

VitroLib:

From an Ontology and Instance Editor to a Linked Data Cataloging Editor

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Overview

- Background
- Screenshots
- Designing for Cataloging
- Developing with the Ontology
 - Application Profiles
- Lessons, questions, and future work

Background

- Mellon Foundation-funded LD4 Projects
- Transition *library systems* to *linked data*
- Link better, explore better
 - Flat record -> Discrete entities with well-defined relationships
 - String identifiers -> URIs
 - Relationships with other linked data
 - Cross-institutional links
- Cataloging tool
 - Part of library systems ecosystem
 - Create/leverage linked data
 - Research what it takes to build something “real”

Cataloging

- “A cataloger is an individual responsible for the processes of ***description, subject analysis, classification, and authority control*** of library materials. Catalogers serve as the ‘foundation of all library service, as they are the ones who organize information in such a way as to make it easily accessible’.” (Emphasis mine)
 - From <https://en.wikipedia.org/wiki/Cataloging>

Cataloging

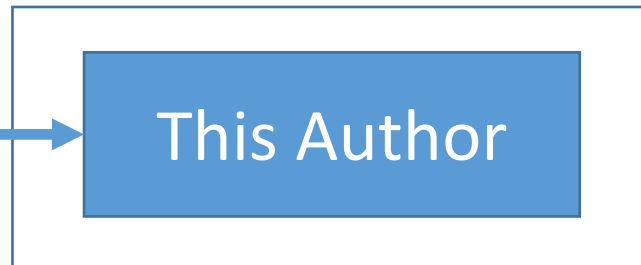
- “... in making decisions about what to record for later discoverability by the end users, the cataloger also has to take into account what aspects of the work are important to bring out given that institution’s collecting strengths, its users, and which subject areas are of broad interest to scholars. “
 - Margaret F. Nichols, Cornell

