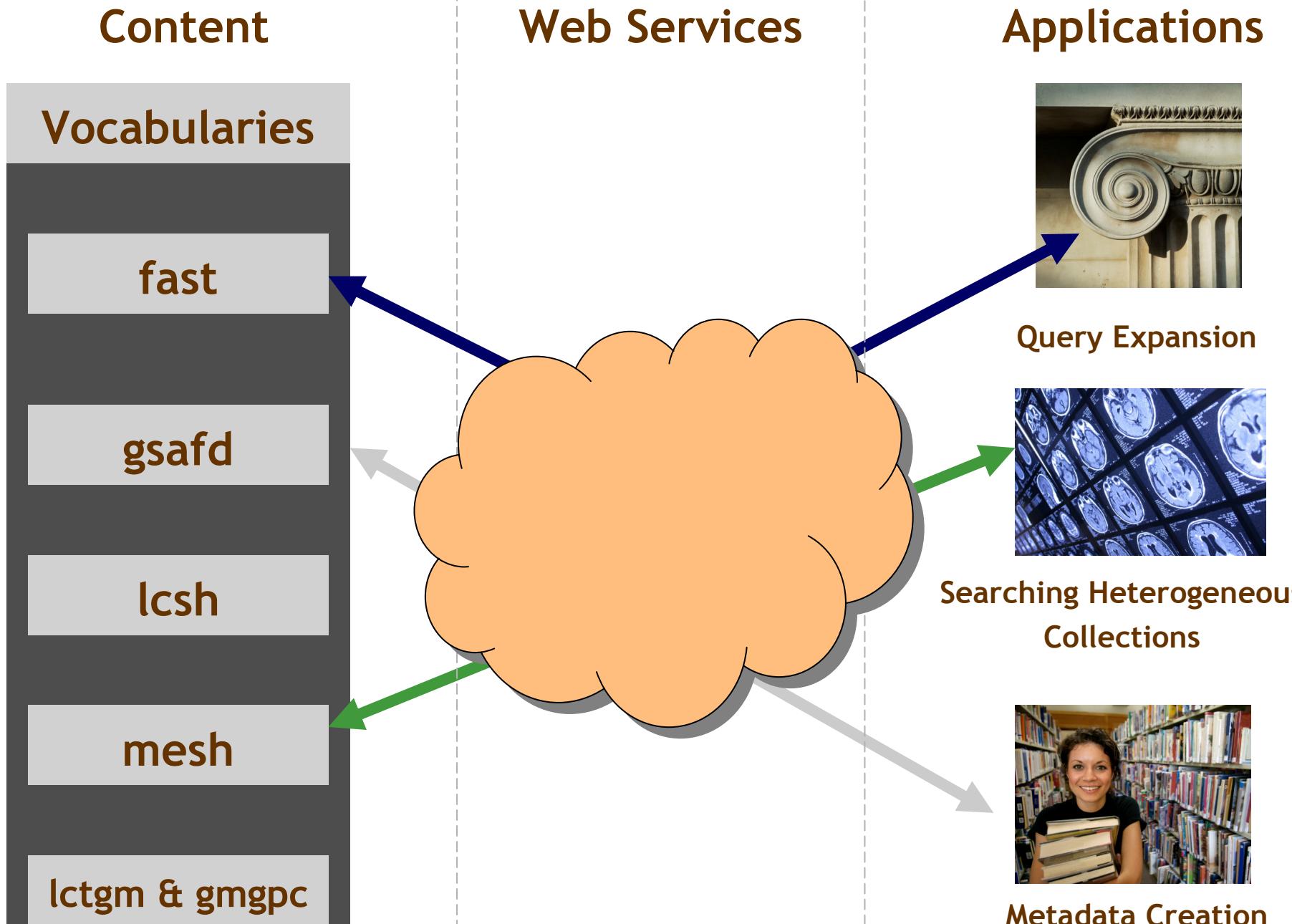
Cross Vocabulary Mappings

From	Vocabulary	To							
		DDC	ERIC	GSAFD	LCC	LCSH	LCSHac	MeSH	NLMC
	DDC (Dewey Decimal Classification)				Direct	Direct & Co-occur	Direct & Co-occur	Direct	Direct
	ERIC thesaurus					Direct			
	GSAFD (Genre terms for fiction)					Direct	Direct		
	LCC (Library of Congress Classification)	Direct							
	LCSH (LC Subject Headings)	Direct & Co-occur	Direct	Direct	Co-occur			Direct	
	LCSHac (LC Children's Headings)	Direct & Co-occur							
	MeSH (Medical Subject Headings)	Direct				Direct			
	NLMC								

Research: <http://www.oclc.org/research/projects/termservices/>

Service: <http://www.oclc.org/terminologies/default.htm>

OCLC Research Office: [Diane Vizine-Goetz \(Lead\)](#)



Vizine-Goetz, NKOS/CENDI Workshop, D.C., 2008

Using MS Office Research Task Pane, provides 10 vocabularies for tagging, searching, translation, etc.

The screenshot shows the Microsoft Internet Explorer browser window with the OCLC Connexion interface. A yellow callout box highlights the text "Using MS Office Research Task Pane, provides 10 vocabularies for tagging, searching, translation, etc." An orange arrow points from this text to the Research Task Pane icon in the toolbar. Another orange arrow points from the Research Task Pane icon to the Research pane itself. The Research pane is highlighted with an orange border and contains a list of vocabulary terms:

- Acrodynia [mesh]
- Alkylmercury Compounds [mesh]
- Almadén [tgn]
- amalgam [aat]
- amalgam gilding [aat]
- amalgam silvering [aat]
- Apārangi [reo]
- Aydin İli [tgn]
- Azogues [tgn]
- B & B Mine [tgn]

The Research Task Pane also includes a "Search for:" field with "mercury", a "Back" button, and a "Submit" button. The main OCLC Connexion interface shows a search for "mercury" in the Cataloging tab, displaying results like "Encarta Dictionary: English (North America)" and "OCLC: All - All OCLC Terminologies".



3 Internet ...

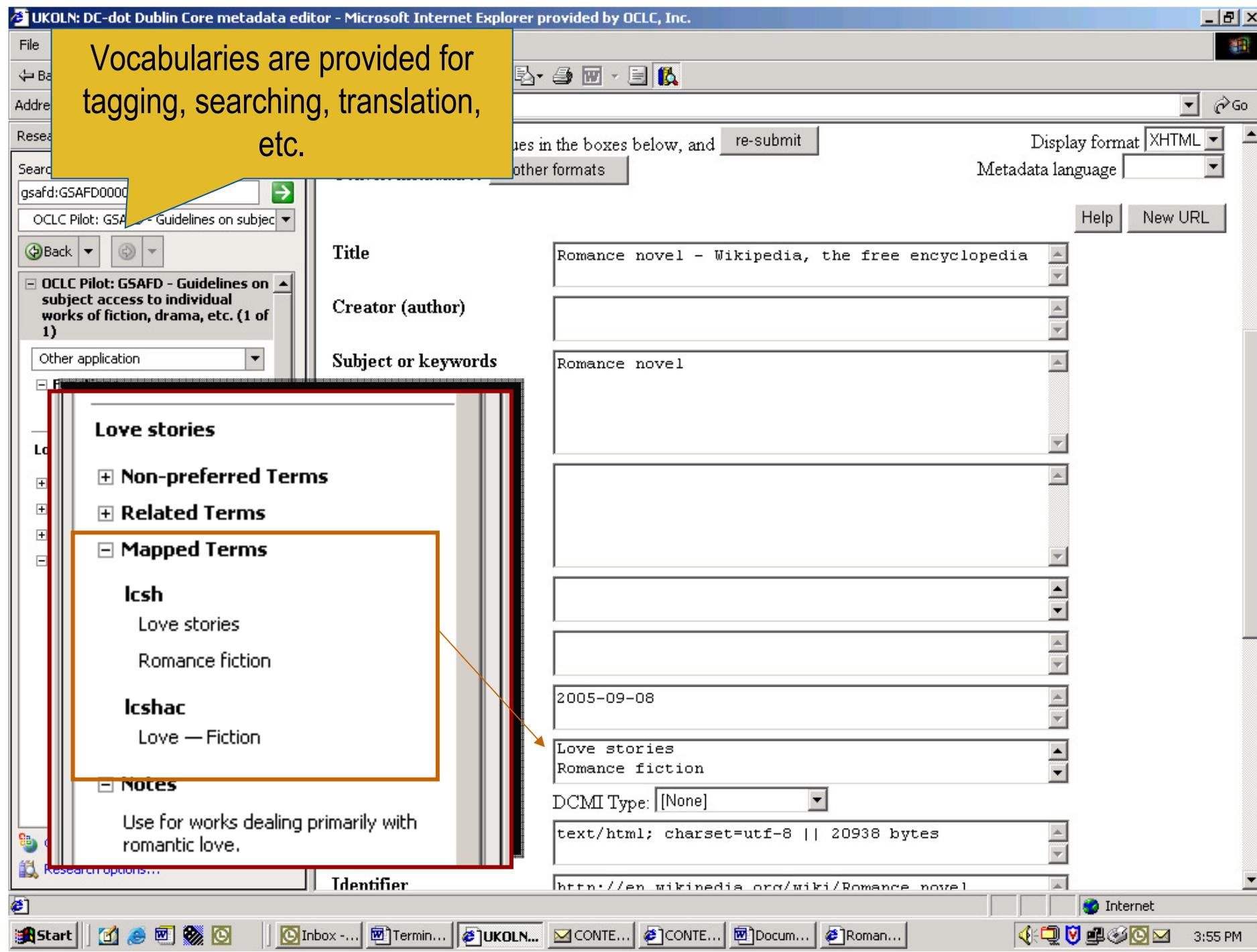
Junk E-mail -...

Microsoft Po...

EN



5:43 PM



OCLC Terminologies Research Projects

– Web Services Pilot

Highlights

- Search descriptions of controlled vocabularies
- Search for concepts/headings in a controlled vocabulary
- Retrieve a single concept/heading by its identifier
- View relationships for a concept/heading including equivalence, hierarchical, and associative
- Retrieve concepts/headings in multiple representations including HTML, MARC XML, SKOS, and Zthes.
- Search using SRU CQL syntax

Technical Resources

- Overview ([pdf](#) [ppt](#))
- URI-patterns
- [Indexing](#)
- [Standards](#)
- [Issues](#)
- [Roadmap](#)

Vocabulary Resources

Jump to: [meta](#) [fast](#) [gsafd](#) [lcshac](#) [lcsh](#) [mesh](#) [lctc](#)

<http://tspilot.oclc.org/resources/index.html>



Vocabulary Resources

Jump to: [meta](#) [fast](#) [gsafdf](#) [lcshac](#) [lcsh](#) [mesh](#) [lctqm](#) [gmopc](#)

lctqm

Name: **Controlled Vocabulary Metadata**

Description: Descriptions of controlled vocabularies

Date: 2008-03

Identifier: meta

Links: [About](#) | [SRU Interface](#) | [Examples](#) | [MARC Statistics](#)

Name: **Faceted Application of Subject Terminology (FAST subject headings)**

Description: A controlled vocabulary based on the terminology of Library of Congress Subject Headings (LCSH)

Date: 2008-03

Identifier: fast

Links: [About](#) | [SRU Interface](#) | [Examples](#) | [MARC Statistics](#)

Name: **Form and genre headings for fiction and drama**

Description: Form and genre terms from the Guidelines On Subject Access To Individual Works Of Fiction, Drama, Etc., 2nd ed.

Date: 2008-03

Identifier: gsafdf

Links: [About](#) | [SRU Interface](#) | [Examples](#) | [MARC Statistics](#)

Name: **Library of Congress AC Subject Headings**

Description: Headings for juvenile literature created for the Annotated Card (AC) program. Must be used in conjunction with LCSH

Date: 2008-03

Identifier: lcshac

Links: [About](#) | [SRU Interface](#) | [Examples](#) | [MARC Statistics](#)

Name: **Library of Congress Subject Headings**

Description: A general subject heading vocabulary maintained by the U.S. Library of Congress

Date: 2008-03

Identifier: lcsh

Links: [About](#) | [SRU Interface](#) | [Examples](#) | [MARC Statistics](#)

Name: **Medical Subject Headings (MeSH®)**

(Cont.)
<http://tspilot.oclc.org/resources/index.html>

The screenshot shows the Terminology Services interface, a project of OCLC Research. The title bar includes standard Windows icons for file operations, search, and help. The main header reads "Terminology Services" and "Experimental Services for Controlled Vocabularies". Below the header, the page title is "lctgm — Thesaurus for graphic materials: TGM I, Subject terms".

