Linked Data for Libraries: Experiments between Cornell, Harvard and Stanford

Simeon Warner (Cornell University)

SWIB15, Hamburg, Germany
2015-11-24

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Library

HARVARD
LIBRARY

STANFORD UNIVERSITY LIBRARIES

LD4L project team

Cornell

- Dean Krafft
- Jon Corson-Rikert
- Lynette Rayle
- Rebecca Younnes
- Jim Blake
- Steven Folsom
- Muhammad Javed
- Brian Lowe*
- Simeon Warner

Harvard

- Randy Stern
- Paul Deschner
- Jonathan Kennedy
- David Weinberger*
- Paolo Ciccarese*

Stanford

- Tom Cramer
- Rob Sanderson
- Naomi Dushay
- Darren Weber
- Lynn McRae
- Philip Schreur
- Nancy Lorimer
- Joshua Greben

* no longer with institution

Linked Data for Libraries (LD4L)

- Nearing the end of a two-year $999k grant to Cornell, Harvard, and Stanford
- Partners have worked together to assemble ontologies and data sources that provide relationships, metadata, and broad context for Scholarly Information Resources
- Leverages existing work by both the VIVO project and the Hydra Partnership
- **Vision: Create a LOD standard to exchange all that libraries know about their resources**

Overview

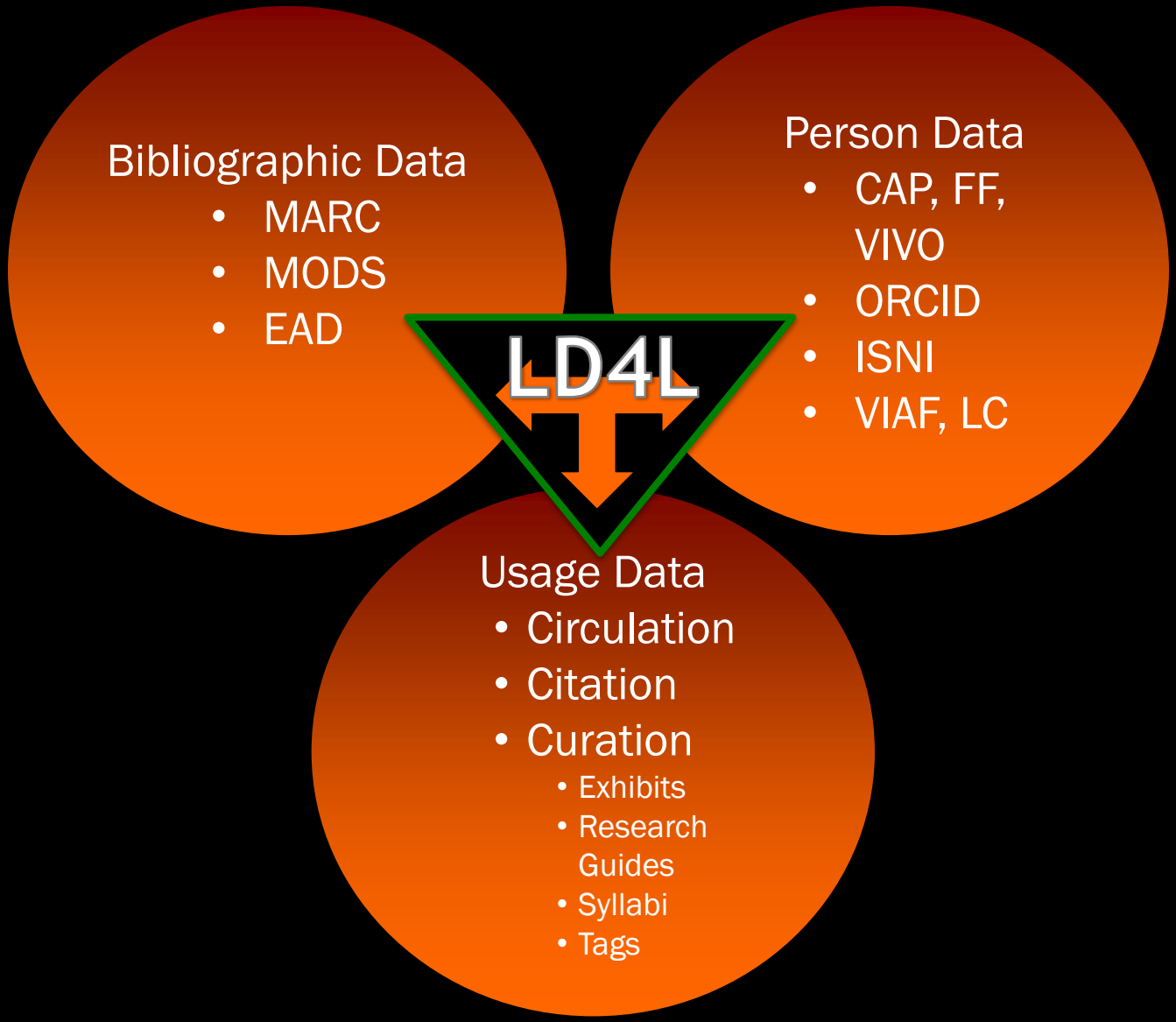
LD4L goals

- Free information from existing library system silos to provide context and enhance discovery of scholarly information resources
- Leverage usage information about resources
- Link bibliographic data about resources with academic profile systems and other external linked data sources
- Assemble (and where needed create) a flexible, extensible LD ontology to capture all this information about our library resources
- Demonstrate combining and reconciling the assembled LD across our three institutions

LD4L working assumptions

- Trying to do conversion and relation work at scale, with full sets of enterprise data
  - Almost 30 million bibliographic records (Harvard: 13.6M, Stanford and Cornell: roughly 8M each)
- Trying to understand the pipeline / workflows that will be needed for this
- Looking to build useful, value-added services on top of the assembled triples

LD4L data sources



LD4L Workshop

https://twitter.com/us_imls/status/573235622237892609

LD4L Workshop

- February, 2015 at Stanford
- 50 attendees doing leading work in linked data related to libraries, from around the world
- Review & vet the LD4L work done to date
  - Use cases
  - Ontology
  - Technology
  - Prototypes
- Plot development moving forward

Workshop details: https://wiki.duraspace.org/x/i4YOB

Topics

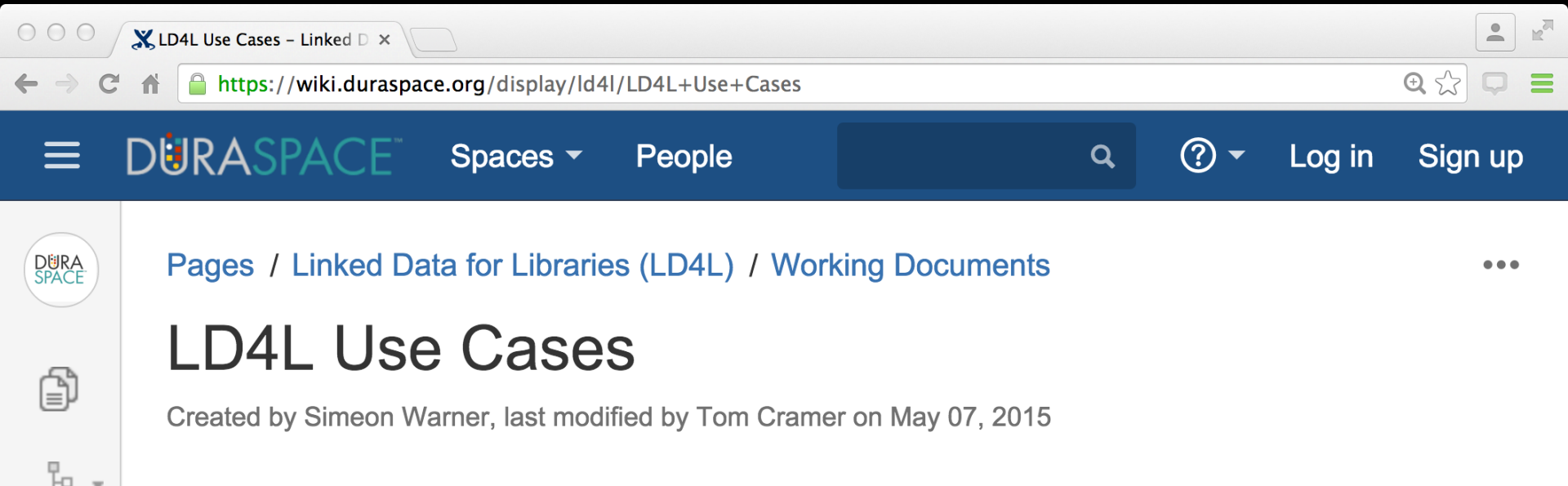
- Curation of Linked Data
- Techniques & Technology
  - Entity resolution (strings to things)
  - Reconciliation (things to things)
  - Converters & validators
- New Uses, Use Cases & Services (Why?)
- Community (Who?)

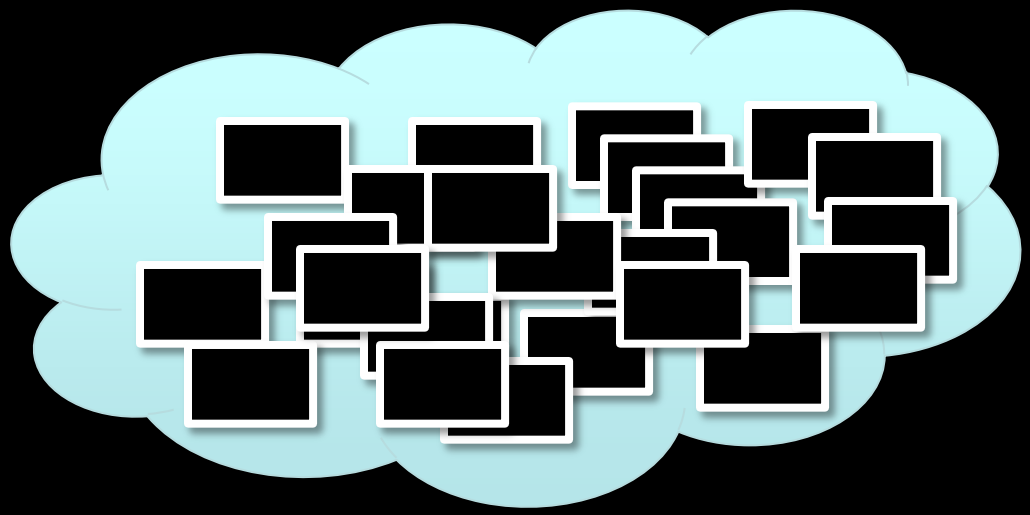
Workshop Recommendations

- Our goal should be that others outside the library community use the linked data that we produce
- We must create applications that let people do things they couldn't do before – don't talk about linked data, talk about what we will be able to do
- Local original assertions (new vs. copy cataloging) should use local URIs even when global URIs exist
- Look to LD to bring together physically/organizationally dispersed but related collections
- Libraries must create a critical mass of shared linked data to ensure efficiency and benefit all of us

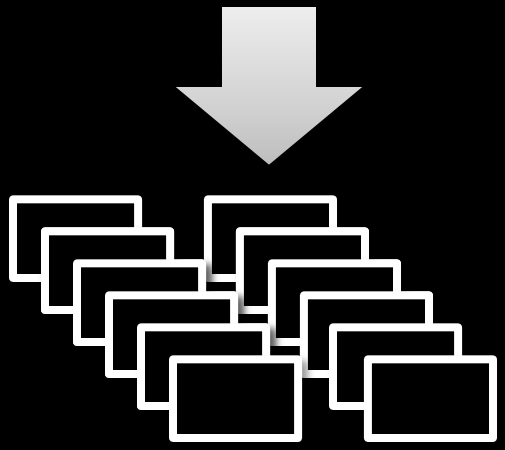
Use Cases

https://wiki.duraspace.org/x/u4eNAw





42 raw use cases



12 refined use cases in 6 clusters…

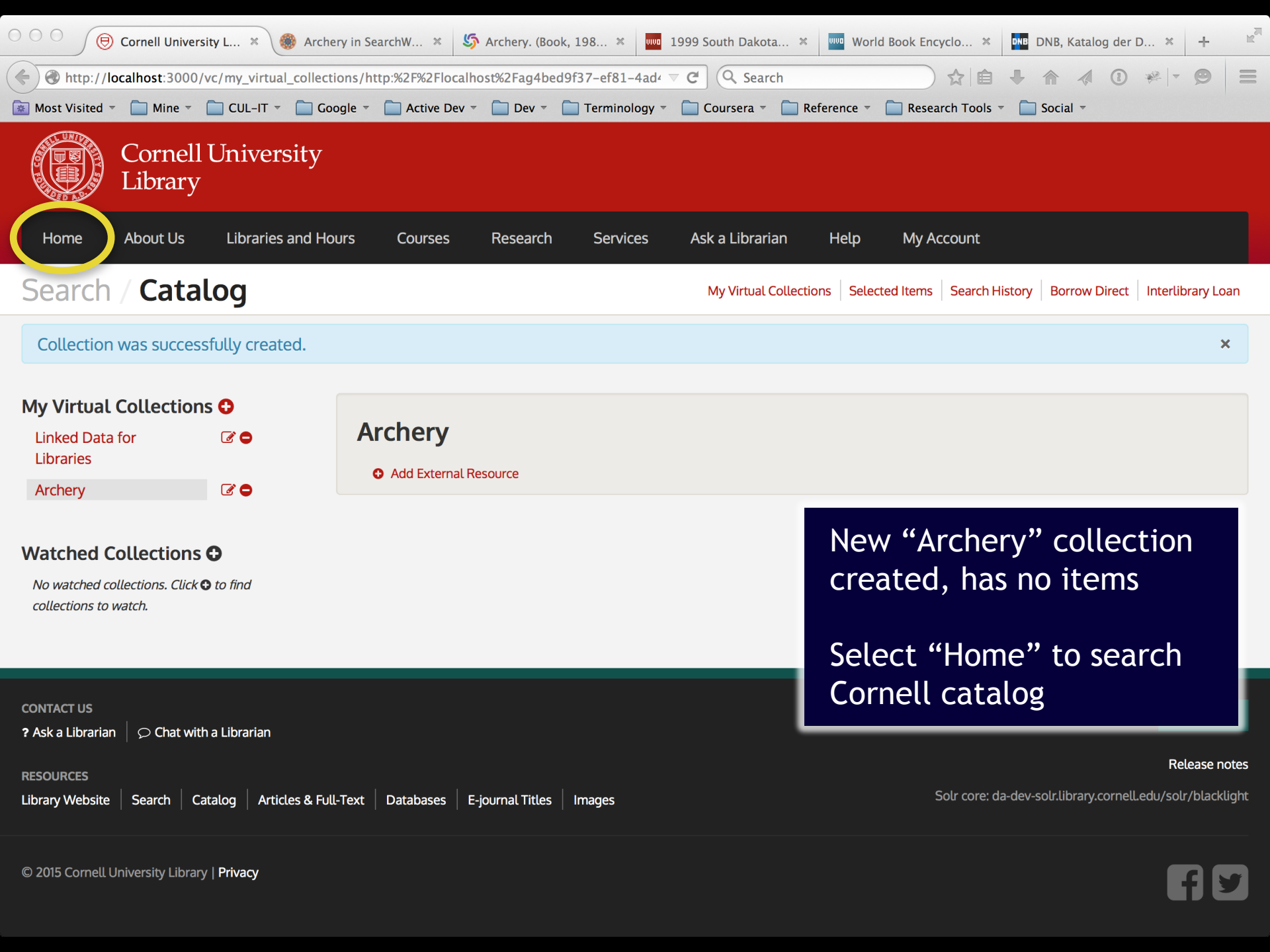
LD4L Use Case Clusters

1. Bibliographic + curation data
2. Bibliographic + person data
3. Leveraging external data including authorities
4. Leveraging the deeper graph (via queries or patterns)
5. Leveraging usage data
6. Three-site services, e.g. cross-site search

UC1.1 - Build a virtual collection

Goal: allow librarians and patrons to create and share virtual collections by tagging and optionally annotating resources

- Implementations
  - Cornell
  - Stanford


Cornell University L...
Archery in SearchW...
Archery. (Book, 198...
1999 South Dakota...
World Book Encyclo...
DNB, Katalog der D...
http://localhost:3000/vc/my_virtual_collections/http:%2F%2Flocalhost%2Fag4bed9f37-ef81-4ad4
Search
Most Visited
Mine
CUL-IT
Google
Active Dev
Dev
Terminology
Coursera
Reference
Research Tools
Social
Cornell University Library
Home
About Us
Libraries and Hours
Courses
Research
Services
Ask a Librarian
Help
My Account
Search / Catalog
My Virtual Collections
Selected Items
Search History
Borrow Direct
Interlibrary Loan
Collection was successfully created.
My Virtual Collections
Linked Data for Libraries
Archery
Watched Collections
No watched collections. Click to find collections to watch.
Archery
Add External Resource
New “Archery” collection created, has no items
Select “Home” to search Cornell catalog
CONTACT US
? Ask a Librarian
Chat with a Librarian
RESOURCES
Library Website
Search
Catalog
Articles & Full-Text
Databases
E-journal Titles
Images
Release notes
Solr core: da-dev-solr.library.cornell.edu/solr/blacklight
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Search Results | Cornell U...

http://localhost:3000/?utf8=✓&q=Archery&search_field=all_fields

Search

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My Virtual Collections | Selected Items | Search History | Borrow Direct | Interlibrary Loan

Looking for more?

