

NEWTON'S THIRD LAW:

**An action-and-reaction approach
to setting Linked Data in motion**

Presented by

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Backstage Library Works

Originally Presented by

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in the ALCTS CaMMS CMIG Meeting
at the 2017 ALA Annual Conference



Poll

Where is your
institution focusing
its linked data
efforts?



What to Expect

- Not a sales pitch, just sharing of ideas
- URI enrichments in MARC
- URI enrichments in non-MARC
- What's out there?



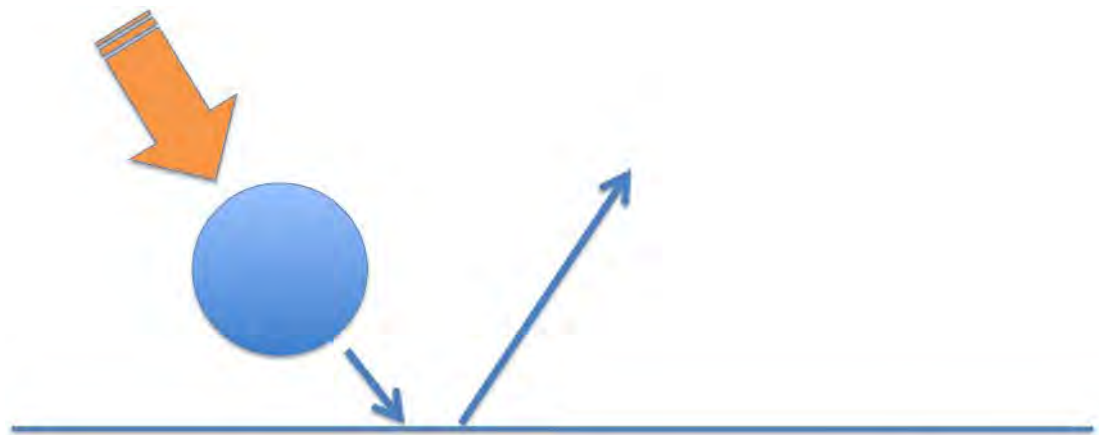
Pendulum Swing



Newton's Cradle

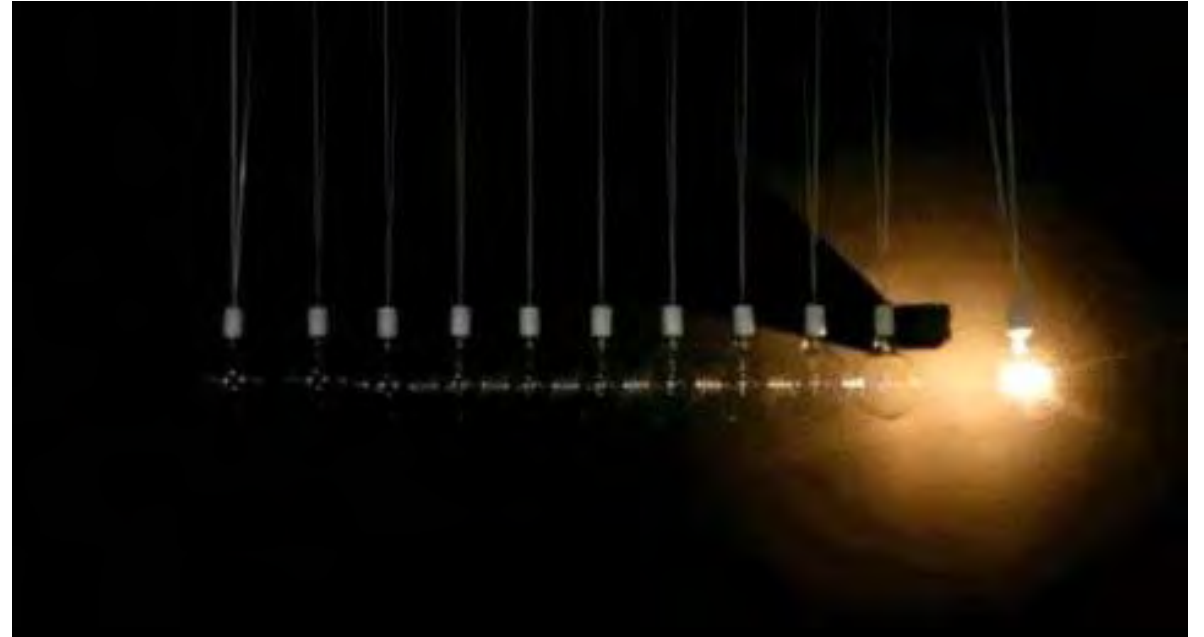


Newton's Third Law

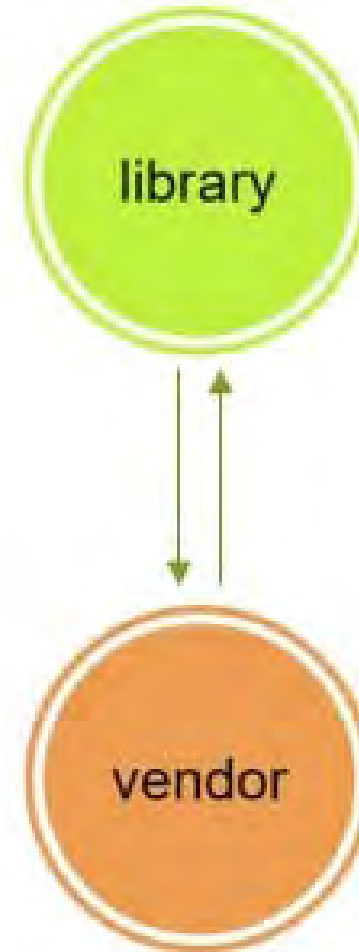


Every action has an equal
and opposite reaction

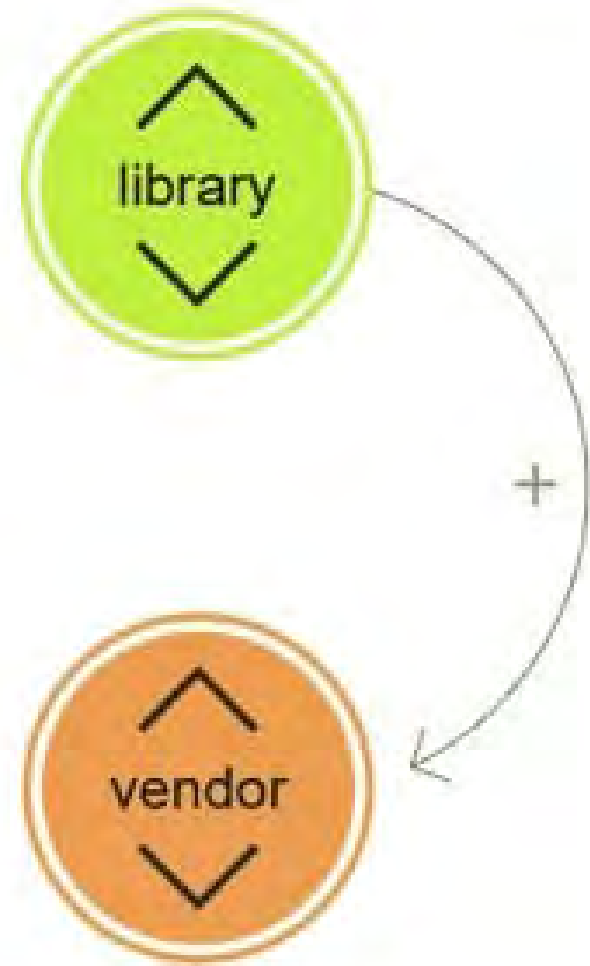
Newton's Cradle



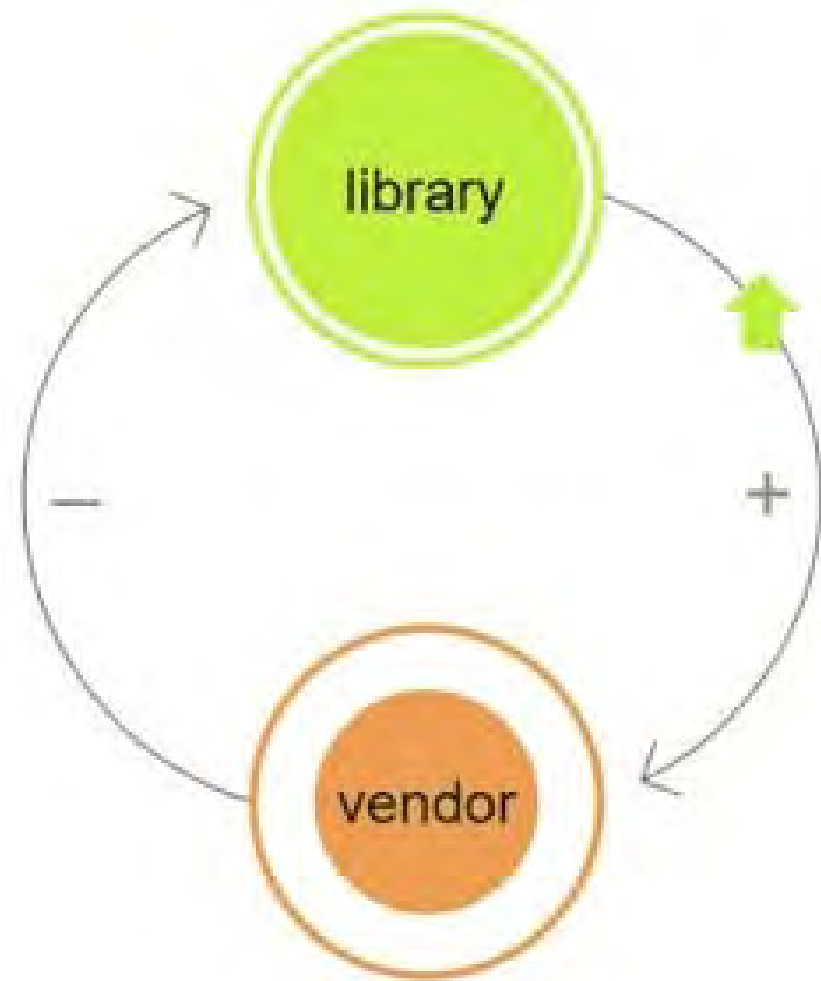
Traditional Relationship



Iterative Relationship



Collaborative Relationship



Time for Some Acronyms



LC

Library of Congress
(Names and Subject Headings)

VIAF

Virtual International Authority File

ISNI

International Standard Name Identifier