The interface is divided into two main sections: "Search" and "Browse".

Search: A table with columns for Index, Relation, Term, and Boolean. The rows list various search parameters, many of which are highlighted with a red rectangular box. The first few rows are:

Index	Relation	Term	Boolean
cql.resultSetId	exact		and
cql.serverChoice	=		and
dc.identifier	exact		and
oclcts.alternativeTerms	=		and
oclcts.expandedHeading	exact		and
oclcts.facets	=		and
oclcts.hierarchyId	exact		
oclcts.mappedIdentifier	exact		
oclcts.mappedTerms	=		
oclcts.marcTags	=		
oclcts.notes	=		
oclcts.preferredTerm	=		and
oclcts.rootHeading	exact		and
oclcts.terms	=		and
oclcts.vocabularyId	exact		and

Browse: A table with columns for Index, Relation, and Term. It includes dropdown menus for each column. Below the table are fields for "Response Position" (set to 1) and "Maximum Terms" (set to 100), followed by a "Browse" button.

<http://tspilot.oclc.org/lctgm/?operation=explain&version=1.1>
Type 'temples' in the
oclcts.expandedHeading box → search.

Terminology Services
Experimental Services for Controlled Vocabularies

a project of OCLC Research

Links: << Back to Search

Ictgm — Thesaurus for graphic materials: TGM I, Subject terms

Results for Search: ocilcts.expandedHeading exact "temples"

Result Set Identifier: 2s4hxh

Records found: 1

Record: 1 of 1 Schema: MARC XML

LDR 00570cz a2200229 4500

001 lctgm010644

003 DLC

005 20080505213847.9

008 850227i anznnbabn |||n|||

009 (DLC)lctgm010644

039 _ _ \$a (DLC)lctgm-010644

039 _ _ \$a (DLC)lctgm-10644

040 _ _ \$a DLC \$b eng \$c OCoLC \$d OCoLC \$d OCoLC-O \$f lctgm \$9 lctgm

150 _ _ \$a Temples \$9 temples

550 _ _ \$w g \$a Religious facilities \$0 (DLC)lctgm008761 \$9 religious facilities

550 _ _ \$w h \$a Buddhist temples \$0 (DLC)lctgm001379 \$9 buddhist temples

550 _ _ \$w h \$a Confucian temples \$0 (DLC)lctgm002437 \$9 confucian temples

550 _ _ \$w h \$a Greek temples \$0 (DLC)lctgm004717 \$9 greek temples

550 _ _ \$w h \$a Hindu temples \$0 (DLC)lctgm004994 \$9 hindu temples

550 _ _ \$w h \$a Roman temples \$0 (DLC)lctgm008977 \$9 roman temples

550 _ _ \$w h \$a Taoist temples \$0 (DLC)lctgm010519 \$9 taoist temples

550 _ _ \$a Churches \$0 (DLC)lctgm002048 \$9 churches

550 _ _ \$a Pagodas \$0 (DLC)lctgm007367 \$9 pagodas

550 _ _ \$a Pronaoi \$0 (DLC)lctgm008289 \$9 pronaoi

550 _ _ \$a Torii \$0 (DLC)lctgm010868 \$9 torii

856 4 _ \$3 HTML document \$q text/html \$u <http://scholar.google.com/scholar?ie=UTF-8&oe=UTF-8&q=Temples> \$y Search Google Scholar

856 4 _ \$3 HTML document \$q application/xhtml+xml \$u <http://worldcat.org/search?q=su%3ATemples> \$y Search WorldCat

856 4 _ \$3 HTML document \$q application/xhtml+xml \$u <http://tspilot.oclc.org/lctgm/lctgm010644.html> \$y Concept description \$z OCLC Research Terminology Services concept description document.

856 4 _ \$3 HTML document \$q application/xhtml+xml \$u <http://tspilot.oclc.org/lctgm.html> \$y Vocabulary description \$z OCLC Research Terminology Services vocabulary description document.

Results for Search: oclcts.expandedHeading exact "temples" - Microsoft Internet Explorer

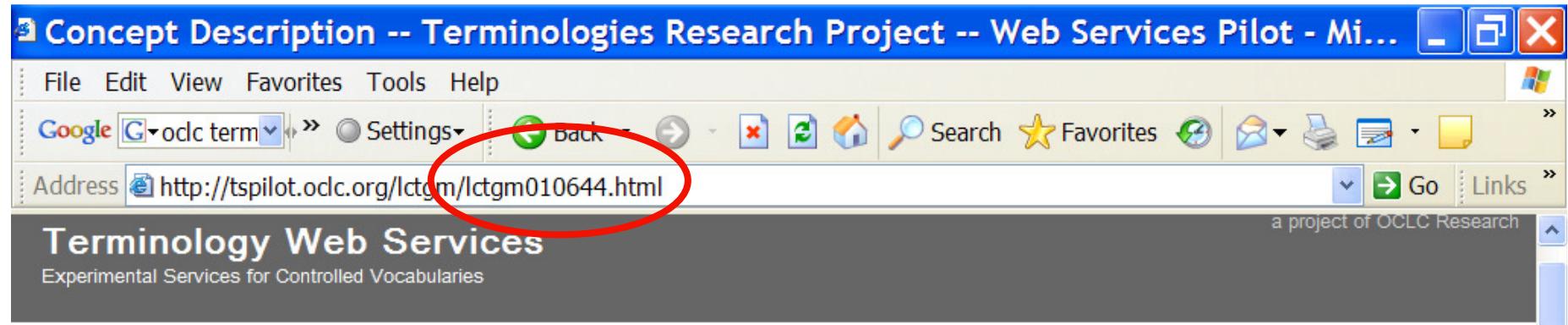
File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Mail Print Find Links

Address http://tspilot.oclc.org/lctgm/?query=oclcts.expandedHeading+exact+"temples"+version=1.1&c=

Google oclc terminology services Go Bookmarks 999 blocked Check Settings

550 __ \$a Churches \$0 (DLC)lctgm002048 \$9 churches
550 __ \$a Pagodas \$0 (DLC)lctgm007367 \$9 pagodas
550 __ \$a Pronaoi \$0 (DLC)lctgm008289 \$9 pronaoi
550 __ \$a Torii \$0 (DLC)lctgm010868 \$9 torii
856 4 _ \$3 HTML document \$q text/html \$u <http://scholar.google.com/scholar?ie=UTF-8&oe=UTF-8&q=Temples> \$y Search Google Scholar
856 4 _ \$3 HTML document \$q application/xhtml+xml \$u <http://worldcat.org/search?q=su%3ATemples> \$v Search WorldCat
856 4 _ \$3 HTML document \$q application/xhtml+xml \$u <http://tspilot.oclc.org/lctgm/lctgm010644.html> \$y Concept description \$z OCLC Research Terminology Services concept description document.
856 4 _ \$3 HTML document \$q application/xhtml+xml \$u <http://tspilot.oclc.org/lctgm.html> \$y Vocabulary description \$z OCLC Research Terminology Services vocabulary description document.
856 4 _ \$3 HTML document \$q text/html \$u <http://www.oclc.org/research/researchworks/terms.htm> \$y OCLC ResearchWorks Terms of Use \$z Use of this resource is governed by the OCLC ResearchWorks terms of use.
952 __ \$a GMGcomp:i



Temples

Vocabulary: Ictgm

Type: Topic

Broader Concepts

Religious facilities

Narrower Concepts

Buddhist temples | Confucian temples | Greek temples | Hindu temples | Roman temples | Taoist temples

Related Concepts

[Churches](#) | [Pagodas](#) | [Pronaoi](#) | [Tori](#)

Links

1. Search WorldCat for Temples 
 2. Search Google Scholar
 3. Search WorldCat
 4. Vocabulary description
 5. OCLC ResearchWorks Terms of Use



http://tspilot.oclc.org/lctgm/lctgm010644.marcxml - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Google G oclc > Settings Links Back Search Favorites Go

