

# **The Strongest Link: Libraries and the Web of Linked Data**

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Memorial University of Newfoundland

Emerging Technologies in Academic Libraries 2010  
Trondheim, Norway - April 2010

# What do Libraries need to do?



1. Use the **RDF data model** to publish structured data on the Web.
2. Use **RDF links** to interlink data from different data sources.

# Library RDF Converters

# MARC to RDF



The screenshot shows the GitHub interface for the repository `rsinger / marc2rdf-modeler`. At the top left is the GitHub logo with the tagline "SOCIAL CODING". Below it, the repository name is displayed with a smiley face icon. A navigation bar includes tabs for "Source", "Commits", "Network (1)", "Issues (0)", and "Downloads". Below this, there are options for "Switch Branches (1)", "Switch Tags (0)", and "Branch List". The repository description reads: "A set of Ruby scripts for taking MARC21 records and remodeling them in RDF". A "Read-Only" button is visible, along with the repository URL: `git://github.com/rsinger/marc2rdf-m`. A commit message is shown: "Removed the 'too-clever-for-my-own-good' override of MARC:". The author is identified as "rsinger (author)" with a date of "August 19, 2009". At the bottom, there is a link to the "README" file.

## MARC/MODS RDFizer

This is an utility tool to convert [MARC](#) records (both in MA to a [MODS](#) representation and then from MODS to RDF.

### How do I use it?

You launch the RDFizer from the command line by giving it records and a folder where to dump the resulting data.

But before you run it, you have to get the source code and b works on all platforms with freely available tools).

### How do I get the source code?

You need a Subversion client. Type `svn` in your shell and s not, go to the [Subversion web site](#) and get one.

# OAI to RDF



[Article](#) | [Discussion](#) | [Edit](#) | [History](#)

## OAI-PMH RDFizer

This is an utility tool to convert the metadata contained in an [OAI-PMH-capable](#) repository to RDF.

### How do I use it?

[\[edit\]](#)

You launch the RDFizer from the command line by giving it the URL of content repository that supports OAI-PMH and the folder to where you want the harvested RDF to be dumped and the tools does the rest.

But before you run it, you have to get the source code and build it (don't worry, it's easy and works on all platforms with freely available tools).

### How do I get the source code?

[\[edit\]](#)

You need a Subversion client. Type `svn` in your shell and see if you have one

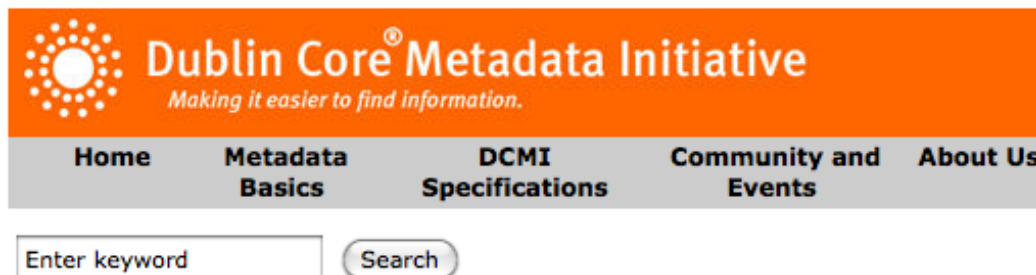
#### NAVIGATION

- » [Main Page](#)
- » [Recent changes](#)
- » [Help](#)

#### TOOLBOX

- » [What links here](#)
- » [Related changes](#)
- » [Upload file](#)
- » [Special pages](#)
- » [Printable version](#)

# Dublin Core to RDF



## Expressing Dublin Core metadata using the Resource Description Framework (RDF)

**Creator:** [Mikael Nilsson](#)  
KMR Group, NADA, KTH (Royal Institute of Technology), Sweden  
[Andy Powell](#)  
Eduserv Foundation, UK  
[Pete Johnston](#)  
Eduserv Foundation, UK  
[Ambjörn Naeve](#)  
KMR Group, NADA, KTH (Royal Institute of Technology), Sweden

**Date** 2008-01-14

**Issued:**

**Identifier:** <http://dublincore.org/documents/2008/01/14/dc-rdf/>

## DC Elements

`xmlns:dc="http://purl.org/dc/elements/1.1/"`

## DC Terms

`xmlns:dcterms="http://purl.org/dc/terms/"`

## DC Abstract Model

`xmlns:dcam="http://purl.org/dc/dcam/"`

# Simile RDFizers



## Ok, I'm interested, what RDFizers are there?

[edit]

Here is the list of the RDFizers that we have built so far:

- **JPEG -> RDF** - scans a folder for JPEG files, parses the EXIF and IPTC metadata found in those files and dumps an RDF/N3 representation of it into a file.
- **MARC/MODS -> RDF** - transforms MARC records from Z39.2 format into MODS and then from MODS to an RDF representation of MODS.
- **OAI-PMH -> RDF** - harvests an OAI-PMH repository and transforms the captured metadata in an RDF representation thru pluggable XSLT stylesheets.
- **OCW -> RDF** - harvests metadata from the MIT OpenCourseWare web site and transforms it into an RDF representation of IEEE LOM.
- **EMail -> RDF** - transforms email mbox files into RDF/XML.
- **BibTEX -> RDF** - transforms BibTEX files into RDF/XML.
- **POM -> RDF** - transforms Maven POM (Project Object Model) files into RDF/N3.
- **DEB -> RDF** - extracts the metadata from a Debian software package and generates an RDF representation.
- **CRW -> RDF** - extracts the metadata from a Canon RAW image file and generates an RDF representation.
- **Flat -> RDF** - converts classic unix text database files, like /etc/passwd, into RDF/N3.



# RDF Publishing Tools



- **Many popular web publishing tools now have RDF & semantic capabilities.**



# Semantic Blogging: Zemanta



Font [dropdown] T [dropdown] **b** *i* T [dropdown] [undo] [redo] [bulleted list] [numbered list] [link] [unlink] [ABC] [image] [video] [edit]

Preview

phrases like the social web, [natural language processing](#), and humanities computing? Yup, putting in those words returned much more relevant related articles. I've inserted the top suggestions at the bottom of the post.

The suggested photos include the lovely one that I've inserted of the [Nidaros Cathedral](#) in Trondheim. I also have several photos of RDF graphs, one of developers working on the semantic version of Drupal, and several pictures of libraries. That's pretty good, right?

It might be better if I threw in a couple of names. Let's try [Kingsley Idehen](#), [Paul Miller](#), and Richard Cyganiak, all actively involved in linked data architecture and evangelism. I'm getting some in-text link suggestions, but only for Paul. I've added the suggested link - it's not linking to Cloud of Data as I expected, but Mr. Miller seems to have several blogs on the go right now.

**IN-TEXT LINKS**

- Zemanta
- natural language processing
- linked data
- Paul Miller
- semantic web
- Kingsley Idehen
- St. John's Newfoundland
- Trondheim, Norway
- social web
- Nidaros Cathedral

[APPLY ALL](#) ?

