

# **bibliotek-o :** **a BIBFRAME Implementation**

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# Background & Motivation

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# LD4L Labs & LD4P (2016-2018)

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- Andrew W. Mellon Foundation funded projects
- Aimed to expand linked data within library domain
- Joint effort: Ontology Group

<https://ld4l.org/> | <http://ld4p.org/>

# Motivation

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- Engage in BIBFRAME evaluation
- Provide extension to BIBFRAME
- Demonstrate select alternative patterns
- Accommodate legacy data in real-world orientation

NOT 'competition'

# bibliotek-o Application Profile Overview

<http://id.loc.gov/ontologies/bibframe/> (bf)

[bibliotek-o.org/ontology/](http://bibliotek-o.org/ontology/) (bib)

<http://purl.org/dc/terms/> (dcterms)

<https://www.loc.gov/standards/datetime/> (EDTF)

<http://xmlns.com/foaf/0.1/> (foaf)

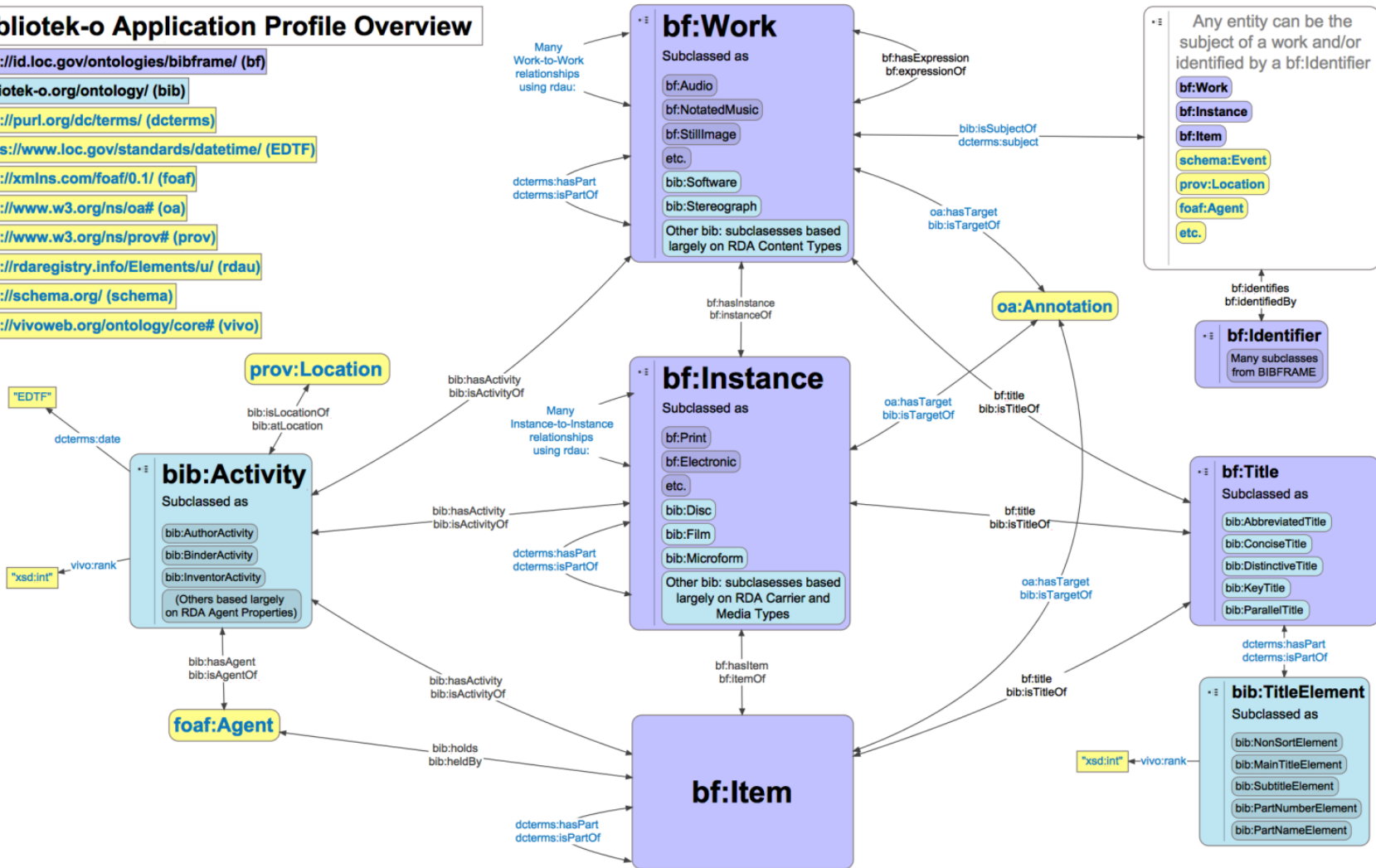
<http://www.w3.org/ns/oa#> (oa)