- Request from Libraries Worldwide (+)
- Search Articles & Full Text (8,186)
- Recommend a Purchase

Refine your results

Access

At the Library 114
Online 81

Format

Book 179
Microform 12
Musical Recording 7
Journal/Periodical 3
Map or Globe 2
Non-musical Recording
Manuscript/Archive 1
Video

Author/Creator

Publication Year

Language

Subject/Genre

Archery | All Fields | Search

Advanced Search | Search Tips

or Start over

All Fields: Archery ✖

« Previous | 1 - 20 of 195 | Next »

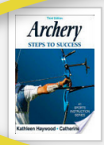
20 per page | Sort by relevance

1. Archery fundamentals c2005

Book Champaign, IL : Human Kinetics, c2005. English

Olin Library Oversize GV1185 .A74 2005 +

Select



2. Archery : steps to success c2006

Haywood, Kathleen.

Book Champaign, IL : Human Kinetics, c2006. English 3rd ed.

Olin Library Oversize GV1185 .H38 2006 +

Select

Select item of interest from search

3. Japanese archery [1965]

Nasu, Toshisuke.

Book Rutland, Vt. : C.E. Tuttle Co., [1965] English

Kroch Library Asia GV1185 .A18 1965

Select

« Previous | Next » | 1 | 2 | 3 | 4 | 5 | ... | 9 | 10

Archery – Cornell Universi...

http://localhost:3000/catalog/5681270

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Search / Catalog

My Virtual Collectio

From the “Add to virtual collection” drop list, select “Archery”

Back to catalog results

Search... | All Fields | Search

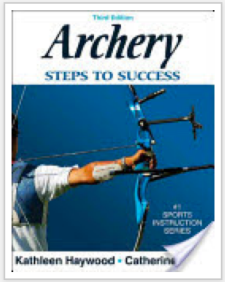
Advanced Search | Search Tips

« Previous | 2 of 195 | Next »

Select | Add to Virtual Collection | Email | Export | Print

Linked Data for Libraries

Archery



Archery

steps to success

Kathleen M. Haywood, Catherine F. Lewis

Author/Creator	Haywood, Kathleen.
Format	Book
Language	English
Edition	3rd ed.
Published	Champaign, IL : Human Kinetics, c2006.
Subject	Archery
Description	196 p. : ill. ; 28 cm.
ISBN	0736055428 (soft cover)
Other author/creator	Lewis, Catherine, 1957-

Olin Library | Hours/Map

Oversize GV1185 .H38 2006 + Text

Available 1 copy

Request

Cornell University L... | Archery in SearchW... | Archery. (Book, 198... | 1999 South Dakota... | World Book Encyclo... | DNB, Katalog der D...

http://localhost:3000/vc/my_virtual_collections/http:%2F%2Flocalhost%2Fag4bed9f37-ef81-4ad4

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Search / Catalog

My Virtual Collections | Selected Items | Search History | Borrow Direct | Interlibrary Loan

Item was successfully created. ×

My Virtual Collections

- Linked Data for Libraries
- Archery

Watched Collections

No watched collections. Click ⊕ to find collections to watch.

Archery

Add External Resource

« Previous | 1 - 1 of 1 | Next »

20 per page | Sort by relevance

1. Archery : steps to success

Haywood, Kathleen.

Book Champaign, IL : Human Kinetics, c2006. 3rd ed.

Source: Cornell Catalog

Show/Hide Notes and Tags

Remove

CONTACT US

? Ask a Librarian | Chat with a Librarian

RESOURCES

Library Website | Search | Catalog | Articles & Full-Text | Dat

Book added to “Archery” collection

Behind the scenes: App used content-negotiation to get MARCXML (no RDF yet...), converted to LD4L ontology and added to Aggregation based on ORE ontology

Archery – Cornell Universi... | 223 results in SearchWorks

searchworks.stanford.edu/?utf8=✓&search_field=search&q=Archery

Search

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STANFORD UNIVERSITY LIBRARIES

My Account | Feedback

SearchWorks catalog

All fields | Archery | ADVANCED | BROWSE | SELECTIONS (0)

Start over | Archery ✖

Limit your search

223 results

- Access
- Resource type
- Media type
- Date
- Library
- Language
- Author
- Call number
- Topic
- Genre
- Region

Previous 1 - 20 Next | View | Sort by relevance | 20 per page | Select all

1. Archery [1956] — Select

Wiseman, Howard
London, W. & G. Foyle [1956]

BOOK 112 p. illus.

At the library | SAL3 (off-campus storage)

Now search in the Stanford catalog

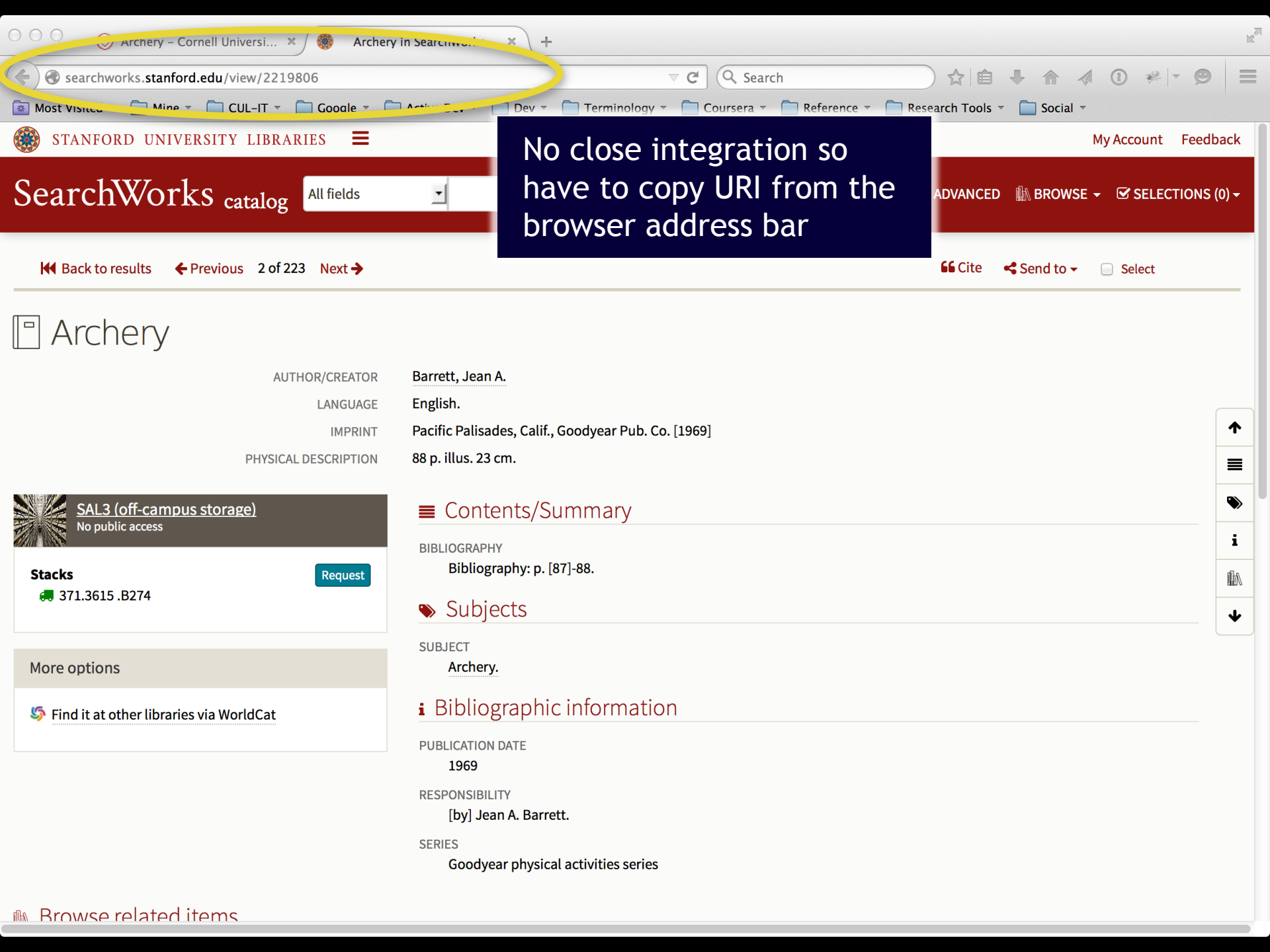
2. Archery [1969] — Select

Barrett, Jean A.
Pacific Palisades, Calif., Goodyear Pub. Co. [1969]

BOOK 88 p. illus. 23 cm.

At the library | SAL3 (off-campus storage)

3. Archery [1926] — Select


searchworks.stanford.edu/view/2219806
Search
STANFORD UNIVERSITY LIBRARIES
My Account
Feedback
SearchWorks catalog
All fields
ADVANCED
BROWSE
SELECTIONS (0)
No close integration so have to copy URI from the browser address bar
Back to results
Previous
2 of 223
Next
Cite
Send to
Select
Archery
AUTHOR/CREATOR
Barrett, Jean A.
LANGUAGE
English.
IMPRINT
Pacific Palisades, Calif., Goodyear Pub. Co. [1969]
PHYSICAL DESCRIPTION
88 p. illus. 23 cm.
SAL3 (off-campus storage)
No public access
Stacks
Request
371.3615 .B274
More options
Find it at other libraries via WorldCat
Contents/Summary
BIBLIOGRAPHY
Bibliography: p. [87]-88.
Subjects
SUBJECT
Archery.
Bibliographic information
PUBLICATION DATE
1969
RESPONSIBILITY
[by] Jean A. Barrett.
SERIES
Goodyear physical activities series
Browse related items

Cornell University L... | Archery in SearchW... | Archery. (Book, 198... | 1999 South Dakota... | World Book Encyclo... | DNB, Katalog der D...

http://localhost:3000/vc/my_virtual_collections/http:%2F%2Flocalhost%2Fagf798bc92-b715-474

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Search / Catalog

My Virtual Collections | Selected Items | Search History | Borrow Direct | Interlibrary Loan

Item was successfully created. ×

Click "+ Add External Resource" under the virtual collection title Archery in the header of the main content area of the page

My Virtual Collections

- Linked Data for Libraries
- Archery

Watched Collections

No watched collections. Click ⊕ to find collections to watch.

Archery

Add External Resource

« Previous | 1 - 1 of 1 | Next »

20 per page | Sort by relevance

1. Archery : steps to success — Remove

Haywood, Kathleen.

Book Champaign, IL : Human Kinetics, c2006. 3rd ed.

Source: Cornell Catalog

Show/Hide Notes and Tags

CONTACT US

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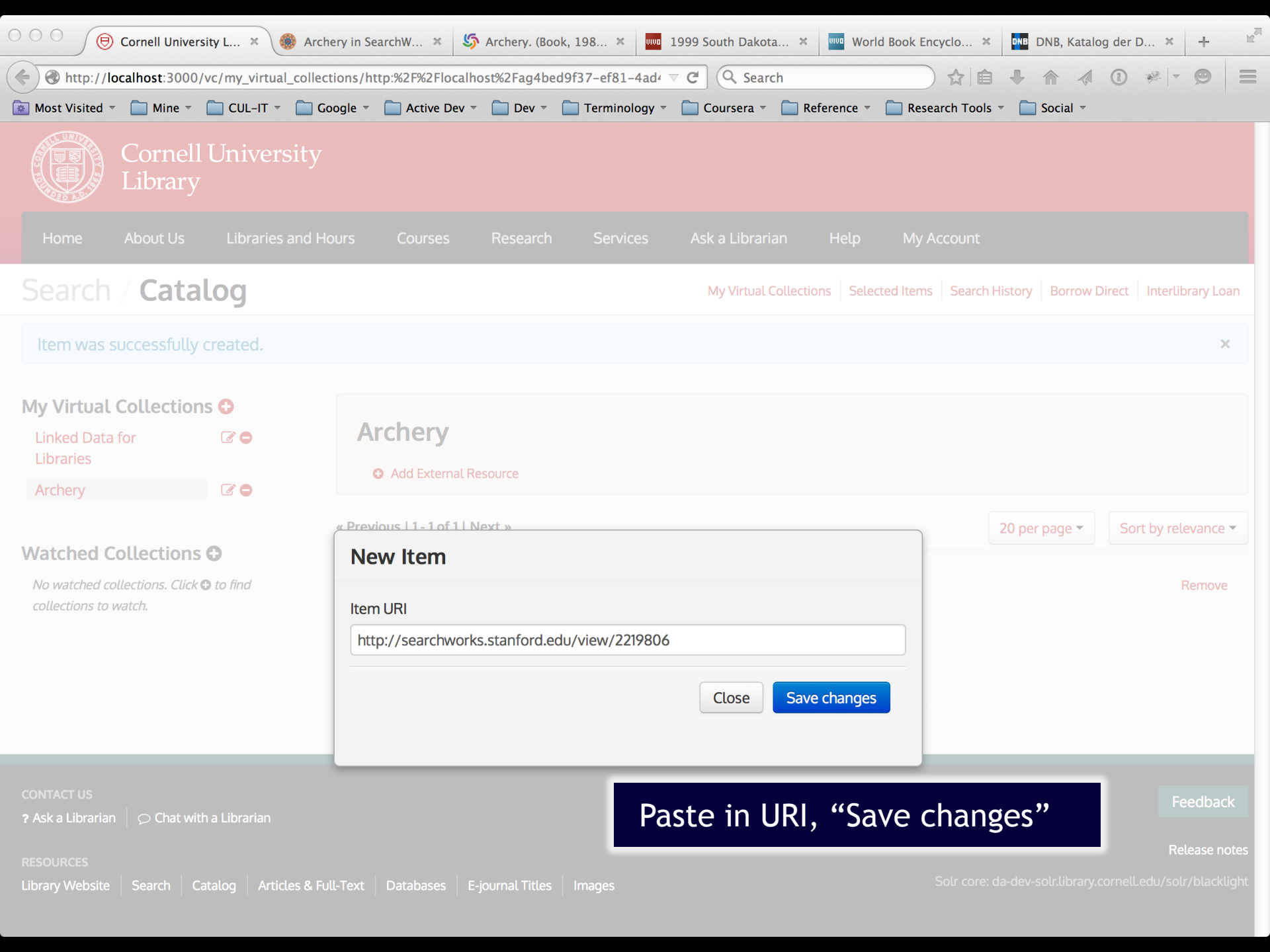
Feedback

Release notes

RESOURCES

Library Website | Search | Catalog | Articles & Full-Text | Databases | E-journal Titles | Images

Solr core: da-dev-solr.library.cornell.edu/solr/blacklight


Cornell University L...
Archery in SearchW...
Archery. (Book, 198...
1999 South Dakota...
World Book Encyclo...
DNB, Katalog der D...
http://localhost:3000/vc/my_virtual_collections/http:%2F%2Flocalhost%2Fag4bed9f37-ef81-4ad4
Search
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CUL-IT
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Selected Items
Search History
Borrow Direct
Interlibrary Loan
Item was successfully created.
My Virtual Collections
Linked Data for Libraries
Archery
Watched Collections
No watched collections. Click to find collections to watch.
Archery
Add External Resource
« Previous | 1 - 1 of 1 | Next »
20 per page
Sort by relevance
Remove
New Item
Item URI
http://searchworks.stanford.edu/view/2219806
Close
Save changes
CONTACT US
Ask a Librarian
Chat with a Librarian
RESOURCES
Library Website
Search
Catalog
Articles & Full-Text
Databases
E-journal Titles
Images
Feedback
Release notes
Solr core: da-dev-solr.library.cornell.edu/solr/blacklight
Paste in URI, “Save changes”

Cornell University L... | Archery in SearchW... | Archery. (Book, 198... | 1999 South Dakota... | World Book Encyclo... | DNB, Katalog der D...

http://localhost:3000/vc/my_virtual_collections/http:%2F%2Flocalhost%2Fag4bed9f37-ef81-4ad4

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My Virtual Collections | Selected Items | Search History | Borrow Direct | Interlibrary Loan

Item was successfully created. ×

My Virtual Collections

- Linked Data for Libraries
- Archery

Watched Collections

No watched collections. Click ⊕ to find collections to watch.