Background

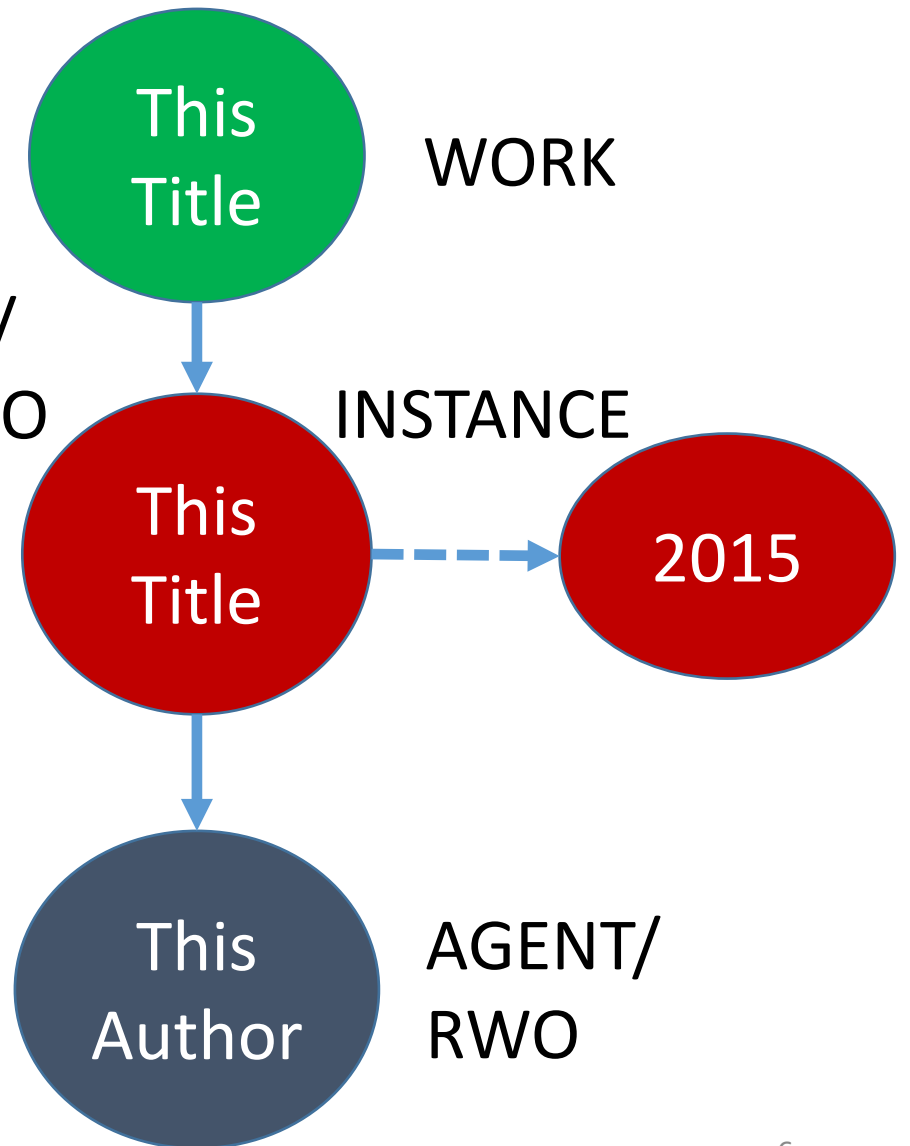
MARC
RECORD



NAME
AUTH
FILE



BIBFRAME/
BIBLIOTEK-O
ENTITIES
WITH URIS

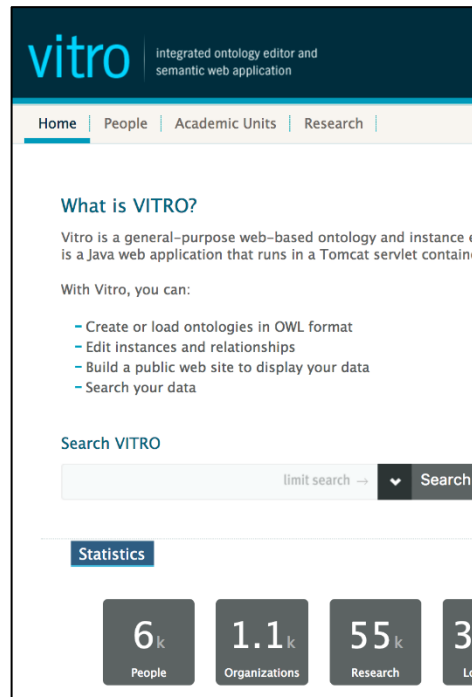


Ontology Editor to Cataloging Editor

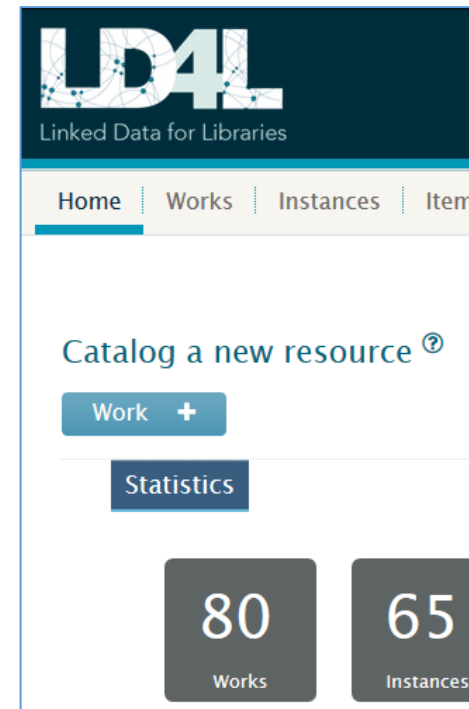
Ontology and Instance Editor and Viewer:

Import ontology

Create and edit classes, properties, instance data



Vitro



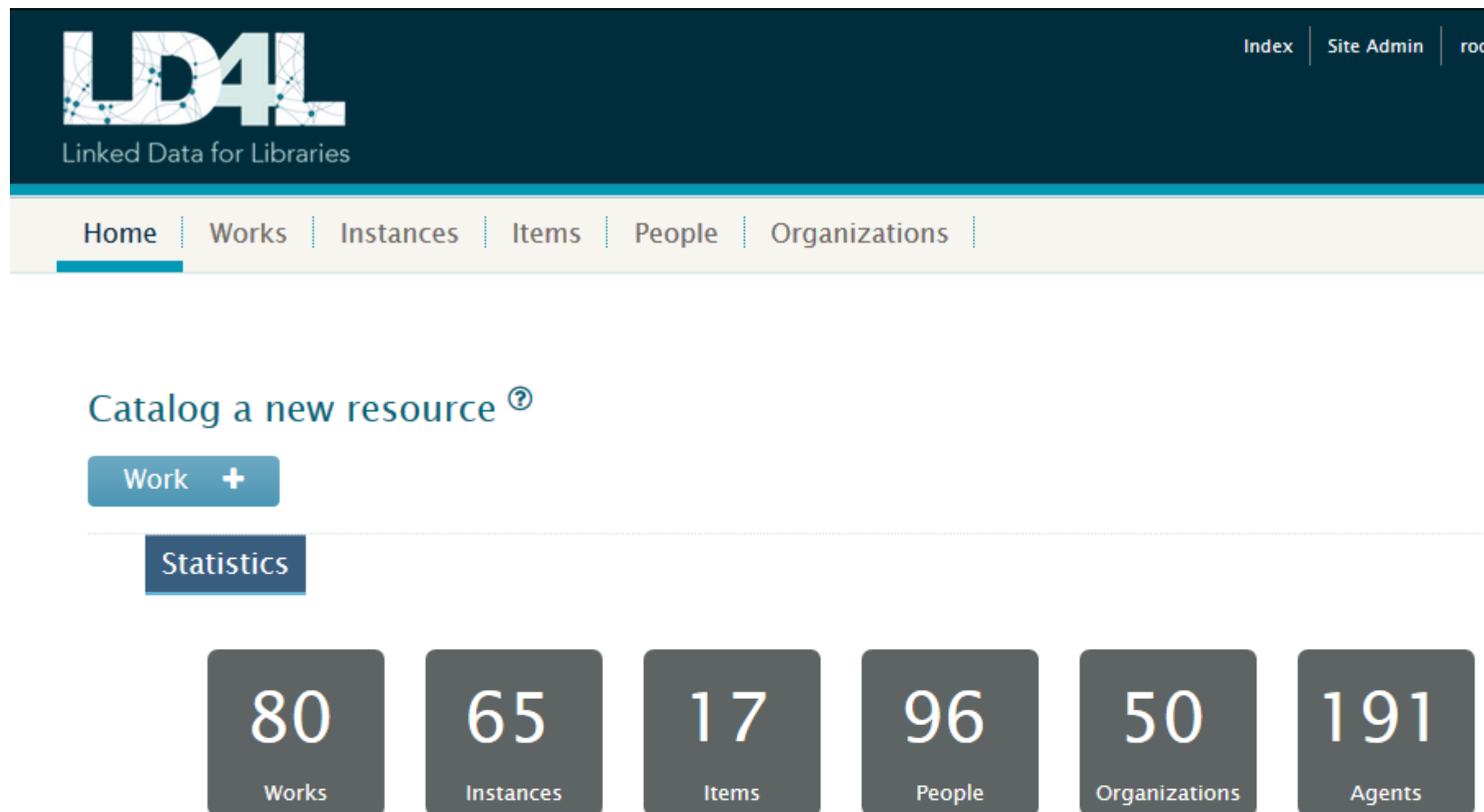
VitroLib

Cataloging editor:

Bibliotek-o

Support cataloging in and using linked data

Demo/Screenshots



Catalog a new resource [?]

Work +

Statistics

80

Works

65

Instances

17

Items

96

People

50

Organizations

191

Agents

New Work

Title *

Made in America

Type *

Audio

Language *

English

Author or Other Role *

Performer

blues brothers

Blues Brothers Band

Blues Brothers (Motion picture)

Wood Brothers (Blues group)

Soul Brothers (Blues group)

Blues Brothers Horns (Musical group)

Blues Eldorados

Blues, Thomas

Blues Rockers

Blues Brothers

Blues revue

Audio



Language *

English



Author or Other Role *

Performer



Selected: Blues Brothers [\(Verify this match\)](#) or [change selection](#)

LC Subject Heading

soul music

Soul music--History and criticism

Guitar music (Soul)

Philadelphia soul (Music)

Soul--Buddhism

Soul worship

Soul mates

Soul music

Soul--Judaism

Soul musicians

Soul--Hinduism

Soul in literature

Soul--Christianity

Soul--Jainism

-- **Has Instance** (RDA Manifestation) --

Title

Made in America

Statement of Responsibility

Blues Brothers

Type

Audio disc

Aperture card
Archival controlled
Audio belt
Audio cartridge
Audio cassette
Audio cylinder
Audio disc
Audio roll
Audio wire reel
Audiotape reel
Belt
Card
Cartridge
Cassette
Computer card
Computer chip
Computer chip cartridge
Computer disc
Computer disc cartridge
Computer tape cartridge

Select an existing Entity or create a new one.

Audio disc



Issue Number

SD 16025

Matrix Number

UPC

EAN

Publisher

atlantic recording co

Atlantic Recording Corporation

Atlantic Consultants

Atlantic jazzlore

Atlantic mystery

Atlantic Workshop

Atlantic series

* required

Atlantic Institute

Atlantic jazz

Atlantic Manor

Atlantic Underwriters

Type

Audio disc



Issue Number

SD 16025

Matrix Number

UPC

EAN

Selected:

Atlantic Recording Corporation

[\(Verify this match](#) or [change selection\)](#)

Date of Publication

1980

Save

or [Cancel](#)

** required fields*



[Admin Panel](#) [Edit this individual](#)

Verbose property display is **off** | [Turn on](#)

Resource URI: <http://vitrolib.cornell.edu/individual/n2726>

[Made in America](#) |   | [Audio](#) | [\(work\)](#) 

authors and other roles

[Blues Brothers](#) (Performer) |  

Instance of Work

[Made in America \(Audio disc\)](#) 1980 |  

subject

[Soul music](#) |  

Instance information (snippets)

Resource URI: <http://vitrolib.cornell.edu/individual/n188>

[Made in America](#) |   

Creative responsibility statement +

Blues Brothers |  

Identifier +

[SD 16025](#) |  

Instance of +

[Made in America](#) |  



Linked Data for Libraries

[Index](#)

[Site Admin](#)

[root](#)



made in america

Search

[Home](#)

[Works](#)

[Instances](#)

[Items](#)

[People](#)

[Organizations](#)

Search results for 'made in america'

[Not the results you expected?](#)

[Made in America](#) | Audio

... Audio Work Perfomer **Made** in **America** English Soul music ...

[Made in America](#)

... Main title element Title element **Made** in **America** ...

Display Only

[works](#) (1)

[instances](#) (1)

Works

[Audio](#) (7)

[Text](#) (1)

[Work](#) (9)

Audio

[all](#)
[A](#)
[B](#)
[C](#)
[D](#)
[E](#)
[F](#)
[G](#)
[H](#)
[I](#)
[J](#)
[K](#)
[L](#)
[M](#)
[N](#)
[O](#)
[P](#)
[Q](#)
[R](#)
[S](#)
[T](#)
[U](#)
[V](#)
[W](#)
[X](#)
[Y](#)
[Z](#)

[Another Wonderfully Excellent Title](#)

[Charles Tucker](#)

[Lots of things go here](#)

[Made in America](#)

[Test New Work with Subject](#)

[Testing subjects](#)

[VitroLib Group Meeting Title](#)

In memoriam: VitroLib without customization

Data Input

Text (BIBFRAME vocabulary) ▼

Add individual of this class

Create a new Text

name *

Create Text or [Cancel](#)