<http://www.w3.org/ns/prov#> (prov)

<http://rdaregistry.info/Elements/u/> (rdau)

<http://schema.org/> (schema)

<http://vivoweb.org/ontology/core#> (vivo)



# Development Process

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# bibliotek-o development process

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- Articulated principles & best practices
- Used BIBFRAME as a starting point / default modeling
- Developed alternative models for discrete patterns
- Submitted recommendations to LoC for consideration

# Design Principles

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# Modeling principles (selected)

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- Reuse and align with existing external vocabularies
- Use OWL axioms (in moderation)
- Prefer object properties and structured data to literals
- Adopt single way of expressing a relationship or attribute
- Prefer atomic data representation
- Simplify and generalize

# Vocabulary reuse & alignment

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Align & reuse well-established ontologies

- FOAF, schema, prov, Web Annotation
- rdau relationships : bibliographic resources

Concerns: stability & semantic alignment

# RDF and OWL constructs (in moderation)

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`rdfs:domain`, `rdfs:range`

`owl:ObjectProperty`, `owl:DatatypeProperty`,  
`owl:SymmetricProperty`, `owl:TransitiveProperty`,  
`owl:inverseOf`

Avoid over-constraint / over-specification

# Uniform representations

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Single method of expressing relationship or attribute

Minimize query paths

# Structured data versus literals

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Prefer object properties & resources, where logical

# Simplify and generalize

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- Prefer generalized properties when classes indicate semantics
- Demonstrated via Activity pattern