**Content Recommendations**

Zemanta MY SOURCES

REFINE UPDATE

**MEDIA GALLERY**

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← Related Media

Related Articles →

← Related Tags

Semantic Web, Zemanta, Resource Description Framework

LABELS [APPLY ALL](#)

Semantic Web Paul Miller Kingsley Idehen

Linked Data **Trondheim** Nidaros Cathedral

Zemanta Knowledge management

Resource Description Framework



**RELATED ARTICLES**

Understanding the Semantic Web - 3 CLICKED  
2 WEEKS AGO DOMAINMACHER.COM

Web of knowledge: the Semantic Web CLICKED  
8 HOURS AGO HEYJUDE.WORDPRESS.COM

Zemanta at Semantic meetups in April CLICKED +  
1 YEAR AGO ZEMANTA.COM

Tools to create relevant context to content CLICKED +  
16 HOURS AGO BETATALES.COM

It's All Semantics: Open Data, Linked Data & T  
1 WEEK AGO READWRITEWEB.COM

Semantic Web und Linked Open Data. Eine Bil  
2 DAYS AGO SLIDESHARE.NET

Talking with David Siegel about 'Pull' and the S +  
3 WEEKS AGO CLOUDOFDATA.COM

What will the semantic Web mean for social me  
1 WEEK AGO SMARTBLOGS.COM

# Semantic MediaWiki



Change view | Lisagoddard | Log out

**SMW<sup>+</sup>**  
Semantic Enterprise Wiki

Search this wiki

[Home](#) **Projects** ▾ **Current project** ▾ **My dashboard** ▾ **Articles and data** ▾

► [Main Page](#) > [UserLogin](#) > Lisagoddard

User page     ▾

Enter person data

**First name\*:**

**Last name:**

**Picture:**    
*Here you can upload a picture of the user.*

**Email:**

**Affiliation:**   
*The autocompletion will suggest existing organizations in the wiki.*

**Homepage (include 'http://'):**

**Homepage label (optional):**

**Phone number:**

**Birthday:**  April  2010

**People this person knows:**   
*Enter a comma delimited list of persons. (Auto-completes on pages in the category 'Person'.)*

Specify the project you are currently working on

**Current project:**

# Semantic MediaWiki



Projects ▾ Current project ▾ My dashboard ▾ Articles and data ▾

► AddData > Lisagoddard 1 > Lisagoddard > AddData > Lisagoddard

User page Discussion History Edit More ▾

## Testing semantic annotation features in Semantic MediaWiki

I set up this account in order to test the semantic tagging features in mediawiki. I'm going to a conference in Trondheim, Norway next week to do a presentation on semantic web/linked data in libraries. The conference is called Emerging Technologies in Academic Libraries (EMTACL). I'm a systems librarian in St. John's Newfoundland, so that's the sort of thing we do for fun.

So far mediawiki has not offered me any semantic annotations, so I will probably have to go and read the docs. Maybe I need to install some browser plugins.


What if I throw in a few phrases like the social web, natural language processing, and humanities computing? Drupal 7? Semantic web? Linked Data?

It might be better if I threw in a couple of names. Let's try Kingsley Idehen, Paul Miller, and Richard Cyganiak, all actively involved in linked data architecture and evangelism.

**Biographic data for Tim Berners-Lee** [Click to change this...](#)

**Birth date:** 1955-06-08 00:00:00.0  
**Education:** The Queen's College, Oxford  
**Occupation:** Computer Scientist  
**See also:** [http://en.wikipedia.org/wiki/Tim\\_Berners-Lee](http://en.wikipedia.org/wiki/Tim_Berners-Lee)  
Sir Timothy John Berners-Lee, OM, KBE, FRS, FREng, FRSA (London, 8 June 1955), is an

**Lisa Goddard**



First name: Lisa  
Last name: Goddard  
Email: [lgoddard@mun.ca](mailto:lgoddard@mun.ca)  
Affiliation: **Memorial University of Newfoundland**  
Homepage: [Twitter Feed](#)  
Phone: (555) 555-5555  
Birthday: 1972/04/30

**Projects**

Projects: *not a member in a project*


**Active Tasks (0)** [Add new task](#)

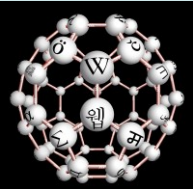
- no active tasks*

# Semantic MediaWiki



**Facts about Lisagoddard** ⓘ RDF feed ⓘ

Affiliation	<a href="#">Memorial University of Newfoundland</a> + ⓘ
Birth date	30 April 1972 + ⓘ
Current project	<a href="#">Libraries &amp; Linked Data</a> + ⓘ
Firstname	Lisa + ⓘ
HasCategory	<a href="#">Category:Person</a> + ⓘ
HasGeocoordinates	<a href="#">49°27′25.181″N, 48°36′42.694″W</a> + ⓘ
Homepage	<a href="http://twitter.com/lisagoddard">http://twitter.com/lisagoddard</a> + ⓘ
Knows	<a href="#">Jennifer Lokash</a> + ⓘ, <a href="#">Gillian Byrne</a> + ⓘ, and <a href="#">Tim Berners-Lee</a> + ⓘ
Lastname	Goddard + ⓘ
Location	<a href="#">Pedagogues Close, St. John's, Newfoundland</a> + ⓘ
Mbox	<a href="mailto:lgoddard@mun.ca">lgoddard@mun.ca</a> + ⓘ
Name	Lisa Goddard + ⓘ
Phone	<a href="#">(555) 555-5555</a> + ⓘ
User image	 + ⓘ



# Semantic MediaWiki

► Main Page > UserLogin > Lisagoddard > AddData

Special page More ▾

Enter event data

**Title\*:**

**Description:**

**Start date:** 26 April 2010 7 :00 :00 AM

**End date:** 28 April 2010 5 :00 :00 PM

**Website (include 'http://'):**

**Website label:**

**Attendee(s):**

Enter a comma delimited list of event attendees. (Auto-completes on pages in the category 'Person'.)

**Related to:**

Enter a comma delimited list of related items. The autocompletion feature will suggest existing pages in the main namespace, but you may type any term.

Retrieve geographic data

**Location:**

Enter the country, city and, if available, the street name, where this event takes place.

**Get geo-coordinates from google:**  True  False

Set this to "True" if you want to retrieve the geo-coordinates of this location automatically for the above location (connects to google). This will only work if you enter an address into the location field.

Show attached content

**Show attached wiki articles:**  True  False

Select "True" if you want to show the articles attached to this event article.

**Event for User:Lisagoddard** iCal

**Description:** Emerging Technologies in Academic Libraries

**Details**

**Start:** 2010/04/26 07:00:00 AM

**End:** 2010/04/28 05:00:00 PM

**Homepage:** [EMTACL 2010](#)

**People attending**

[User:Lisagoddard](#)

**Related items**

[semantic web](#), [linked data](#), [academic libraries](#), [conferences](#), [librarian](#)

**Location of Event for User:Lisagoddard 1**


**Location:** Norwegian University of Science and Technology, Trondheim, Norway

**Geographic coordinates:** [63.4244477°N, 10.4182722°E](#)

If you want to retrieve the geo-coordinates with google then first activate the Google web service. After that open this article with the "edit with form"-tab and set "Get geo-coordinates from google" true.

# Drupal 6 CMS





# Drupal

Home » Download » Modules

[Documentation](#) [Download](#) [S](#)

### Maintainers for Resource Description Framework (RDF)

- miglius** - 1 commit  
last: 8 weeks ago, first: 8 weeks ago
- scor** - 1 commit  
last: 18 weeks ago, first: 18 weeks ago
- Arto** - 340 commits  
last: 31 weeks ago, first: 2 years ago
- febraro** - 1 commit  
last: 1 year ago, first: 1 year ago

[View all committers](#)

### Issues for Resource Description Framework (RDF)

To avoid duplicates, please search before submitting a new issue.

[Advanced search](#)

**All issues**  
51 open, 85 total  
**Bug reports**  
25 open, 44 total


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## Resource Description Framework (RDF)

[View](#) [CVS instructions](#)

**Arto** - October 10, 2007 - 14:39 Modules · Developer · RDF

**RDF** is a **W3C standard** for modeling and sharing distributed knowledge based on a decentralized open-world assumption. Any knowledge about anything can be decomposed into triples (3-tuples) consisting of subject, predicate, and object; essentially, RDF is the lowest common denominator for exchanging data between systems.