ORCID

Open Researcher and Contributor ID

FAST

Faceted Application of Subject Terminology

MeSH

Medical Subject Headings
(National Library of Medicine)

Stanford University Project

- 2015 investigation on URIs
- Phil Schreur, Nancy Lorimer
- Authorities
- Bibliographic records
- Lessons learned



Stanford – Authorities

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4,034,406 ORCID iDs and counting. [See more...](#)

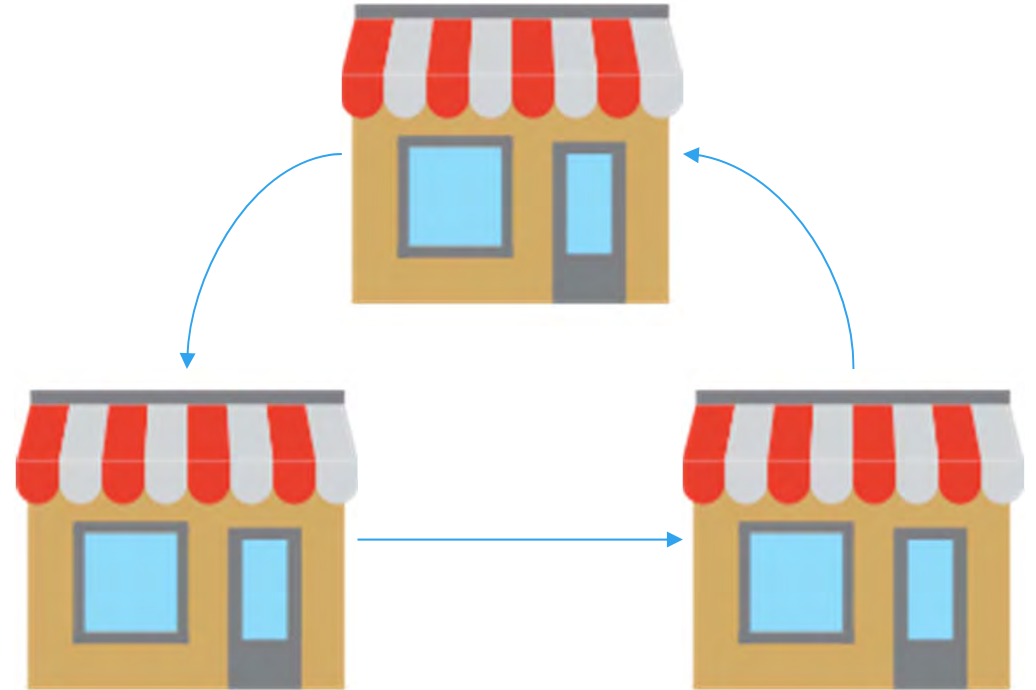
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Stanford – Authorities