Address http://tspilot.oclc.org/lctgm/lctgm010644.marcxml

```
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<record xmlns="http://www.loc.gov/MARC21/slim" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
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```

http://tspilot.oclc.org/lctgm/lctgm010644.zthes - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Google G oclc » Settings Links Back Forward Search Favorites Mail Print

Address http://tspilot.oclc.org/lctgm/lctgm010644.zthes Go

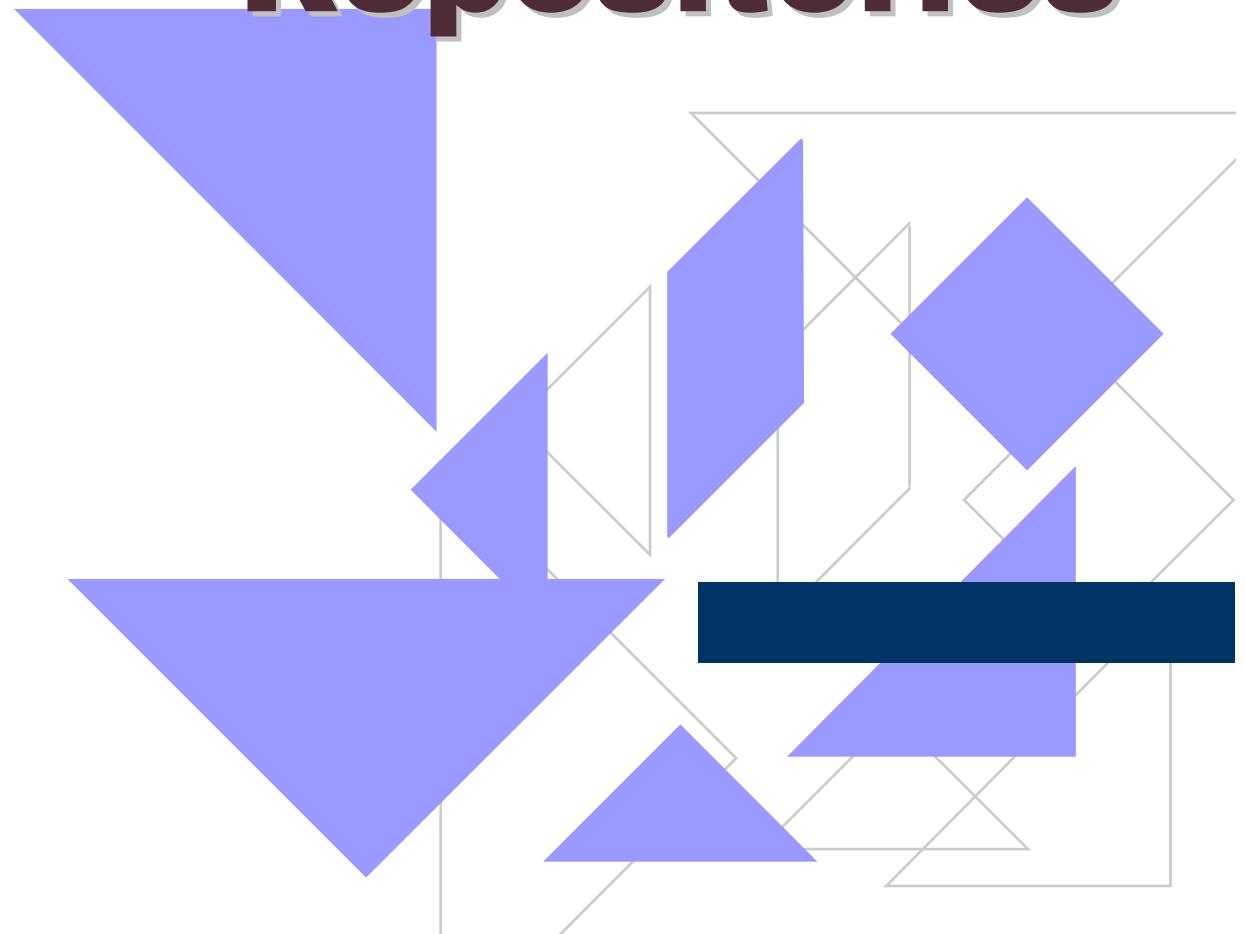
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- <zthes xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="http://zthes.z3950.org/schema/zthes-1.0.xsd">
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 <termNote label="OtherResourceLocation">OCLC Research Terminology Services concept description document.
 <http://tspilot.oclc.org/lctgm/lctgm010644.html> [application/xhtml+xml]</termNote>
 <termNote label="OtherResourceLocation">OCLC Research Terminology Services vocabulary description document.
 <http://tspilot.oclc.org/lctgm.html> [application/xhtml+xml]</termNote>
 <termNote label="OtherResourceLocation">Use of this resource is governed by the OCLC ResearchWorks terms of use.
 <http://www.oclc.org/research/researchworks/terms.htm> [text/html]</termNote>
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- <relation>
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-</relation>

http://tspilot.oclc.org/lctgm/lctgm010644.zthes

Done Internet

start 2 W. 2 I. 4 M. Micr... EN 3:59 PM

Ontology Registries / Repositories




[Home](#) [Browse](#) [Search](#) [All Mappings](#)
[Submit New Ontology](#)

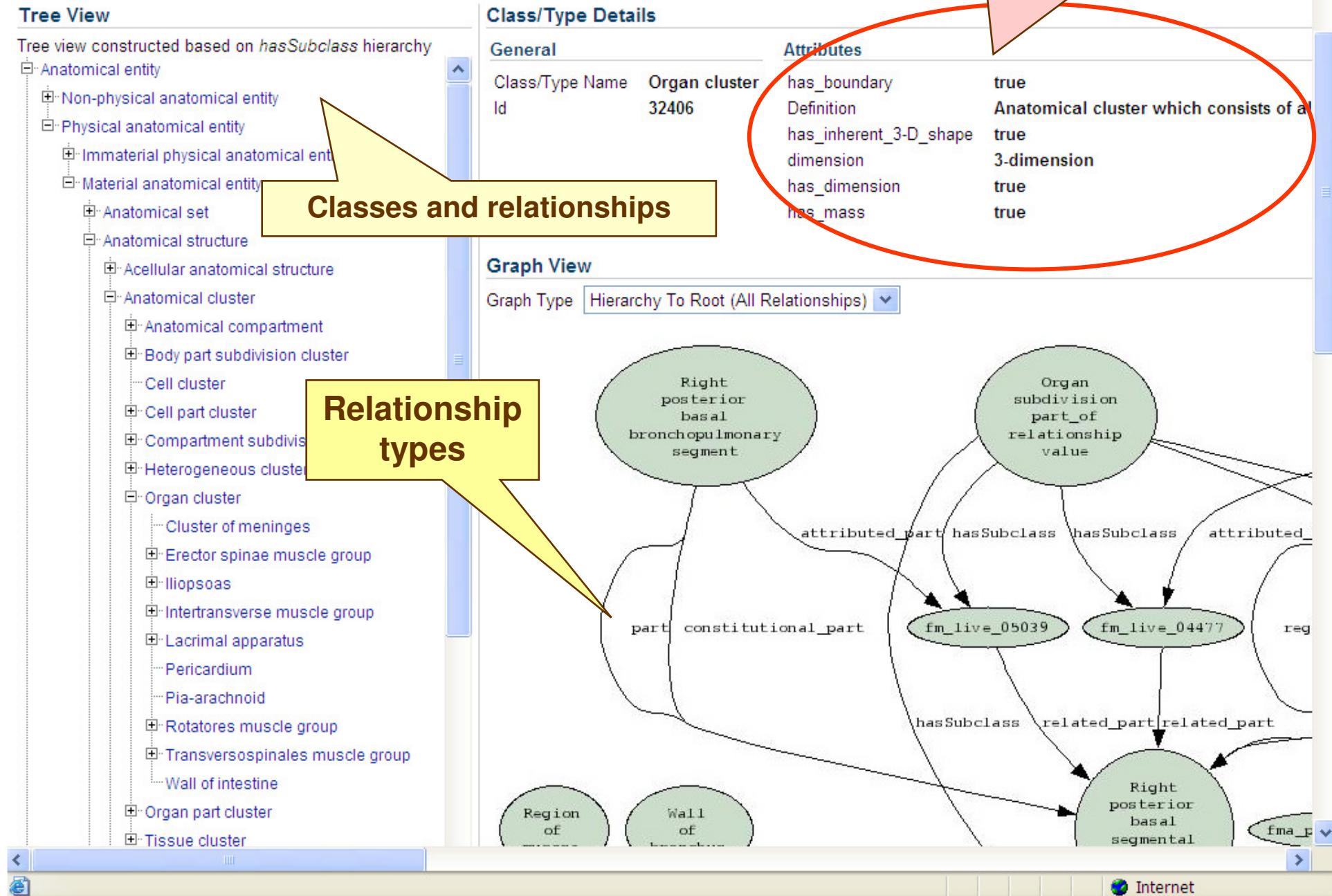
of ontologies: 111
 • NCBO Library: 78
 • Remote Ontologies: 33

Ontology Name	Format	Version	Author	Uploaded On	
Event (INOH pathway ontology)	OBOF	See Remote Site	Event Administrators	08/22/2008	
Evidence codes	OBOF	1.17	Michael Ashburner	05/29/2008	Explore
eVOC (Expressed Sequence Annotation for Humans)	OBOF	See Remote Site	Evoc Administrators	08/22/2008	
Fly taxonomy	OBOF	1.1	Michael Ashburner	08/24/2007	Explore
FlyBase Controlled Vocabulary	OBOF	1.13	Evidence_code Administrators	07/30/2008	Explore
FMA	OWL-DL	1.4		01/16/2007	Explore
Foundational Model of Anatomy (subset)	OBOF	See Remote Site	Http://obo Administrators	08/22/2008	
Fungal gross anatomy	OBOF	1.1	Fungal_anatomy Administrators	07/30/2008	Explore
Galen	OWL-FULL	1.1		01/16/2007	Explore
Gene Regulation Ontology	OWL-FULL	See Remote Site	Vivian Lee	08/22/2008	
Gene Regulation Ontology (GRO)	OWL-DL	0.3	Vivian Lee	06/25/2008	Explore
Habronattus courtship	PROTEGE	See Remote Site	Http://www Administrators	08/22/2008	
Human developmental anatomy, abstract version	OBOF	1.3	EMAP Administrators	07/30/2008	Explore
Human developmental anatomy, timed version	OBOF	1.3	EMAP Administrators	07/30/2008	Explore
Human disease	OBOF	1.10	Human_disease Administrators	08/01/2008	Explore
ICD9	LEXGRID-XML	9		05/16/2008	Explore

<http://bioportal.bioontology.org/>



Foundational Model of Anatomy (FMA) Ontology viewing from BioPortal



THE NATIONAL CENTER FOR BIOMEDICAL ONTOLOGY

 BioPortal 2.0

Sign In Register

Home Browse Search All Mappings ICD9 

[View Ontology Metadata](#)

+ SUPPLEMENTARY CLASSIFICATION OF EXTERNAL CAUSES OF INJURY AND POISONING [Link To Concept](#)

+ SUPPLEMENTARY CLASSIFICATION OF FACTORS INFLUENCING HEALTH STATUS AND CONTACT WITH HEALTH SERVICES

+ PROCEDURES

+ DISEASES AND INJURIES

SUPPLEMENTARY CLASSIFICATION OF EXTERNAL CAUSES OF INJURY AND POISONING (Link To Concept)

Details Visualization Marginal Notes Mappings Resources

Class Name: SUPPLEMENTARY CLASSIFICATION OF EXTERNAL CAUSES OF INJURY AND POISONING

ID: E800-E999.9

Sib: DISEASES AND INJURIES , SUPPLEMENTARY CLASSIFICATION OF FACTORS INFLUENCING HEALTH STATUS AND CONTACT WITH HEALTH SERVICES , PROCEDURES

Par: V-ICD9CM

Umls Cui: C0376109

Semantic Type: Classification

Chd: OTHER ACCIDENTS , OTHER ROAD VEHICLE ACCIDENTS , Place of occurrence , LATE EFFECTS OF ACCIDENTAL INJURY , RAILWAY ACCIDENTS , SURGICAL AND MEDICAL PROCEDURES AS THE CAUSE OF ABNORMAL REACTION OF PATIENT OR LATER COMPLICATION, WITHOUT MENTION OF MISADVENTURE AT THE TIME OF PROCEDURE , ACCIDENTAL FALLS , ACCIDENTS DUE TO NATURAL AND ENVIRONMENTAL FACTORS , MOTOR VEHICLE NONTRAFFIC ACCIDENTS , DRUGS, MEDICINAL AND BIOLOGICAL SUBSTANCES CAUSING ADVERSE EFFECTS IN THERAPEUTIC USE , ACCIDENTS CAUSED BY FIRE AND FLAMES , SUICIDE AND SELF-INFILCTED INJURY , INJURY RESULTING FROM OPERATIONS OF WAR , MISADVENTURES TO PATIENTS DURING SURGICAL AND MEDICAL CARE , ACCIDENTAL POISONING BY OTHER SOLID AND LIQUID SUBSTANCES, GASES, AND VAPORS , HOMICIDE AND INJURY PURPOSELY INFILCTED BY OTHER PERSONS ,