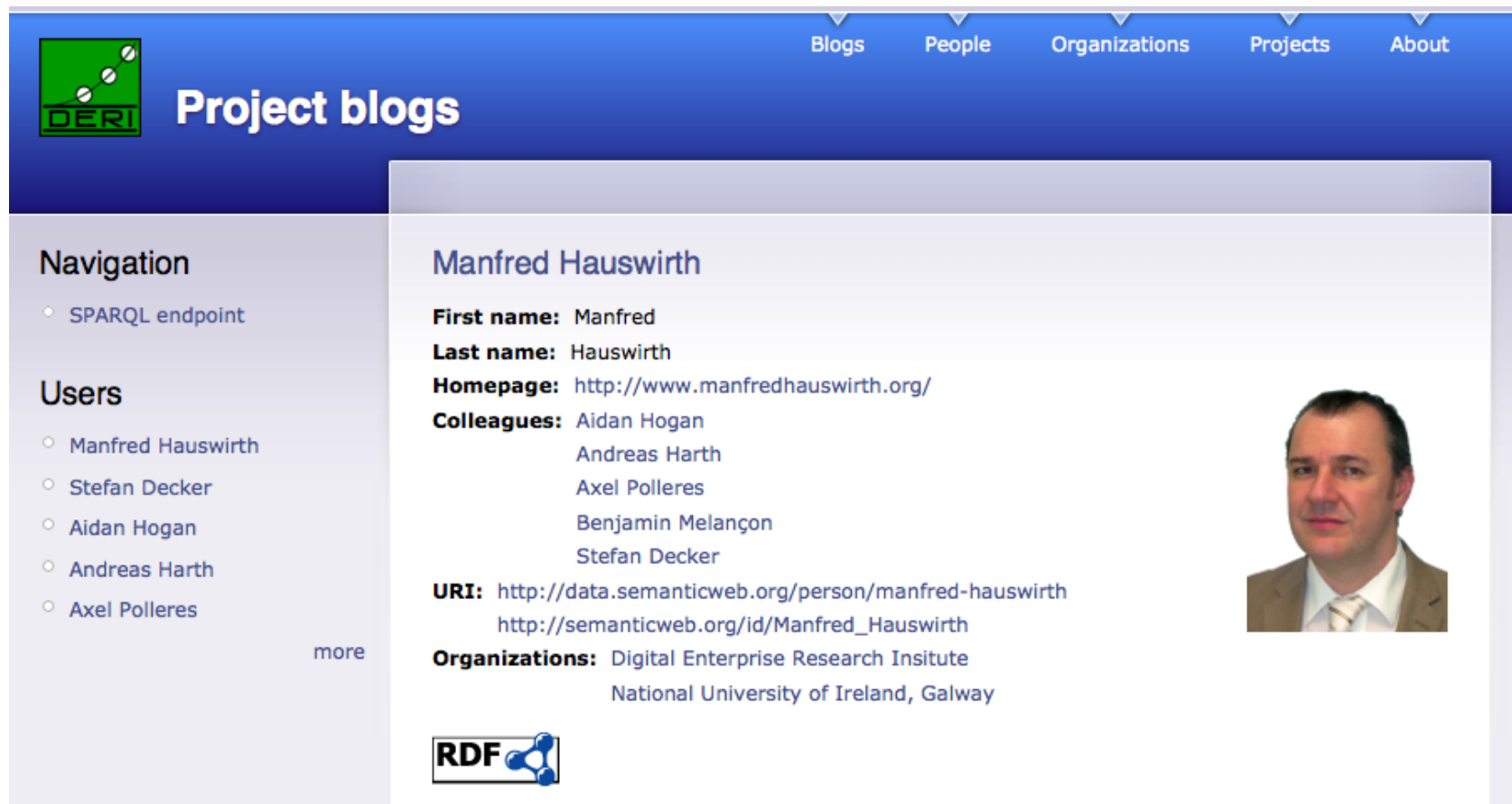
This module provides comprehensive RDF functionality and interoperability for the Drupal 6.x platform. For more information, read [the introductory posting](#) or watch the [demo video](#). Be sure to subscribe to the [Semantic Web](#) group on groups.drupal.org to keep up with the latest happenings.

The module requires **PHP 5.2** or newer, makes use of the **ARC2** library if available, and will integrate with the **Views**, **FeedAPI**, **Feed Element Mapper**, **Location**, and **Services** modules if they are installed. For adding **SPARQL** query support, see the related **SPARQL** project.

Projects that rely on this module as a dependency include **Calais**, **File Framework**, **FeedAPI RDF** and the **Relations** and **DAV** APIs and their spin-offs such as **File Relations Server**.

This project is being developed by **Arto Bendiken**, **Miglius Alaburda**, **Ben Lavender**, **Jeff Miccolis**, **Frank Febraro** and **Stéphane Corlosquet**. Development has been in part sponsored by **OpenBand** and **MakaluMedia**.

# Drupal 7 with RDFa



The screenshot shows a Drupal 7 website interface. At the top, there is a blue navigation bar with the DERI logo on the left and menu items for "Blogs", "People", "Organizations", "Projects", and "About". Below the navigation bar, the page title "Project blogs" is displayed. On the left side, there is a sidebar with "Navigation" (including a "SPARQL endpoint" link) and "Users" (listing Manfred Hauswirth, Stefan Decker, Aidan Hogan, Andreas Harth, and Axel Polleres). The main content area features a profile for Manfred Hauswirth, including his name, first and last names, homepage, colleagues, URI, and organizations. A portrait photo of Manfred Hauswirth is shown on the right. At the bottom of the profile, there is an RDF logo.

**Navigation**

- [SPARQL endpoint](#)

**Users**

- [Manfred Hauswirth](#)
- [Stefan Decker](#)
- [Aidan Hogan](#)
- [Andreas Harth](#)
- [Axel Polleres](#)


[more](#)

## Manfred Hauswirth


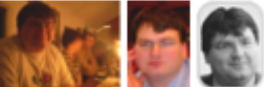

**First name:** Manfred  
**Last name:** Hauswirth  
**Homepage:** <http://www.manfredhauswirth.org/>  
**Colleagues:** Aidan Hogan  
Andreas Harth  
Axel Polleres  
Benjamin Melançon  
Stefan Decker

**URI:** <http://data.semanticweb.org/person/manfred-hauswirth>  
[http://semanticweb.org/id/Manfred\\_Hauswirth](http://semanticweb.org/id/Manfred_Hauswirth)

**Organizations:** Digital Enterprise Research Insitute  
National University of Ireland, Galway





<p><a href="#">VisiNav</a></p> <p>manfred hauswirth <input type="checkbox"/> Knows <input type="checkbox"/></p> <p><a href="#">Detail</a> <a href="#">List</a> <a href="#">Table</a> <a href="#">RSS</a></p>	<p><a href="#">VisiNav</a></p> <p>manfred hauswirth <input type="checkbox"/> Knows <input type="checkbox"/> made <input type="checkbox"/></p> <p><a href="#">Detail</a> <a href="#">List</a> <a href="#">Table</a> <a href="#">Timeline</a> <a href="#">RSS</a></p>
<p><a href="#">Axel Polleres</a>  <a href="http://www.polleres.net/foaf.rdf#me">http://www.polleres.net/foaf.rdf#me</a></p>  <p><a href="#">Person</a> <a href="#">Spatial Thing</a> <a href="#">Person</a></p>	<p><a href="#">Transforming co-NP Checks to Answer Set Computation by Me</a>  <a href="http://dblp.l3s.de/d2r/resource/publications/conf/agp/EiterP03">http://dblp.l3s.de/d2r/resource/publications/conf/agp/EiterP03</a>  document <a href="#">InProceedings</a>  2003</p>
<p><a href="#">Benjamin Melançon</a>  <a href="http://srvgal65.deri.ie/projectblogs/node/2#this">http://srvgal65.deri.ie/projectblogs/node/2#this</a></p> <p><a href="#">Person</a> <a href="#">Spatial Thing</a> <a href="#">Person</a></p>	<p><a href="#">Context Dependent Reasoning for Semantic Documents in Sin</a>  <a href="http://data.semanticweb.org/workshop/ssws/2008/paper/main/6">http://data.semanticweb.org/workshop/ssws/2008/paper/main/6</a>  document <a href="#">Post</a> <a href="#">InProceedings</a></p>
<p><a href="#">Stefan Decker</a>  <a href="http://www.deri.ie/about/team/member/Stefan">http://www.deri.ie/about/team/member/Stefan</a></p>  <p><a href="#">Person</a> <a href="#">Spatial Thing</a> <a href="#">Person</a></p>	<p><a href="#">polleres-feier</a>  <a href="http://data.semanticweb.org/conference/eswc/2006/paper/polleres...">http://data.semanticweb.org/conference/eswc/2006/paper/polleres...</a></p>
<p><a href="#">Aidan Hogan</a>  <a href="http://sw.deri.org/~aidanh/foaf/foaf.rdf#Aidan">http://sw.deri.org/~aidanh/foaf/foaf.rdf#Aidan</a></p>  <p><a href="#">Person</a> <a href="#">Spatial Thing</a> <a href="#">Person</a></p>	<p><a href="#">Axel Polleres' Personal Web Page</a>  <a href="http://www.polleres.net/">http://www.polleres.net/</a>  document  This is the homepage of Axel Polleres. I currently work as a senior research Galway, where I am affiliated with the Digital Enterprise Research Institute 2007-06-25</p>
	<p><a href="#">debruijn-lausen</a>  <a href="http://data.semanticweb.org/conference/eswc/2006/paper/debruijn...">http://data.semanticweb.org/conference/eswc/2006/paper/debruijn...</a></p> <p><a href="#">paper-119</a>  <a href="http://data.semanticweb.org/conference/eswc/2007/paper-119">http://data.semanticweb.org/conference/eswc/2007/paper-119</a></p>