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Stanford Triple Store



Stanford – Bibs

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Stanford – Bibs

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Stanford Real World Objects (RWO)



[The Library of Congress](#) > [Linked Data Service](#)

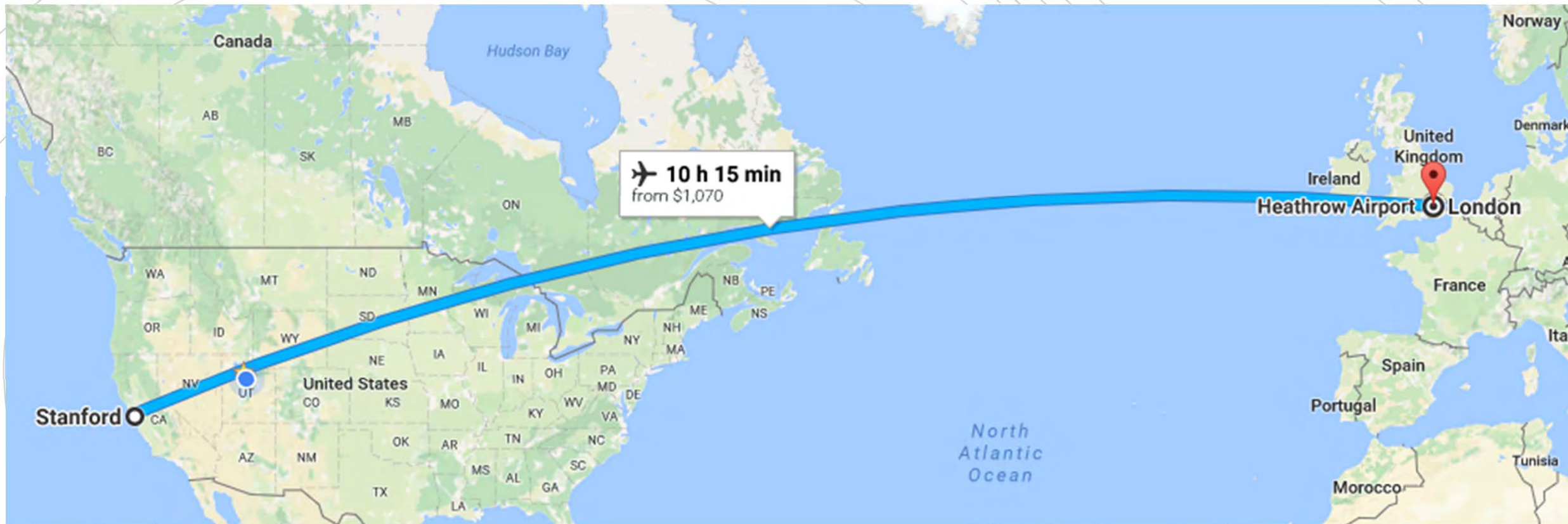
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Stanford – Lessons Learned

- Flexibility in approach
- Experimentation
- Extended timelines
- Iterative process
- Collaborative feedback