OpenOntologyRepository



[WikiHomePage](#) | [RecentChanges](#) | [Page Index](#)

[Login](#) ([create account](#))

Open Ontology Repository (OOR) Initiative - Home Page

(17YG)

Most Critical Task(s) At Hand: (17YH)

- prepare a status report, OOR rationale and requirements, and a proposed roadmap at the [OntologySummit2008 Apr-29 Workshop](#). (1DOF)
 - start working on funding (1ANS)

What's New: (17Y3)

- 2008_04_10 - Thursday: Joint OOR-OntologySummit2008 Panel Discussion: "Developing an Ontology of Ontologies for OOR" - Co-chairs: BarrySmith & MichaelGruninger; Panelists: MichaelGruninger, PeterHaase, NatashaNoy & ElisaKendall - ConferenceCall_2008_04_10 T (1BZ4)
 - next OOR-Team conference call: 2008_04_18 - Friday: OOR Project Team Member Conference Call - OOR/ConferenceCall_2008_04_18 T (1BZ1)
 - 2008_04_03 - Thursday: Joint OOR-OntologySummit2008 Panel Discussion: "An Open Ontology Repository: Rationale, Expectations & Requirements - Session-2" - Chair:

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ConferenceCall 2008 04 24
WikiHomePage

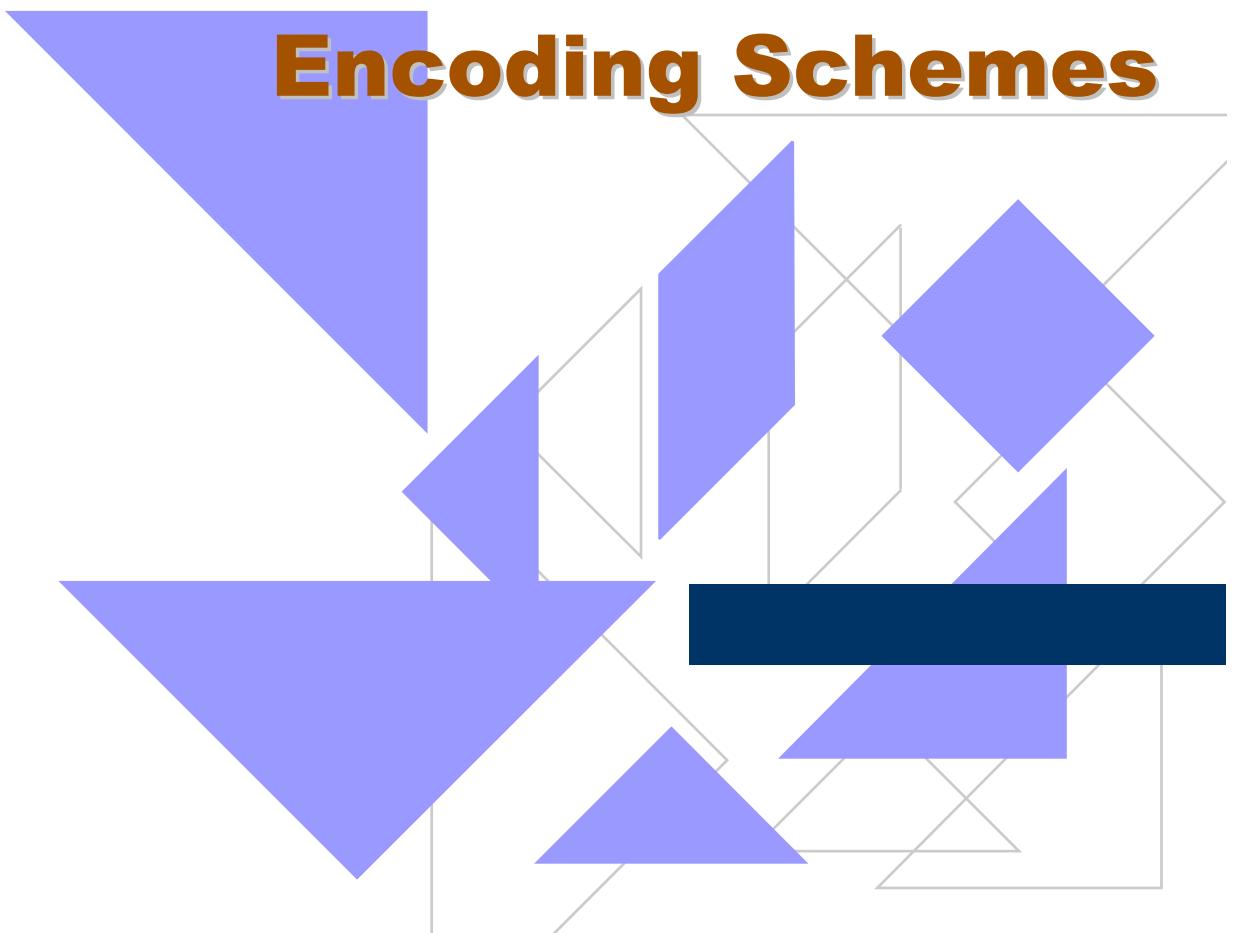
View Backlinks

Wiki Search

Mixed / Integrated Models

Metadata Registries that Include Schemas and Related

Encoding Schemes



(1): NSDL Registry

ies :: List - Microsoft Internet Explorer http://metadataregistry.org/vocabulary/list.html

File Edit View Favorites Tools Help

Address http://metadataregistry.org/vocabulary/list.html Go Google Settings sign in / register | about Search

NSDLREGISTRY Supporting Metadata Interoperability

Vocabulary: NSDL Education Level Vocabulary Concepts

Label	URI	Status	Last Updated	Actions
Grades Pre-K to 12	http://metadataregistry.org/uri/NSDLEdLvl/1023	Middle School	http://metadataregistry.org/uri/NSDLEdLvl/1023	View
Elementary School	http://metadataregistry.org/uri/NSDLEdLvl/1023	Top Concept?	http://metadataregistry.org/uri/NSDLEdLvl/1023	View
Pre-Kindergarten	http://metadataregistry.org/uri/NSDLEdLvl/1023	Status:	Published	View
Middle School	http://metadataregistry.org/uri/NSDLEdLvl/1023	Properties		View
Grade 6	http://metadataregistry.org/uri/NSDLEdLvl/1023	rower	Grade 6	View
		rower	Grade 7	View
		rower	Grade 8	View
		note	Term Source: http://www.ed.gov	View
		ader	Grades Pre-K to 12	View
		alternative label	Junior High School	View

Aims: supporting registration of schemes and schemas; supporting the machine mapping of relationships among terms and concepts in those schemes and schemas.

U.Washington: [Stuart A. Sutton](#)

Cornell Univ: [Diane Hillmann, Jon Phipps](#)

(1): NSDL Registry (cont.)

NSDL REGISTRY

Supporting Metadata Interoperability

Schemas

- Label ▾ ⓘ
- Dublin Core Elements
- FOAF (Friend Of A Friend)
- FRBR Entities
- RDA Elements
- RDA Roles
- RDF
- RDF Schema
- Resource Identifiers
- SKOS (Simple Knowledge Organization System)

9 results

Schema: Show detail for Dublin Core Element

Detail	Properties	History
Detail		
Owner:	Dublin Core Metadata	
Label:	Dublin Core Element	
Namespace		
Name:	dcterms	
URI:	http://purl.org/dc/elements/1.1/	
Documentation		
URL:		
Note:		
Tags:		
Defaults		
Status:	Published	
Language:	English	
Users +		

Schema: Show detail for Dublin Core Element			
Detail	Properties	History	Maintainers
Label ⓘ	URI ⓘ		Standards
Contributor	.../dc/elements/1.1/contributor	Published	Publ
Coverage	.../dc/elements/1.1/coverage	Published	Publ
Creator	.../dc/elements/1.1/creator	Published	Publ
Date	.../dc/elements/1.1/date	Published	Publ
Description	.../dc/elements/1.1/description	Published	Publ
Format	.../dc/elements/1.1/format	Published	Publ
Identifier	.../dc/elements/1.1/identifier	Published	Publ
Language	.../dc/elements/1.1/language	Published	Publ
Publisher	.../dc/elements/1.1/publisher	Published	Publ
Relation	.../dc/elements/1.1/relation	Published	Publ
Rights	.../dc/elements/1.1/rights	Published	Publ
Source	.../dc/elements/1.1/source	Published	Publ
Subject	.../dc/elements/1.1/subject	Published	Publ
Title	.../dc/elements/1.1/title	Published	Publ
Type	.../dc/elements/1.1/type	Published	Publ
15 results			

The Dublin Core Metadata Registry
Promoting the discovery and reuse of metadata.

About
Browse | Search
Administration
Help
v 3.3.8

Browse | Search
Language Preference

Browse the registry by classification