# Library RDF Publishing Tools

# Dspace & RDF



## Search DSpace@MIT

  
 Search DSpace@MIT  
 This Collection

[Advanced Search](#)

## Browse

### All of DSpace@MIT

[Communities & Collections](#)  
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### This Collection

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## My Account

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## Links

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## Women as Policy Makers: Evidence from a Randomized Policy Experiment in India

[Show full item record](#)

Citable URI: <http://hdl.handle.net/1721.1/39126>

**Title:** Women as Policy Makers: Evidence from a Randomized Policy Experiment in India  
**Author:** Raghabeendra Chattopadhyay; Esther Dufo  
**Issue Date:** 2007-10-05  
**Abstract:** This data set uses political reservations for women in India to study the impact of women's leadership on policy decisions. Using a dataset we collected on 265 village councils in West Bengal and Rajasthan, we compare the type of public goods provided in reserved and unreserved village? councils. Data sets based upon information provided by GP Pradhans, local villagers, and the 1991 Indian Census  
**URI:** <http://hdl.handle.net/1721.1/39126>  
**Other Identifiers:** hdl:1902.1/USBFNOMLAT  
**Keywords:** gender, decentralization, affirmative action, political economy, gender, decentralization, affirmative action, political economy

# Fedora & RDF



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## Welcome to Mulgara

**Mulgara** is a scalable RDF database written entirely in [Java](#).

Mulgara is licensed under the [Open Software License v3.0](#).  
New code is being contributed using the [Apache 2.0 license](#).

Latest Release:

 **DOWNLOAD NOW**   
V2.1.7 (Feb 16, 2010)

### Recent News

---

[Mulgara v2.1.7 has been released](#). This release introduces interruptible queries, and better matches the SPARQL algebra requirements. For details, please see the [release notes](#). [Download from here](#). - **February 16, 2010**

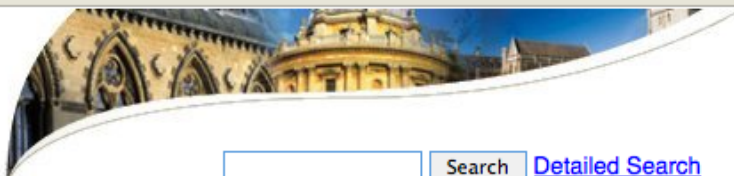
[Mulgara v2.1.6 has been released](#). This fixes a regression in nested OPTIONAL operations and introduces new functions, particularly the ARQ function extensions. For details, please see the [release notes](#). [Download from here](#). - **December 17, 2009**

[Mulgara v2.1.5 has been released](#). SPARQL now correctly supports non-DISTINCT queries, with significant optimizations for UNION. For details, please see the [release notes](#). [Download from here](#). - **December 11, 2009**

[New IRC channel](#). This is a new port of call for people requiring help with Mulgara. Point your IRC client to irc.freenode.net and join [#mulgara](#). - **November 9, 2009**


# Fedora & RDF



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ORA Journal Article: "**em>**: adding emotion to strategy in understanding British Pakistani transnational marriages"

Tinyurl.com link: <http://ora.ouls.ox.ac.uk/objects/uuid:96efaceb-fcc8-46db-94c9-c2e0bd99d34d>

Member of collection [Journal Articles](#)

## Title: *Rishtas*: adding emotion to strategy in understanding British Pakistani transnational marriages

**Abstract:** The popularity of transnational marriages that in most cases involve first cousins or other kin distinguishes Pakistanis from other British South Asian groups. In this article we explain the popularity of such marriages. We seek to complement accounts that stress kinship obligations and socio-economic strategy by showing that transnational marriages are also motivated by the emotional ties of kinship. Central to this analysis is a focus on the Urdu/Panjabi concept of *rishta*, which conveys ideas about a 'good' match and about emotional connections between people. Our attention to emotional discourse between siblings, between parents and children and between prospective spouses in the context of marriage arrangements augments the understanding of what is at stake for those involved in transnational marriages. Our analysis also complements accounts that emphasize parental exegesis by offering a multigenerational perspective.

**Author:** Alison Shaw

( Alison Shaw )

### Institution

University of Oxford

### Faculty/Department

Medical Sciences Division - Public Health

### Research Group

Ethox Centre

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(beta service)

Link to this page:

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# Fedora & RDF



**Reference:** Alison Shaw ; Katharine Charsley , (2006). *Rishtas: adding emotion to strategy in understanding British Pakistani transnational marriages* . *Global Networks* , 6 (4), 405-421

Link to this archived copy: <http://ora.ouls.ox.ac.uk/objects/uuid:96efaceb-fcc8-46db-94c9-c2e0bd99d34d>

**Relationships for "[em>: adding emotion to strategy in understanding British Pakistani transnational marriages](#)" :**

View full list as RDF in format:

[HTML Lite](#) [HTML Full](#) [RDF/XML](#) [N-Triples](#) [N3](#) [Turtle](#)

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# Eprints & RDF



UNIVERSITY OF  
**Southampton**  
School of Electronics  
and Computer Science

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- Research Facilities
- Centres and Institutes
- Latest Technologies

### Publications

- Publications Home
- This weeks new additions
- Search
- Browse by research group
- Browse by year

### Intranet Tools

- Add publications
- Modify REF2013 Information

## 3store: Efficient Bulk RDF Storage

Harris, S. and Gibbins, N. (2003) 3store: Efficient Bulk RDF Storage.

### Download

 [Postscript](#)  
286Kb

### Abstract

The development and deployment of practical Semantic Web applications requires technologies for the storage and retrieval of RDF data that are robust and scalable. In this paper, we describe the 3store RDF storage and query engine developed within the Advanced Knowledge Technologies project, and discuss the design rationale and optimisations behind it which enable the efficient handling of large RDF knowledge bases.