Wellcome Library Project

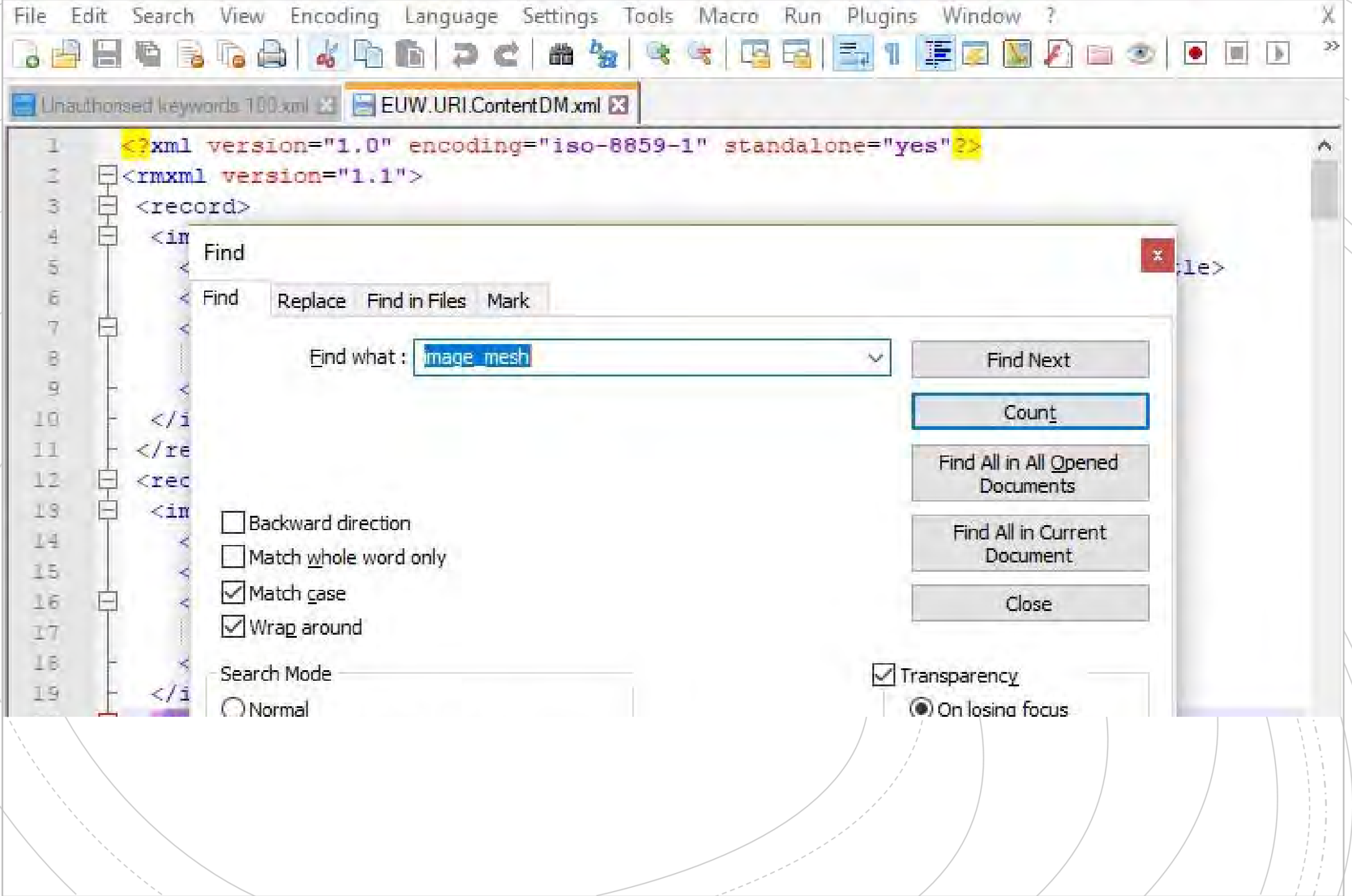
- 2016 investigation on URIs
- June Tomlinson
- Non-MARC XML
- MeSH, LC
- URIs: LC, MeSH, VIAF





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Wellcome Library

Near-Match Headings

Section 1: Unmatched Headings

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2. B0001710

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Wellcome Library Unmatched Headings

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Wellcome Library Updated Headings

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1 record	Old	image/image_keywords_unauth/_	cramp
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Wellcome – Lessons Learned

- Home-grown XML
- Experimentation
- One-word entries
- Iterative process
- Collaborative feedback



Franken-MARC

n-us-ma ▼
PZ7.A582
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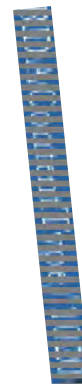
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▼ aFirst edition.
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110 2_ ▼ 0<http://id.loc.gov/authorities/names/no2007154566>
245 00 ▼ 0http://id.loc.gov/marc/bibliographic/instanceTitle/titleValue/Record_of_work
260 _ ▼ 0<http://id.loc.gov/marc/bibliographic/publication/providerPlace/Williamsport> ▼
0 <http://id.loc.gov/marc/bibliographic/publication/providerDate/nd>
300 _ ▼ 0<http://id.loc.gov/marc/bibliographic/extent/volume> ▼ 0<http://id.loc.gov/marc/bibliographic/illustrationNote/illustrations> ▼
0 <http://id.loc.gov/marc/bibliographic/dimensions/22-31cm>
310 _ ▼ 0<http://id.loc.gov/vocabulary/frequencies/ann>
590 _ ▼ 0http://id.loc.gov/marc/bibliographic/note/PREMARCSERLOC_merged_record
651 _0 ▼ 0<http://id.loc.gov/authorities/names/n50075133> ▼ 0<http://id.loc.gov/authorities/subjects/sh99005736>