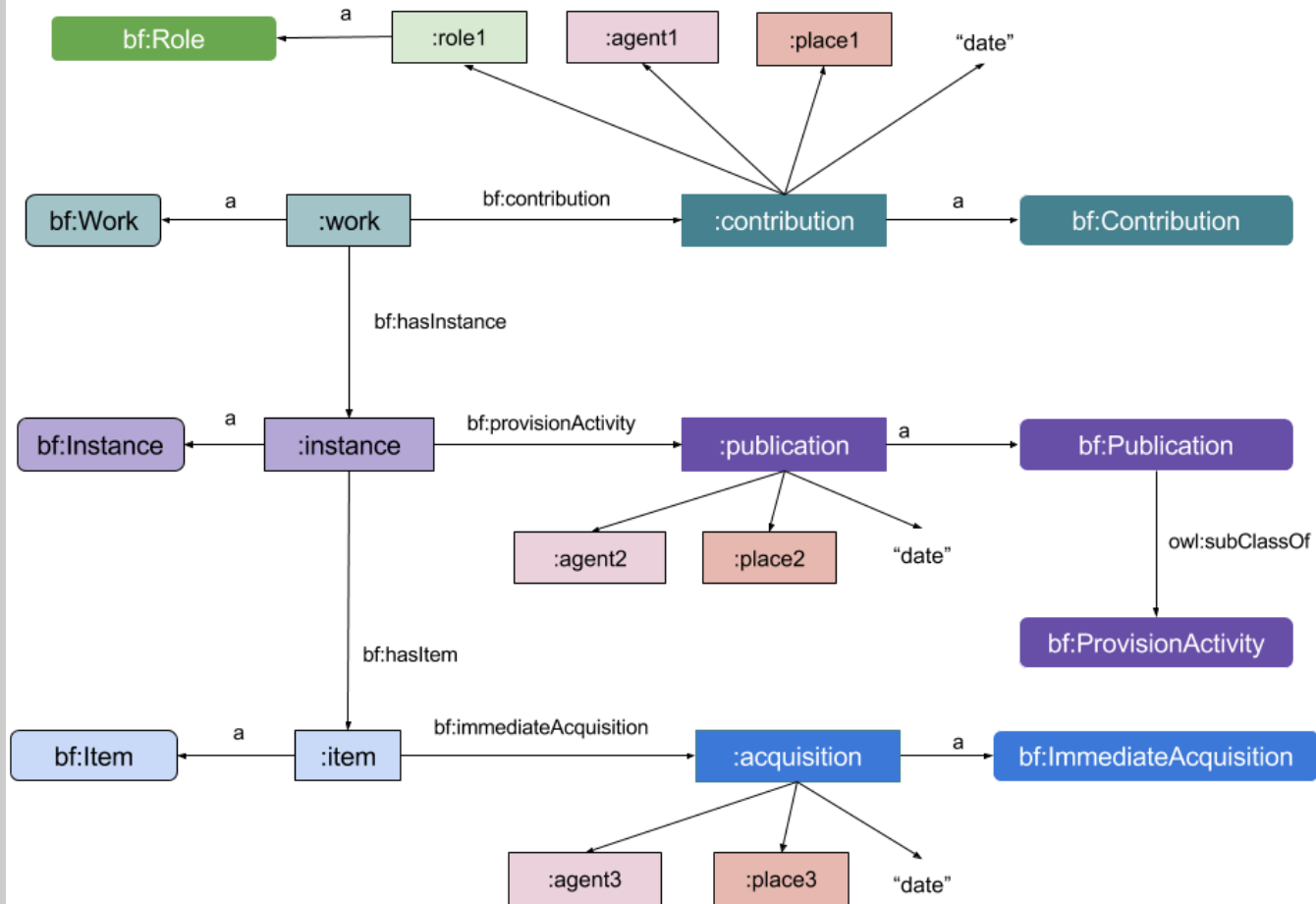
# Select Modeling Patterns

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# Activities

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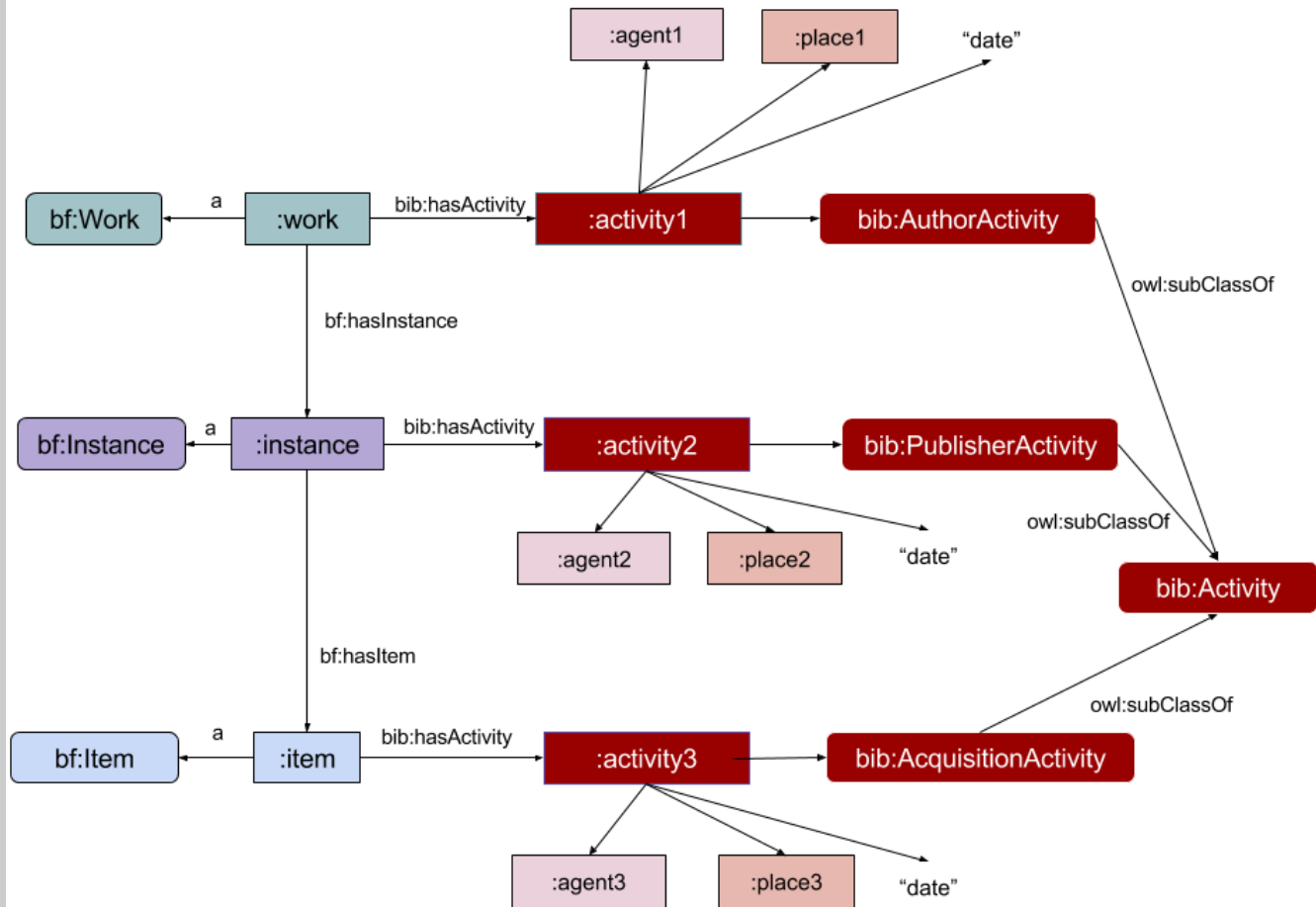




# bibliotek-o activities

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*Design principle: Prefer the simplest and most general model capable of faithfully representing the data. Use common patterns to capture shared semantics across entity types.*