**Creators:** [Stephen Harris](#), [Nicholas Gibbins](#)

**Item Type:** Other

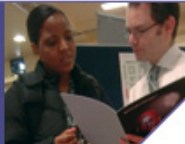
**Keywords:** [H.2.8 Database Applications](#) [H.3.3 Information Search and Retrieval](#) [I.2.0 Artificial Intelligence, General](#)

**Research Group:** [Intelligence, Agents, Multimedia](#)


### RESEARCH THEMES



### INDUSTRIAL PARTNERSHIPS




### APPLY ONLINE FOR A PhD



### RESEARCH PROSPECTUS

PDF (7MB)



# Eprints & RDF



**Metadata**

**Download Statistics**

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ID Plus Text Citation

Export

- ID Plus Text Citation
- RDF+XML**
- BibTeX
- Pageflow Montage
- RDF+N-Triples
- JSON
- Dublin Core
- OAI-ORE Resource Map (Atom Format)
- Simple Metadata
- Refer
- METS
- OAI-ORE Resource Map (RDF Format)
- Search Data Dump
- Pageflow
- HTML Citation
- ASCII Citation
- YAML
- RDF+N3
- EPrints Application Profile (experimental)
- OpenURL ContextObject



# Libraries & RDF

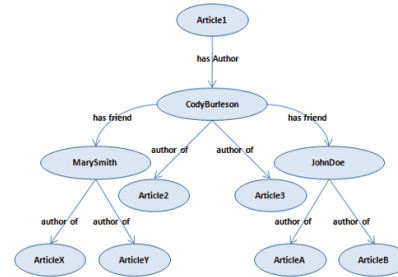
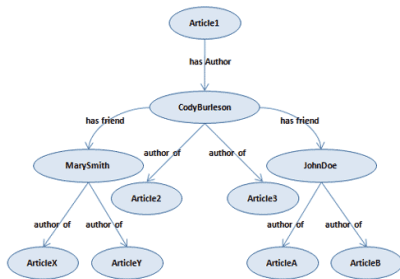


- **Plenty of tools already exist to allow libraries to expose data as RDF.**
- **Become aware, experiment, work with vendors to develop semantically compliant tools.**

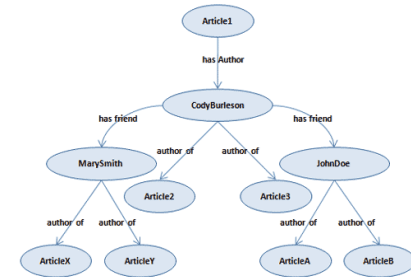
# RDF Linking



The LIBRARY  
of CONGRESS



The New York Times  
ON THE WEB





# Library Linking Hubs



- **Reuse existing URIs for entities & concepts.**
- **Connect resources to external data published by other data sources.**

# Subject linking: loc.id.gov



Details [Visualize](#)

## Fjords

**URI:** <<http://id.loc.gov/authorities/sh85048937#concept>>

**Type:** Topical Term

**Alternate Labels:** Fiords

**Broader Terms:**

- [Coasts](#)
- [Glacial landforms](#)

**LC Classification:** GB454.F5

**Created:** 1986-02-11

**Last Modified:** 1987-12-31 12:44:36

**Similar concepts from other vocabularies:**

- <http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb12009563w>

**Alternate Formats:** [RDF/XML](#), [N-Triples](#), [JSON](#)

# Virtual International Authority File



**VIAF** Beta  
Virtual International Authority File

**Search**

Select Field:  Select Index:  Search Terms:

**Selected Covers**

**Freud, Sigmund,, 1856-1939**

**ФРЕЙД, ЗИГМУНД, 1856-1939**

**1856-1939 , פרויד, זיגמונד,**

**Freud, Sigmund**

**פרויד, סיגמונד, 1856-1939 מ**

**Freud, Sigmund (פרויד, סיגמונד)**

VIAF ID:34456780

# RDF Book Mashup



## Book Search Results for “interpretation of dreams freud”

Search for books:

**Note:** You can use an RDF-aware user agent (e.g. Browser) to explore the RDF based Linked Data (Metadata) associated



### **The Interpretation Of Dreams**

Sigmund Freud

<http://www4.wiwiss.fu-berlin.de/bookmashup/books/8562022489>



### **Signmud Freud's The Interpretation of Dreams - Freud's seminal exploration of human nature (Discus**

Sigmund Freud, James Strachey

<http://www4.wiwiss.fu-berlin.de/bookmashup/books/>



### **THE INTERPRETATION OF DREAMS - Freud's Seminal Exploration of Human Nature**

Sigmund (James Strachey Transl.) Freud

<http://www4.wiwiss.fu-berlin.de/bookmashup/books/>

# Linked Periodicals Data



## Work Employment & Society

<http://periodicals.dataincubator.org/journal/work-employment-and-society>

[RDF/XML](#) [JSON](#) [Turtle](#)

<b><a href="#">Titles</a></b>	Work Employment & Society Work, Employment & Society
<b><a href="#">Type</a></b>	<a href="#">bibo:Journal</a>
<b><a href="#">Publisher</a></b>	<a href="#">organization:sage-publications</a>
<b><a href="#">Subjects</a></b>	<a href="#">authorities:sh85065928</a> <a href="#">authorities:sh85065946</a> <a href="#">authorities:sh85148133</a>
<b><a href="#">Subjects</a></b>	Arbeitssoziologie Industrial relations Industrial sociology Relations industrielles Sociologie industrielle Travail Work
<b><a href="#">Homepage</a></b>	<a href="http://wes.sagepub.com">http://wes.sagepub.com</a>
<b><a href="#">ISSN</a></b>	0950-0170



# RKBExplorer - Publication



RKBExplorer » Publications » Basic Concepts and Taxonomy of Dependable and Secure Computing

Search...

- about
- help
- contact
- system requirements
- data sources
- acknowledgements

**Related publications**

**Details**

**Title:**  
Basic Concepts and Taxonomy of Dependable and Secure Computing

**Authors:**  
[Jean-Claude Laprie](#)   
[Carl Landwehr](#)   
[Brian Randell](#)   
[Algirdas Avizienis](#)

**Abstract:**  
This paper gives the main definitions relating to dependability, a generic concept including as special case such

**People**

- [Brian Randell](#)
- [Algirdas Avizienis](#)
- [Carl Landwehr](#)
- [Jean-Claude Laprie](#)

**Organisations**

- [NEWCASTLE UNIVERSITY](#)
- [The University of Newcastle upon Tyne](#)
- [LAAS-CNRS](#)
- [LABORATORY OF THE ANALYSIS AND THE ARCHITECTURE OF SYSTEMS \(LAAS\)](#)

**Publications**

- [A Family of Trusted Third Party based Fair-Exchange Protocols](#)
- [Fundamental concepts of dependability](#)
- [Conceptual Model and Architecture](#)
- [Dependability and its threats: a taxonomy](#)

**Courses & Materials**

- [Fundamentals of Dependability](#)
- [Dependability of computer systems](#)

# RKBExplorer - Person




RKBExplorer » [People](#) » Jean-Claude Laprie

Search...

- about
- system requirements
- help
- data sources
- contact
- acknowledgements

### Related people

### Details



**Full Name:**  
[Jean-Claude Laprie](#)

**Works For:**  
[LAAS-CNRS](#)

**Telephone:**  
 +33 5 61 33 78 85

#### People

- [Karama Kanoun](#) ?
- [Jean Arlat](#) ?
- [Mohamed Kaaniche](#) ?
- [David Powell](#) ?
- [Brian Randell](#) ?
- [C BEOUNES](#) ?

#### Organisations

- [LAAS-CNRS](#) ?
- [Centre National de la Recherche Scientifique](#) ?
- [Groupe TSF, LAAS CNRS, 7 avenue du Colonel Roche, 31077, Toulouse, Cedex 4, France](#) ?
- [LABORATORY OF THE ANALYSIS AND THE ARCHITECTURE OF SYSTEMS](#) ?

#### Publications

- [Conceptual Model and Architecture](#) ?
- [Fundamental concepts of dependability](#) ?
- [Modelling Interdependencies Between the Electricity and Information Infrastructures.](#) ?
- [RKBExplorer](#) ?

#### Courses & Materials

- [Fundamentals of Dependability](#) ?
- [Dependability of computer systems](#) ?
- [Software Reliability Engineering](#) ?
- [The Challenge of Dependable Systems \(MSc Computer Security & Resilience\)](#) ?

