ALA ALCTS Cataloging and Classification Research Interest Group Meeting

Expanding the Metadata Librarian Horizon: Reflections on the Metadata Practices in the Web and Digital Repositories

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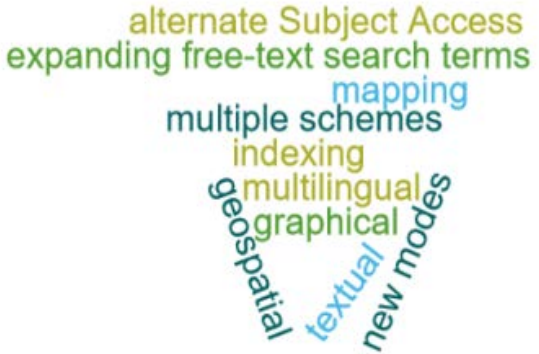
Digital Repository, the Web and KOSs

- *Systems of Knowledge Organization for Digital Libraries: Beyond Traditional Authority Files,* by Gail Hodge. Copyright 2000 by the Council on Library and Information Resources.
- **Types of Knowledge Organization Systems (KOSs):**

Term Lists	Classifications and Categories	Relationship Lists
Authority files, Glossaries, Dictionaries, Gazetteers	Subject headings, Classification schemes, Taxonomies, Categorization schemes	Thesauri, Ontologies, Semantic networks

- **Linking Digital Library Resources to Related Resources**
- **Making Resources Accessible to Other Communities** (see graph)
- **Implementing Knowledge Organization Systems:**
  - **Making the Link (DL-KOS): metadata; text analysis**



Environmental Scanning of Authority Control in Digital Repositories

- Problems in name authority control in institutional repositories. (Salo, Dorothea. 2009)
- FAO's Survey Open Access Repositories in the Agricultural Domain (2009-2010): Only 40% is using some sort of authority control, especially for Journal titles.
- Survey of ARL-member institutions: Despite the system challenge, half use LCNAF in some capacity (Goslen, Anna S. 2011)
- Western Name Authority File Project: Authority Control for Digital Collections Survey, 2016.

Name Disambiguation:
Authority Control & Identity Management

- **Name Disambiguation**
  - Manual disambiguation (e.g., LCNAF);
  - Author registry site;
  - Automatic name disambiguation.

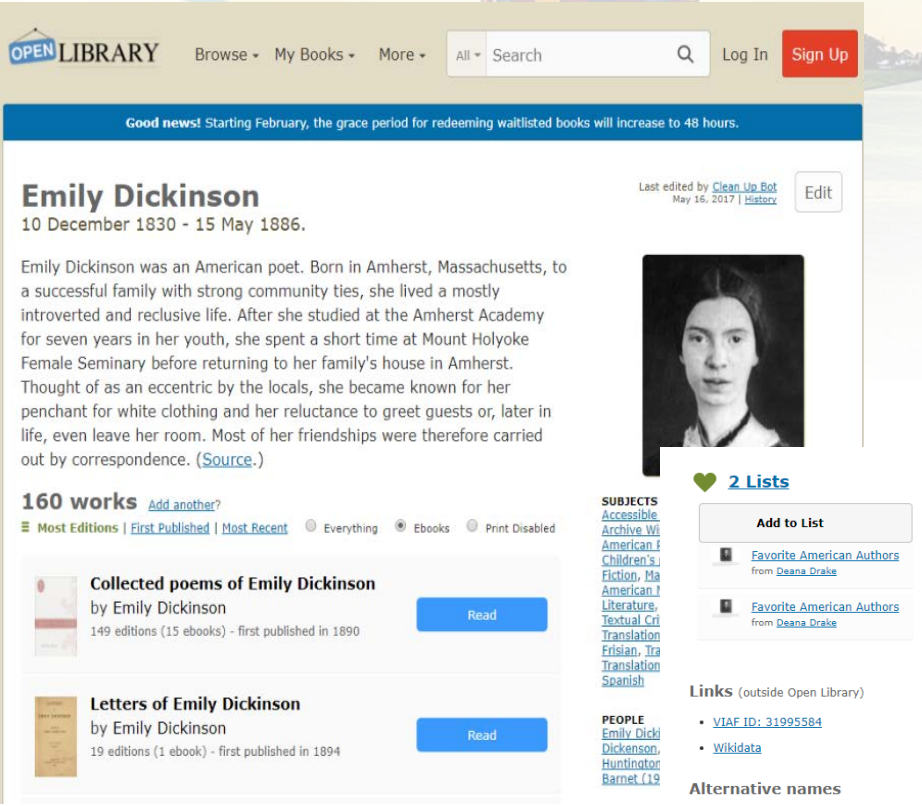
  (Elliott, Sarah. Survey of Author Name Disambiguation: 2004-2010)