# Content/Carrier/Media

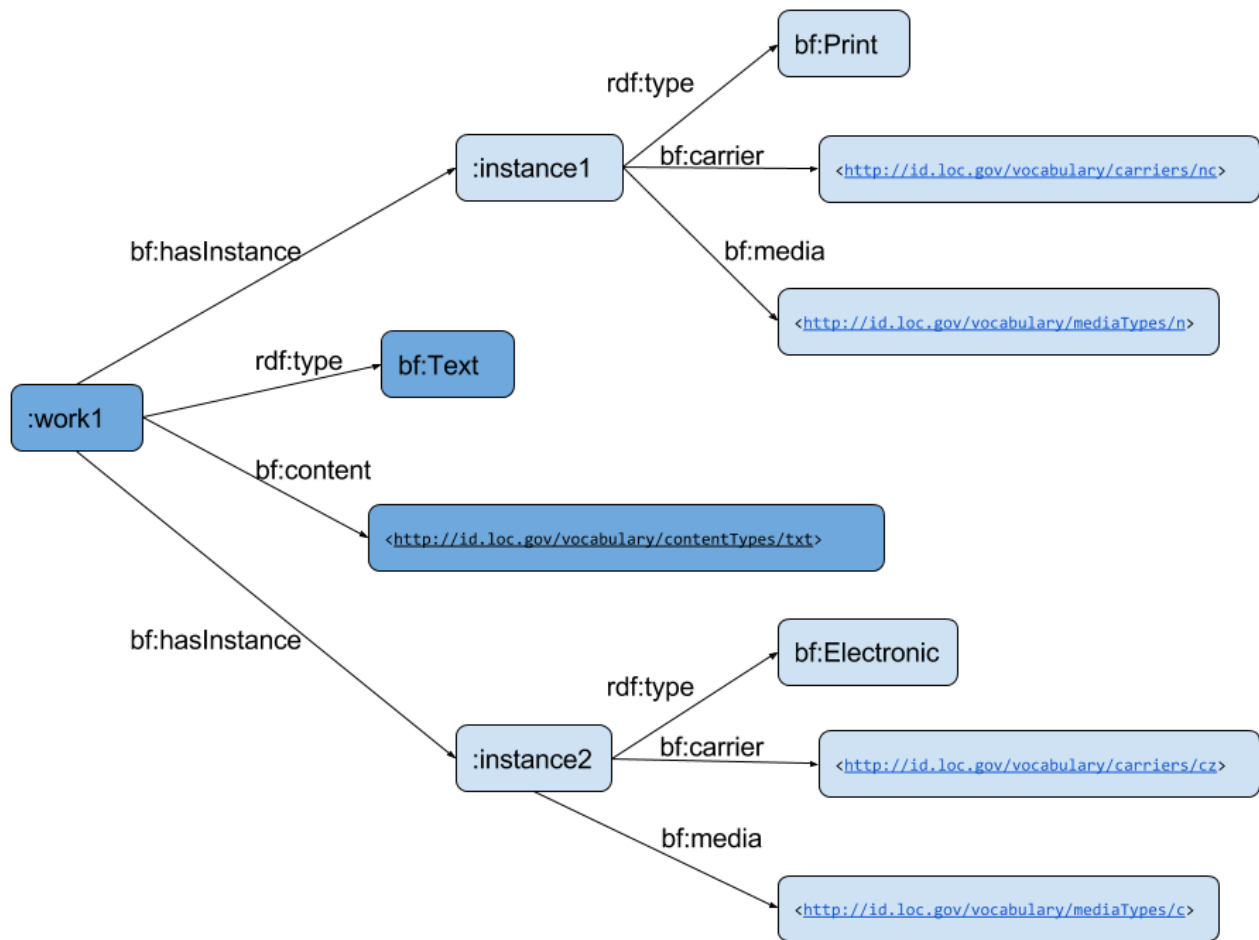
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# BIBFRAME content/carrier/media

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Two patterns:

- bf:content/bf:Content | bf:carrier/bf:Carrier | bf:media/bf:Media
- Subclassing of bf:Work | bf:Instance