# RKBExplorer - Organization



RKBExplorer » Organisations » LAAS-CNRS

Search... Search

- about
- help
- contact
- system requirements
- data sources
- acknowledgements

**Related organisations**

**Details**

**Other Names:**  
LAAS-CNRS

<http://wiki.rkbexplorer.com/id/laas-cnrs-address>

**Web Address:**  
<http://www.laas.fr/>

**Web Address:**  
[http://en.wikipedia.org/wiki/Laboratory\\_for\\_analysis\\_and\\_architecture\\_of\\_systems](http://en.wikipedia.org/wiki/Laboratory_for_analysis_and_architecture_of_systems)

**Description:**  
The Laboratory for analysis and architecture of systems

**People**

- [Agnan de Bonneval](#)
- [Ana Rugina](#)
- [David Powell](#)
- [Eric Alata](#)
- [Etienne Baudin](#)
- [Helene Waeselynck](#)
- [Jacques Collet](#)

**Organisations**

- [Laboratoire d'Analyse et d'Architecture des Systèmes](#)
- [LABORATORY OF THE ANALYSIS AND THE ARCHITECTURE OF SYSTEMS \(LAAS\)](#)
- [LAAS-CNRS TOULOUSE](#)
- [NEWCASTLE UNIVERSITY](#)
- [INSTITUT DE RECHERCHE EN INFORMATIQUE ET SYSTEMES](#)

**Publications**

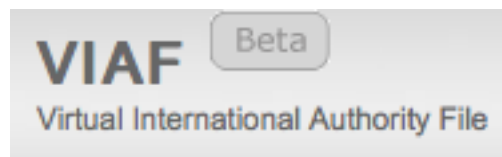
No results found

**Courses & Materials**

- [Dependability of computer systems](#)
- [Experimental Assessment of Computer System Dependability](#)
- [Dependability evaluation of computer systems](#)
- [Distributed Fault Tolerance](#)
- [Fault Tolerance in Distributed Object-Oriented Systems](#)



LIBRIS 



Google books



 Data Incubator



SerialsSolutions



# What's the promise?



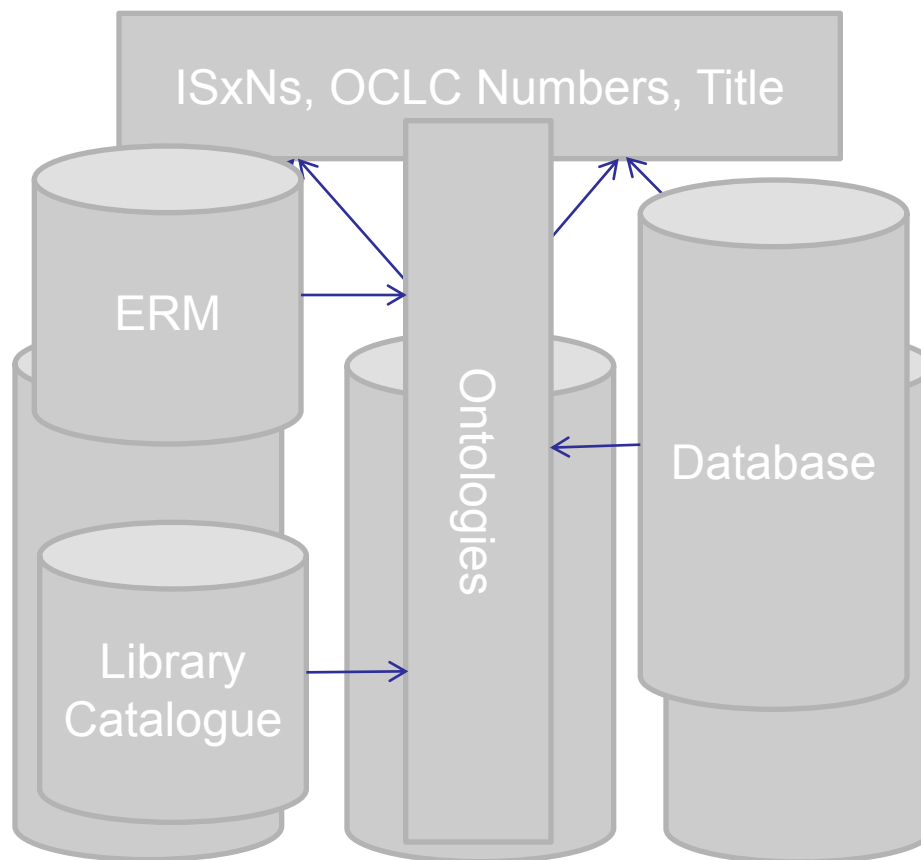
- **Better, smarter discovery**
- **Enriched content**
- **Enhanced personalization**

# Smarter linking



<b>Title:</b>	Deviance and crime in colleges and universities: What goes on in the halls of ivy.	
<b>Authors:</b>	<a href="#">Hickson, Mark, III</a> <a href="#">Roebuck, Julian B.</a>	<p><b>Deviance and crime in colleges and universities : what goes on in the halls of ivy</b></p> <p><b>Personal Author:</b> Hickson, Mark.</p> <p><b>Title:</b> <a href="#">Deviance and crime in colleges and universities : what goes on in the halls of ivy / by Mark Hickson III and Julian B. Roebuck.</a></p> <p><b>Publication info:</b> Springfield, Ill. : Charles C Thomas, c2009.</p> <p><b>Physical descrip:</b> xiv, 253 p. ; 26 cm.</p> <p><b>Subject term:</b> <a href="#">Universities and colleges--United States--Sociological aspects.</a></p> <p><b>Subject term:</b> <a href="#">Universities and colleges--Corrupt practices--United States.</a></p> <p><b>Subject term:</b> <a href="#">College discipline--United States.</a></p> <p><b>Subject term:</b> <a href="#">Deviant behavior--United States.</a></p> <p><b>Subject term:</b> <a href="#">College students--United States--Psychology.</a></p> <p><b>Bibliography note:</b> Includes bibliographical references and index.</p> <p><b>Added author:</b> <a href="#">Roebuck, Julian B.</a></p> <p><b>ISBN:</b> 9780398078799 (hard)</p> <p><b>ISBN:</b> 0398078793 (hard)</p> <p><b>ISBN:</b> 9780398078805 (pbk.)</p> <p><b>ISBN:</b> 0398078807 (pbk.)</p>
<b>Source:</b>	Springfield, IL, US: Cha	
<b>ISBN:</b>	978-0-398-07879-9 (Ha 978-0-398-07880-5 (Pa	
<b>Language:</b>	English	
<b>Keywords:</b>	interdisciplinary typolog drinking; date rape; as	
<b>Abstract:</b>	(from the cover) This <i>h</i> shootings were aberrat binge drinking, date rap <b>behavior</b> and crime in including coaching <b>beh</b> <b>behavior</b> , sexual issue commercialism at the e pressures of external g deviance and crime tha academic would rather all rights reserved)	
<b>Subjects:</b>	<a href="#">*Antisocial Behavior</a> ; <a href="#">*Colleges</a> ; <a href="#">*Criminal Behavior</a> ; <a href="#">*School Environment</a> ; <a href="#">*Taxonomies</a> ; <a href="#">Campuses</a> ; <a href="#">Classroom Environment</a> ; <a href="#">Crime</a> ; <a href="#">Educational Administration</a> ; <a href="#">Higher Education</a> ; <a href="#">Morality</a> ; <a href="#">Social Behavior</a>	
<b>Classification:</b>	Classroom Dynamics & Student Adjustment & Attitudes (3560) Criminal <b>Behavior</b> & Juvenile Delinquency (3236)	
<b>Population:</b>	Human (10)	
<b>Age Group:</b>	Adulthood (18 yrs & older) (300)	
<b>Intended Audience:</b>	Psychology: Professional & Research (PS)	
<b>Format Covered:</b>	Print	
<b>Publication Type:</b>	<b>Book</b> ; Authored <b>Book</b>	
<b>Release Date:</b>	20100118	
<b>Accession Number:</b>	2009-17252-000	