Franken-MARC

001 — 8675309
005 — 20150430072518.0
008 — 830401n xx a eng
035 — ▼9(DLC) 06009606
010 — ▼a 06009606
040 — ▼aDLC ▼cCarP ▼dDLC
043 — ▼an-us-pa
050 00 ▼aHF296 ▼b.W73
110 2_ ▼aWilliamsport Community Trade Association, Williamsport, Pa.
245 00 ▼aRecord of work.
260 — ▼a[Williamsport] ▼c[n.d.]
300 — ▼av. ▼billus. ▼c22-31 cm.
310 — ▼aAnnual
590 — ▼aPREMARC/SERLOC merged record
651 _0 ▼aWilliamsport (Pa.) ▼xEconomic conditions.



Franken-MARC

001 _ ▼0<http://id.loc.gov/resources/bibs/8675309>
005 _ ▼0<http://id.loc.gov/marc/changeDate/2015-04-30T07:25>
010 _ ▼0<http://id.loc.gov/vocabulary/identifiers/lccn/identifierValue/06009606>
040 _ ▼0<http://id.loc.gov/vocabulary/organizations/descriptionSource/dlc> ▼0<http://id.loc.gov/vocabulary/organizations/descriptionTranscriber/carp> ▼
0 <http://id.loc.gov/vocabulary/organizations/descriptionModifier/dlc>
043 _ ▼0<http://id.loc.gov/vocabulary/geographicAreas/n-us-pa>
050 00 ▼0<http://id.loc.gov/authorities/classification/H>
110 2_ ▼0<http://id.loc.gov/authorities/names/no2007154566>
245 00 ▼0http://id.loc.gov/marc/bibliographic/instanceTitle/titleValue/Record_of_work
260 _ ▼0<http://id.loc.gov/marc/bibliographic/publication/providerPlace/Williamsport> ▼
0 <http://id.loc.gov/marc/bibliographic/publication/providerDate/nd>
300 _ ▼0<http://id.loc.gov/marc/bibliographic/extent/volume> ▼0<http://id.loc.gov/marc/bibliographic/illustrationNote/illustrations> ▼
0 <http://id.loc.gov/marc/bibliographic/dimensions/22-31cm>
310 _ ▼0<http://id.loc.gov/vocabulary/frequencies/ann>
590 _ ▼0http://id.loc.gov/marc/bibliographic/note/PREMARCSERLOC_merged_record
651 _0 ▼0<http://id.loc.gov/authorities/names/n50075133> ▼0<http://id.loc.gov/authorities/subjects/sh99005736>

Is this where we're going?



Poll

Which data formats
would you
consider for URI
enrichment?



What's Out There?



PCC URI Task Group

Updates

- [April 15, 2017](#) (PDF 231 KB)
- [October 6, 2016](#) (PDF 1.5 MB)
- [April 15, 2016](#) (PDF 369KB)
- [October 2015](#) (PDF 157KB)

Survey:

PCC URI Survey: Enhancing MARC Records with RDF URIs and Other Identifiers

- Survey deadline: September 15, 2017

MARC proposals approved:

- [2017-09](#): Defining Field 758 (Resource Identifier) in the MARC 21 Bibliographic Format
- [2017-08](#): Use of Subfields \$0 and \$1 to Capture Uniform Resource Identifiers (URIs) in the MARC 21 Formats
- [2017-01](#): Redefining Subfield \$4 to Encompass URIs for Relationships in the MARC 21 Authority and Bibliographic Formats

MARC discussion papers converted to proposals and approved:

- [2016-DP19](#): Adding Subfield \$0 to Fields 257 and 377 in the MARC 21 Bibliographic Format and Field 377 in the MARC 21 Authority Format
- [2016-DP18](#): Redefining Subfield \$0 to Remove the Use of Parenthetical Prefix "(uri)" in the MARC 21 Authority, Bibliographic, and Holdings Formats

Task Group Chair:

- Jackie Shieh, (George Washington University)

PCC URI Task Group

Members and stakeholder institutions:

- Robert Bremer (OCLC)
- Michelle Durocher (PCC Policy Committee Representative)
- Steven Folsom (Harvard University)
- Paul Frank (Library of Congress)
- Jean Godby (OCLC Research)
- Les Hawkins (CONSER Representative)
- Reinhold Heuvelmann (German National Library (DNB))
- Chew Chiat Naun (PCC Standing Committee on Standards)
- Gary Strawn (PCC Standing Committee on Automation)

Consultants:

- Ian Bigelow (University of Alberta)
- John Chapman (OCLC)
- Galen Charlton (Evergreen)
- Corine Deliot (British Library, consultant, ISNI specialist)
- Nancy Fallgren (NLM)
- Nancy Lorimer (Stanford, LD4P)
- Terry Reese (Ohio State, MarcEdit)
- Adam Schiff (University of Washington)
- Nate Trail (Network Development and MARC Standards Office (NDMSO), Library of Congress)
- Melanie Wacker (Columbia, MODS)
- Thurstan Young (British Library, MAC liaison)

Open Community Registry of LOD Tools

Tool	Type (Whatever makes sense to you as a tool type)	Function	Language	Website	Notes
ALIADA	Converter, publisher, linker	Convert MARC to customizable RDF, save to store and link with other datasets	Java	https://github.com/ALIADA/aliada-tool	Automatic conversion linking and publication of RDF datasets hosted by different Library or Collection Management Software.
Annif			English	Website: http://annif.org/ Github: https://github.com/osma/annif/ API: http://api.annif.org	https://vimeo.com/212577974
Arc2 PHP Sparql and Triplestore		SPARQL endpoint and triplestore	PHP	https://github.com/semsol/arc2	Used for http://the-fr.org , example endpoint: http://the-fr.org/public/sparql/endpoint.php
bib-rdf-pipeline	Conversion	Framework for converting MARC via BIBFRAME to Schema.org, with reconciliation, work clustering etc.	Mixed (Makefile, marc2bibframe2, Python, shell scripts, Unix tools, Jena, SPARQL...)	https://github.com/NatLibFi/bib-rdf-pipeline	In some details specific to Finnish data, but contains parts that could be reused elsewhere (e.g. SPARQL query for BF2 to Schema.org conversion)
Blazegraph	Triplestore	Storage/query	Java	https://www.blazegraph.com/	
CEDAR	Editor	Produce/edit RDF based on ontology-driven forms	Java, JS	https://metadatacenter.org/tools-training/cedar-template-tools	The purpose of CEDAR is to improve metadata and its use. Does not yet support the creation of properties.
Controlled Vocabulary Manager	Vocabulary Manager		Ruby/Rails	https://github.com/OregonDigital/ControlledVocabularyManager	The software that runs OpaqueNamespace.org
CTSASearch					
data.world	Publishing	Collaborative platform for finding and sharing data that uses the Semantic Web as its framework		data.world	Users can access the semantic graph database using SPARQL (and SQL) with a built in query function
Fuseki	Triplestore	Storage/query	Java	https://jena.apache.org/documentation/fuseki2/	

http://bit.ly/registry_LOD_tools

Library of Congress BIBFRAME Compare Tool

BIBFRAME Comparison Tool Compare MARCXML to BIBFRAME2

Identifier ☒ Bib ID ☐ LCCN Serialization ☒ Turtle ☐ RDF XML

8675309

Lookup Name URIs ☐ No ☒ Yes

Search

Clear

MARC

```
01165cas a2200301u| 4500
001 8675309
005 20150430072518.0
008 830401n      xx a ||||| ||eng|
010 $a 06009606
035 $9(DLC) 06009606
040 $aDLC$cCarP$dDLC
043 $an-us-pa
```

BIBFRAME (Turtle)

```
@prefix bf: <http://id.loc.gov/ontologies/bibframe/> .
@prefix bflc: <http://id.loc.gov/ontologies/bflc/> .
@prefix madsrdf: <http://www.loc.gov/mads/rdf/v1#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix zs: <http://docs.oasis-open.org/ns/search-ws/sruResponse> .
```

<http://bibframe.org/tools/compare>

Library of Congress
BIBFRAME Compare Tool

```
043    $an-us-pa
050 00 $aHF296$b.W73
110 2  $aWilliamsport Community Trade Association, Williamsport, Pa. [from old
      catalog]
245 00 $aRecord of work.
249 3  $iSERLOC variant entry$aWilliamsport, Pa. Board of Trade. Record pf wo
rk
249 3  $iSERLOC variant entry$aWilliamsport Community Trade Association, Willi
amsport, Pa. Report, -1913
249 3  $iSERLOC variant entry$aWilliamsport, Pa. Board of Trade. Annual repor
t
260    $a[Williamsport]$c[n.d.]
300    $av.$billus.$c22-31 cm.
310    $aAnnual
590    $aPREMARC/SERLOC merged record
651 0  $aWilliamsport (Pa.)$xEconomic conditions.
```