** required fields*

IdentityTitlesContributorsPhysical Characteristics

Identity

name +

Titles

has preferred title +

Contributors

has activity +

Create a new Work of type Text

User-centered design

- Process overview
 - **Leave assumptions at the door**
 - Observe, listen, learn, design, evaluate, iterate
- **End-users: Catalogers**
 - ***How can this tool support catalogers in their tasks?***
 - How do they analyze, assess, input information now?
 - How does this tool fit into the larger “infosphere” and library ecosystem?
- **Iterative** prototyping and evaluation
 - Thank you Nick Cappadonna!
 - Round 3 completed last summer: 7 participants covering 4 institutions

Emerging lessons and questions

- ***The ontology is not enough***
 - What activity should I pick?
 - What does this property name mean?
- ***Existent content and context is ALWAYS required***
 - Original cataloging does not happen in a vacuum
 - Search is the first step
- The “form”: what components of information should be displayed together/first?
- Keyboarding vs. GUIs: Carpal tunnel is a real concern

Emerging lessons and questions

- ***How does the change in the model (the use of robust links) change how we think while cataloging?***
- Standardization vs. transcription
- How much to enable for entry on the creation page?
- How to handle content-specific pathways?
- What context is needed to support analysis/synthesis?

Context examples: Lookups and Search

- Autocomplete using LCSH/LCNAF
 - Additional lookups possible
- Multiple front-ends possible for same lookup architecture
- QA lookups: one strategy for coalescing lookups
 - Lynette Rayle and Dave Eichmann's work with QA and a central server
- How to integrate both *internal and external lookups*?
- Related: ***Local authority management***

UI-QA-Authority

Author *
twain,mark
Clemens, Olivia Langdon, 1845-1904
Twain, Mark, 1835-1910 (Spirit)
Twain, Mark, 1835-1910. Plymouth Rock and the Pilgrims and other salutary platform opinions
Twain, Mark, 1835-1910. Private history of a campaign that failed
Twain, Mark, 1835-1910. Eve's diary
Twain, Mark, 1835-1910. Prince and the pauper
Twain, Mark, 1835-1910. Mark Twain papers
Twain, Mark, 1835-1910. Man that corrupted Hadleyburg
Twain, Mark, 1835-1910. Mark Twain library
Twain, Mark, 1835-1910. Works. 2003
Twain, Mark, 1835-1910. Mysterious stranger and other stories
Twain, Mark, 1835-1910. Murder, a mystery and a marriage
Twain, Mark, 1835-1910
Twain, Mark, 1835-1910. Tom Sawyer abroad

Hyrax/Vitrolib – UI for selecting an entry from an authority

`http://localhost:3000/qa/search/linked_data/
oclc_fast/personal_name?q=twain&maximumRecords=2`

```
[{"uri": "http://id.worldcat.org/fast/31622", "id": "31622",  
  "label": "Twain, Mark, 1835-1910"},  
 {"uri": "http://id.worldcat.org/fast/365563", "id": "365563",  
  "label": "Twain, Shania"}]
```

QA – normalize RDF returned from an authority

`http://experimental.worldcat.org/fast/search?
query=oclc.personalName+%22twain%22
&sortKeys=usage&maximumRecords=2`

RDF of
search
results

Direct Access
of External
Authority

Jena-Fuseki-
Lucene Cache*

LDF Cache

Active-Triples
LDF Cache
(Marmotta or
Blazegraph)

* search of cache performed via Lucene index

VitroLib Lookup: Behind the scenes

```
▼ {  
  definedBy: http://id.loc.gov/authorities/names,  
  conceptId: "n 80062615",  
  bestMatch: null,  
  label: "Blues Brothers",  
  type: "corporate",  
  definition: null,  
  uri: http://id.loc.gov/authorities/names/n80062615,  
  schemeURI: http://id.loc.gov/authorities/names,  
  broaderURIList: [ ],  
  narrowerURIList: [ ],  
  exactMatchURIList: [ ],  
  closeMatchURIList: [ ],  
  altLabelList: [ ],  
  ▼ additionalInformation: {  
    RWO: http://id.loc.gov/rwo/agents/n80062615  
  }  
},
```

- VitroLib lookup contacts QA implementation
- QA returns results
- Results translated into lookup results format understood by Vitro/VitroLib
- Returned to interface

Lookups with Context: Possibilities

Library of Congress Lookup

←

→

✕

🏠

http://localhost:3000/qa/lookup/linked_data/loc/personal_name

🔍

3

Cancel

2

Authority:

Library of Congress

OCLC FAST

Cornell Local

1

twain

Lookup

7

Not found?

Add to Local

Click one to select...

Authoritative Label	Variant Labels	Field of Activity	Occupation	Dates
4 Twain, Shania	Twain, Eilleen Edwards, Eilleen	Country Music	Singer	Birth: 19650828
5 Twain, Mark, 1835-1910	Tvèn, Mark, 1835-1910 Tuèĭn, Mark, 1835-1910 Tuwayn, Mārk, 1835-1910 Twayn, Mārk, 1835-1910 T'u-wen Ma-k'o, 1835-1910 more... 6	Literature Humor Wit and humor	Authors Lecturers Humorists	Birth: (edtf) 1835-11-30 Death: (edtf) 1910-04-21
Twain, Charles		Writing Editing	Author Editor	
Twain, Jane				
Luu, Twain		Internet Industry	Business Woman	

Lookups with Context: Possibilities

Agrovoc Lookup

← → ✕ 🏠

3 Cancel

4 Save

2 Authority:

Agrovoc

Cornell Local

1

Lookup

7 Not found?

Add to Local

Click one or more checkboxes to select...