Archery

Add External Resource

« Previous | 1 - 2 of 2 | Next »

1. Archery : steps to success

Haywood, Kathleen.

Book Champaign, IL : Human Kinetics, c2006. 3rd ed.

Source: Cornell Catalog

Show/Hide Notes and Tags

2. Archery [1969]

Barrett, Jean A.

Book Pacific Palisades, Calif., Goodyear Pub. Co. 1969

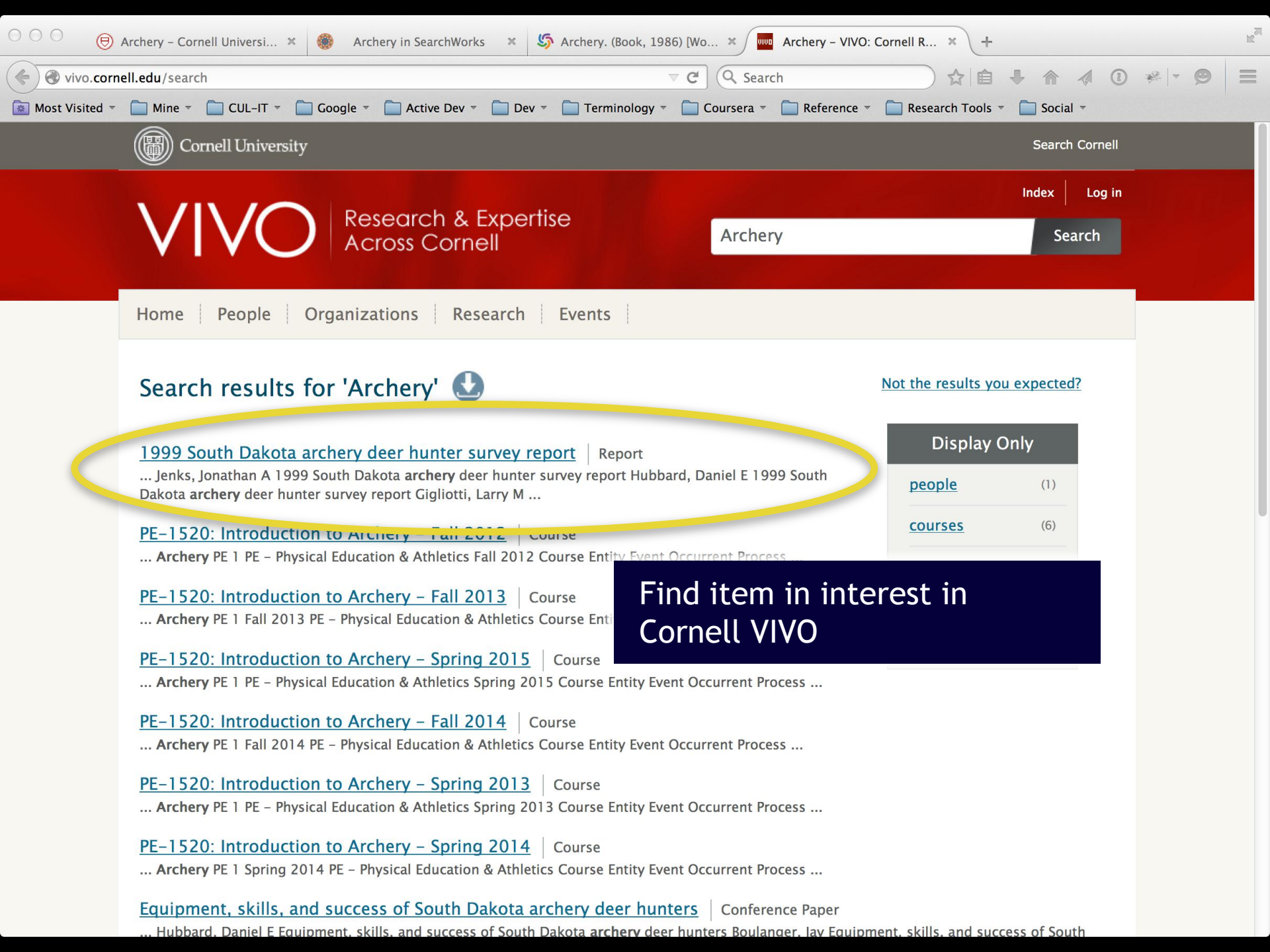
Source: Stanford Catalog

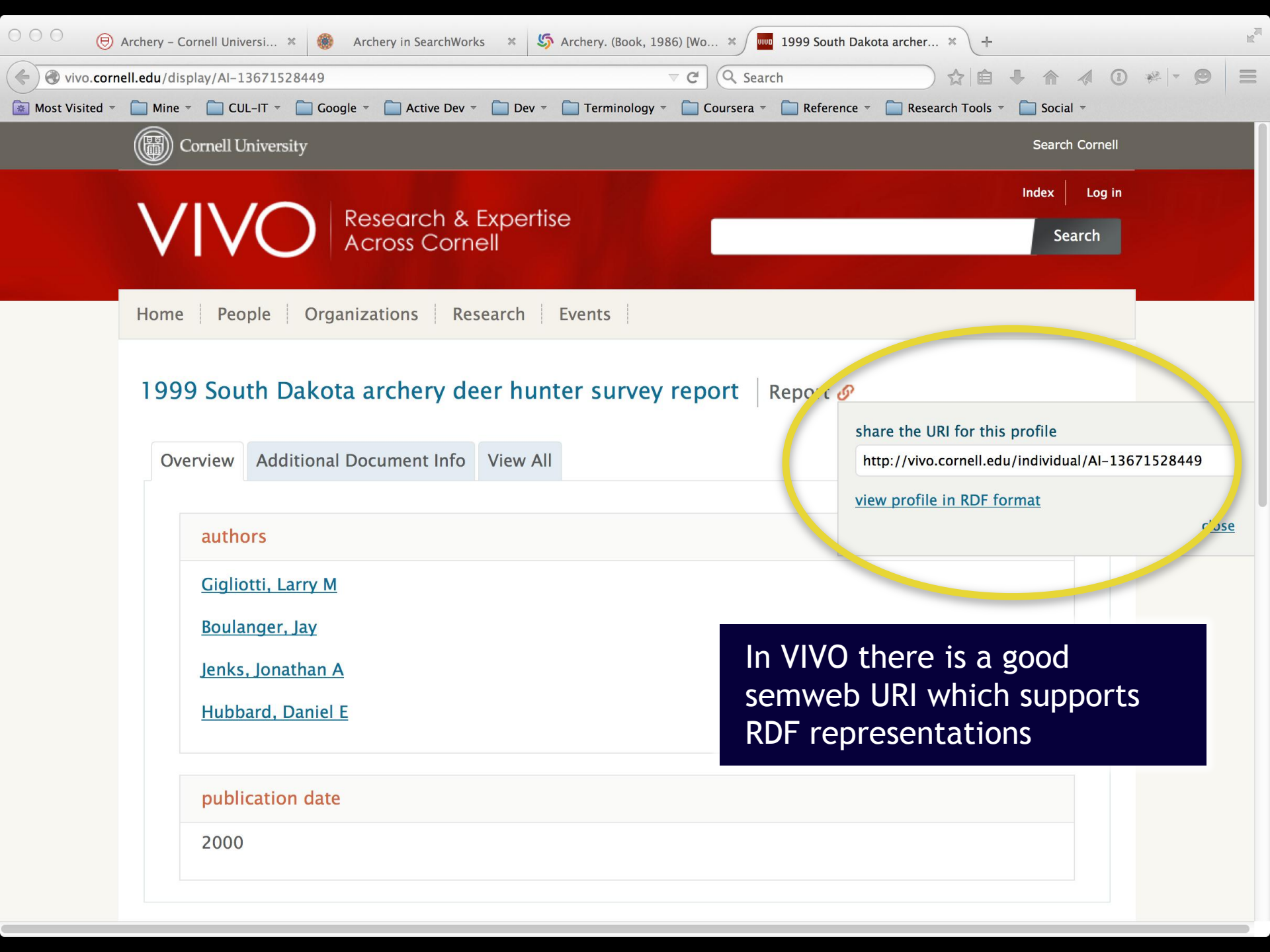
Show/Hide Notes and Tags

Remove

Book from Stanford catalog added to "Archery" collection

Behind the scenes: App gets data from Stanford, converts to LD4L and adds to ORE Aggregation


Archery – Cornell Universi...
Archery in SearchWorks
Archery. (Book, 1986) [Wo...
Archery – VIVO: Cornell R...
vivo.cornell.edu/search
Search
Most Visited
Mine
CUL-IT
Google
Active Dev
Dev
Terminology
Coursera
Reference
Research Tools
Social
Cornell University
Search Cornell
VIVO
Research & Expertise Across Cornell
Index
Log in
Archery
Search
Home
People
Organizations
Research
Events
Search results for 'Archery'
Not the results you expected?
1999 South Dakota archery deer hunter survey report | Report
... Jenks, Jonathan A 1999 South Dakota archery deer hunter survey report Hubbard, Daniel E 1999 South Dakota archery deer hunter survey report Gigliotti, Larry M ...
PE-1520: Introduction to Archery – Fall 2012 | Course
... Archery PE 1 PE – Physical Education & Athletics Fall 2012 Course Entity Event Occurrent Process ...
PE-1520: Introduction to Archery – Fall 2013 | Course
... Archery PE 1 Fall 2013 PE – Physical Education & Athletics Course Enti
PE-1520: Introduction to Archery – Spring 2015 | Course
... Archery PE 1 PE – Physical Education & Athletics Spring 2015 Course Entity Event Occurrent Process ...
PE-1520: Introduction to Archery – Fall 2014 | Course
... Archery PE 1 Fall 2014 PE – Physical Education & Athletics Course Entity Event Occurrent Process ...
PE-1520: Introduction to Archery – Spring 2013 | Course
... Archery PE 1 PE – Physical Education & Athletics Spring 2013 Course Entity Event Occurrent Process ...
PE-1520: Introduction to Archery – Spring 2014 | Course
... Archery PE 1 Spring 2014 PE – Physical Education & Athletics Course Entity Event Occurrent Process ...
Equipment, skills, and success of South Dakota archery deer hunters | Conference Paper
... Hubbard, Daniel E Equipment, skills, and success of South Dakota archery deer hunters Boulanger, Jay Equipment, skills, and success of South
Display Only
people (1)
courses (6)
Find item in interest in Cornell VIVO


Archery – Cornell Universi...
Archery in SearchWorks
Archery. (Book, 1986) [Wo...
1999 South Dakota archer...
vivo.cornell.edu/display/AI-13671528449
Search
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Cornell University
Search Cornell
VIVO
Research & Expertise Across Cornell
Index
Log in
Search
Home
People
Organizations
Research
Events
1999 South Dakota archery deer hunter survey report
Report
share the URI for this profile
http://vivo.cornell.edu/individual/AI-13671528449
view profile in RDF format
close
Overview
Additional Document Info
View All
authors
Gigliotti, Larry M
Boulanger, Jay
Jenks, Jonathan A
Hubbard, Daniel E
publication date
2000
In VIVO there is a good semweb URI which supports RDF representations

Cornell University L... | Archery in SearchW... | Archery. (Book, 198... | 1999 South Dakota... | World Book Encyclo... | DNB, Katalog der D...

http://localhost:3000/vc/my_virtual_collections/http:%2F%2Flocalhost%2Fag4bed9f37-ef81-4ad4

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My Virtual Collections

- Linked Data for Libraries
- Archery

Watched Collections

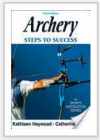
No watched collections. Click ⊕ to find collections to watch.

Archery

Add External Resource

« Previous | 1 - 4 of 4 | Next »

20 per page | Sort by relevance



1. Archery : steps to success — Remove

Haywood, Kathleen.

Book Champaign, IL : Human Kinetics, c2006. 3rd ed.

Source: Cornell Catalog

Show/Hide Notes and Tags

2. Archery [1969]

Barrett, Jean A.

Book Pacific Palisades, Calif., Goodyear Pub. Co. 1969

Source: Stanford Catalog

Show/Hide Notes and Tags

3. Archery. 1986

Book default : default, 1986 en 1986 revision.

Source: OCLC Worldcat

Show/Hide Notes and Tags

4. 1999 South Dakota archery deer hunter survey report — Remove

Book

Source: Cornell VIVO

Show/Hide Notes and Tags

Same process to "+ Add External Resource"

Behind the scenes: App can get RDF directly but still needs to map to LD4L ontology

UC1.2 - Tag scholarly information resources to support reuse

Goal: provide librarians tools to create and manage larger online collections of catalog resources

- Implementation
  - More automation
  - Batch processes as well as individual editing
  - At Cornell plan to use this to replace current mechanisms for selecting subset collections for subject libraries. Key is separation of tags (as annotations) from core catalog data

Cornell University L... | Archery in SearchW... | Archery. (Book, 198... | 1999 South Dakota... | World Book Encyclo... | DNB, Katalog der D...

http://localhost:3000/vc/my_virtual_collections/http:%2F%2Flocalhost%2Fag4bed9f37-ef81-4ad4

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My Virtual Collections

- Linked Data for Libraries
- Archery

Watched Collections

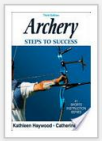
No watched collections. Click ⊕ to find collections to watch.

Archery

Add External Resource

« Previous | 1 - 6 of 6 | Next »

20 per page | Sort by relevance



1. Archery : steps to success — Remove

Haywood, Kathleen.

Book Champaign, IL : Human Kinetics, c2006. 3rd ed.

Source: Cornell Catalog

Show/Hide Notes and Tags

Note:

This is an excellent resource on archery technique.