- **Identities**: Scopus author identifier and profile, VIAF, ISNI, ResearcherID, ORCID, Worldcat identities…

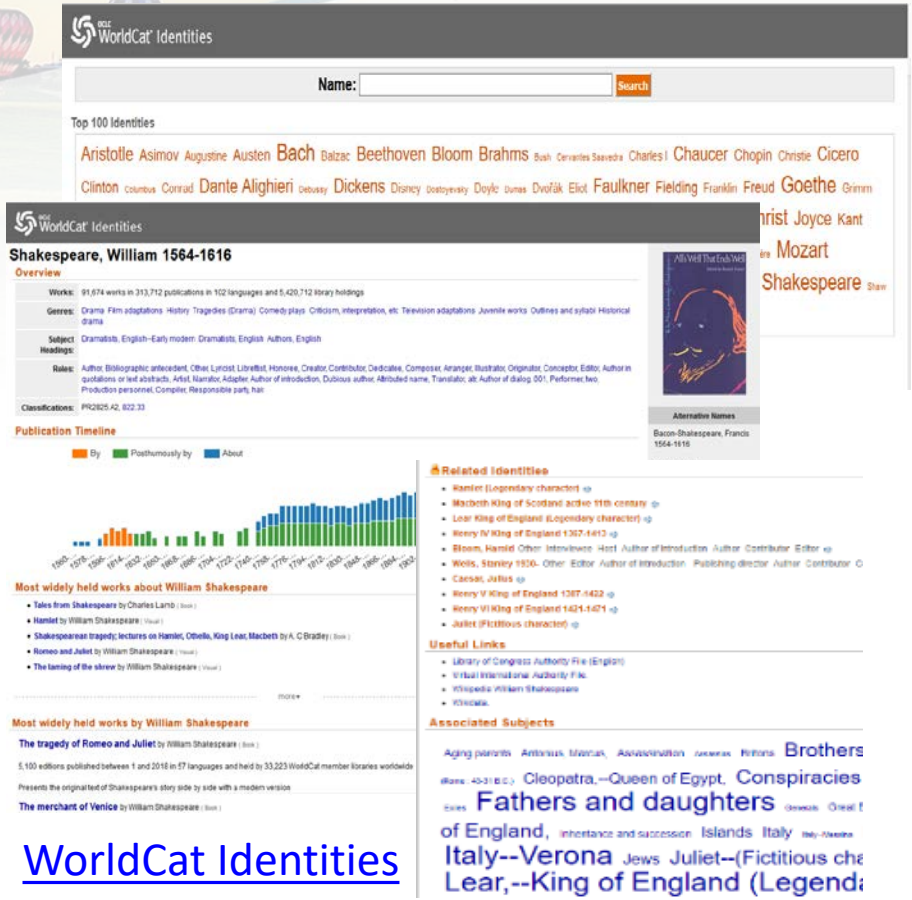
- **Shifting from Authority Control to Identity Management**

  (Identity Management or Authority Control? Liss, 2017 ALA Annual)

Engaging User Interfaces Using Author Information



[Open Libraries Author Page]



[WorldCat Identities]

Subjects & Keywords:
Debate on the Use of Controlled Vocabularies

- **Information retrieval research** shows that the use of CVs does not improve precision and recall;
- **Indexing researchers** show that CV usage can improve indexing consistency.
- **This study found that: LCSH works best for topical terms; Bio thesaurus ITIS works better for scientific terms.**
  (White, Hollie. Examining scientific vocabulary: Mapping controlled vocabularies with free text keywords, 2013.)