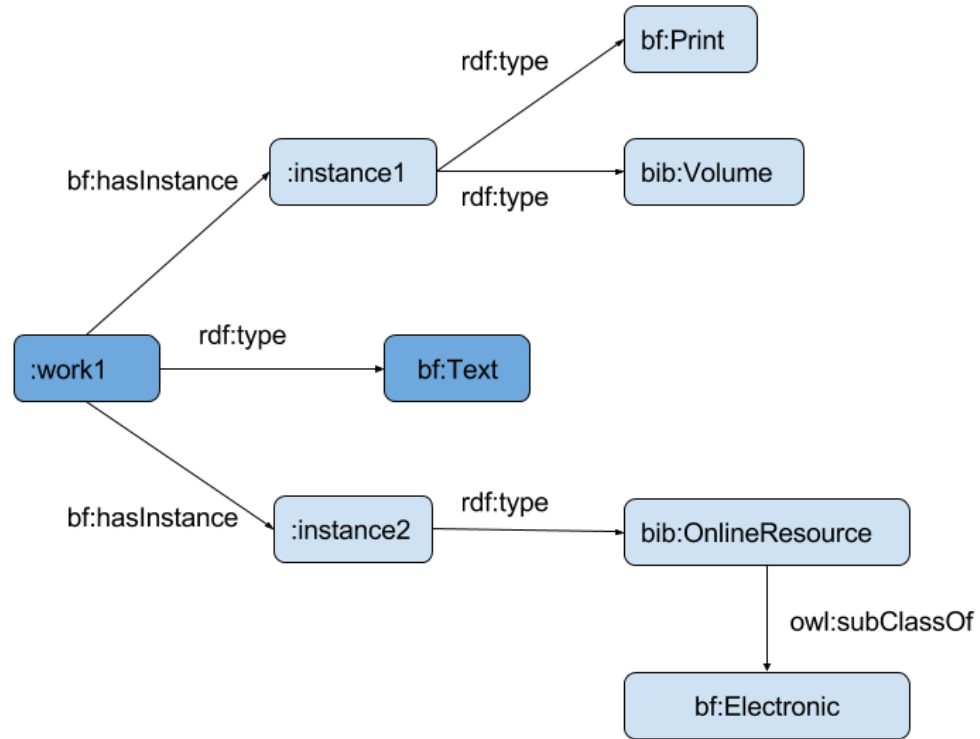


# bibliotek-o content/carrier/media

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*Design principle: Adopt a single method of expressing a relationship or attribute in order to eliminate redundancy and minimize query paths.*

Subclasses of bf:Work | bf:Instance





# bibliotek-o content/carrier/media

*Design principle: Prefer decomposed (atomic) to precomposed (composite) values.*

- BIBFRAME:
  - Content resource “two dimensional moving image”
  - Content resource “three dimensional moving image”
- bibliotek-o:
  - bf:MovingImage
  - bf:Object + bf:MovingImage

# Legacy Literals

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# The challenge of legacy literals

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*Migrate and preserve unstructured legacy data while defining a forward-looking model for original cataloging in RDF.*

508 ##\$aPhotographer, Richard Beymer ; film editor, Charles Pavlich.

- *In general*, BIBFRAME tends to accommodate legacy data by defining datatype properties.
  - bf:credits (datatype property)

# bibliotek-o strategy

- Focus on a model suited to original RDF data creation and real world data.
- But conversion tools not yet able to fully parse this complex data.
- Attach a custom datatype to the string to flag the data for future parsing and structuring.
  - <http://bibliotek-o.org/datatypes/legacySourceData>
- Create the target object structure.
- Store the typed literal as the rdf:value of the object.
- Preserves legacy data without distorting the model with unwanted datatype properties.

# Tooling

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# Editors

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- VitroLib
  - Cataloging editor built on Vitro
    - Ontology-neutral semantic web application for ontology and instance editing and browsing
    - Foundation of VIVO application
  - Loaded with bibliotek-o framework ontologies
  - Customizations for data entry and display based on these ontologies and application profile (in progress)
  - Lookups to external data sources
  - Developing SHACL application profiles to drive custom form configurations
- CEDAR
  - Create and edit RDF-based, ontology-driven forms

# Status and Community Engagement

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# bibliotek-o's influence on BIBFRAME

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- owl:inverses declared
- datatype properties --> object properties (select)
- selective soft-alignment



# bibliotek-o status

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Further development frozen; however...

# Community engagement

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We welcome GitHub issues around modeling:

<https://github.com/ld4l-labs/bibliotek-o>

# Advocacy

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bibliotek-o represents:

LD4\_ Ontology Group's BIBFRAME 2.0 assessment

We encourage active engagement with BIBFRAME

# Documentation

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Home page: <http://bibliotek-o.org/ontology>

OWL file: <http://bibliotek-o.org/ontology.owl>

Human-readable documentation: <http://bibliotek-o.org/ontology.html>

Visualization: <https://bibliotek-o.org/overview/overview.html>

GitHub repository: <https://github.com/ld4l-labs/bibliotek-o/tree/v1.0.1>

FAQ, pattern recommendations & RDA discussion:

<https://wiki.duraspace.org/x/H5TBB>

# Thank you!

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