Display: Summary of All Terms

Properties (71)

dcterms:abstract	dcterms:accessRight	dcterms:accrualMethod	dcterms:accrualPolicy	dcterms:accuracy
dcterms:accrualPolicy	dcterms:alternative	dcterms:audience	dcterms:audience	dcterms:audience
dcterms:bibliographicCitation	dcterms:conformsTo	dc:contributor	dcterms:contributor	dcterms:contributor
dc:coverage	dcterms:coverage	dcterms:created	dc:creator	dcterms:creator
dcterms:creator	dc:date	dcterms:date	dcterms:dateAccepted	dcterms:dateAccepted
dcterms:dateCopyrighted	dcterms:dateSubmitted	dc:description	dcterms:description	dcterms:description
dcterms:educationLevel	dcterms:extent	dc:format	dcterms:format	dcterms:format
dcterms:hasFormat	dcterms:hasPart	dcterms:hasVersion	dc:identifier	dcterms:identifier
dcterms:identifier	dcterms:instructionalMethod	dcterms:isFormatOf	dcterms:isPartOf	dcterms:isPartOf
dcterms:isReferencedBy	dcterms:isReplacedBy	dcterms:isRequiredBy	dcterms:issued	dcterms:issued

Properties from different namespaces

Properties that serves as a refinement of another property

<http://dcmi.kc.tsukuba.ac.jp/dcregistry/navigateServlet>



Vocabulary Encoding Schemes (9)

dcterms:DCMType	dcterms:DDC	dcterms:IMT	dcterms:LCC
dcterms:LCSH	dcterms:MESH	dcterms:NLM	dcterms:TGN
dcterms:UDC			

Syntax Encoding Schemes (11)

dcterms:Box	dcterms:ISO3166	dcterms:ISO639-2	dcterms:ISO639-3
dcterms:Period	dcterms:Point	dcterms:RFC1766	dcterms:RFC3066
dcterms:RFC4646	dcterms:URI	dcterms:W3CDTF	

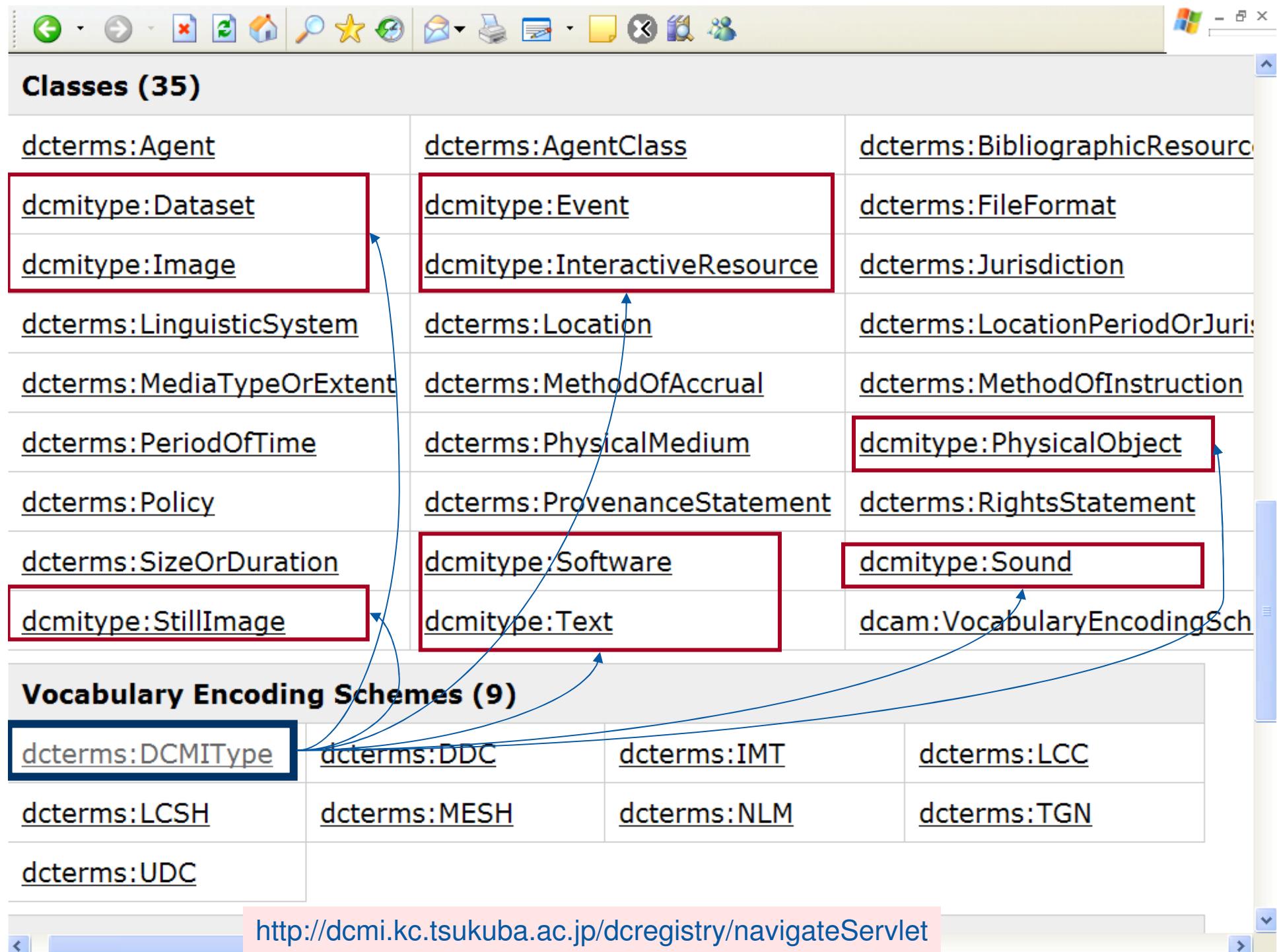
Collections (4)

<http://purl.org/dc/dcam/>

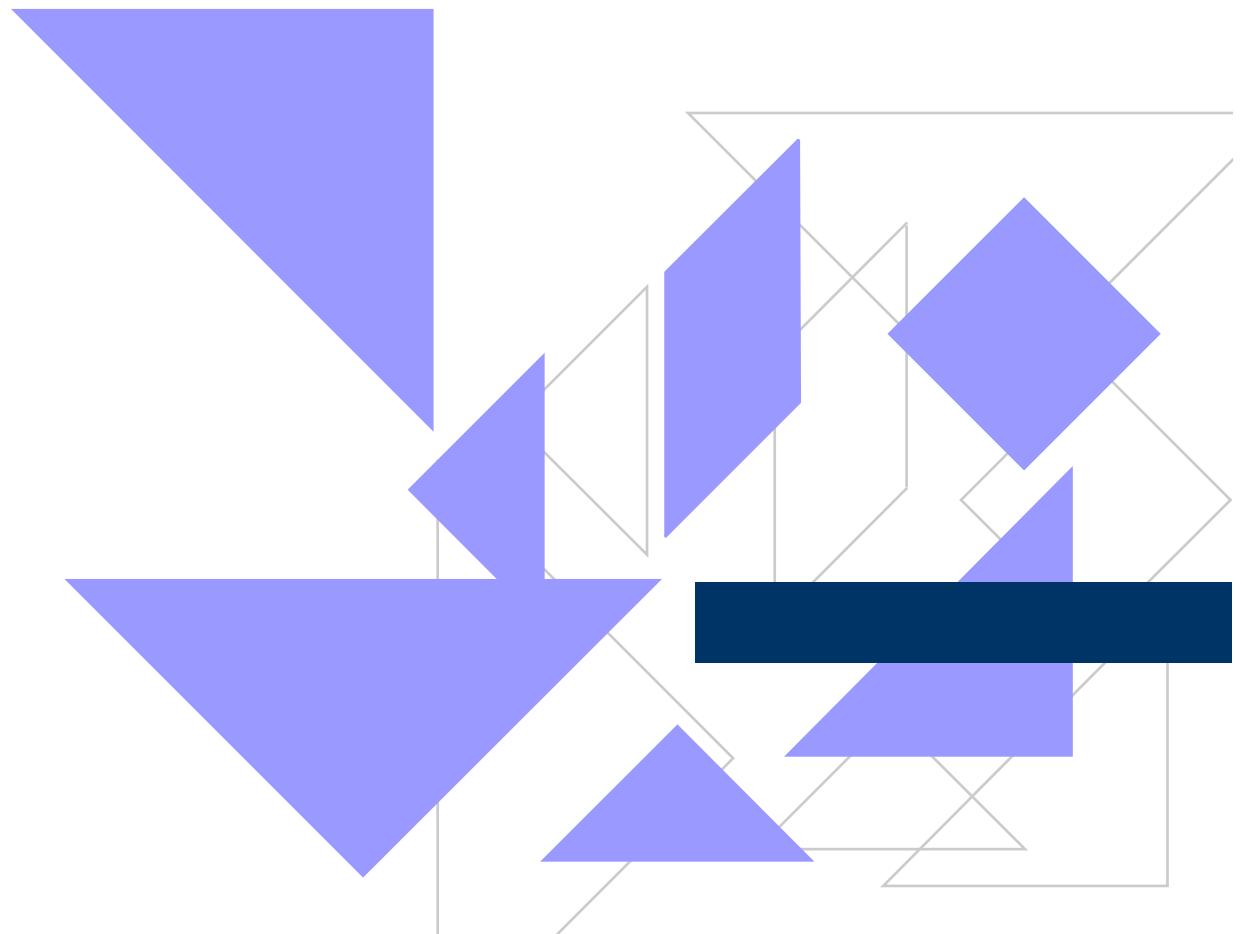
<http://purl.org/dc/dcmitype/>

<http://purl.org/dc/elements/1.1/>

<http://purl.org/dc/terms/>



Integrated Registries



ISO/IEC 11179 Metadata Registry (MDR)

◆ *Framework* (Part 1)

- introduces fundamentals that are essential to the understanding of the whole set of standards

◆ *Classification* (Part 2)

- discusses registering and administering all or part of a classification scheme
- (CLASSIFICATION schemes include: key words, thesauri, taxonomies, and ontologies)

◆ *Registry metamodel and basic attributes* (Part 3)

- specifies a conceptual model for a metadata registry

ISO/IEC 11179 Metadata Registry (MDR)

- ◆ *Formulation of data definitions* (Part 4)
 - provides guidance on how to develop unambiguous data definitions
- ◆ *Naming and identification principles* (Part 5)
 - states the formal naming and identification of metadata items
- ◆ *Registration* (Part 6)
 - defines identification, quality, and provenance of metadata in a metadata registry

<http://metadata-standards.org/11179/>

Flexibility

- ◆ Recognizes that not all metadata registries will have the need (or the means) to support all of the attributes specified for the metadata model in ISO 11179 Part 3
- ◆ Allows sufficient flexibility for the Registration Authority to specify the requirements in accordance with the standard and “adopt a stricter or less strict level of conformance, levying corresponding requirements on Submitting Organizations”
-- ISO/IEC 11179, 2004: Part 6: 9

ISO 11179 Data Element Registries

- ◆ [US National Cancer Institute - Cancer Data Standards Repository \(caDSR\)](#) 
- ◆ [Australian Institute of Health and Welfare - Metadata Online Registry \(METeOR\)](#)
- ◆ [US Department of Justice - Global Justice XML Data Model GJXDM](#)
- ◆ [US Environmental Protection Agency - Environmental Data Registry](#)
- ◆ [US Health Information Knowledgebase \(USHIK\)](#)
- ◆ [US National Information Exchange Model NIEM](#)
- ◆ [Minnesota Department of Education Metadata Registry \(K-12 Data\)](#)
- ◆ [Minnesota Department of Revenue Property Taxation \(Real Estate Transactions\)](#)

NCICB: Cancer Data Standards Repository (caDSR) - Microsoft Internet Explorer



File Edit View Favorites Tools Help

Address http://ncicb.nci.nih.gov/NCICB/infrastructure/cacore_overview/cadsr Go

National Cancer Institute

U.S. National Institutes of Health | www.cancer.gov



RELATED LINKS

PUBLIC ACCESS:
CDE Browser and
Form Builder □

UML Model Browser □
NCI BioPortal □

NCI Thesaurus □
NCI Metathesaurus □

USER ACCOUNT
ACCESS: Curation
Tool □
Sentinel Tool □
caDSR Admin Tool □
caDSR Training

SIW CURRENT
RELEASE (Semantic
Integration
Workbench) □
Archived SIW 3.1 □
caDSR HAPPY.jsp
(caCORE caDSR
API) □
caDSR Freestyle
Search - Beta
Release □

DOWNLOADS
[more...]

caDSR Repository

HOME ABOUT NCICB INFRASTRUCTURE TOOLS PROJECTS DOWNLOADS TRAINING SUPPORT

Infrastructure > caCORE > Cancer Data Standards Repository (caDSR)