Set Note | Reset

Set Tags | Reset

Remove

Free text tags supported for each item

Tags saves as Open Annotation with motivation oa:tagging

UC 2.1 - See and search on works by people to discover more works and better understand people

Goal: link catalog search results to researcher networking systems to provide current articles, courses

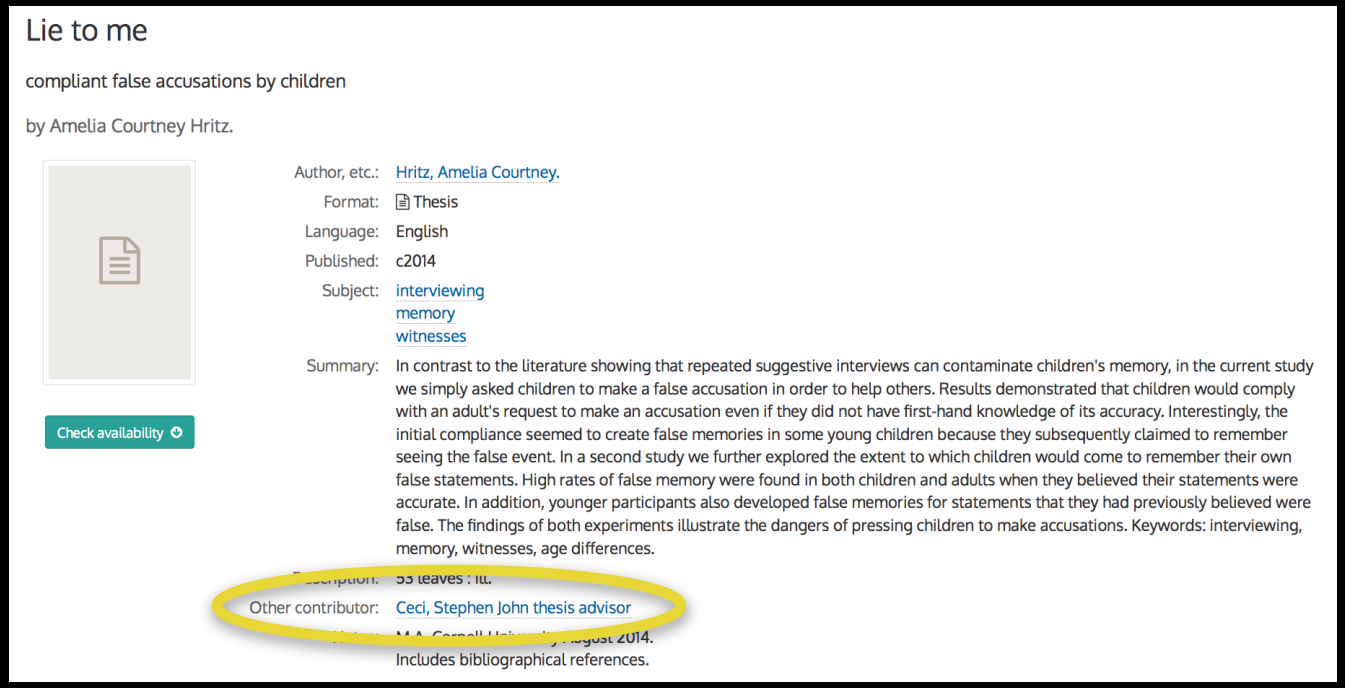
- Implementation
  - Adding VIVO URIs to MARC records for thesis advisors
  - Adding links to VIVO records linking back to faculty works and their students' theses
  - Raises important issues about URI stability

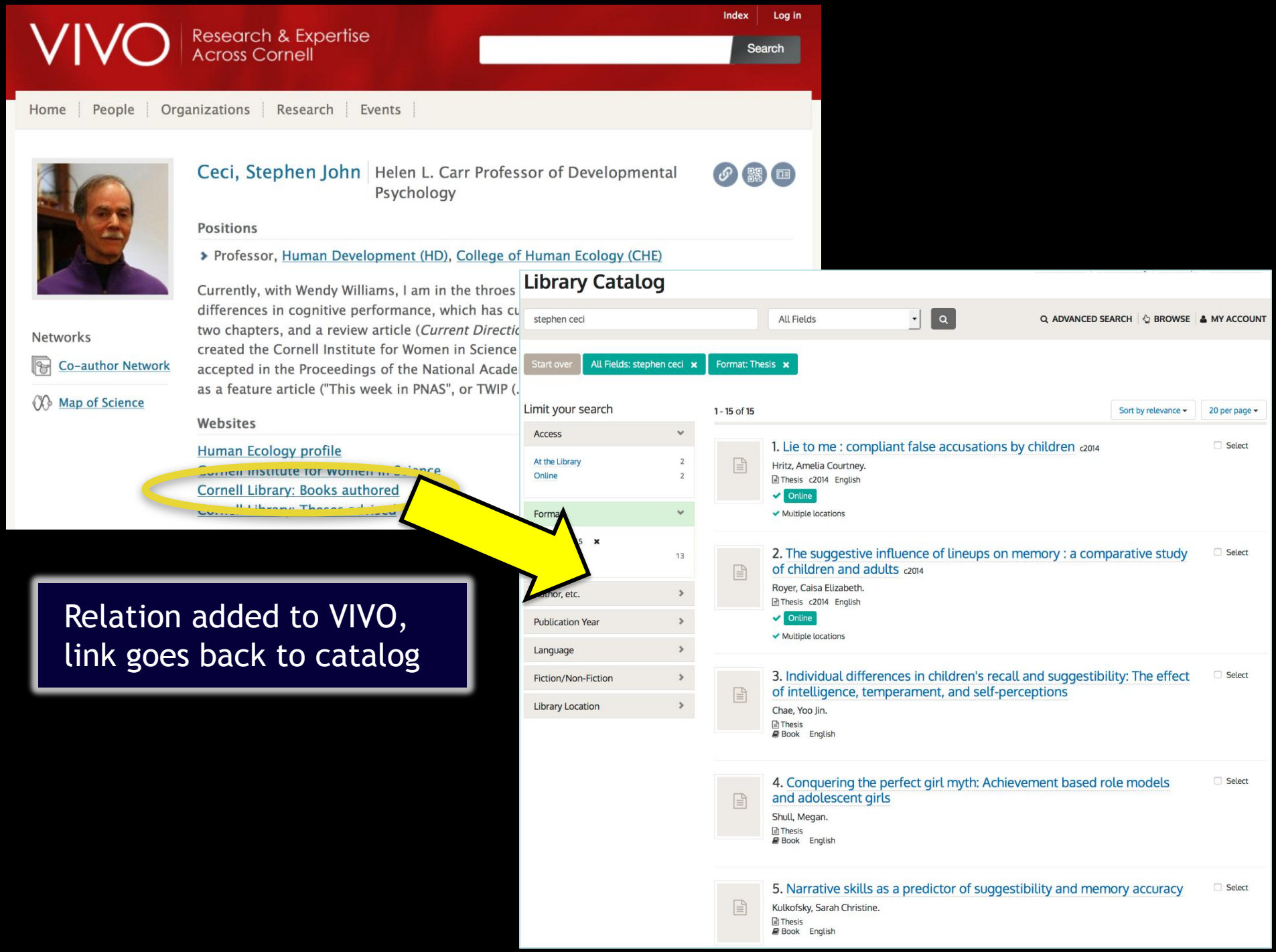
Thesis Advisors and VIVO

Cornell Technical Services is including thesis advisors in MARC records using NetIDs from the Graduate school database

e.g., 700 1 ‡a Ceci, Stephen John ‡e thesis advisor ‡0

Advisors are looked up against VIVO to get URIs for the faculty members





Relation added to VIVO, link goes back to catalog

UC4.1 - Identifying related works

Goal: find additional resources beyond those directly related to any single work using queries or patterns, as for example changes in illustrations over a series of editions of a work

- Implementation
  - Explored by modeling non-MARC metadata from Cornell Hip Hop Flyer collection using LinkedBrainz
  - Availability of data will influence richness of discoverable context

Hip Hop flyers

494 flyers, each flyer describes an event/s

Events can have a known venue. Multiple flyers refer to same venue.

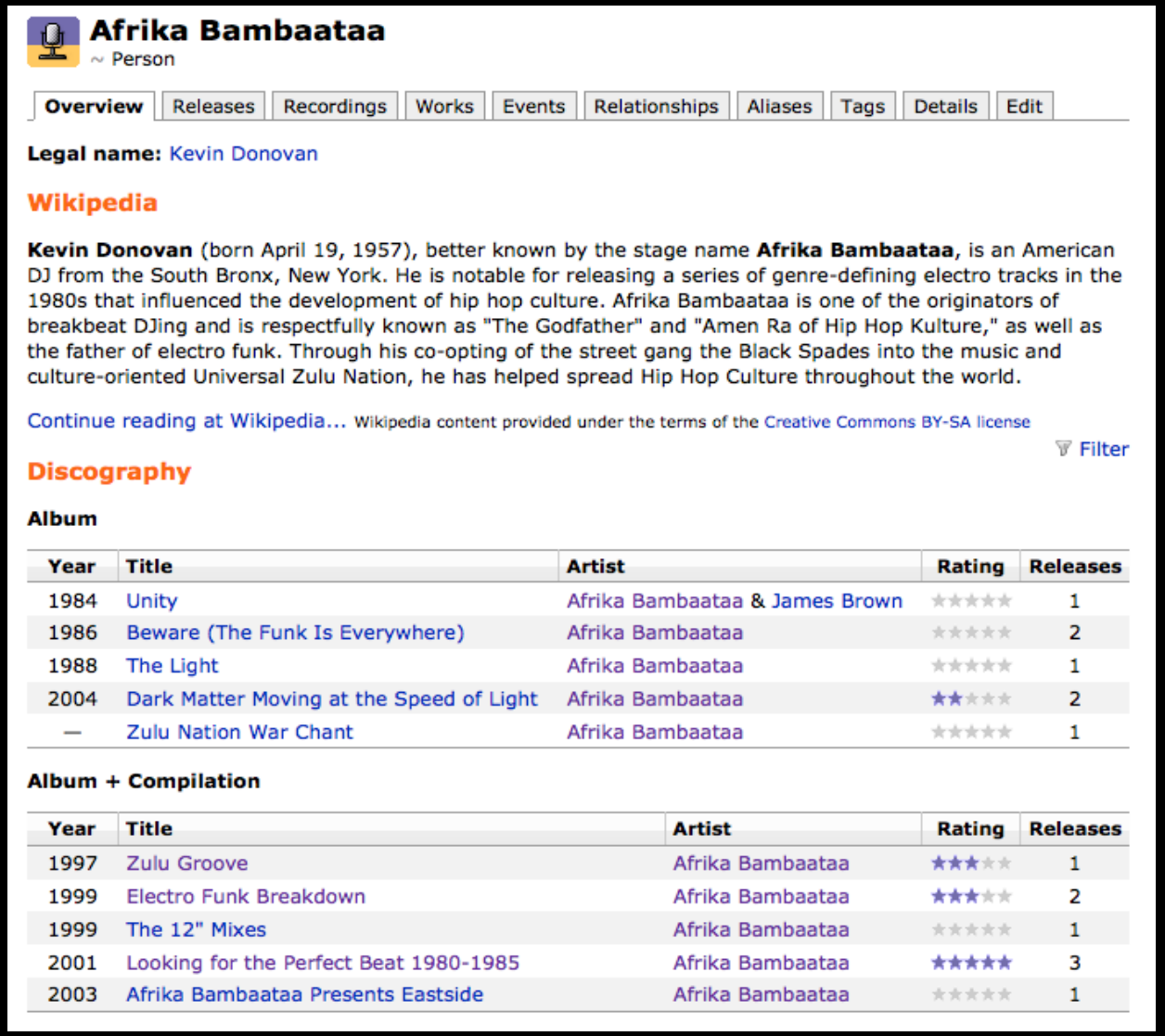
Each event can have anywhere from 1-20 (plus) performers

Pilot: Linking Hip Hop flyer metadata to MusicBrainz/LinkedBrainz data

- Model non-MARC metadata from Cornell Hip Hop Flyer Collection in RDF
  - Test LD4L BIBFRAME for describing flyers originally catalogued using ARTstor's Shared Shelf
  - Use Getty Art & Architecture Thesaurus to create bf:Work sub-classes
  - Test the use of other ontologies for describing other entities including Event ontology and Schema.org

- Use of URIs for performers to recursively discover relationships to other entities via dates, events, venues, graphic designers, work types and categories

MusicBrainz



Afrika Bambaataa

~ Person

Overview | Releases | Recordings | Works | Events | Relationships | Aliases | Tags | Details | Edit

Legal name: Kevin Donovan

Wikipedia

Kevin Donovan (born April 19, 1957), better known by the stage name **Afrika Bambaataa**, is an American DJ from the South Bronx, New York. He is notable for releasing a series of genre-defining electro tracks in the 1980s that influenced the development of hip hop culture. Afrika Bambaataa is one of the originators of breakbeat DJing and is respectfully known as "The Godfather" and "Amen Ra of Hip Hop Kulture," as well as the father of electro funk. Through his co-opting of the street gang the Black Spades into the music and culture-oriented Universal Zulu Nation, he has helped spread Hip Hop Culture throughout the world.

Continue reading at Wikipedia... Wikipedia content provided under the terms of the Creative Commons BY-SA license

Filter

Discography

Album

Year	Title	Artist	Rating	Releases
1984	Unity	Afrika Bambaataa & James Brown	★★★★★	1
1986	Beware (The Funk Is Everywhere)	Afrika Bambaataa	★★★★★	2
1988	The Light	Afrika Bambaataa	★★★★★	1
2004	Dark Matter Moving at the Speed of Light	Afrika Bambaataa	★★★★★	2
—	Zulu Nation War Chant	Afrika Bambaataa	★★★★★	1

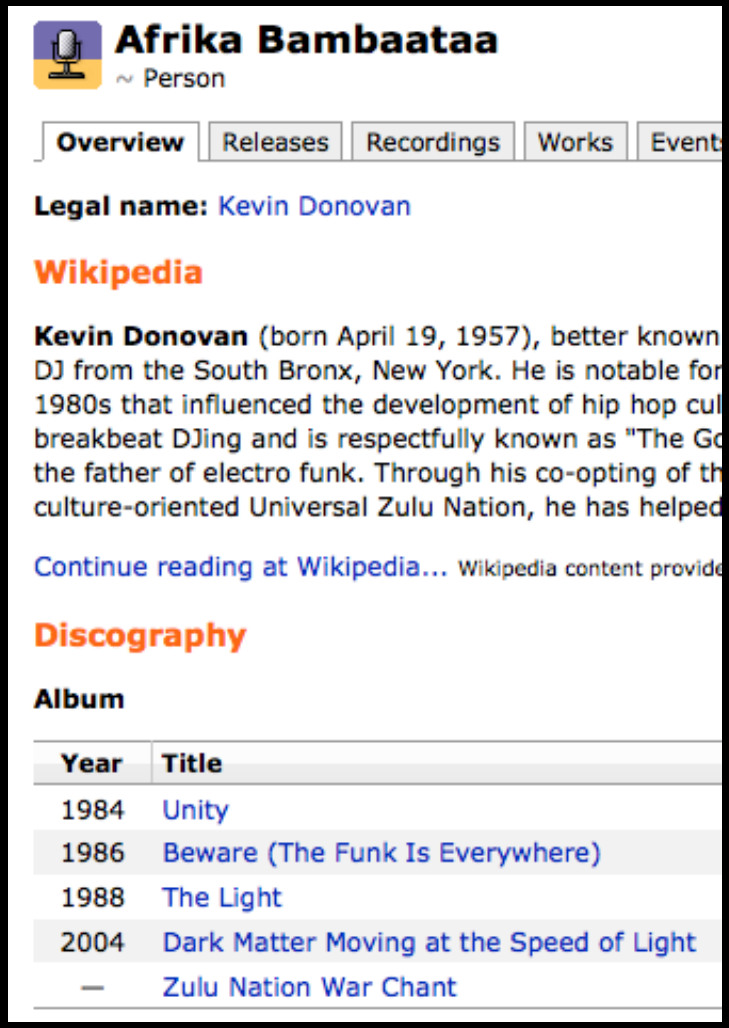
Album + Compilation

Year	Title	Artist	Rating	Releases
1997	Zulu Groove	Afrika Bambaataa	★★★★★	1
1999	Electro Funk Breakdown	Afrika Bambaataa	★★★★★	2
1999	The 12" Mixes	Afrika Bambaataa	★★★★★	1
2001	Looking for the Perfect Beat 1980-1985	Afrika Bambaataa	★★★★★	3
2003	Afrika Bambaataa Presents Eastside	Afrika Bambaataa	★★★★★	1

LinkBrainz is RDF from MusicBrainz

Connects out to Dbpredia and broader LOD graph

Reconciling mo:Release with bf:Audio



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Continue reading at Wikipedia... Wikipedia content provide