Library of Congress BIBFRAME Compare Tool

BIBFRAME (Turtle)

```
<http://bibframe.example.org/8675309#Item050-10> a bf:Item ;
  bf:itemOf <http://bibframe.example.org/8675309#Instance> ;
  bf:shelfMark [ a bf:ShelfMarkLcc ;
    rdfs:label "HF296.W73" ;
    bf:source <http://id.loc.gov/vocabulary/organizations/dlc> ] .

<http://bibframe.example.org/8675309#Topic651-20> a bf:Place,
  madsrdf:ComplexSubject ;
  rdfs:label "Williamsport (Pa.)--Economic conditions." ;
  bf:source [ a bf:Source ;
    bf:code "lcsh" ] ;
  madsrdf:authoritativeLabel "Williamsport (Pa.)--Economic conditions." ;
  madsrdf:componentList ( [ a madsrdf:Geographic ;
    madsrdf:authoritativeLabel "Williamsport (Pa.)" ] [ a
madsrdf:Topic ;
    madsrdf:authoritativeLabel "Economic conditions" ] ) ;
  madsrdf:isMemberofMADSScheme <http://id.loc.gov/authorities/subjects> .

<http://bibframe.example.org/8675309#Work> a bf:Text,
  bf:Work ;
  rdfs:label "Record of work." ;
  bf:adminMetadata [ a bf:AdminMetadata ;
    bflc:encodingLevel [ a bflc:EncodingLevel ;
```


Library of Congress BIBFRAME Compare Tool


```
bf:frequency [ a bf:Frequency ;  
    rdfs:label "Annual" ],  
    <http://id.loc.gov/vocabulary/frequencies/ann> ;  
bf:hasItem <http://bibframe.example.org/8675309#Item050-10> ;  
bf:identifiedBy [ a bf:Lccn ;  
    rdf:value " 06009606 " ] ;  
bf:instanceOf <http://bibframe.example.org/8675309#Work> ;  
bf:issuance <http://id.loc.gov/vocabulary/issuance/ser1> ;  
bf:note [ a bf:Note ;  
    rdfs:label "illus." ;  
    bf:noteType "Physical details" ] ;  
bf:provisionActivity [ a bf:ProvisionActivity,  
    bf:Publication ;  
    bf:place <http://id.loc.gov/vocabulary/countries/xx> ],  
    [ a bf:ProvisionActivity,  
    bf:Publication ;  
    bf:date "n.d" ;  
    bf:place [ a bf:Place ;  
        rdfs:label "Williamsport" ] ] ;  
bf:provisionActivityStatement "[Williamsport] [n.d.]" ;  
bf:title [ a bf>Title ;  
    rdfs:label "Record of work." ;  
    bf:lc:titleSortKey "Record of work." ;
```

Library of Congress BIBFRAME Compare Tool

[The Library of Congress](#) > [BIBFRAME](#)

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BIBFRAME




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Model & Vocabulary

- [BIBFRAME model](#)
- [BIBFRAME vocabulary](#)
 - [Category view](#)
 - [List view](#)
 - [RDF View](#)
 - [Extension list view](#)

Bibliographic Framework Initiative

Initiated by the Library of Congress, BIBFRAME provides a foundation for the future of bibliographic description, both on the web, and in the broader networked world that is grounded in Linked Data techniques. A major focus of the initiative is to determine a transition path for the MARC 21 formats while preserving a robust data exchange that has supported resource sharing and cataloging cost savings in recent decades.



Model and Vocabulary (2.0)

Model description, vocabulary presented in various views, guidelines, examples, analyses.

MARC 21 to BIBFRAME 2.0 Conversion Tools

- [Conversion Specifications](#)
Library of Congress MARC to BIBFRAME 2.0 conversion specifications
- [Conversion Programs](#)
XSLT conversion programs that apply the Library of Congress conversion specifications
- [MARC to BIBFRAME comparison viewer](#)

Implementation, Tools and Downloads

Implementation register, editor, other tools and downloads

What's New

BIBFRAME Update Forum at ALA Annual (June 2017)
[View agenda and presentations »](#)

What's New in BIBFRAME 2.0

BIBFRAME Vocabulary updated, MARC to BIBFRAME conversion specifications and programs released
March 10, 2017
[View specifications »](#)

BIBFRAME Pilot (Phase 1): Report and Assessment
June 16, 2016
[View report »](#)

Final Thoughts

- No judgments
- Make it successful
- Celebrate
- Share with others



Questions?



Thank You

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