Cancer Data Standards Repository (caDSR)



The NCICB Resource for Common Data Elements

One of the problems confronting the biomedical data management community is the panoply of ways that similar or identical concepts are described. Such inconsistency in data descriptors (metadata) makes it nearly impossible to aggregate and manage even modest-sized data sets in order to be able to answer basic questions. The NCI, together with partners in the research community, develops common data elements (CDEs) that are used as metadata descriptors for NCI-sponsored research and for the caCORE applications. The caCORE objects are represented by UML Models. The UML Model is used to facilitate a semi-automated load from caCORE UML into ISO/IEC 11179 Administered Components. This is discussed in more detail in the [Software Developers Toolkit \(SDK\)](#). The caDSR is a database and tool set that the NCI and its partners use to create, edit and deploy the CDEs.

Delve deeper into "Cancer Data Standards Repository (caDSR)"

- [caDSR Content Creation](#)
- [Application Developer Zone](#)
- [ISO/IEC 11179 Standard](#)
- [Business Rules](#)
- [caCORE Software Planning](#)
- [FAQ](#)



<http://umlmodelbrowser.nci.nih.gov/umlmodelbrowser/>

0:11 PM



Cancer Data Standards Repository (caDSR) --CDE (Common Data Element) Browser

 CDE Browser

[CDE Home](#) [FormBuilder](#) [Cart](#)

[Admin Tool](#) [Curation Tool](#) [NCI Metathesaurus](#) [NCI Terminology Server](#) [Sentinel Tool](#) [UML Model Browser](#) [What's new](#)

Data Element Search

Search for Data Elements 1053 [Search preferences](#) [Advanced search](#)

caDSR Contexts >> caCORE (NCI Core Infrastructure)

Exact phrase
 All of the words
 At least one of the words

Tip: This is an exact match search. To search

Note: Default settings exclude Test and Training context views from the tree and certain non-released Workflow and Registration statuses. Click the 'Search Preferences' link above to view or change the exclusion criteria.

Search Results [Search within results](#)

Results fewer than expected? Check [Search Preferences](#)

[\[Download Data Elements to Prior Excel\]](#) [\[Download Data Elements to Excel\]](#) [\[Download Data Elements\]](#)

Sort order : (Default) Registration Status >> Workflow Status >> Long Name [Ascending]

1 - 100 of 1053 [Next](#)

<http://umlmodelbrowser.nci.nih.gov/umlmodelbrowser/>

supports browsing, searching, and exporting the CDEs (Common Data Elements) within or across contexts

Cancer Data Standards Repository (caDSR) --CDE (Common Data Element) Browser

- ◆ Important additional items:
 - Form -- a collection of CDEs
 - Protocol -- a collection of Forms
 - For clinical trials applications
 - ◆ Forms correspond to Case Report Forms (CRFs)
 - ◆ Protocols correspond to a clinical trial protocol



Cancer Data Standards Repository (caDSR)

-- UML (Unified Modeling Language) Model Browser

The image shows the UML Model Browser interface for the Cancer Data Standards Repository (caDSR). On the left, a tree view displays 'caDSR Contexts' including 'BRIDG', 'caBIG', 'BehavioralResearchMeasures' (with a circled 'BehavioralMeasure' class), 'Bioconductor', 'BiospecimenCoreResource', 'C3PR', 'CAD Markup', 'CAD Order', and 'CAP Cancer Checklists' (with a circled 'Prostate' domain). A blue arrow points from the 'BehavioralMeasure' node to the search results. The main panel shows a search bar with 'Class Search' and a result count of '3339 Matches'. A yellow callout box highlights the search functionality with the text: 'supports browsing, searching, and exporting the classes, attributes, and relationships between classes of a UML domain model'. Below the search bar are filters for 'Class Name', 'UML Project Name' (set to ALL), 'Sub Project Name' (set to ALL), and 'Package Name' (set to ALL). A red oval highlights the 'Classes' tab in the navigation bar. The table below lists the first few results:

Class Name	Project Name	Project Version
ArrayDesign	caArray_1.1	1.1
		1
		2

<http://umlmodelbrowser.nci.nih.gov/umlmodelbrowser/>

 CADSR

Sort order : Class Name [Ascending]

Class Name	Project Name	Project Version	Project Workflow Stauts	Sub Project Name	Package Name
ArrayDesign	caArray_1.1	1.1	RELEASED	mageom 1.1	gov.nih.nci.mageom.domain
Msi	CoCaNUT	1	RELEASED		edu.princeton.cocanut.domain
Atom	caCORE 3.2	3.2	RELEASED	EVS	gov.nih.nci.evs.domain
ActivitySummary	caTRIP Tumor Registry	1	RELEASED	Tumor Registry	edu.duke.cabig.tumorregistry