- **User search query compared with FAST terms and legacy keywords in the IR: FAST terms match better.**
  (Hanrath & Radio. 2016)

- **Researchers assign subject/keyword metadata to their own materials in IRs; Tagging**

- **Advantage of controlled vocabularies lies in linked data?!**

- **The web's impact to library practices and digital repositories: BIBFRAME! What about digital repositories**

What about the Web: Metadata & Text Analysis

- **Web archiving**: **Capturing E-Publications of Public Documents (CEP); SWISH-E based IGI search engine**
  - **Illinois Subject Tree, Metadata Generator available**; worked as RA;
  - **Author generated metadata is rare, supplement with**:
    - Inclusion of plain-text; extraction of noun phrases; knowledge of the ownership of the website; collection level metadata; classifier program for assigning subject classifications (Jackson, 2005)
  - **Automatic subject heading assignment** for online government publications using a semi-supervised machine learning approach. (Hu, X., Jackson, L., Deng, S. and Zhang, J., 2006.)

- **"Making the link":** metadata; machine learning, natural language processing…
- **Learn about web technology, web standards:** HTTP, RDF, URIs…
- **Search engine optimization and digital repositories**

What about the Web: IR Working w/ Search Engines

- **Google's ranking algorithm:** PageRank; RankBrain

- **Google Scholar:** "Rank documents the way researchers do"
  - **Author page**: created for authors
    - Name, position, email, research interest, **publications** (title, author, journal name, volume, issue, year), **cited by** (Citations, h-index, i10-index), Co-authors
  - Author has no unique alphanumeric identifiers; use **statistical model** to try to tell authors apart; author mediation

- **IR Content Discovery:** Provide metadata structured according to **Google Scholar guidelines** can greatly improve the indexing ratio of IR content; transform Dublin Core to **High Wire Press tags** and include as meta tags in html (Arlitsch & O'Brien)

What about the Web: Get Metadata to be Understood by Search Engines

- **Schema.org**: a set of extensible schemas that enable webmasters to embed **structured data** to web pages for use by search engines and other applications.
  - Created by search engines (Google, Bing, Yahoo)
  - **Schema.org vocabulary** (entities, actions, relationships)
  - **Extensions**
    - **Bibliographic Extension** (http://bib.schema.org/)
    - **Extend Schema.org to represent archives** (https://archival.github.io/schema-org/)

- **Schema.org, Libraries & Digital Repositories**: Get metadata to be understood by search engines
  - WorldCat, Europeana, Islandora…

Changing Digital Repositories

Islandora

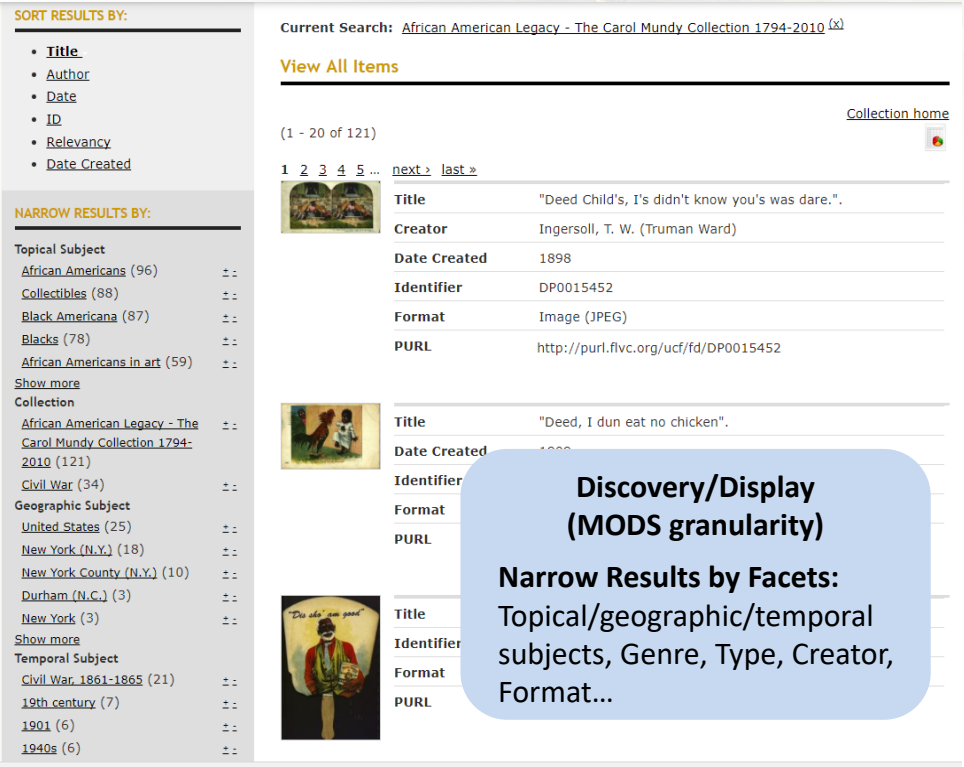
- Open source. Supports Dublin Core, MODSXML, MADS, METS, PREMIS…
- Authority Control in Islandora 7.x: **Entities Solution Pack**
  - **Entities:** Person, place, event, organization;
  - Entities created in **MADS** or **EAC-CPF**;
  - Build departmental directories and faculty profiles;
  - **Islandora FLVC:** Some institutions populated author and department names (w/ basic authority control)
- **Integrated doi** (batch ingest module), **ORCID**.
- **Subject:** authority can be defined, e.g.,<Subject authority="LCSH"…>
  - FSU DigiNole case: local script to reconcile and add subjects to MODS records (Miguez, 2017)
- **Google Scholar tags** added to citation object's page; **schema.org tags** added to metadata fields