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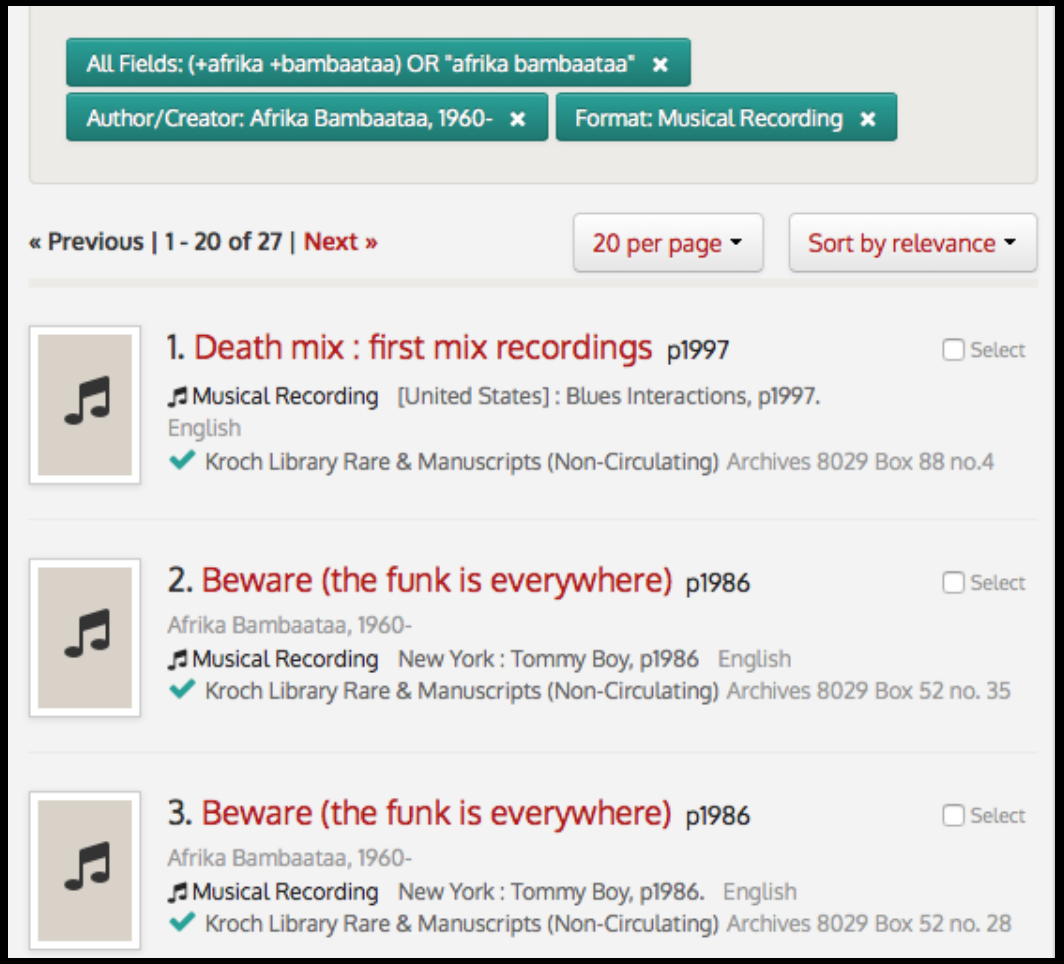


All Fields: (+afrika +bambaataa) OR "afrika bambaataa" ×
Author/Creator: Afrika Bambaataa, 1960- × | Format: Musical Recording ×

« Previous | 1 - 20 of 27 | Next » 20 per page Sort by relevance

1. Death mix : first mix recordings p1997 Select
Musical Recording [United States] : Blues Interactions, p1997.
English
Kroch Library Rare & Manuscripts (Non-Circulating) Archives 8029 Box 88 no.4

2. Beware (the funk is everywhere) p1986 Select
Afrika Bambaataa, 1960-
Musical Recording New York : Tommy Boy, p1986 English
Kroch Library Rare & Manuscripts (Non-Circulating) Archives 8029 Box 52 no. 35

3. Beware (the funk is everywhere) p1986 Select
Afrika Bambaataa, 1960-
Musical Recording New York : Tommy Boy, p1986. English
Kroch Library Rare & Manuscripts (Non-Circulating) Archives 8029 Box 52 no. 28

Takeaways

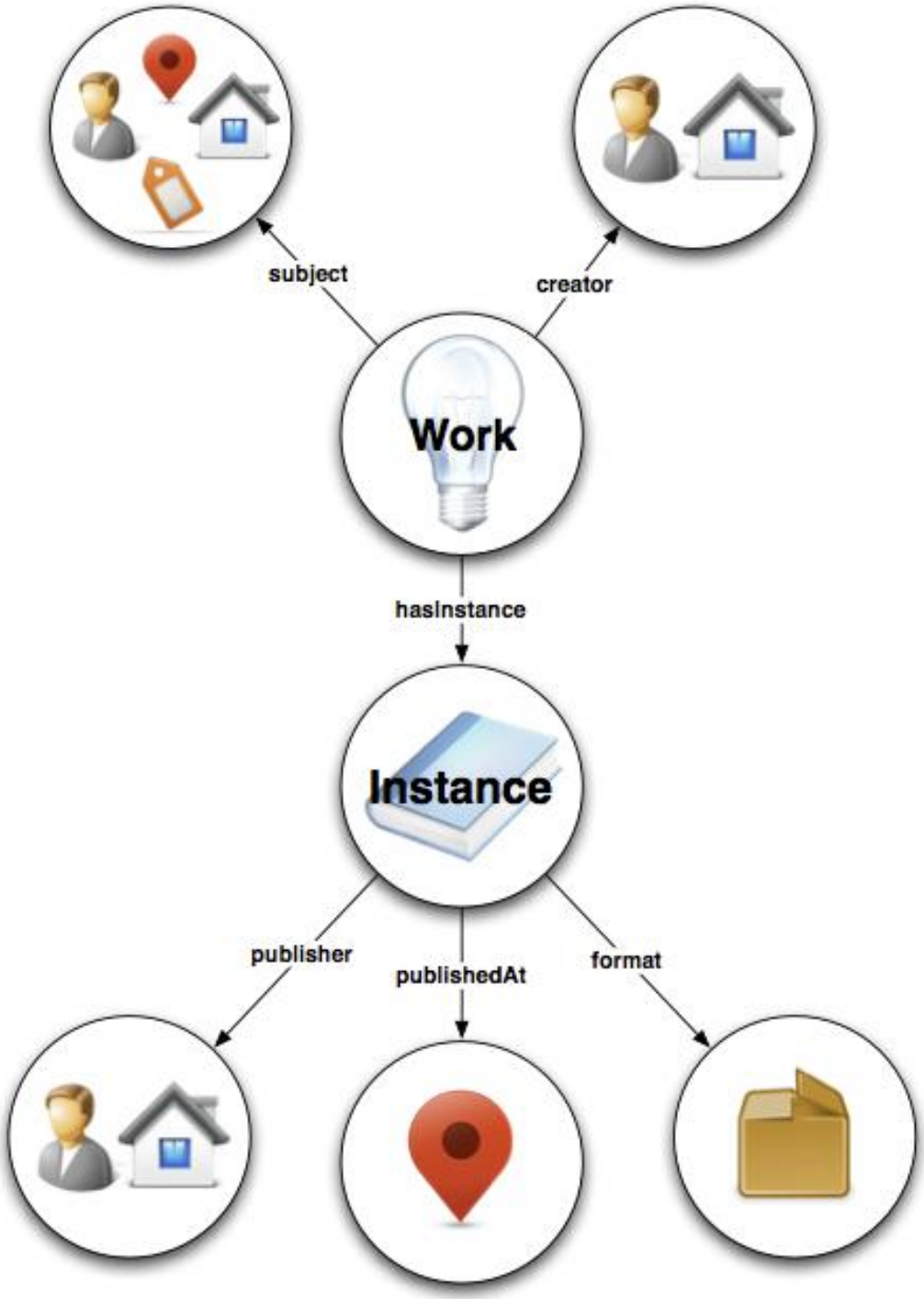
- Able to map large parts of our metadata to RDF using multiple ontologies to discover more relationships to more entities (still some mapping and reconciliation work to do)
- Largely predicated on manual workflows for preprocessing, URI lookups, and unstable software for RDF creation
- Need more URIs for both linking to and linking from in order to take advantage of queries and patterns

Assembling* the LD4L Ontology

* Note “Assembling” not “Creating”

BIBFRAME1 basic entities and relationships

- Creative work
- Instance
- Authority
- Annotation



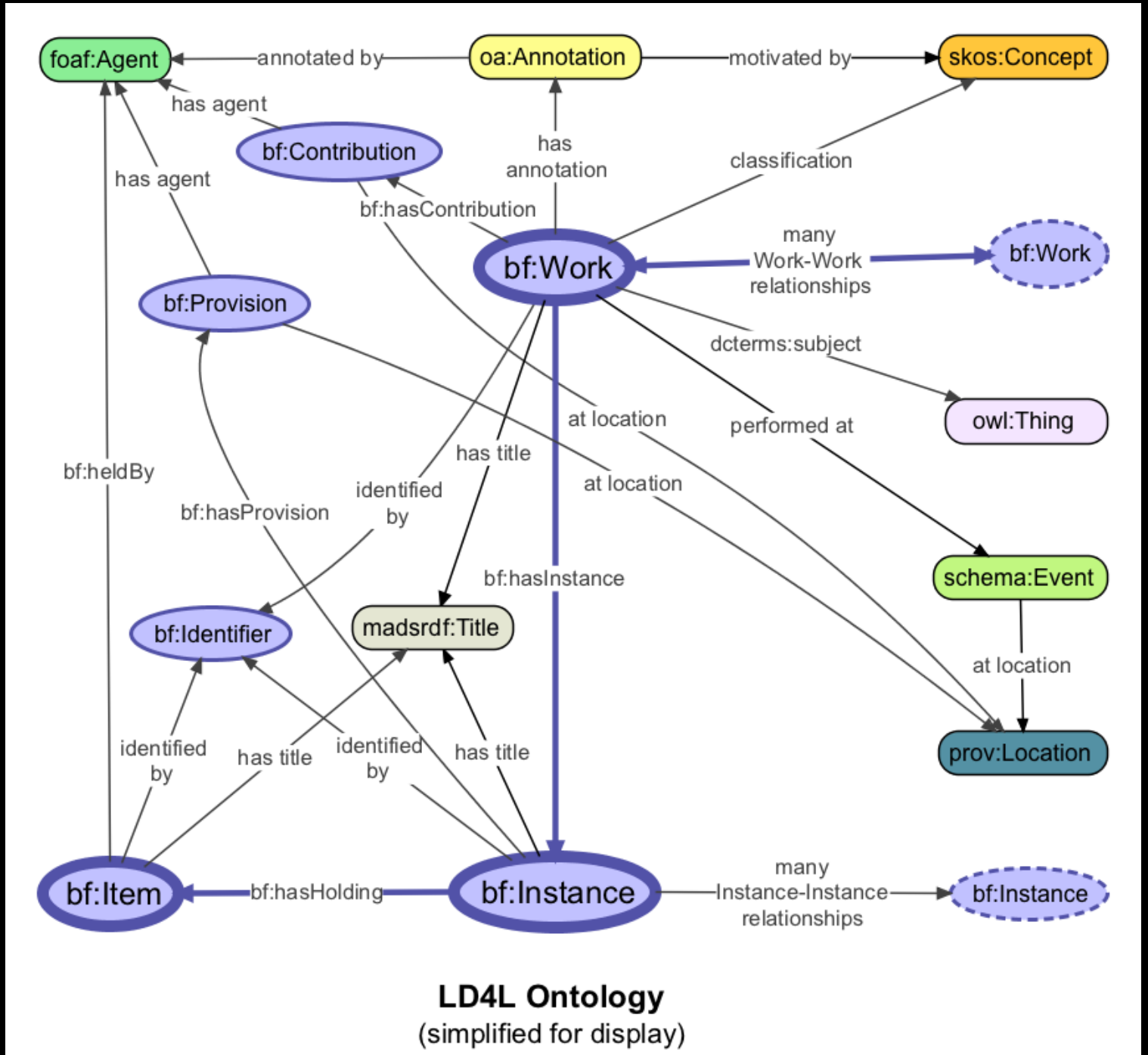
http://bibframe.org/vocab-model/

A number of issues with BIBFRAME1

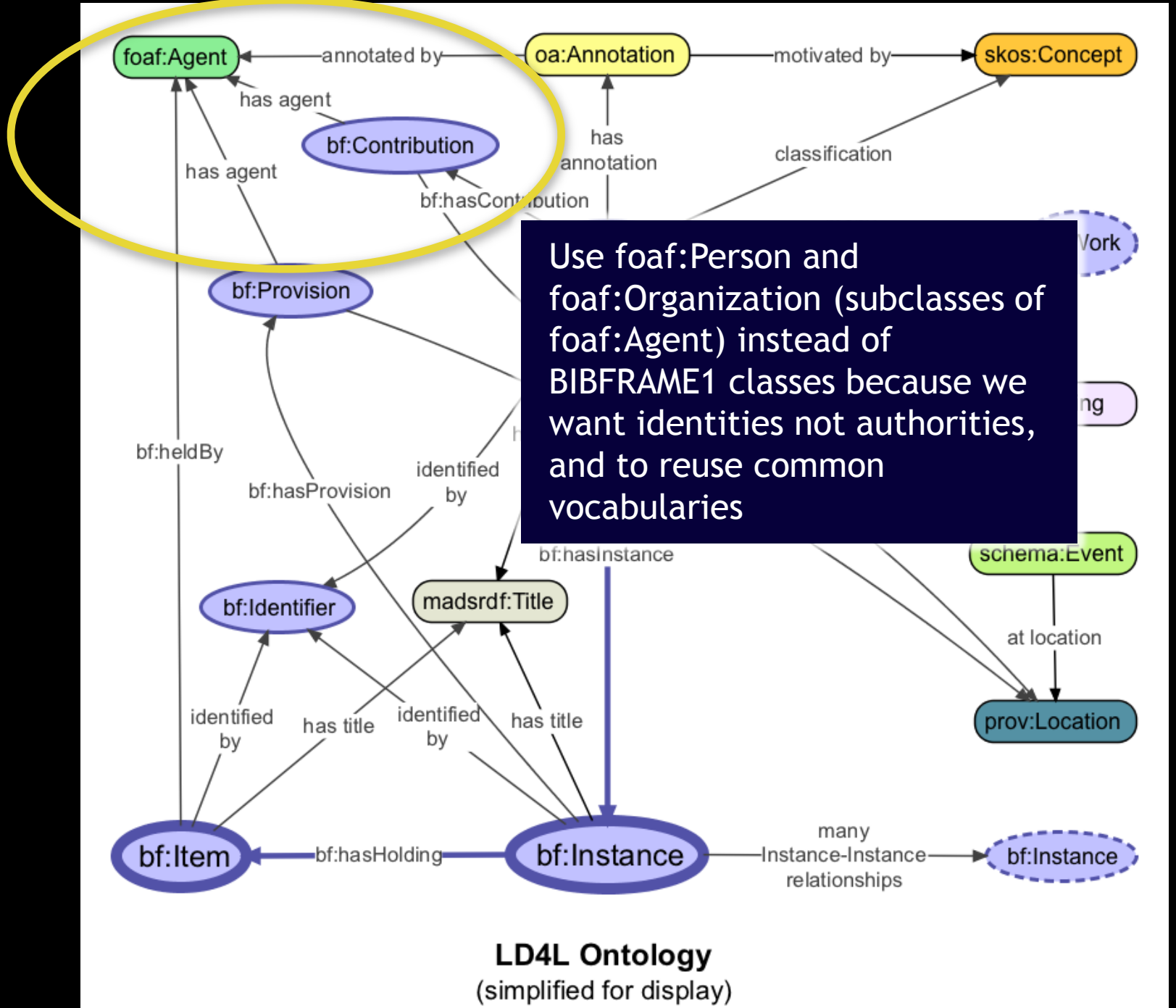
Some linked data best practices highlighted in the Sanderson report:

- Clarify and limit scope
- Use URIs in place of strings (identification of the resource itself vs. resource description)
- Reuse existing vocabularies and relate new terms to existing ones
- Only define what matters (and inverse relationships do)
- Remove authorities as entities in favor of real world URIs
- Reuse the Open Annotation ontology vs. reinventing the wheel