ListProcessing	NHLBI	1	RELEASED	ProteinDB	edu.jhu.icm.proteindb
Experiment2DGelList	NHLBI	1	RELEASED	ProteinDB	edu.jhu.icm.proteindb
RnaAnnotation	CoCaNUT	1	RELEASED		edu.princeton.cocanut.domain
InvasiveBreastCarcinomaNeoplasmHistologicType	caTRIP Annotation Engine	1	RELEASED		edu.pitt.cabig.cae.domain.I
GeneOntology	caCORE 3.2	3.2	RELEASED	caBIO	gov.nih.nci.cabio.domain
InvestigationalNewDrug	caAERS	1	RELEASED		gov.nih.nci.cabig.caaers.domain
RadicalProstatectomyProstateSurgicalPathologySpecimen	CAP Cancer Checklists	1	RELEASED		edu.upmc.opi.cabig.caties
Department	caTISSUE Core	1	RETIRED ARCHIVED		edu.wustl.catissuecore.domain
ChemicalClass	caMOD	2.1	RELEASED		gov.nih.nci.camod.domain
InvivoResult	caMOD_2.5	2.5	RELEASED		gov.nih.nci.camod.domain
TimeRecord	caNano	1	RELEASED	caNanoDB	edu.wustl.sccne.caNanoDB
StudyOrganization	C3PR	2	RELEASED		edu.duke.cabig.c3pr.domain
ExocrinePancreasAccessionCharacteristics	caTISSUE CAE	1.2	RELEASED		edu.pitt.cabig.cae.domain
Study	C3PR	2	RELEASED		edu.duke.cabig.c3pr.domain
entityDescription	LexBIG	2.2	RELEASED	LexBIGSlice_2.2	org.LexGrid.CommonTypes
Toxicity	Potential CDEs for Reuse	1	RELEASED	Hematopoietic Stem Cell Transplantation	net.agnis.outcomes.domain
SynopticSurgicalPathologyReport	CAP Cancer Checklists	1	RELEASED		edu.upmc.opi.cabig.caties
VariationReporter	calIntegrator 2.1	2.1	RELEASED		gov.nih.nci.caintegrator.domain
presentation	LexBIG	2.2	RELEASED	LexBIGSlice_2.2	org.LexGrid.Concepts

model,
please
click
"Refresh
tree"

Refresh tree

caDSR Context:

- caDSR
- |__ ca
- |__ BF
- |__ ca
- |__ +
- |__ +
- |__ +
- |__ E

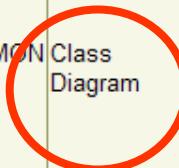


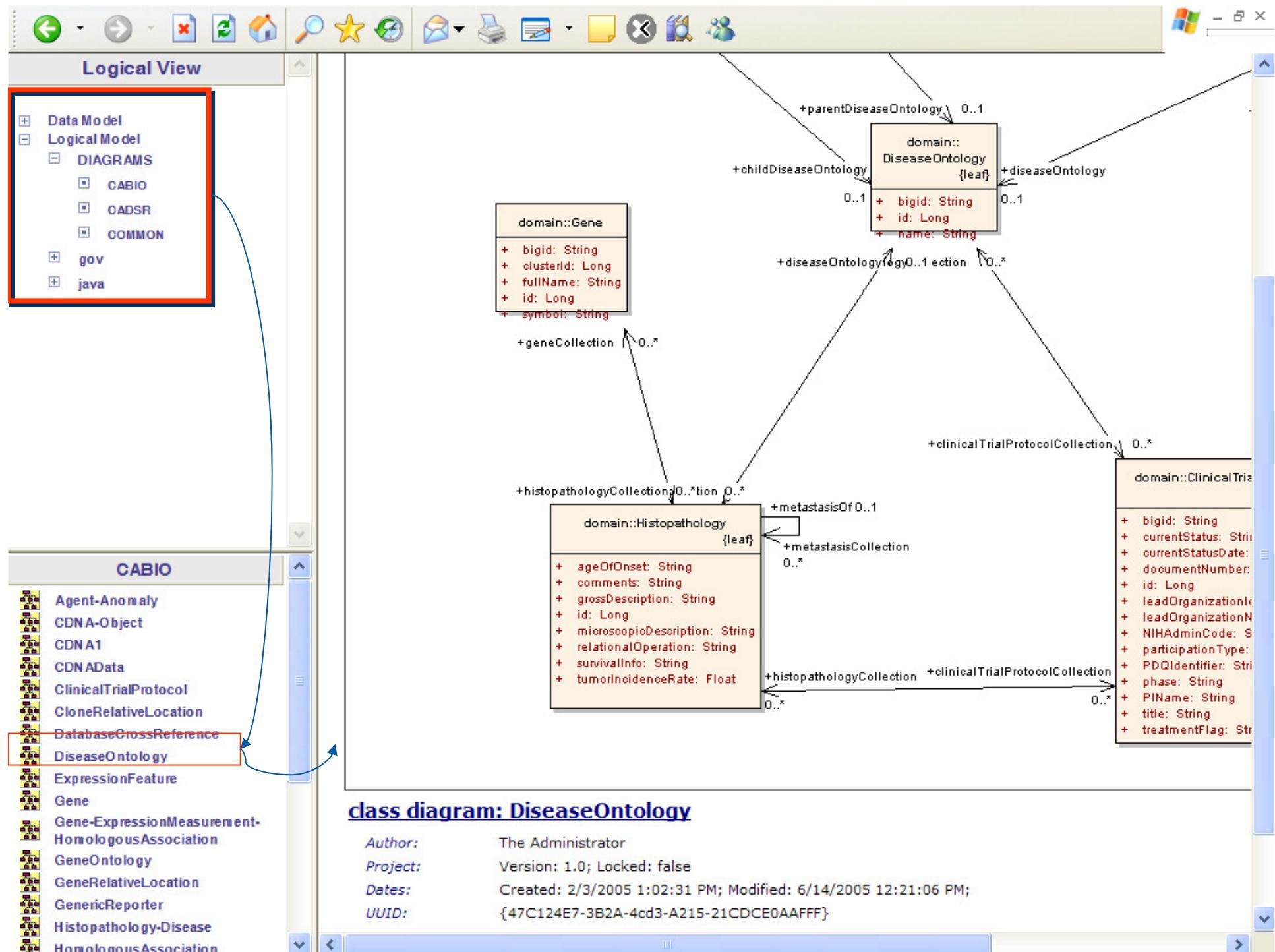
Selected Project

Public ID:	2528431
Version:	3.2
Long Name:	caCORE 3.2
Short Name:	caCORE 3.2
Definition:	Version 3.2 of caCORE models.
Workflow Status:	Reviewed and approved administered component
Registration Status:	

Reference Documents

Document Name	Document Type	Document Text	URL	Attachments
caDSR/caBIO/COMMON 3.2 HTML	Class Diagram	caCORE 3.2 UML Model in HTML format for caDSR, COMMON and caBIO	http://ncicb.nci.nih.gov/NCICB/content/ncicblfs/EA/caCORE3-2Model/index.htm	
caDSR/caBIO/COMMON XMI	XMI File	The caCORE domain models in XMI.	http://ncicb.nci.nih.gov/NCICB/content/ncicblfs/caCORE32eapandxmi/caCORE3-2.xmi	
caDSR/caBIO/Common 3.2 EAP	REFERENCE	The caCORE .eap file containing the Data and Logical models for caDSR,	http://ncicb.nci.nih.gov/NCICB/content/ncicblfs/caCORE32eapandxmi/caCORE3-2.eap	





Projects extending ISO 11179

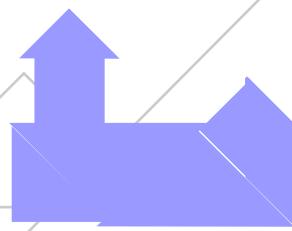
- ◆ XMDR (eXtended MetaData Registry)
[XMDR] Project)
- ◆ NIST XDS (Cross-Enterprise
Document Sharing) Public Registry
Test Facility

XMDR Project Goals

- **Extend ISO-IEC 11179 ed. 2 Metadata Registry Standard**
 - ◆ for increasingly large, complex databases and software systems
 - ◆ particularly for large organizations like EPA, NCI, DOD, etc.
- **Incorporate and manage evolution of concept information**
 - ◆ Code sets of valid values, terminologies, thesauri, ontologies
 - ◆ A shared metamodel for **both metadata and concepts**
- **support software inference, aggregation, and agent services**

In fact concerning

registry of registries/collections



XMDR Goals (cont.)

- ◆ **Improve representation of relationships**
 - between data (e.g., data elements and value domains)
 - and between concept structures (e.g., ontologies, taxonomies, thesauri, terminologies, etc.)
- ◆ **Register and manage complex semantic metadata** (i.e., concepts) in more formal, systematic ways (e.g., description logic) to facilitate machine processing of semantics in order to:
 - link together data elements and terms across multiple systems
 - discover relationships among data elements, terms, and concepts
 - create and manage names, definitions, terms, etc.
 - **support software inference, aggregation, and agent services**

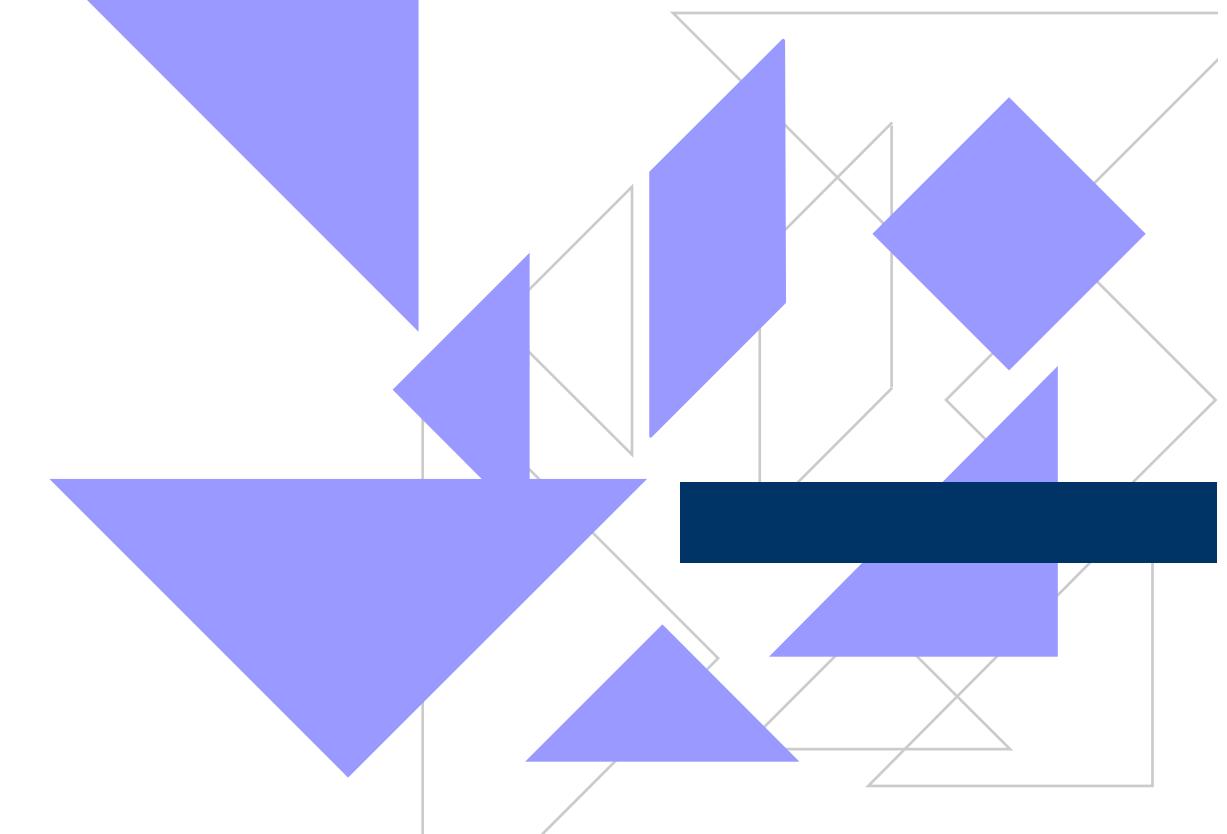
XMDR Goals (cont.)

- ◆ Add more rigorous and formal specification for
 - concepts and concept systems (including ontologies)
 - relationships between metamodel components
 - formal axioms for conceptual and structural relationships

- ◆ Use concepts to unify different types of metadata
 - evolution requires increasing granularity and detail
 - combine strengths of data dictionaries/registries and ontologies



Service Registries



Web Services defined

- ◆ A **Web service** is a software system designed to support interoperable machine-to-machine interaction over a network.