# Data integration



# Disambiguation



[Madonna](#) at Raphael's nightclub (NSFW)

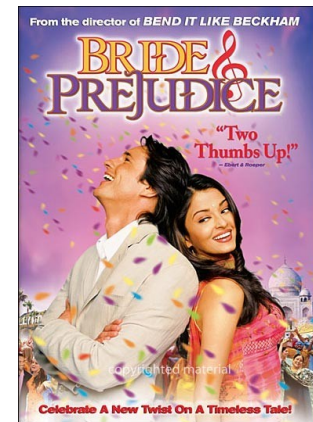
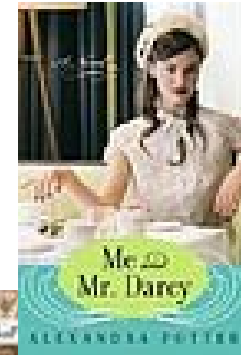
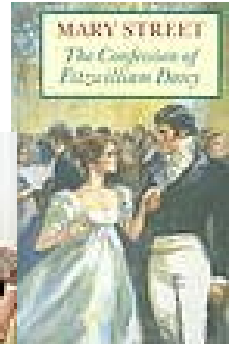
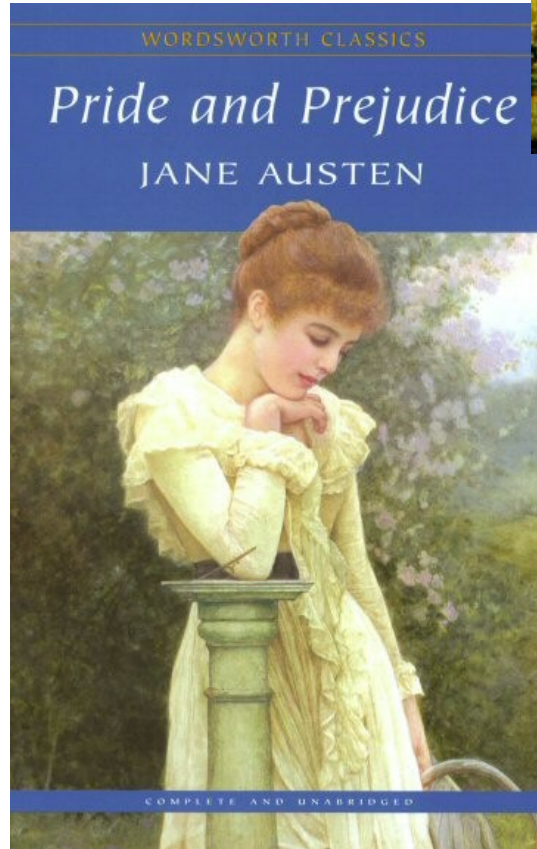
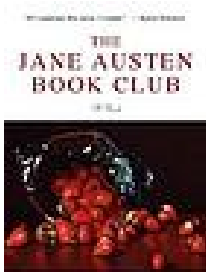
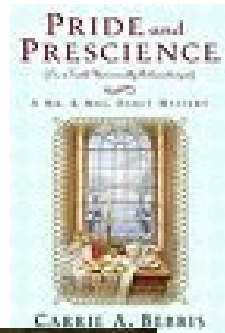


Raphael's [Madonna](#) (NSFW)