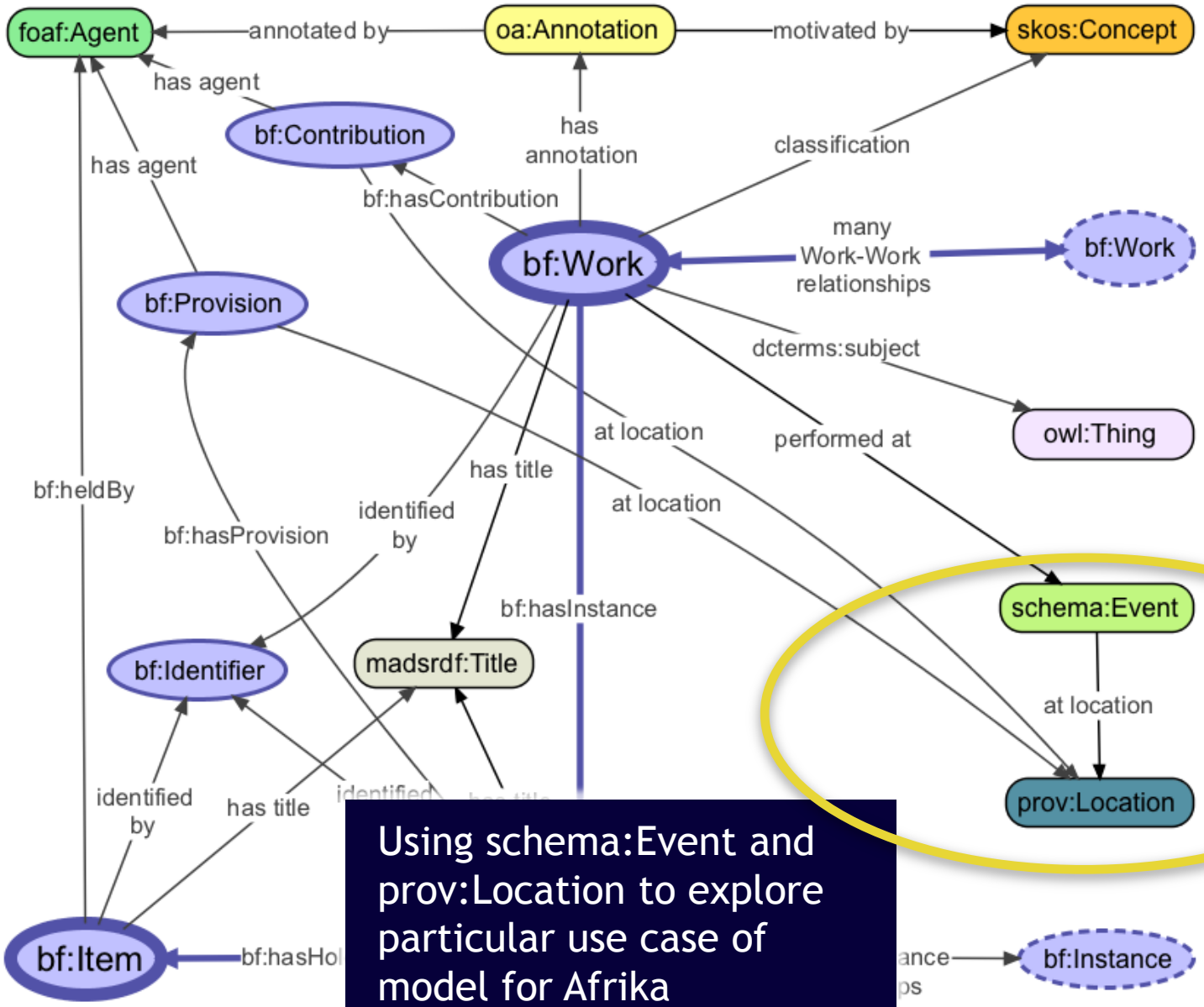
➔ Use BIBFRAME where possible, mix in other ontologies



LD4L Ontology
(simplified for display)



LD4L Ontology
(simplified for display)



Using schema:Event and prov:Location to explore particular use case of model for Afrika Bambaataa collection

(simplified for display)

Photo: James Cridland https://www.flickr.com/photos/jamescridland/613445810

Cross institutional StackScore

- Builds on StackScore work at Harvard
- Have computed anonymous scores at Cornell
- Represent scores as annotations on Works/Instances

Open issues:

- Best ways to calculate?
- Cross institutional normalization?
- How to integrate with UX?

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The Conversation

Opinion and ideas.

October 7, 2014 by David Weinberger

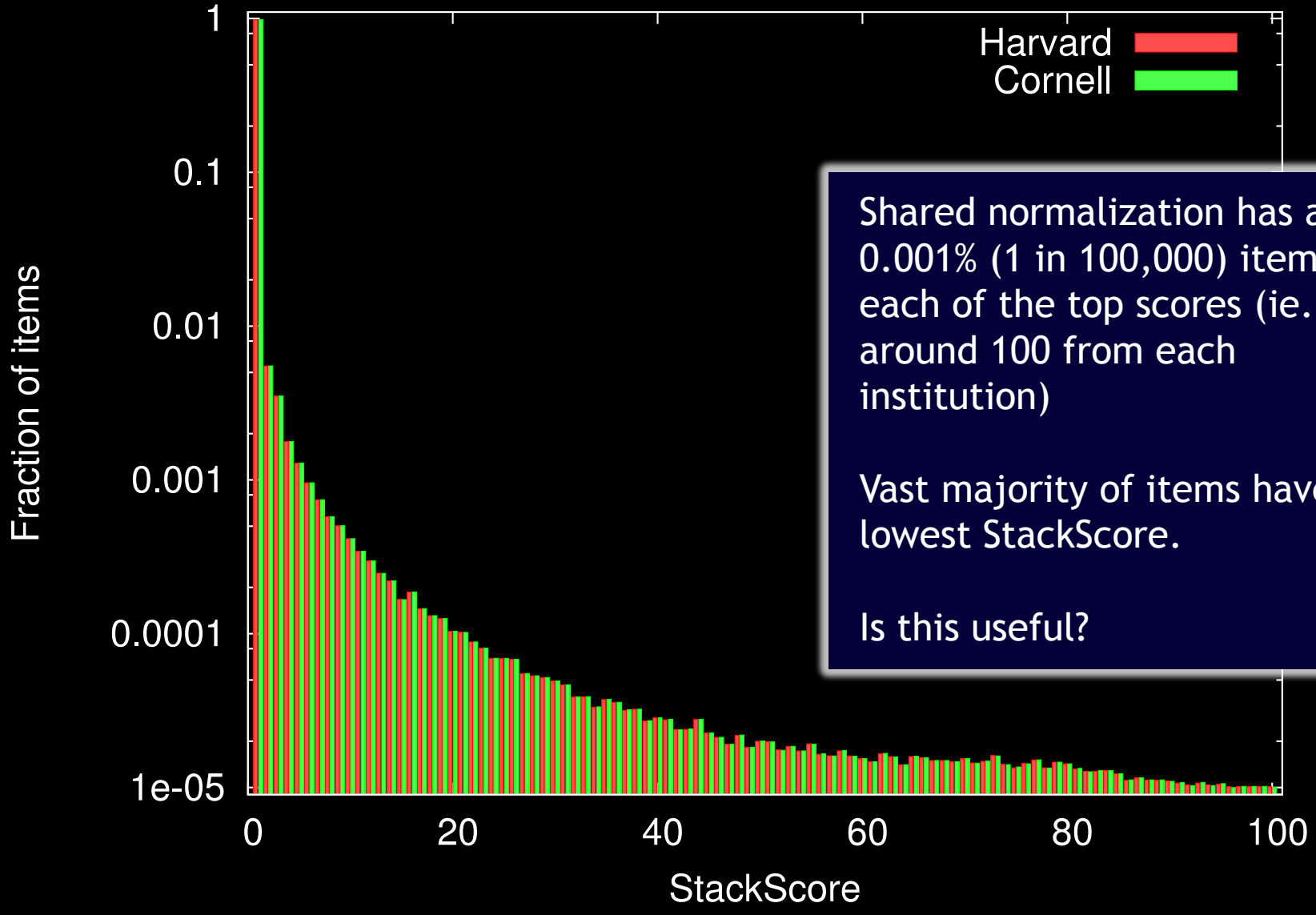
A Good, Dumb Way to Learn From Libraries

Too bad we can't put to work the delicious usage data gathered by libraries.

Research libraries may not know as much as click-obsessed Amazon does about how people interact with their books. What they do know, however, reflects the behavior of a community of scholars, and it's unpolluted by commercial imperatives.

But privacy concerns have forestalled making library usage data available to application developers outside the library staff, and often even within. And the data are the definition of incompatible: Libraries collect them in different formats at different levels of granularity and at different time scales, making them hard to work with.

Normalizing StackScores



Shared normalization has about 0.001% (1 in 100,000) items for each of the top scores (ie. around 100 from each institution)

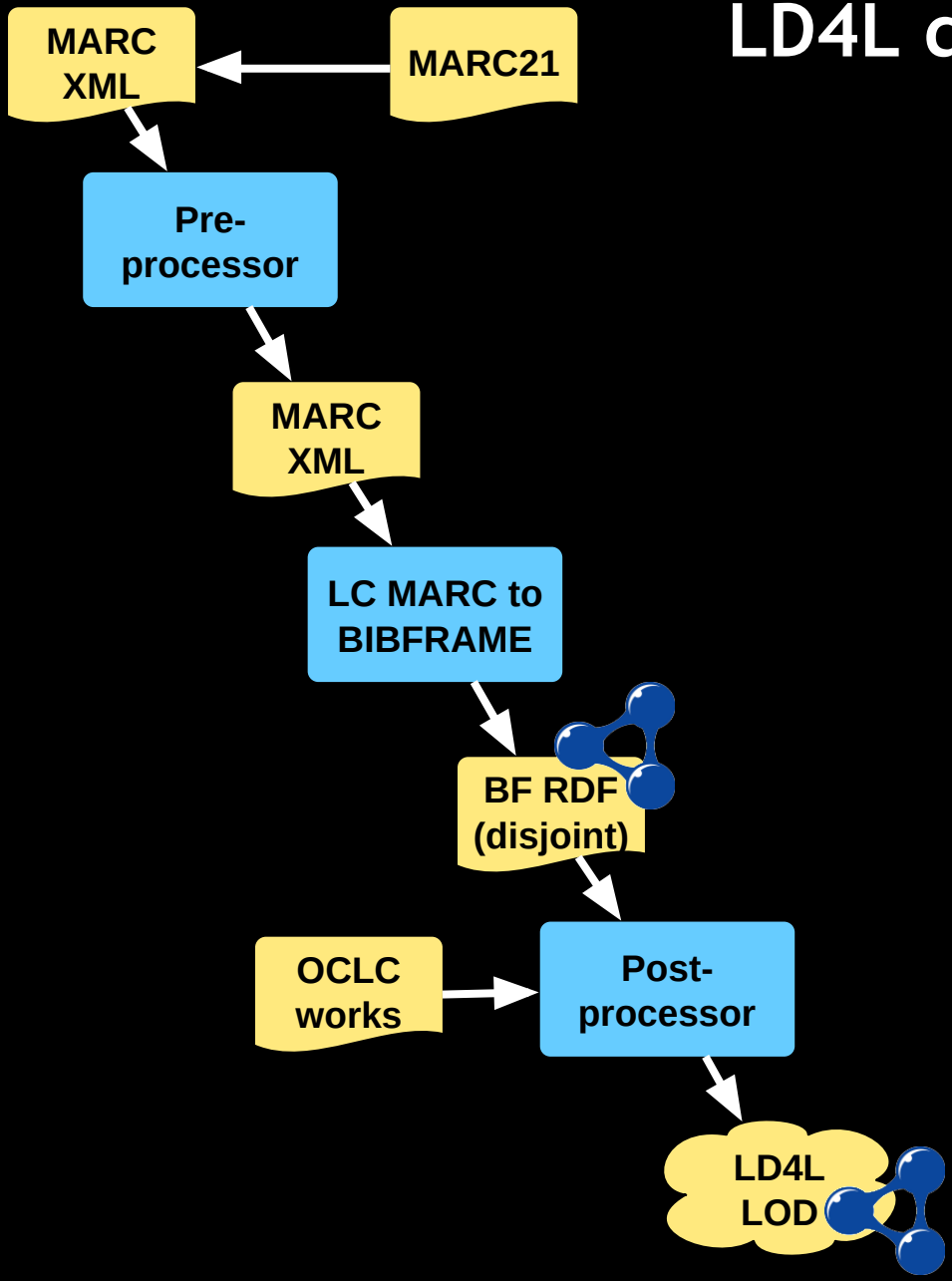
Vast majority of items have lowest StackScore.

Is this useful?

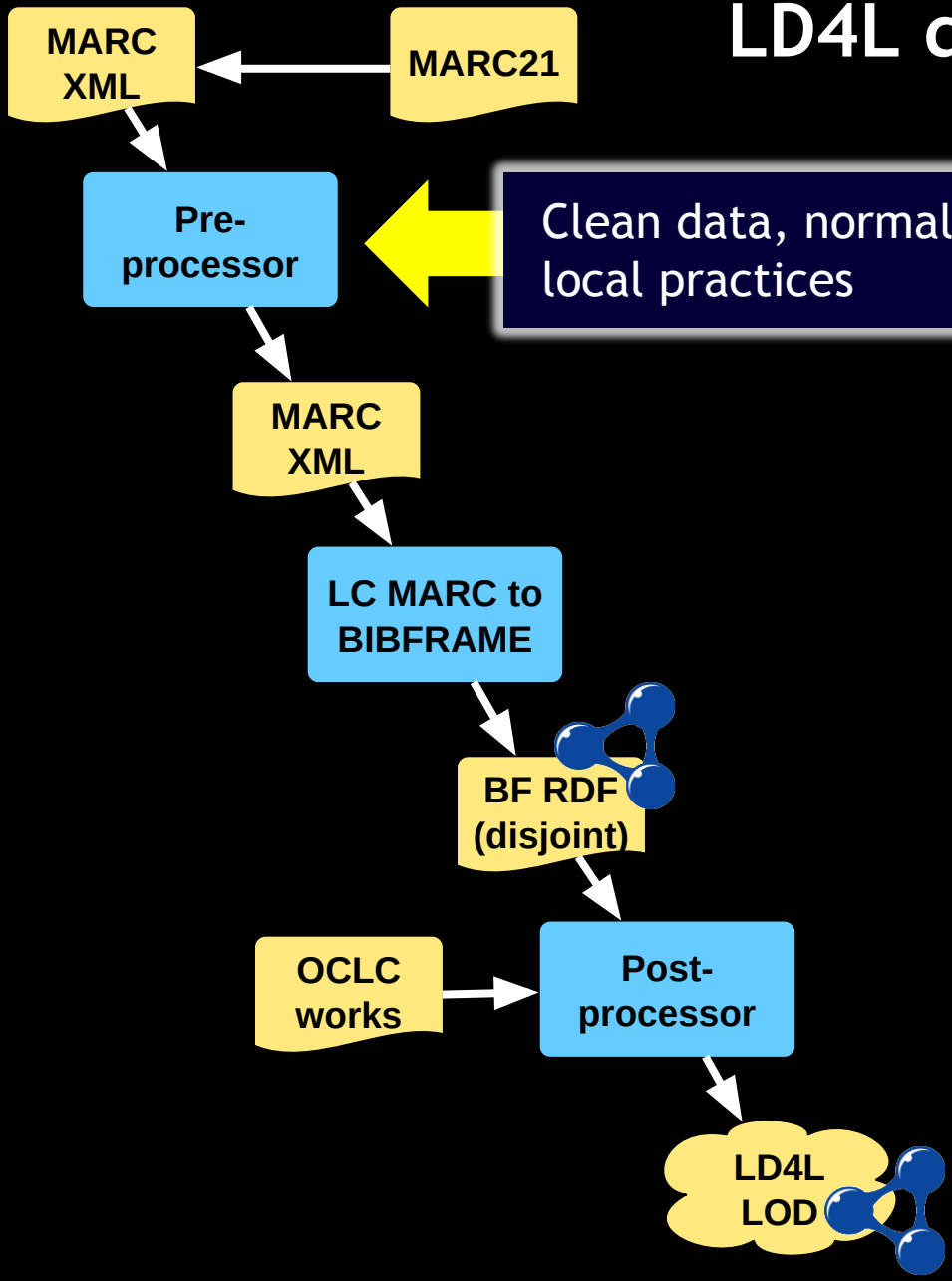
Data: https://github.com/ld4l/ld4l-cul-usage