CONTENTdm

- Proprietary. Supports DC, XML.
- **Support multiple controlled name& subject vocabularies and thesauri**:
  - AAT, TGN, TGM, ULAN…
  - LCSH, FAST not included;
  - CVs can only be chosen when first establishing a field; local terms can be added, but not separated from controlled lists; validation enforced

Changing Digital Repositories

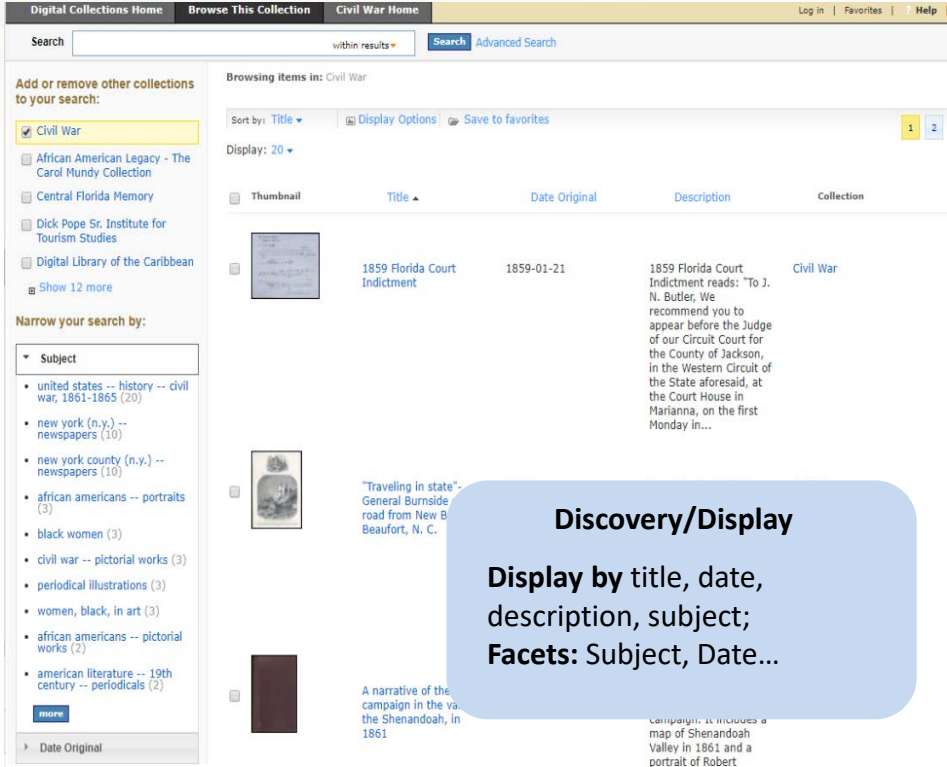
Islandora
Collection Example



Discovery/Display (MODS granularity)

Narrow Results by Facets: Topical/geographic/temporal subjects, Genre, Type, Creator, Format…

CONTENTdm
Collection Example



Discovery/Display

Display by title, date, description, subject;
Facets: Subject, Date…

Changing Digital Repositories

Islandora

- **Linked Data:** Effort in mapping MODS to RDF. Fedora 4, LDP implementation; Islandora CLAW
- **Cases:**
  - TU Delft repository example: Colonical Architecture (Delftdora module, Fedora 3)
  - A Lightweight Structured Data Implementation Using JSON-LD and Schema.org for Digital Repository (Mak et al.)
- **My own experience:**
  - Data mapping, transformation, Notepad++ text editor. Metadata migration to Islandora: Is there an easy way? 2014.
  - Standards implementation. Applying RDA to CONTENTdm & Islandora. 2015.