Broader	Found	Narrower	Same As
5 ☐ animal products <a>↗ ☐ body fluids <a>↗	☐ milk <a>↗ 6	☐ buffalo milk <a>↗ ☐ camel milk <a>↗ ☐ colostrum <a>↗ ☐ cow milk <a>↗ ☐ ewe milk <a>↗ ☐ goat milk <a>↗	http://aims.fao.org/aos/asfa/c_7251 http://cat.aii.caas.cn/concept/c_32204 http://cat.aii.caas.cn/concept/c_33165 http://d-nb.info/gnd/4039264-8 http://eurovoc.europa.eu/1565 http://linkeddata.ge.imati.cnr.it:2020/resource/EARTH/55910 http://lod.nal.usda.gov/nalt/631 http://www.eionet.europa.eu/gemet/concept/5254 http://zbw.eu/stw/descriptor/14124-5
☐ by-products <a>↗	☐ milk by-products <a>↗	☒ milk products <a>↗	
☐ collection <a>↗	☐ milk collection <a>↗		
☐ containers <a>↗	☐ milk containers <a>↗		
☒ animal fats <a>↗	☐ milk fats <a>↗		http://cat.aii.caas.cn/concept/c_38198 http://d-nb.info/gnd/4169913-0 http://eurovoc.europa.eu/1836 http://lod.nal.usda.gov/nalt/9160 http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11980632s
☐ proteases <a>↗	☒ chymosin <a>↗		http://cat.aii.caas.cn/concept/c_33063 http://cat.aii.caas.cn/concept/c_58677 http://lod.nal.usda.gov/nalt/13041

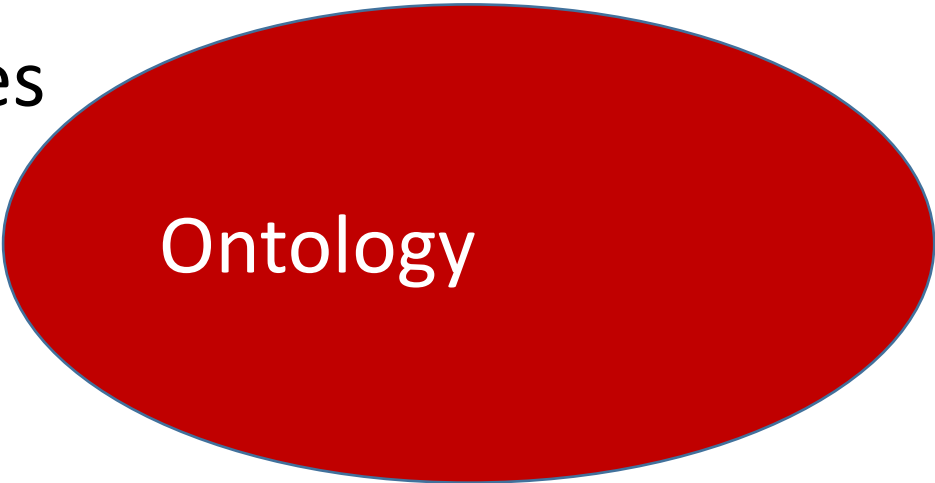
Ontology editor to cataloging editor

- ***Extensions/add-ons to Vitro***, including:
 - Core set of ontologies incorporated
 - Lookups: Refactor VIVO lookup code into Vitro
 - Customizations for front-end (entry, display)
 - Easing customizations of default application behavior
 - “Write lots of code” -> “Write some JSON”
- **How to encode customizations for particular ontological/user contexts?**

The Model is NOT the View

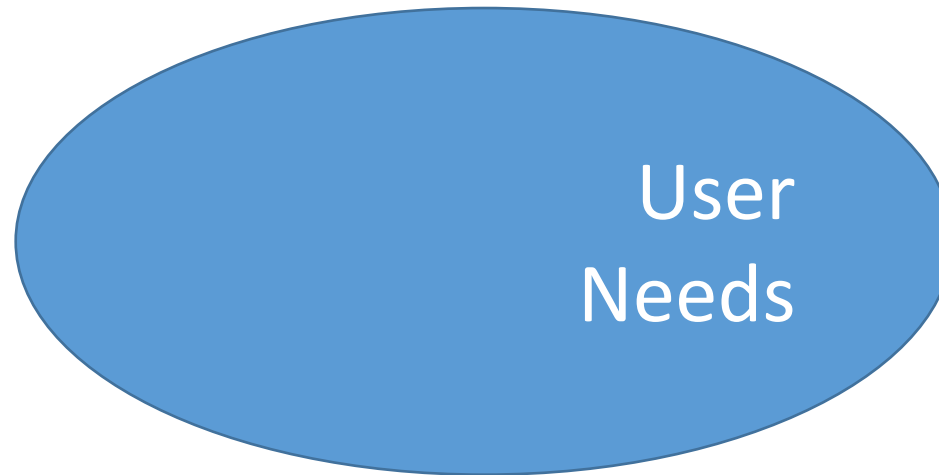
Main classes
and properties

Is it “true”?