``

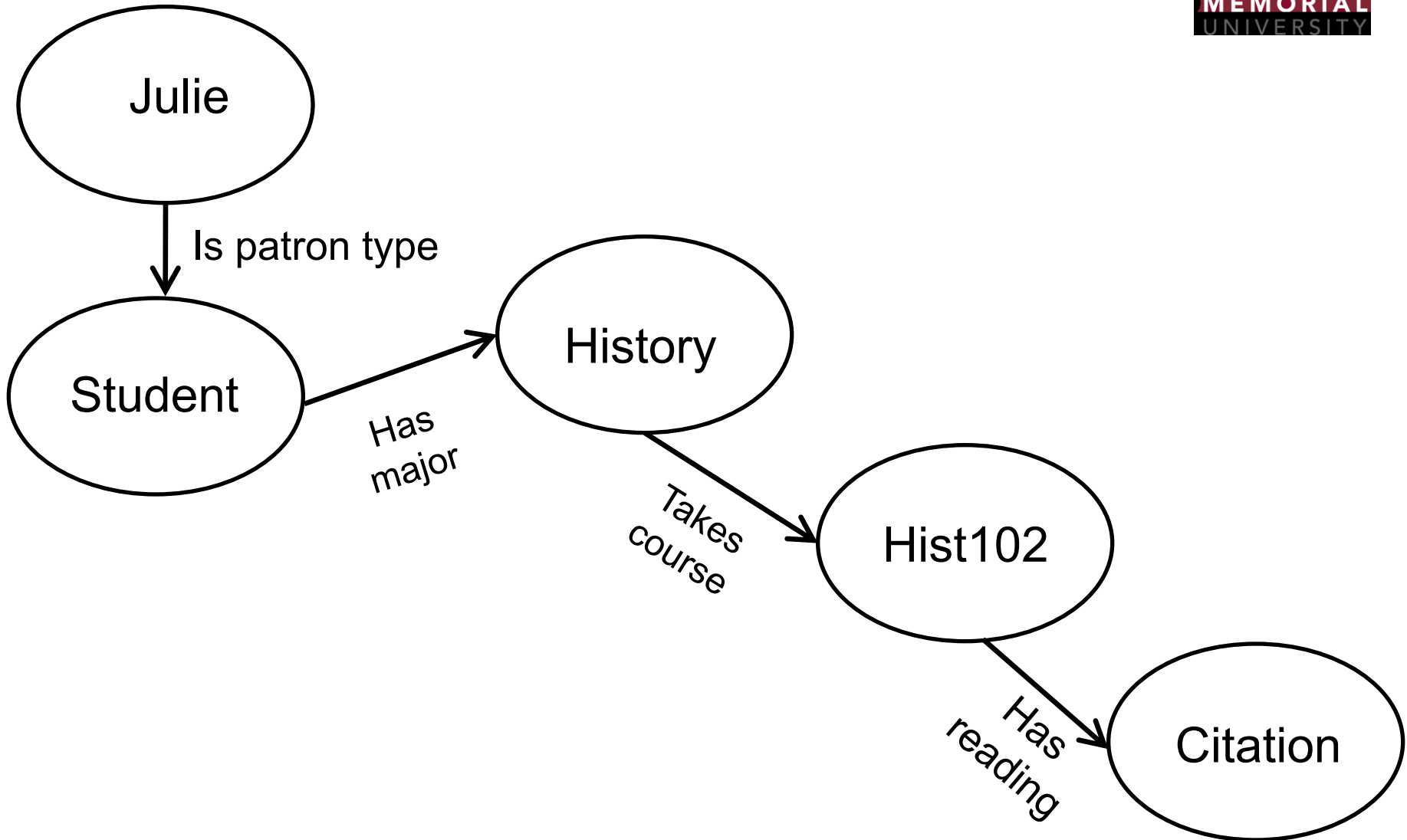


# Related Works to Relationships





# Enhanced personalization



# The Holy Grail?



# What are the obstacles?



- **Trust**
- **Data ownership**
- **It's...well...hard**

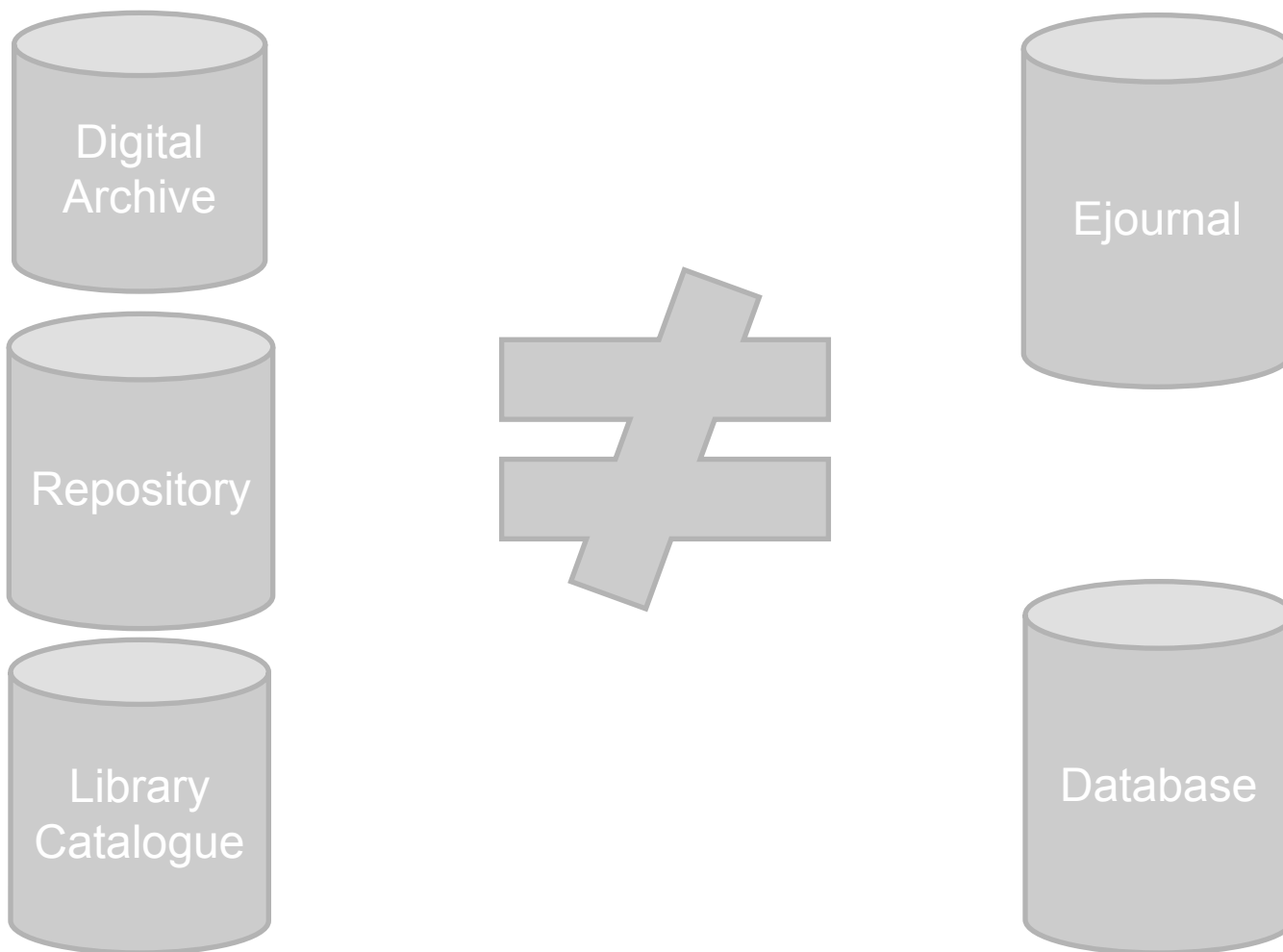
# Trust



The largest hurdle to library adoption of Linked Data, though, may not be educational or technological ... The sticking point for librarians may be an issue of trust.

- Ross Singer, "Linked Data Now!"

# Data ownership



# Rocking the foundations



- **MARC**
- **RDA**
- **DCMI/RDA Task Group**



# What can we do...now?



- **Eric Miller noted in a 2004 talk that libraries have four major roles in the semantic web:**
  1. exposing collections – use Semantic Web technologies to make content available;
  2. web'ifying thesaurus/mappings/services;
  3. sharing lessons learned;
  4. persistence.

# Exposing collections

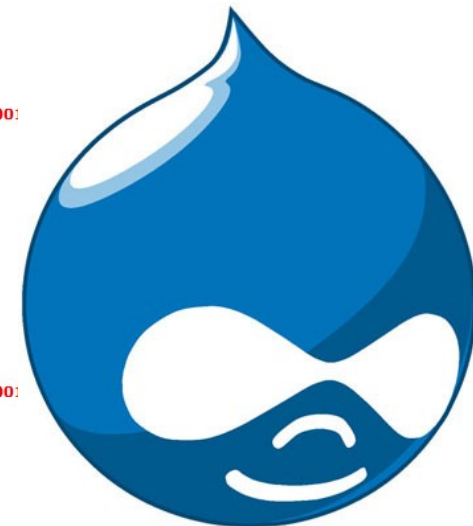


```
..org/OAI/2.0/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/OAI-PMH.xsd">  
  <responseDate>  
    <="oai_dc" set="cns">http://collections.mun.ca/cgi-bin/oai.exe</request>
```

```
</0</identifier>  
>
```

```
v.openarchives.org/OAI/2.0/oai_dc/" xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/ http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
```

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<dc:uri>Cover</dc:uri>  
<dc:relation>(4.7 MB) -- http://collections.mun.ca/PDFs/cns/FF_1015_C57.pdf</dc:relation>  
<dc:identifier>http://collections.mun.ca/u?/cns,0</dc:identifier>  
</oai_dc:dc>  
</metadata>  
</record>  
- <record>  
- <header>  
  <identifier>oai:collections.mun.ca:cns/1</identifier>  
  <timestamp>2005-10-17</timestamp>  
  <setSpec>cns</setSpec>  
</header>  
- <metadata>  
- <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/" xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/ http://www.openarchives.org/OAI/2.0/oai_dc.xsd">  
  <dc:title>Inside Cover</dc:title>  
  <dc:identifier>http://collections.mun.ca/u?/cns,1</dc:identifier>  
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</metadata>  
</record>  
- <record>  
- <header>  
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</header>  
- <metadata>  
- <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/" xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/ http://www.openarchives.org/OAI/2.0/oai_dc.xsd">  
  <dc:title>Opening Page</dc:title>  
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</oai_dc:dc>  
</metadata>  
</record>
```



# web'ifying thesaurii, etc.



## Cataloguing

NT  
Descriptive cataloguing  
RT  
Authority control (Local)  
Subject analysis

Charging/discharging (library materials)  
USE **Circulation**

## Circulation

UF Borrowing (library materials)  
Charging /discharging (Library materials)  
Lending (library materials)  
Loans (library materials)  
RT  
Holds (library materials) (Local)  
Loan periods (Local)  
Recall (library materials) (Local)  
Renewals (Local)  
Reserve materials (Local)

## Citations (Local)

UF Bibliographic citations

## Classification

### Classification schemes

RT  
Controlled vocabularies

### Collection development

NT  
Selection of materials

### Colleges and universities

Computer searching  
USE **Online searching**

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:skos="http://www.w3.org/2004/02/skos/core#">
  <skos:Concept rdf:about="http://staff.library.mun.ca/staff/staffdir/libweb/controlled/concept/13" />

    <skos:prefLabel>Circulation</skos:prefLabel>
    <skos:altLabel>Borrowing</skos:altLabel>
    <skos:altLabel>Loans</skos:altLabel>
    <skos:scopeNote>Refers to functions related to circulating material, not the administrative
department.</skos:scopeNote>
    <skos:narrower rdf:resource="http://staff.library.mun.ca/staff/staffdir/libweb/controlled/concept/38"/>
    <skos:narrower rdf:resource="http://staff.library.mun.ca/staff/staffdir/libweb/controlled/concept/103"/>
    <skos:narrower rdf:resource="http://staff.library.mun.ca/staff/staffdir/libweb/controlled/concept/16"/>
    <skos:inScheme rdf:resource="http://staff.library.mun.ca/staff/staffdir/libweb/controlled"/>

  </skos:Concept>

</rdf:RDF>
```

# Sharing lessons