CONTENTdm

- **Linked data experiments:**
  - Not inside the system, but work on exported data.
  - **UIUC.** Challenges of Mapping Digital Collections Metadata to Schema.org (Lampron et. al. 2016.)
  - **OCLC& CONTENTdm**. Metadata Refinery, transforms CONTENTdm metadata to Linked Data, 2016. Not yet scalable. (Washburn et al. 2016.)
- **My own experience:**
  - Used a mixture of terms from id.loc.gov (text only) and local.
  - Reconcile certain fields (e.g., advisor) in exported datasheet against LC authorities in OpenRefine.

Changing Digital Repositories

DSpace

- Open source. Supports Qualified DC, can export to METS, MODS…
- DSpace 6.x, XMLUI (Manakin), JSPUI.
- **Metadata Registry**: Default registry (DC, DCTERMS); Local Metadata Registry.

- **Authority control & Identity Management**
  - Can be enabled in configuration;
  - CVs in form fields; in separate XML files;
  - Authority key; ORCID integration.

- dc.subjects doesn't enforce control; supports some specific vocabularies (e.g., SRSC); has dc.subject.lcsh field

- Usage analysis via plug-in, SEO

Digital Commons

- Proprietary. Supports qualified DC.
- **Authority Control & Identity Management**
  - **Author:** author names entered as they appear in email or source; include name, email and institution
  - **Author merge tool**
  - **DOI and ORCID integration**

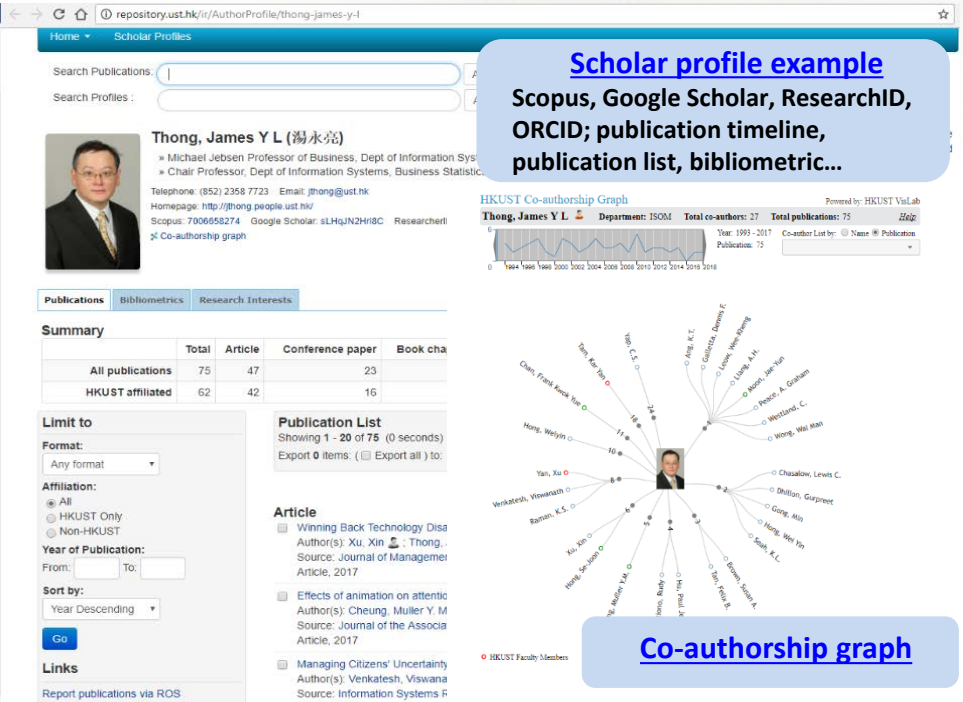
- **Subject:** built-in Discipline thesaurus; only has Keywords field, can request to add subject field, but not included in browsing/ facets

- **Some features:** Impact & Analytics map, improved SEO

Changing Digital Repositories

DSpace
Author Page Example

- **HKUST IR** (Powered by VuFind and DSpace)