Ontology

The Model is NOT the View

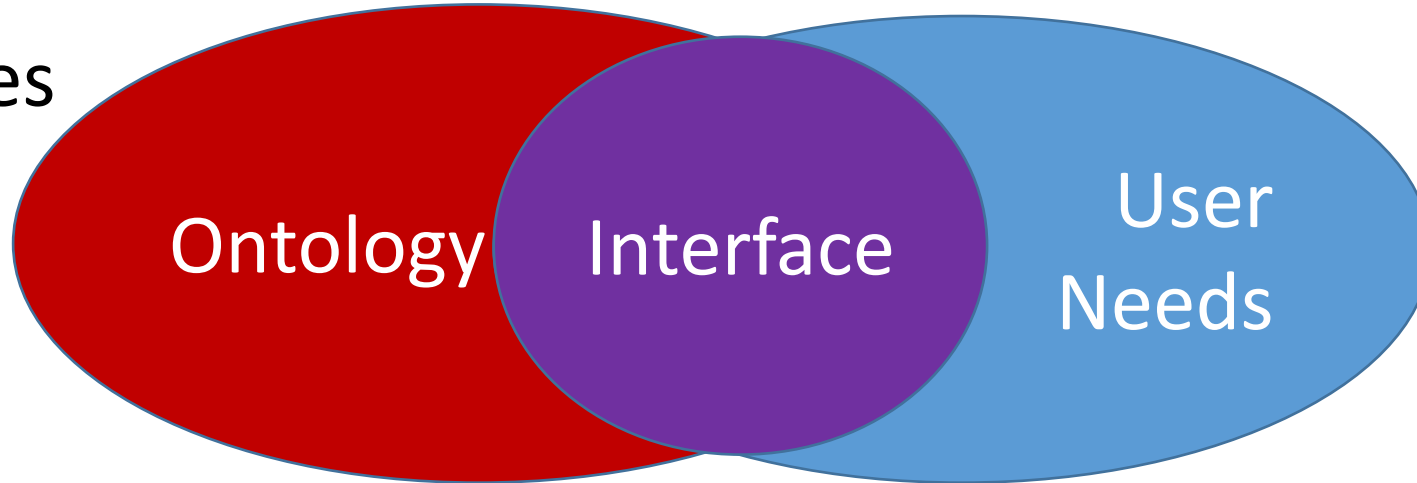


Usable/useful
creation,
editing, display

The Model is NOT the View

Main classes
and properties

Is it “true”?