Photo: Tony Hisgett https://www.flickr.com/photos/hisgett/3365087837

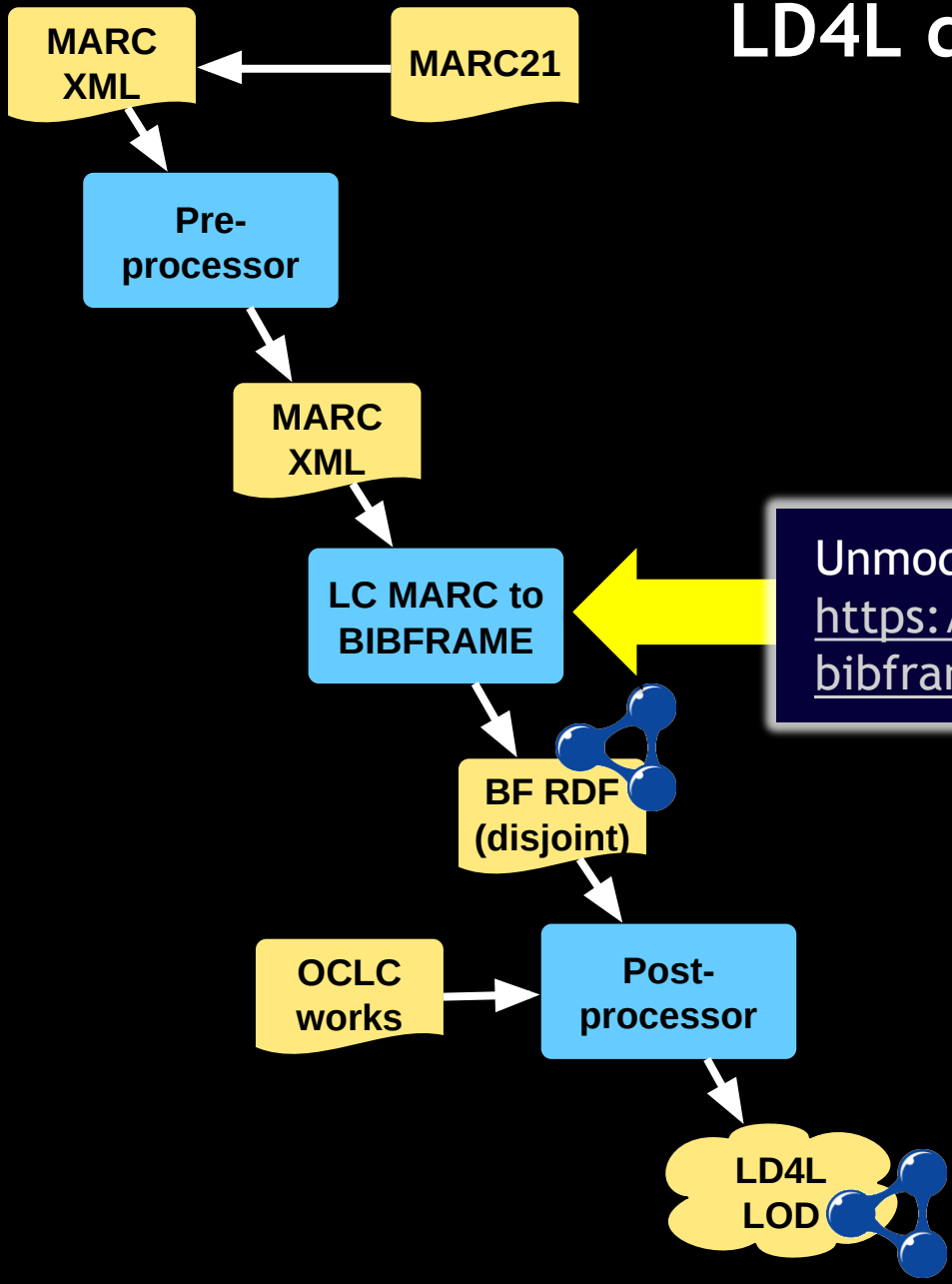
LD4L data transformation



LD4L data transformation

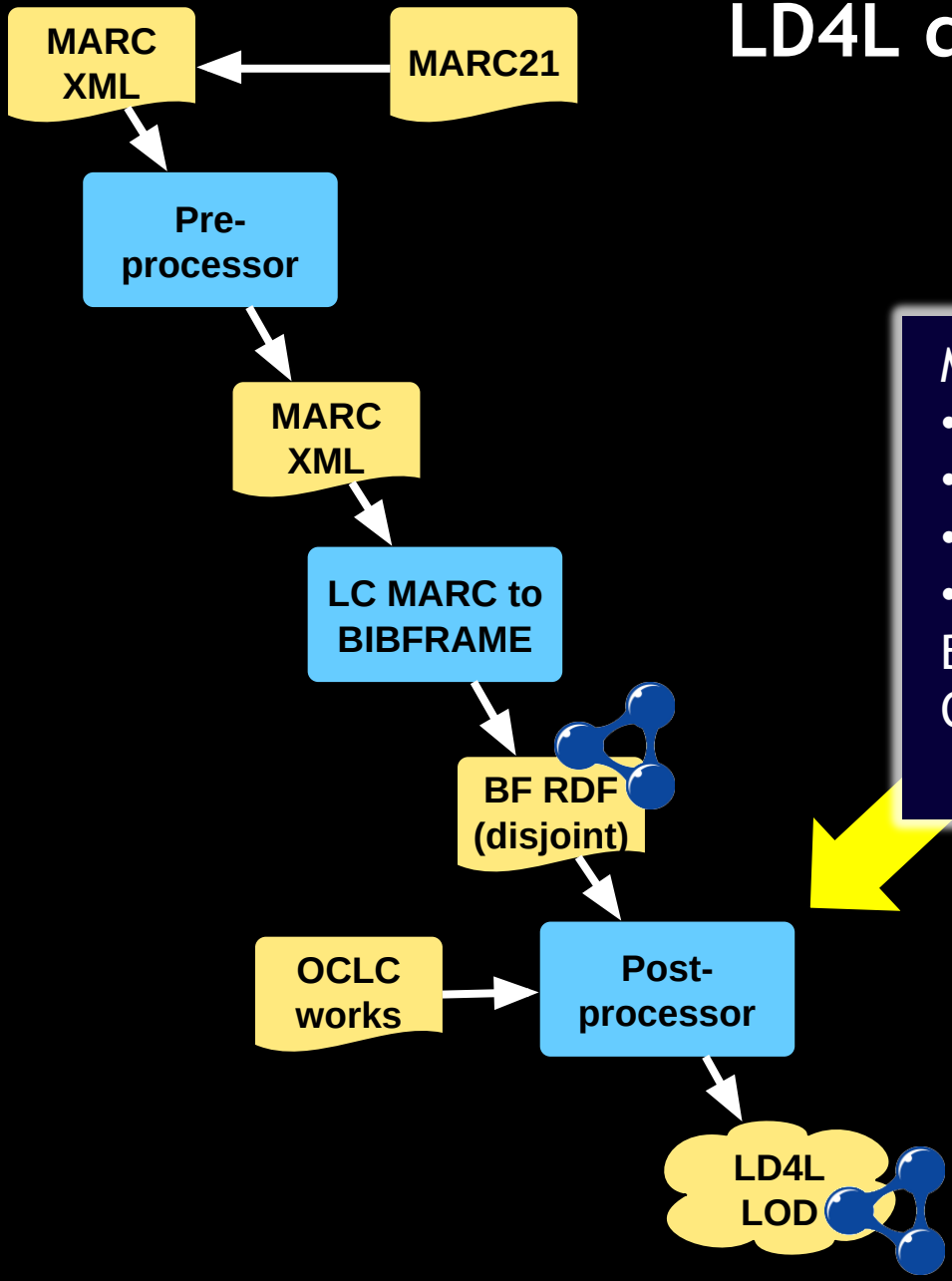


LD4L data transformation



Unmodified LC converter: https://github.com/lcnetdev/marc2bibframe

LD4L data transformation



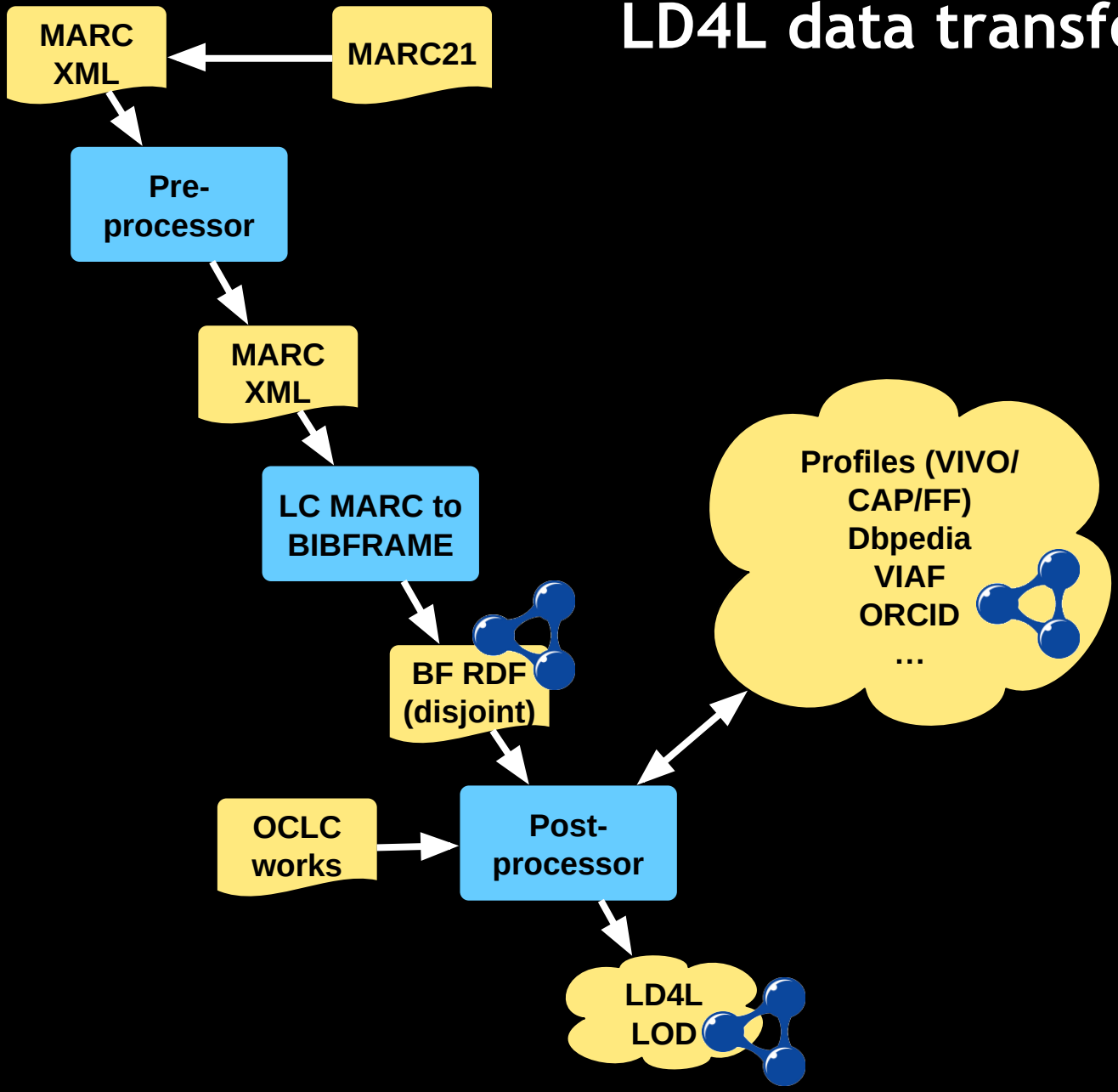
Match up

- Worldcat ids for instances
- Authorized names for persons
- FAST subject headings
- Strings to ids by rules