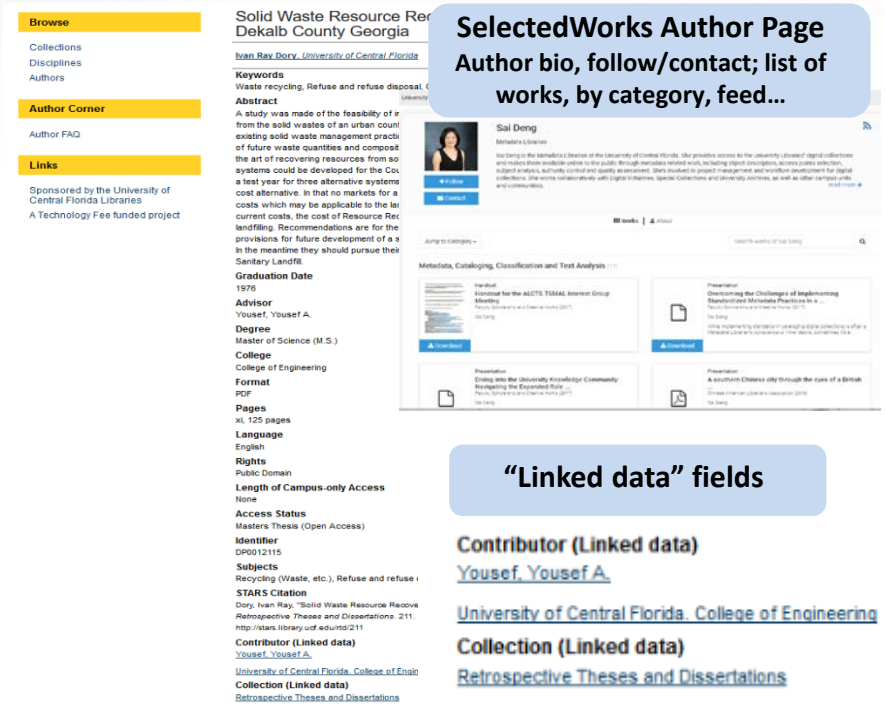


Scholar profile example
Scopus, Google Scholar, ResearchID, ORCID; publication timeline, publication list, bibliometric…

Co-authorship graph

Digital Commons
Author Page & Record Examples

- **UCF Author/contributor Linked Data**



SelectedWorks Author Page
Author bio, follow/contact; list of works, by category, feed…

“Linked data” fields

Changing Digital Repositories

DSpace

- **DSpace Linked Data support spans all three Layers:** **"**the storage layer with **a triple store**, the business logic with classes to **convert** stored contents into RDF, and the application layer with a module to **publish** RDF serializations." (Donohue, DSpace documentation)

- **Discovery/Display:**
  - **Browse by** communities, collections, date, authors, titles, **subjects**, type;
  - Author, subject, date **facets**.

- **My past experience at WSU** (in interface, data repurposing, transformation and transfer):
  - Building Collections in IRs from External Data Sources
  - Enhancing workflow through batch import from Excel to DSpace; Customized mapping and metadata transfer from DSpace/SOAR to OCLC and Voyager
  - Building New Interfaces for Shocker Open Access Repository

Digital Commons

- **Linked data**: Allow to add extra fields for links (not RDF)

- **Discovery/Display:**
  - **Browse by** collections, **disciplines**, authors;
  - Discipline, keyword, year, type **facets**;
  - **Exhibit-like presentation;**
  - Included in **Bepress' networks** (e.g., Digital Humanities Commons).

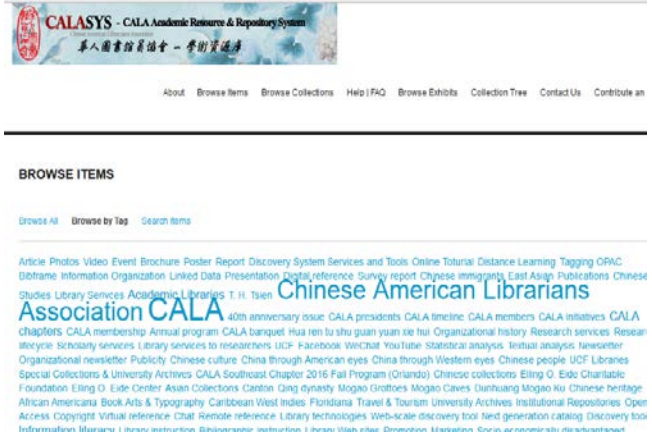
- **Our experience:**
  - Include links (id.loc.gov, viaf.org) in added additional fields for author, advisor, department names etc.;
    - Preparing for linked data in digital repositories.
  - Data (in spreadsheet) cleanup and reconciliation using OpenRefine;
  - Verifying author names (challenging): Google, university and departmental websites, publications, CV…