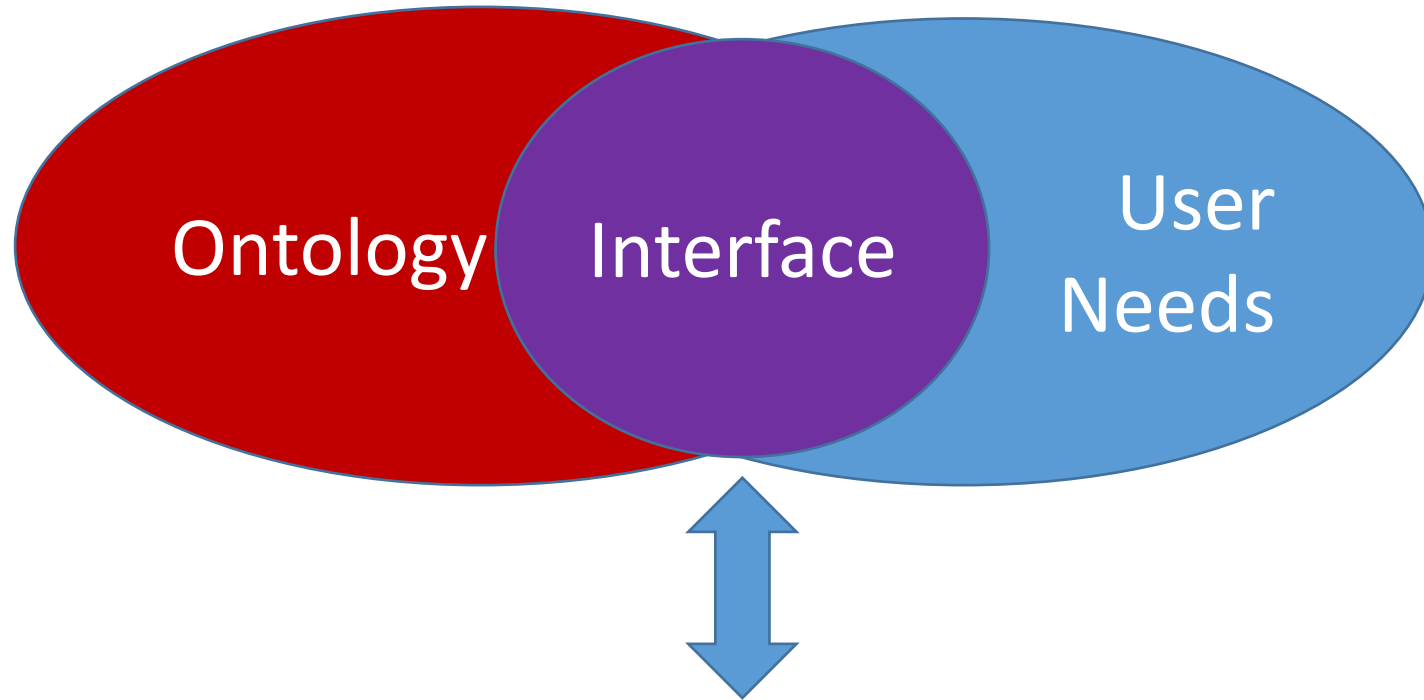


Usable/useful
creation,
editing, display

The path to ontology realization

- ... *Never did run smooth*
- Examples
 - Domains/ranges are not specified
 - Nested/complex relationships
- VitroLib's approach
 - Try to minimize changes in “real” ontology level
 - Custom Forms, Faux Properties
- **Ontology versus expression in application**
 - Configure at application level
 - In these contexts, display these properties in this way
 - Make them editable in this way

The Model is NOT the View

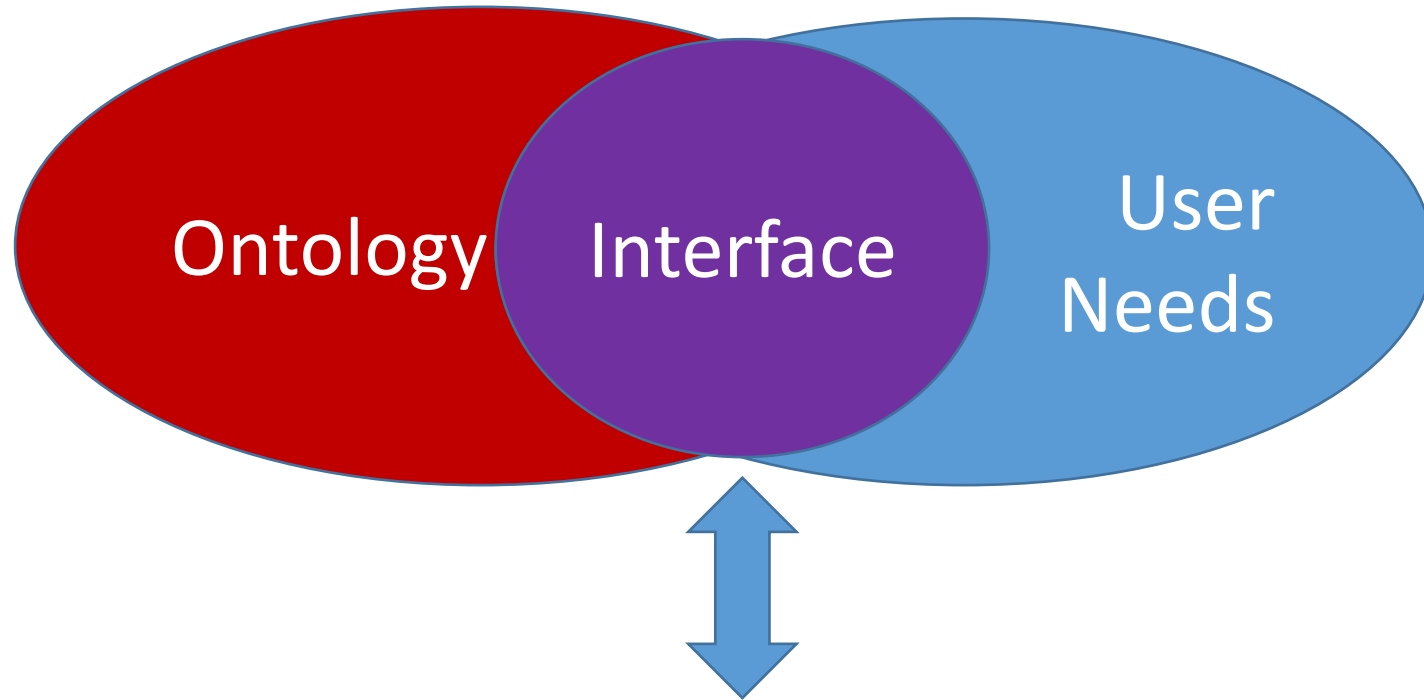


When should this property appear?

How should the user view/create/edit this property?

What vocabularies/lookups should be used for this property?