- E.g., Web APIs that can be accessed over a network and executed on a remote system hosting the requested services.

-- <http://www.w3.org/TR/ws-gloss/>



Sometimes it is around collections' registrations

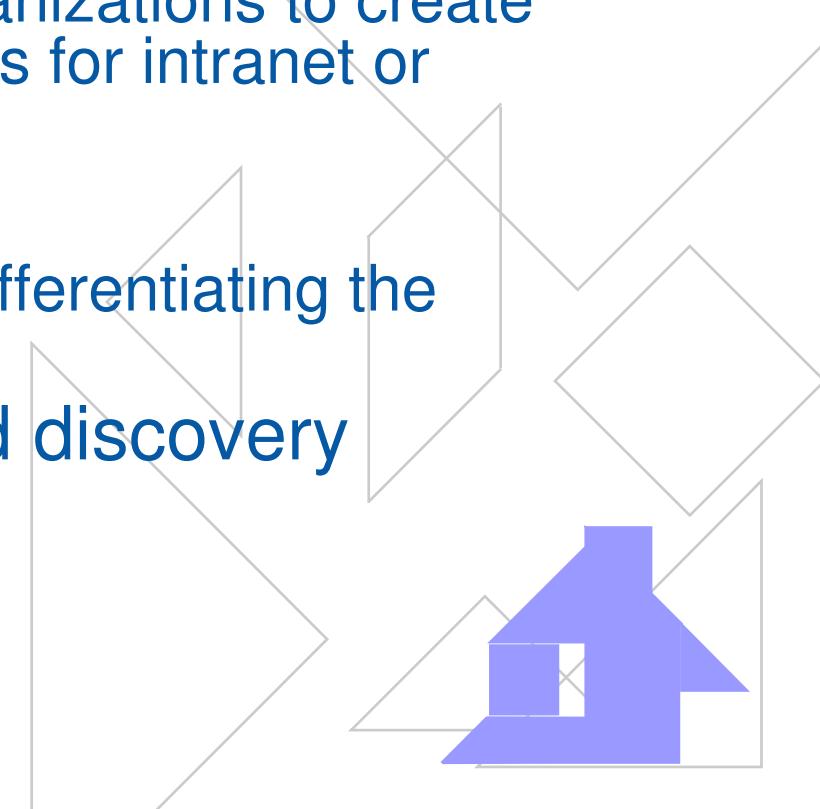
The JISC Information Environment Service Registry (IESR)

- machine readable registry of electronic resources
- contains *information about* these electronic resources, and details of *how to access them*

<http://iesr.ac.uk/>

The Nature of Web Services

- ◆ Decentralized
 - new operating systems, applications, and APIs are equipped with built-in functionalities or tools for allowing businesses or organizations to create their own business registries for intranet or extranet use
- ◆ More dynamic changes
 - Tracking, managing, and differentiating the changes are essential
- ◆ More real-time search and discovery requests/responses



Terminology Services

- ◆ **Terminology Services** (TS) are a set of services that present and apply vocabularies, both controlled and uncontrolled, including their member terms, concepts and relationships.
- searching, browsing, discovery, translation, mapping, semantic reasoning, subject indexing and classification, harvesting, alerting, etc.

-- Tudhope, Koch, and Heery, 2006.
Terminology Services and Technologies.
<http://www.ukoln.ac.uk/terminology/JISC-review2006.html>

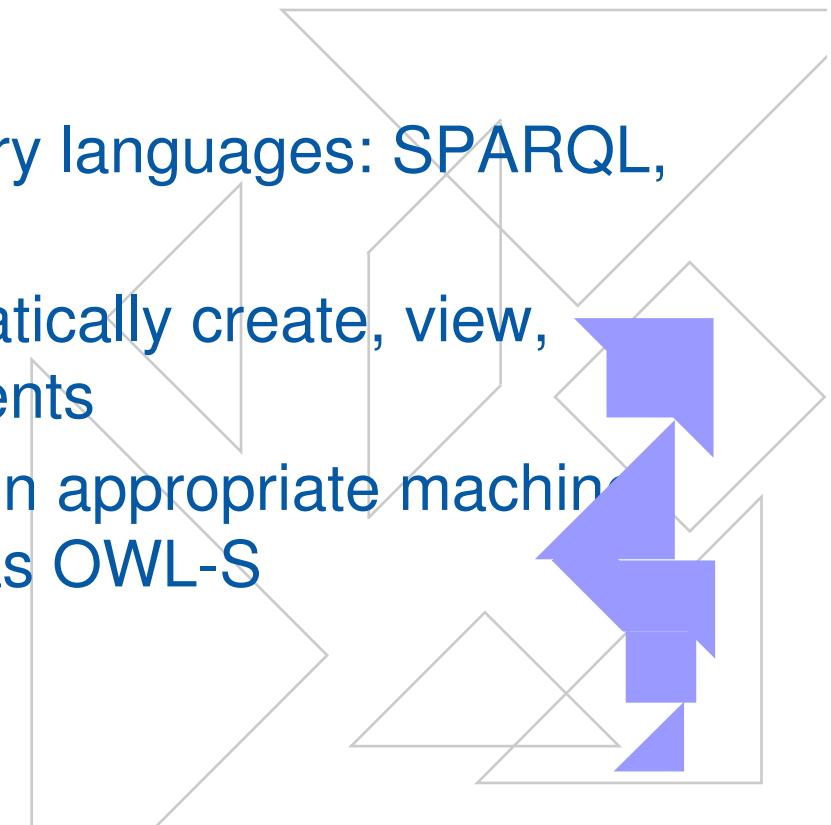
Functions of terminology-based and ontology-based Services (1)

- ◆ **User services**

- Search, link, browse, identifying

- ◆ **Machine user services**

- querying using various query languages: SPARQL, REST, SOAP
 - Using an API to programmatically create, view, and modify repository contents
 - Defining machine services in appropriate machine interpretable format, such as OWL-S



Functions of terminology-based and ontology-based Services (2)

◆ Tool services

- Searching available tools
- Downloading
- Identifying

◆ Validation services

◆ OWL services

- Browsing, querying, indexing
- Services for external search engines and entity extractors to index and mine contents
- Visualization services
- Annotation services
- Semantic search
- Crawling and indexing of contents

◆ Reasoning services

- (ontologies)
- Import Services
 - ◆ Support importing of modular ontologies into larger ontologies

◆ Semantic Mapping Services

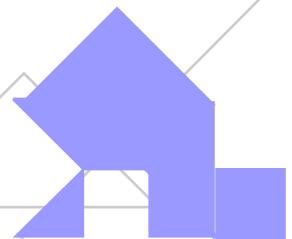
- Schema Translation
- Visually-aided Mapping
- Disambiguation
- Terminology to Concept Mapping Services

◆ Ontology and Instance Versioning Services

-- based on Leo Obrst, 2008, Toward an Ontology Repository

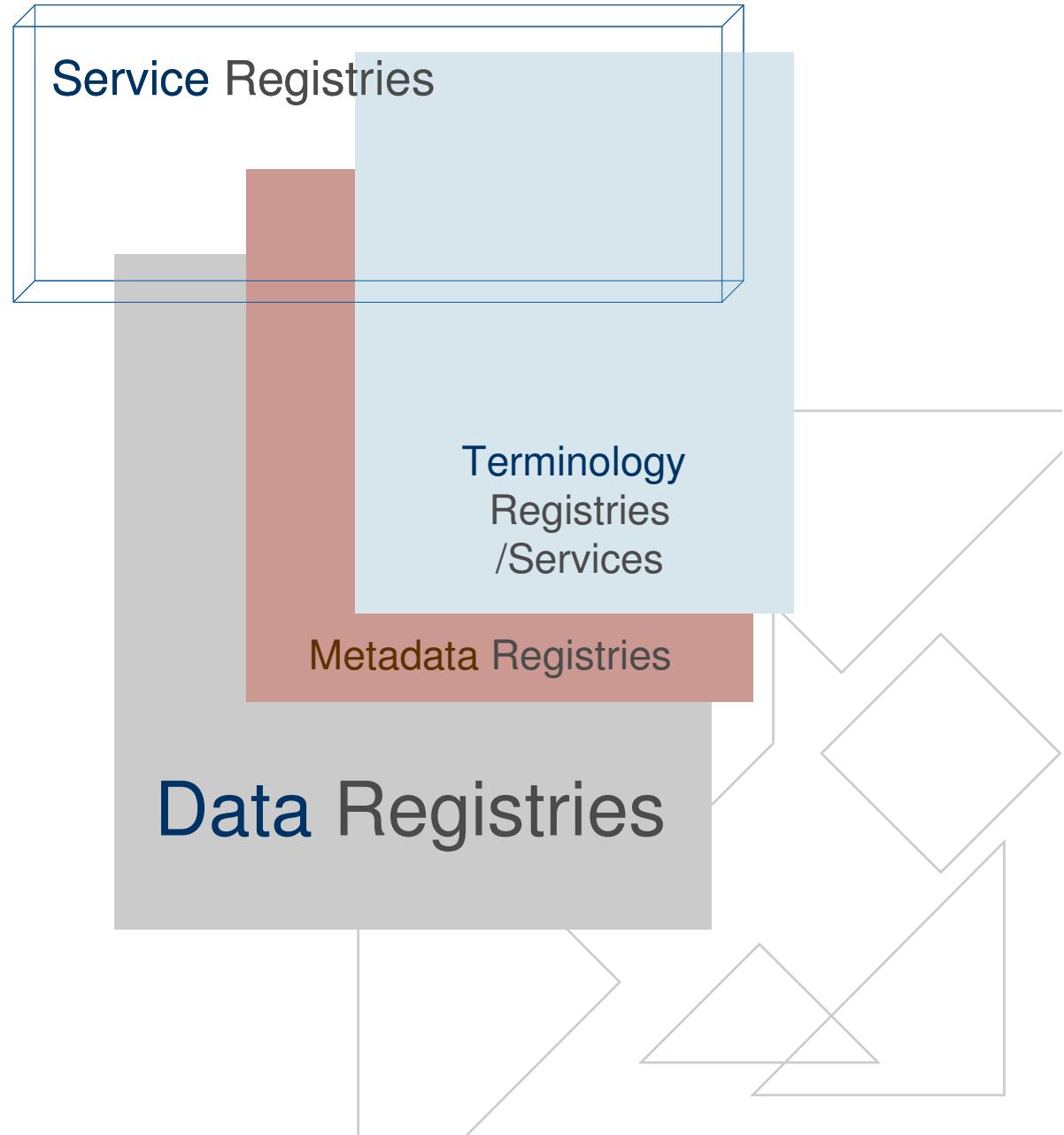
Reasons to have a service registry

- ◆ to provide information documenting Web services across stages
- ◆ to periodically keep track of the business and Web service life-cycle
- ◆ to aid in finding services of interest
- ◆ to support real-time search queries across multiple data registries and business registries



Summary

◆ Synergies
and
differences

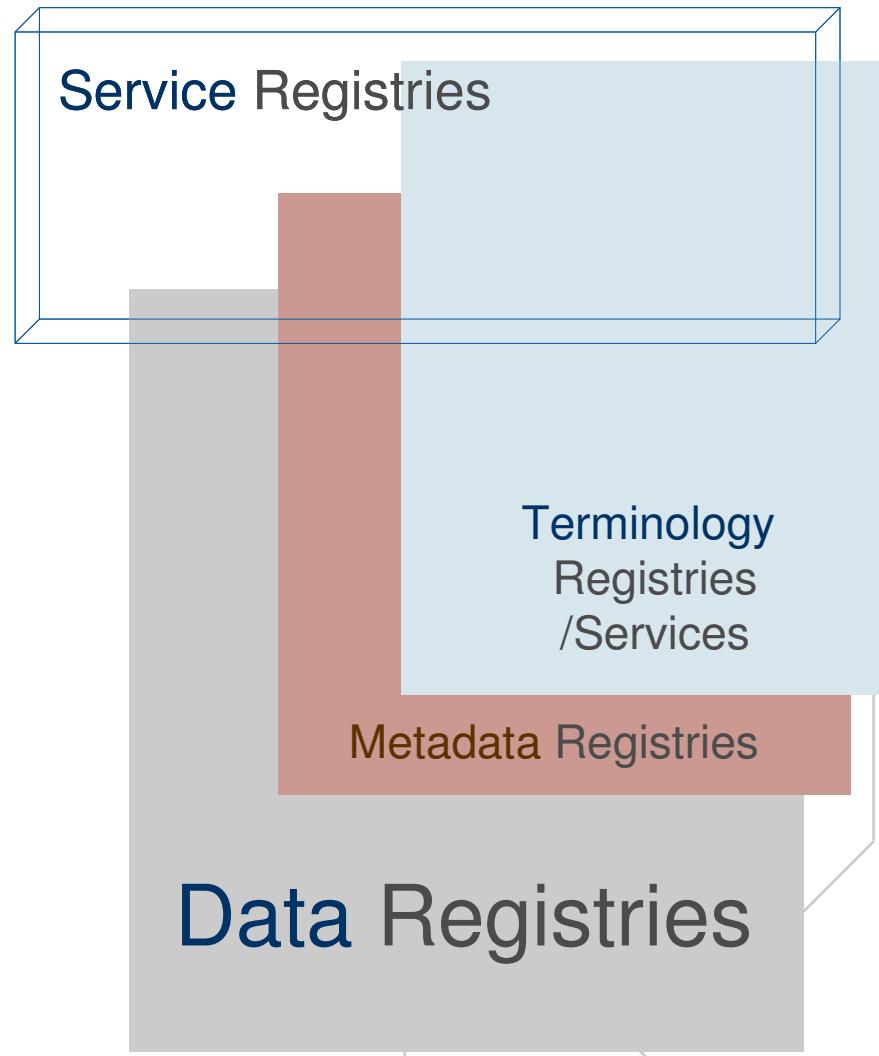


WHAT

(type of data)

- metadata of something
- resources themselves
 - concept represented by terms
 - concept relationships interpreted by some kinds of format

Data type-based view



Research
projects

operational

stage

WHERE

Community-based

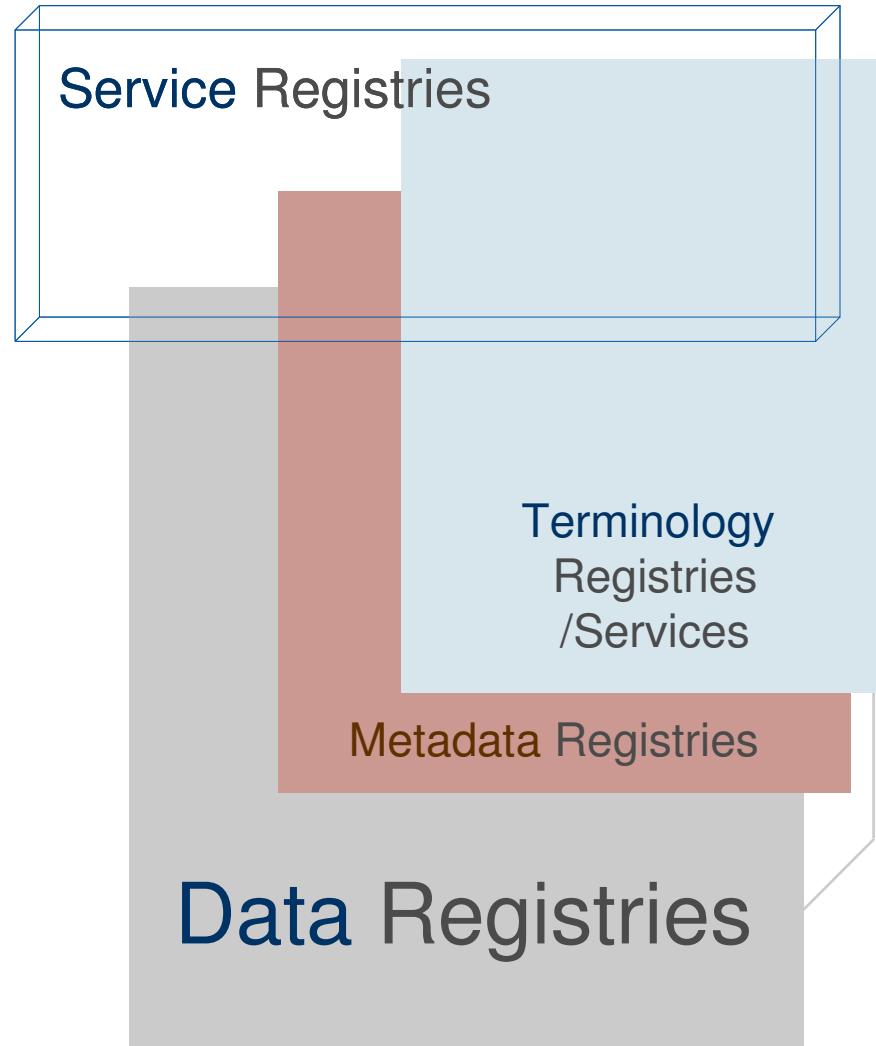
- museum, health, justice, environment, ...

Institution-based

- EPA, Cancer Institute, FAO, ...

Research projects

Data type-based view



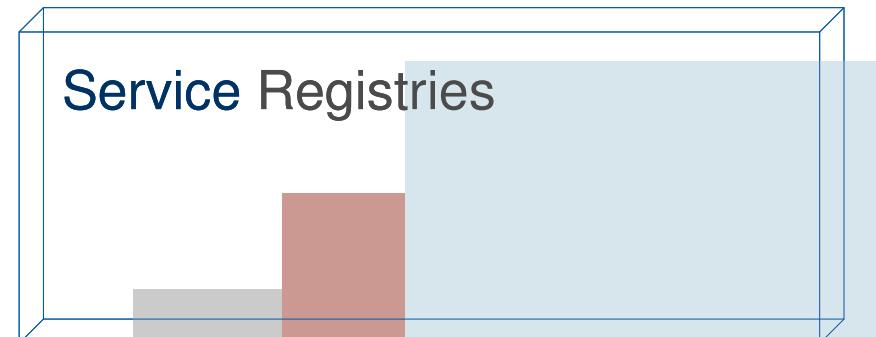
operational

stage

WHO (users and contributors)

- Application developers
- Vocabulary developers
- Content providers
- End-users
- Software agents

Data type-based view



Terminology
Registries
/Services

Metadata Registries

Data Registries

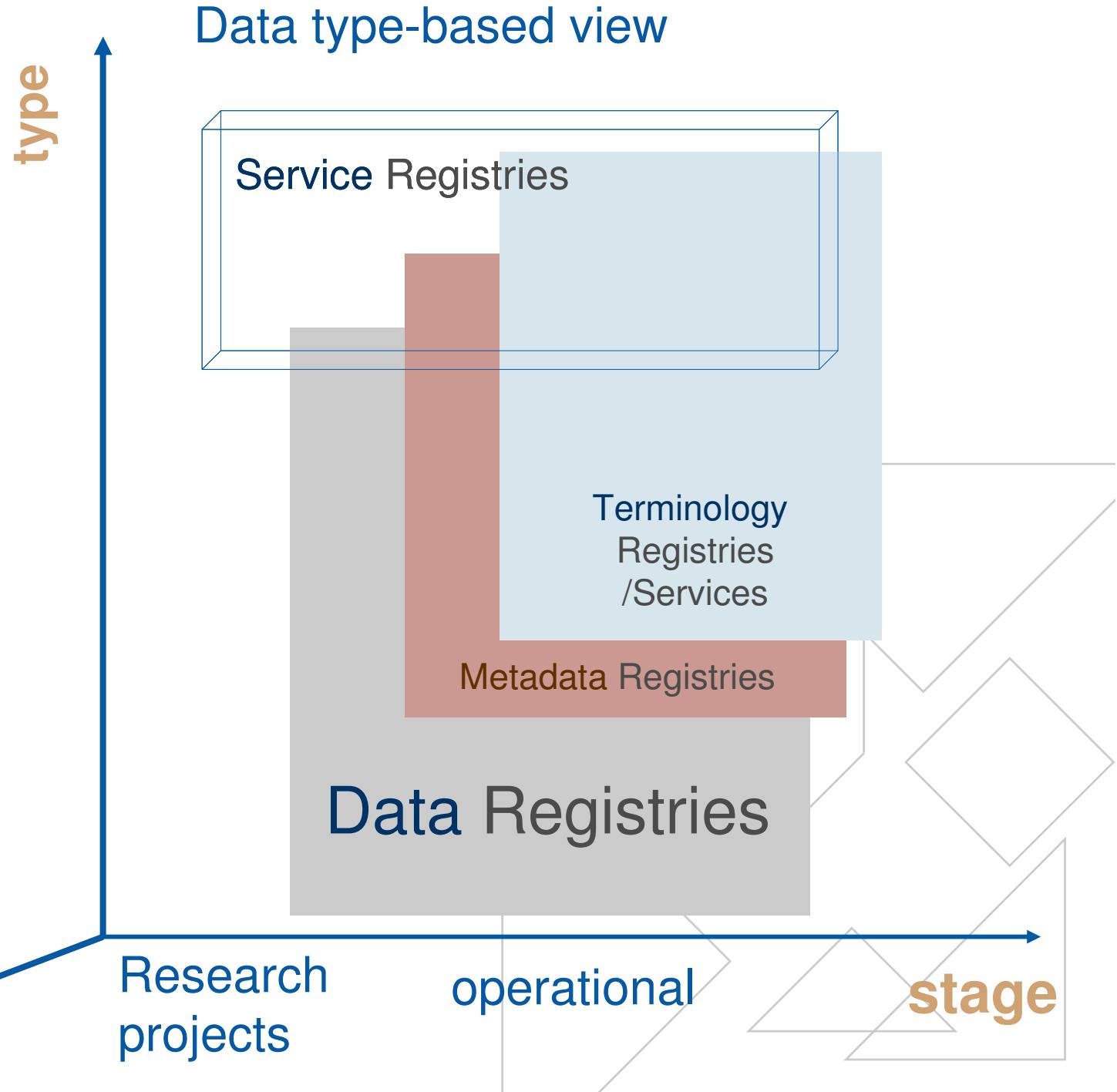
Research
projects

operational

stage

WHEN
**(when they are
needed)**

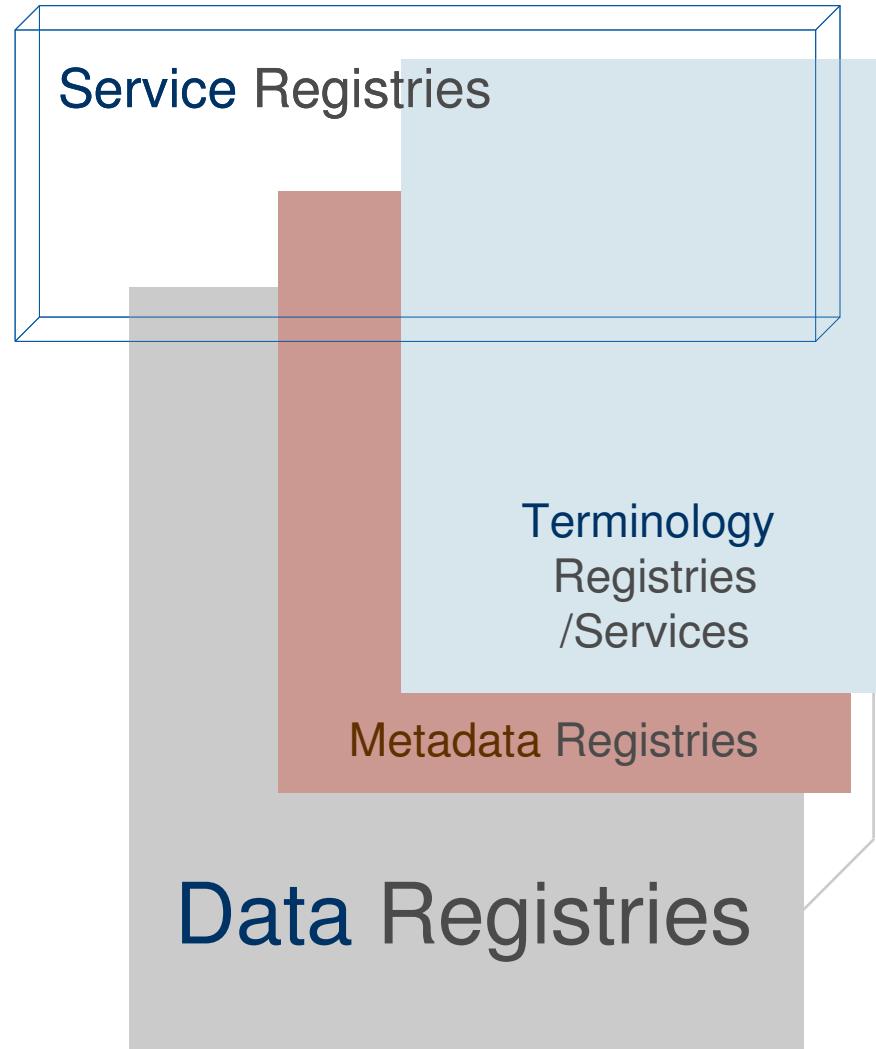
- Design time
- Run time
 - dynamic
 - real-time
 - on-the-fly



HOW (functions)

- persistent storage
- management
- [M2M] services
- and

Data type-based view



Research
projects

operational

stage

and many more variables

- ◆ Scale / size
- ◆ Data models to handle
 - Hidden semantics
 - Relationship types
- ◆ Indexing and analysis requirements
- ◆ Extracting and downloading capabilities
- ◆ Decentralization capabilities
- ◆



Open Questions

- ◆ Synergies and differences?
- ◆ Should registries be set by task/institutions or by types?
- ◆ Are upper registries needed?