BF -> LD4L ontology

OCLC data to combine works

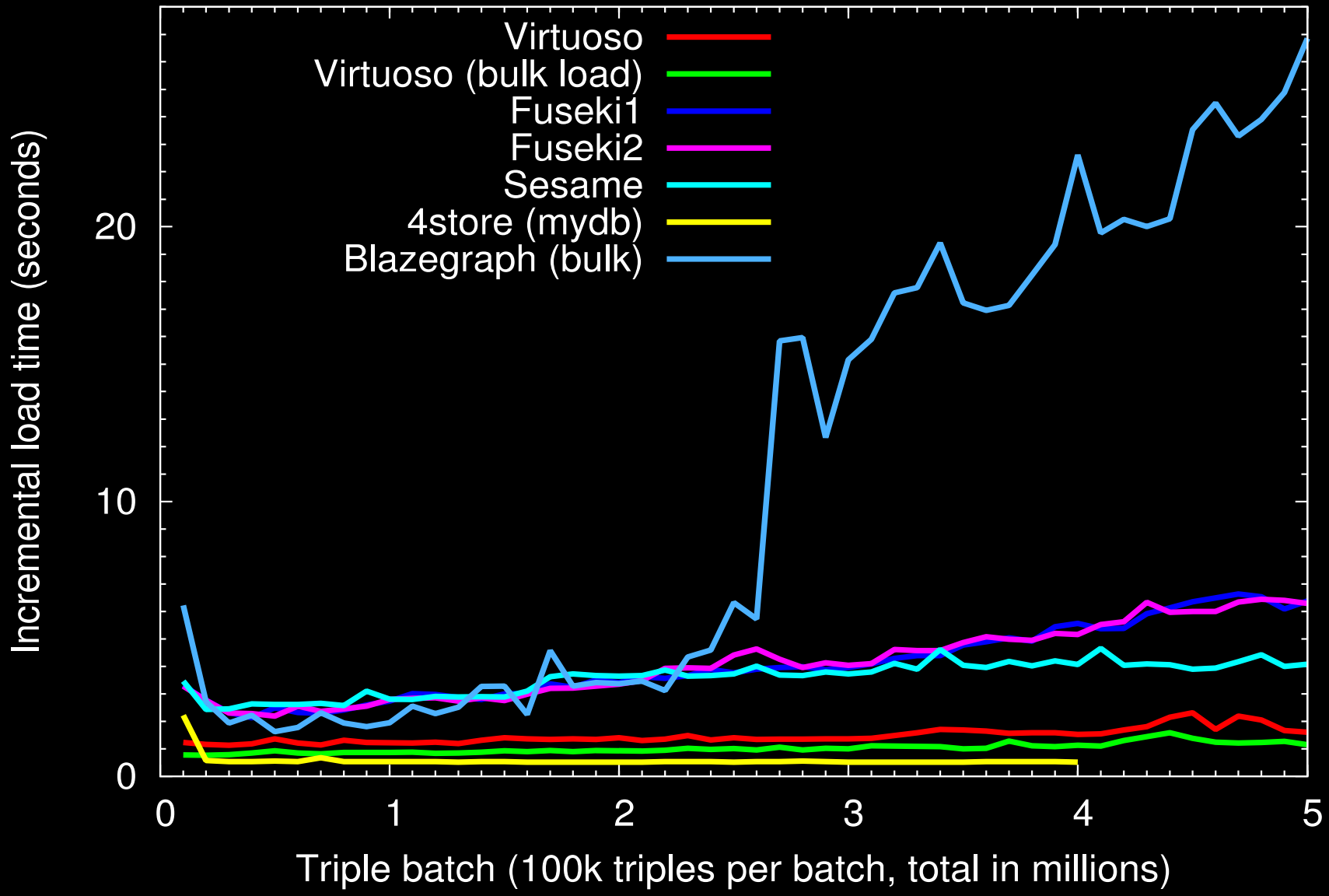
LD4L data transformation



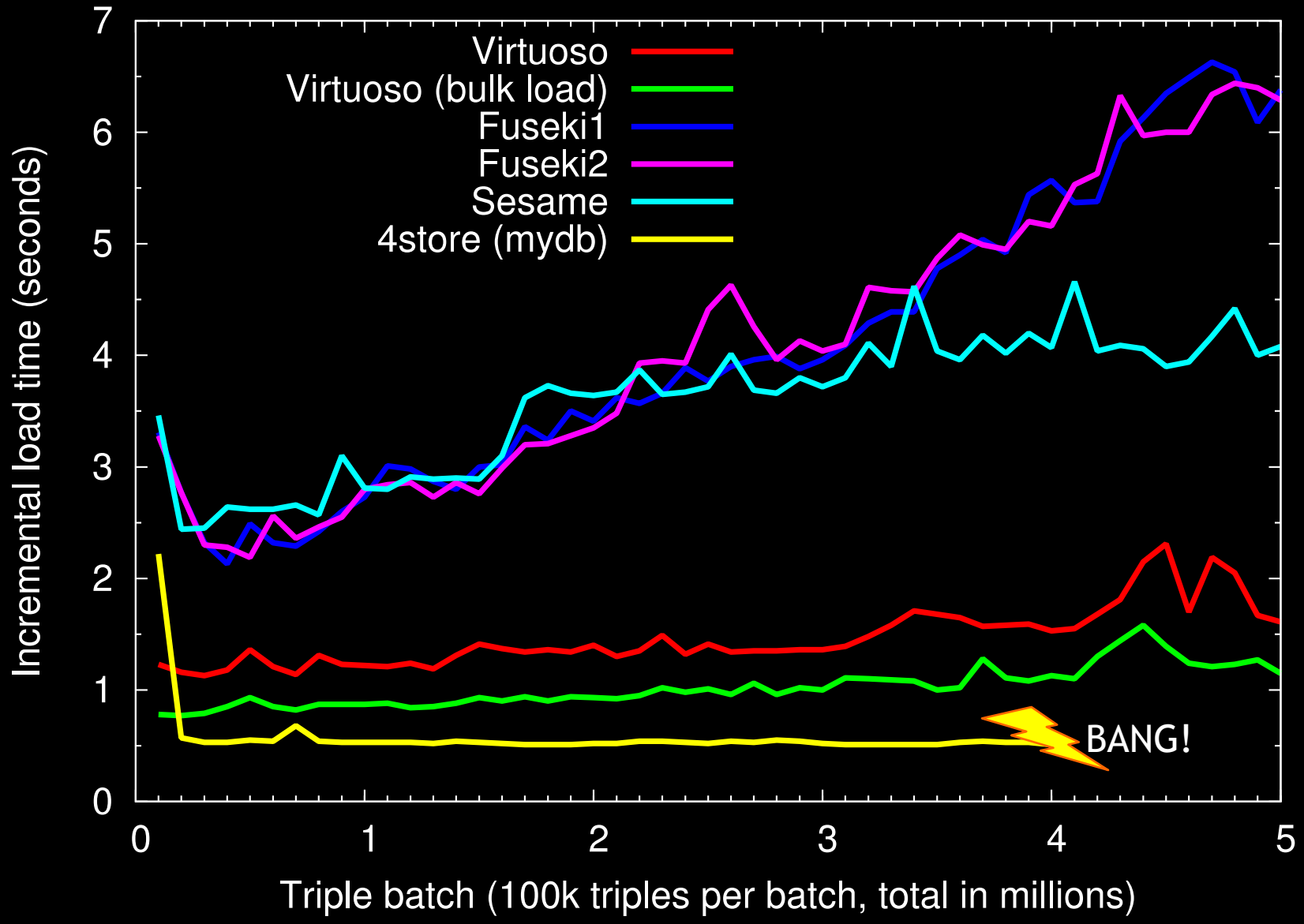
Future processing challenges

- Join with VIVO/CAP/Profiles data as a coherent, richer local authority picture
- Extend to full variety of different types of catalog records
- Address issues of entity resolution and linking in the real world for works, people, organizations, events, places, and subjects
- Integrate with other linked data sources via common global identifiers and shared ontologies

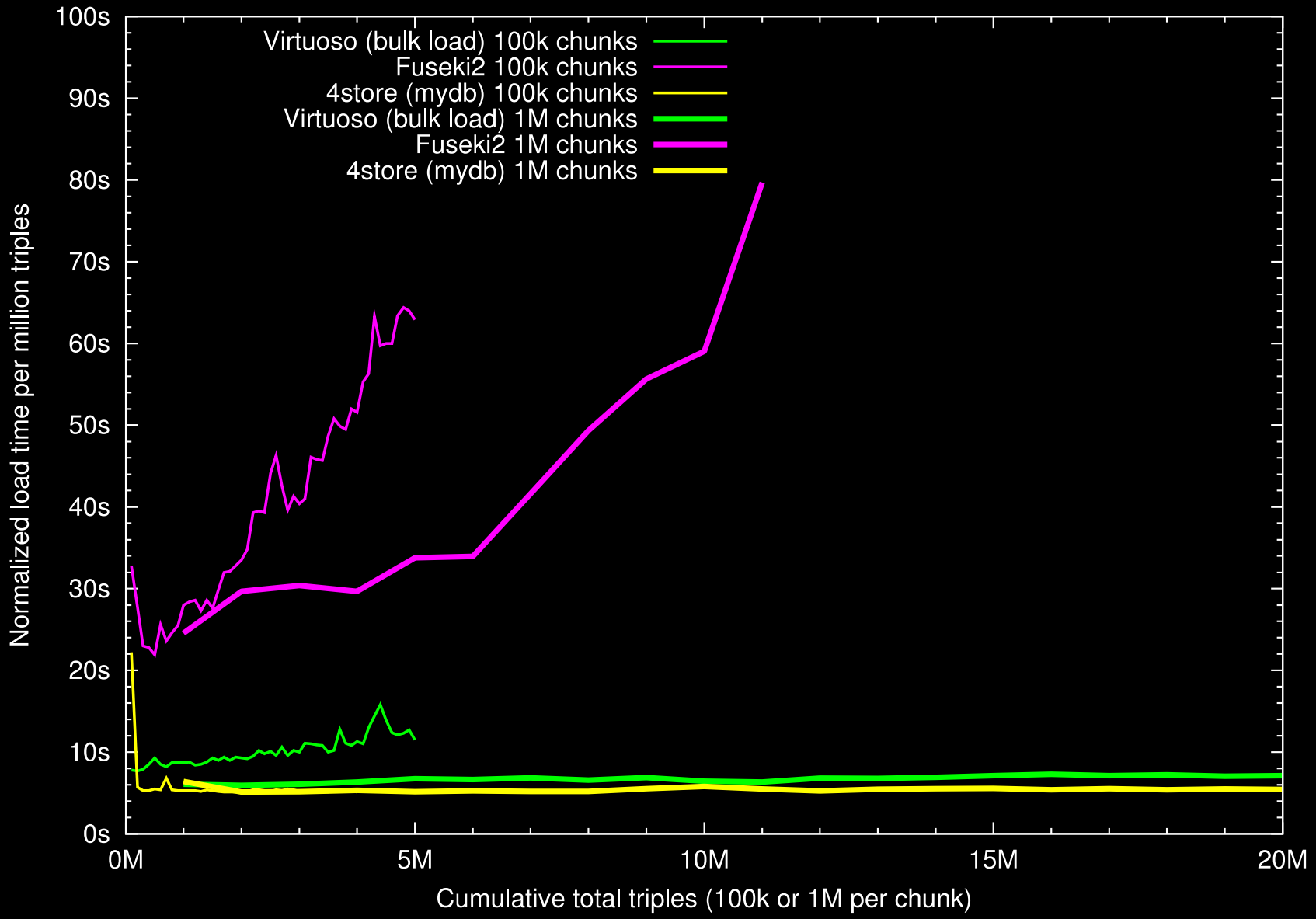
Triplestores - Very small load (1)



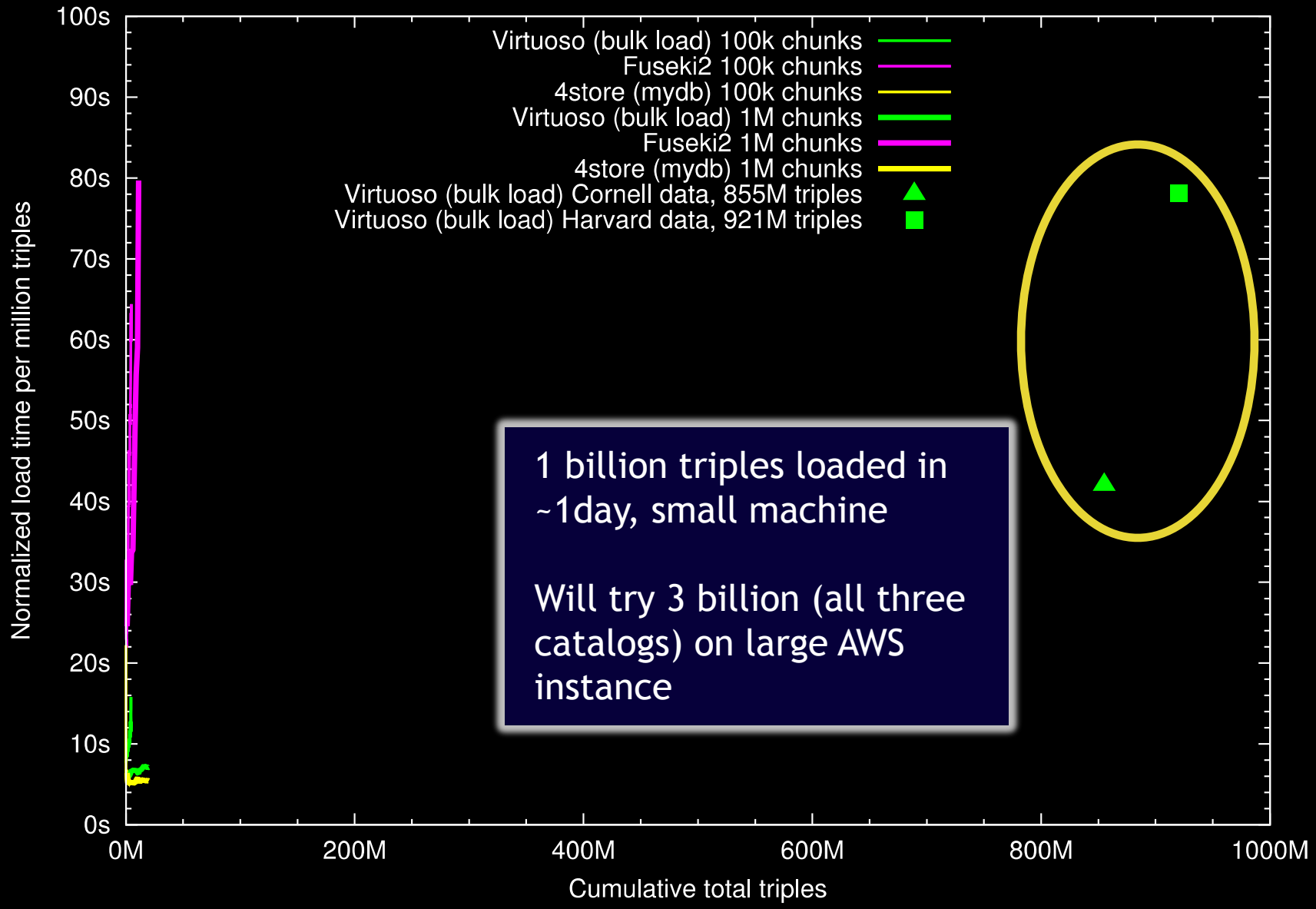
Triplestores - Very small load (2)



Triplestores - Slightly larger load (3)



Triplestores - Billion triple loads



Triplestores - AllegroGraph @ Stanford

- Using AllegroGraph developer license with 500M triple limit
  - would have loaded full 650M triples in absence of limit
- Running on 64GB machine, 4 cores, 2 threads
  - java settings: -Xms24G –Xmx 52G
- Divided data from 7.5M bibliographic records into 75 RDF/XML files, 1GB each
- Average 1h to process and load each -> 2k triples/sec but expect that is dominated by RDF/XML parse
- Total 3 day load time – painful but repeatable
- Lots of web management tools, visualization, full-text indexing, user and permission handling
- SPARQL relatively fast and even ones with very large result sets complete given time

[Thanks to Joshua Greben @ Stanford for summary]

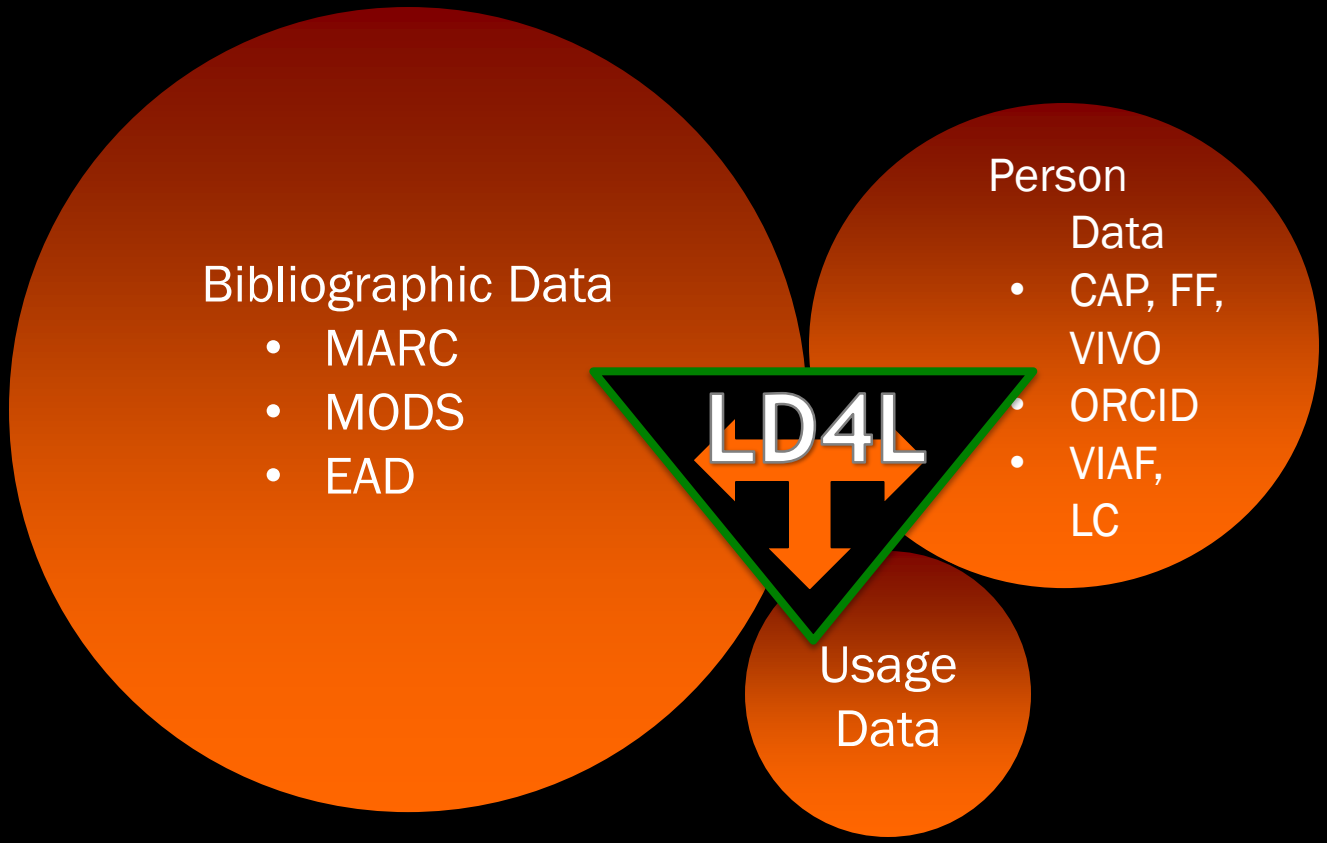
From triplestore to index

- Goal of triplestore load is to be able to merge data and analyze
- Do *NOT* expect end user performance => build Solr index
- Initial tests suggested 2-weeks to build Solr index for just Cornell data
- Will use large AWS instance to build Blacklight index for Cornell + Harvard + Stanford data

- Various optimization possibilities but try simple approach first

Summary

LD4L data sources revisited



Looking to relate three classes of data from across three different institutions. Different progress on different fronts, most with bibliographic data

Project Outcomes

- Open source extensible LD4L ontology compatible with VIVO ontology, BIBFRAME, and other existing library LOD efforts
- Open source LD4L semantic editing and display
- Implementation of virtual collections compatible with Project Hydra using ActiveTriples
- Demonstration Blacklight search across multiple LD4L instances
- Draft LOD dumps of augmented catalog data from Harvard, Stanford and Cornell

Project team outside the now-demolished Myer Library, Stanford, Summer 2014

Questions?

Slides: http://goo.gl/SlE825
More Info: http://ld4l.org
Code: https://github.com/ld4l
Data (soon): http://draft.ld4l.org