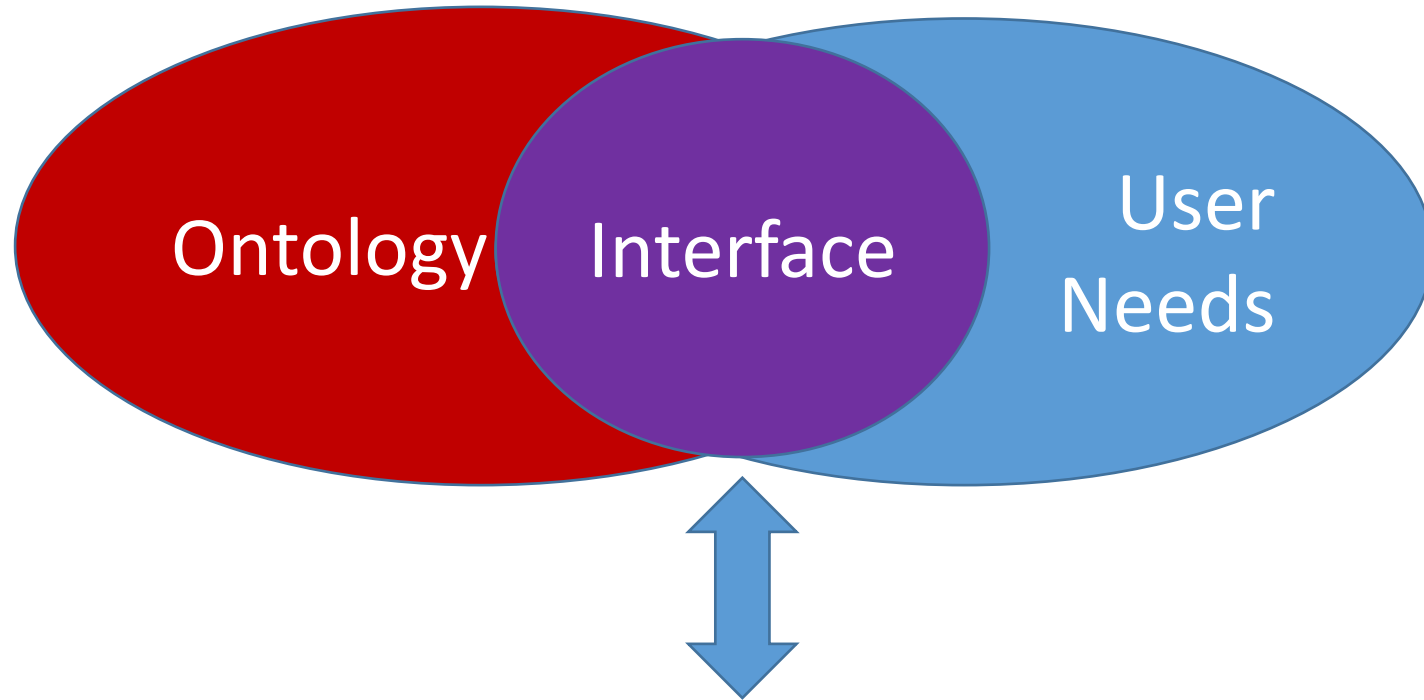
The Model is NOT the View



Software application-level configuration:

Custom, configurable, context-aware display and entry
Definition of related/relevant interactions (e.g. lookups)

The Model is NOT the View



Software application-level configuration:
An implementation of “metadata application profiles”

Application Profiles: SHACL

- "They may be used for purposes such as form building or predictable printing of RDF files."
 - <https://www.w3.org/TR/shacl/#nonValidation>
- Shape: How this property looks/acts within a given context
 - When the subject is of type X
 - And the object is of type Y
 - It shall be called Z
 - And it will expect a URI OR a literal

Application Profiles: SHACL

```
bibliotek-o_shapes:AudioWorkForm ...
```

For creating a new Audio Work

```
rdf:type sh:NodeShape ; ...
```

```
sh:property [
```

```
  sh:path bf:genreForm ;
```

Predicate: genreForm

```
  sh:target bf:Work ;
```

Subject: Work

```
  sh:class skos:Concept;
```

Object: Concept

```
  sh:group
```

```
    bibliotek-o_shapes:TypeFormPropertyGroup ;
```

```
  sh:name "Form Genre" ;
```

Label: "Form Genre"

```
  sh:nodeKind sh:IRI ;
```

Type: URI

```
  sh:order "0"^^xsd:decimal ;
```

```
]; ...
```

Application Profiles: Translating to VitroLib

- “Faux property”:
 - application-specific configuration for properties enabling context-specific behavior/display
- Custom entry/display configuration
- Generating application-level configuration based on SHACL

Application Profiles: Translating to VitroLib

```
siteConfig:fpgn255 config:configContextFor bf:genreForm ;  
  config:hasConfiguration config:fpgenconfig255 ;  
  config:qualifiedByDomain bf:Work ;  
  config:qualifiedBy skos:Concept ;  
  rdf:type config:ConfigContext .
```

```
siteConfig: fpgenconfig255 vitro:displayRankAnnot  
"0"^^<http://www.w3.org/2001/XMLSchema#int> ;  
  config:displayName "Form Genre" ;  
  rdf:type config:ObjectPropertyDisplayConfig .
```

Continuing and Future Work

- Streamlining SHACL translation
- Evaluate design of work/instance/item creation, editing, and display
 - Starting with audio, moving to other content types/formats
 - How to display links to related entities:
 - WHEN they are useful for cataloging
 - WHILE still providing relative ease of access/understanding/use for catalogers

Continuing and Future Work

- Design for context
 - Searching for/bringing in existing created works/instances/items
 - Providing information from lookups to help with disambiguation/synthesis
 - Is this the thing that it is?
- Where/how does the editor fit into the ecosystem?
 - In short-term as well as long-term?

What you can do

- Tell us your cataloging stories
- Potential for feedback on design
- I wish I could ...
- Tell us your metadata application profile stories
- Ask us questions

Not to mention

- How do we make the case for conversion and culture change?
 - A better, integrated process for making the decisions? Doing the analysis?
 - Better discovery and user experience for the library catalog users?
- Challenges
 - To show it, we have to do it
 - To do it, we have to show it
 - How to iterate to accomplish both?

Questions and Comments

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