Changing Digital Repositories

Omeka

- Open source web publishing platform. Supports Dublin Core. Can export METS, dc-rdf, json etc.
- **Subject** field not enforced; has additional tag feature.
- **Browse/Discovery:**
  - Terms can be accessed via clicking tags in the record;
  - Browse by tag (word cloud);
  - Browse items/collections/exhibits;
  - Collection tree

- **Plug-ins:**
  - **Import from Dropbox, YouTube; CSV batch import**
  - **LC Suggest (plug-in)**
  - **User Profiles (plug-in)**
  - **Ozmeka (plug-ins)/ Omeka linked data**
- My own experience: CALASYS (as a CALASYS Group member)



Browse by Tag

Various Approaches in Authority Control/Identity Management/Discovery etc.

- **System approach:** Develop new functionality; develop extensions and plug-ins; collaboration
- **Institutional approach:**
  - e.g., Name Authority Control: An institutional repository approach (Waugh, 2013)
- **Regional approach,** e.g., Western Name Authority File Project
- **National and International approach,** e.g., WorldCat Identities, VIAF, ISNI…
- **Individual reflection:**
  - Being a cataloger means to be not only a guardian of principles and standards but also a knowledge organizer, collaborator, researcher and an innovative and curious-minded lifelong learner (Diao & Hernandez. 2014)

Some Discussions

- **A *Very Basic Understanding of the Big Environment (Broaden your horizon)**
  - **How to organize knowledge and information? How does search work in various platforms and the web?**
  - **Knowledge Organization Systems (KOSs); Every DL uses one or more KOS.**
    - **Primary applications:** Indexing, browsing, searching DLs
    - **Other applications:** Automatic annotation/indexing of contents/documents, automatic classification of contents/documents, developing Concept Space and ontologies for enhanced browsing/navigation, interoperability among DLs, linked data creation, publication venue authority control, visualization for browsing…
    - **Additional applications:** Automatic query expansion, Search Term Recommendation (STR) System

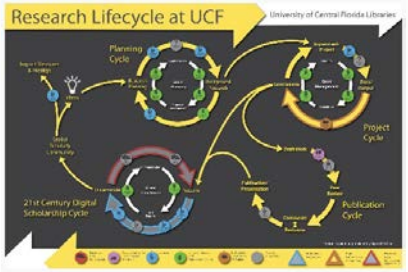
    (Sunny, TISS. Application of Traditional Knowledge Organization Systems in Digital Libraries: A Study on Current Status. Tata Institute of Social Sciences)

- **Understanding of Metadata and the Profession**
  - The Evolving Role of the Metadata Librarian: Competencies Found in Job Descriptions (Han& Hswe, 2010)
  - Metadata standards, schemas, vocabularies… “What then?”
  - While users and authors can contribute metadata, do Metadata Librarians have values to add? What are those values?

In addition…

- **Metadata Services is defined as:** Providing metadata consultation and assistance to university faculty and students in their research lifecycle.

- **The Research Lifecycle at UCF**
  - Sub-cycles: the Planning cycle, the Project cycle, the Publication cycle, the 21st century digital scholarship cycle
  - Dataset Metadata and Metadata Services



- **Challenges and Opportunities for Metadata Services**
  - Connecting the dots: Defining scholarly services in a research lifecycle model, 2013.
  - Diving into the University Knowledge Community, 2017.

Final Thoughts

- **Open mindset**
- **Learn new knowledge, information and skills**
  - Possible areas: vocabulary management, document encoding, data processing;
  - Learn some basic skills in working with data: XML, XSLT, RDF…
  - Learn to use tools, e.g., semi-automatic metadata editing tools: MarcEdit, Notepad++, OpenRefine…
  - Think out of the box: what can we learn from the web practices?

- **Be flexible and collaborative**
  - Flexible in working with different systems;
  - Collaborate with people beyond cataloging/metadata, Technical Services, your own library and the library field.

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Thank you!

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