

Control or Chaos:

Embracing Change and Harnessing Innovation in an Ecosystem of Shared Bibliographic Data

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Introduction: What will we cover

In an effort to capture some of the challenges for bibliographic control emerging in the changing landscape for library bibliographic metadata we will focus on several key areas of discussion as they relate to data reuse:

1. RDA and BIBFRAME
2. What surprises do we find in MARC?
3. What should BIBFRAME and BIBFRAME infrastructure look like?
4. Discussion: Harnessing innovation and maintaining control



Context: What lense are we using for this examination

In 2018 strategic planning at UAL resulted in a plan for *Moving Forward with Linked Data at UAL*

“In order to reap the benefits of full participation in the linked open data environment, UAL should continue to take steps towards complete conversion of existing library data to linked open data.”¹

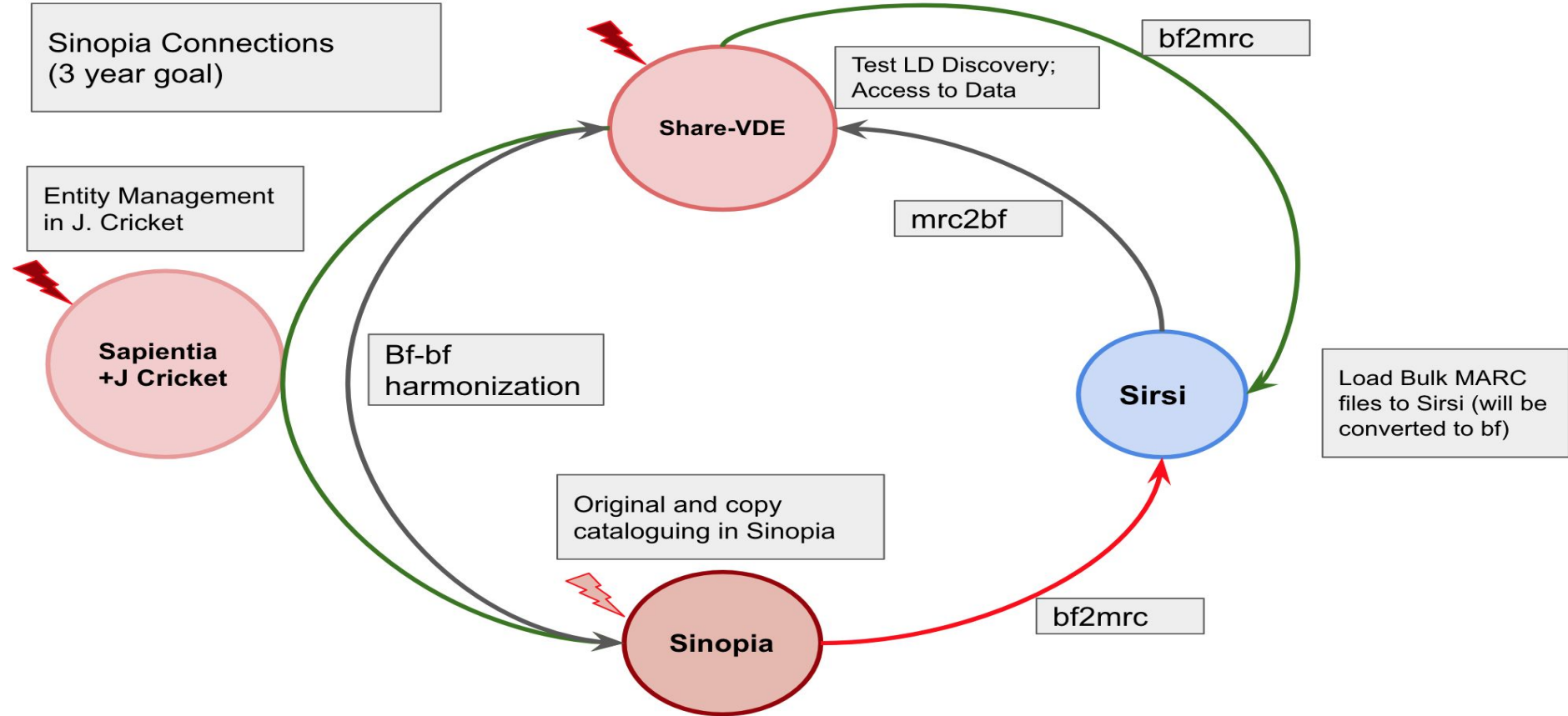
Since 2018 UAL has continued as a member of Share-VDE and was part of the LD4P2 Cohort. We are also a member of the Program for Cooperative Cataloging.

Much of this session is informed by experiences and observations from these projects and our points of reference, particularly as we plan for next steps and strategic priorities for the next 5 years.

1. [Moving Forward with Linked Data at UAL](#)



Context: Bringing it all together



RDA and BIBFRAME

Resource
Description and
Access


2010

2011

BIBFRAME

Chaos and Convergence

Approximately a decade of history leading to a few key points:

- From the very outset of RDA in 2010 there was agreement that an alternative to MARC was required to support the extent of RDA.
 - BIBFRAME has also had a long development trajectory, with initial work starting in 2011, with the goal of creating a community standard to allow RDA to move beyond MARC.
 - In 2010 a test was carried out for the initial version of RDA, but at the time this was focused on application in MARC only, so with the development of BIBFRAME we are really just getting to a point where many components can come together.
 - 2017-2020 has seen increased development not just in BIBFRAME, but in the evaluation, testing and analysis of use of RDA in a linked data environment. This acceleration has resulted in beautiful chaos, with further work on data modelling, more maturity in conversion processes, and use case development driving novel extensions and adaptations for the use of RDA in a BIBFRAME environment.
 - **Now** is the time to move forward together
- 

Analysing Native BIBFRAME and the use of RDA

LINKED DATA EDITOR

SINOPIA v3.5.11

CanadianCohort1

[Help and Resources](#)

[Logout](#)

[Dashboard](#) [Resource Templates](#) [Search](#) [Load RDF](#) [Editor](#) [Exports](#)

  [Close](#) [Save](#)

UAL Monograph Work (Un-Nested)

[Has Opus](#)

[Has Instance](#)

[Work Identifier](#)

[Contribution \(Creator/Contributor\)](#)

Title Information

[Work Title Variation](#)

[Work Title](#)

[Preferred Title for Work](#)

[Form of Work](#)

[Date of Work](#)

[Place of Origin of the Work](#)

[\(Geographic\) Coverage of the Content](#)

[\(Time\) Coverage of the Content](#)

[Intended Audience](#)

[In Series](#)

[Notes about the Work](#)

[Dissertation](#)

[Contents](#)

[Summary](#)

[Subject of the Work](#)

[Classification numbers](#)

✓ [Content Type](#)

[Language of Expression](#)

Has Opus

Enter a URI

Has Opus

Has Instance

Enter a URI

Has Instance

Work Identifier ⓘ

Enter lookup query

⌵

Lookup

Contribution (Creator/Contributor)

Primary Contribution

[+ Add another](#)

[+ Add Primary Contributor](#) ⓘ

[+ Add Relationship Designator \(RDA Appendix I\)](#) ↗

Contribution

[+ Add another](#)

[+ Add Contributor \(only one per contribution node\)](#)

[+ Add Relationship Designator \(RDA Appendix I\)](#) ↗

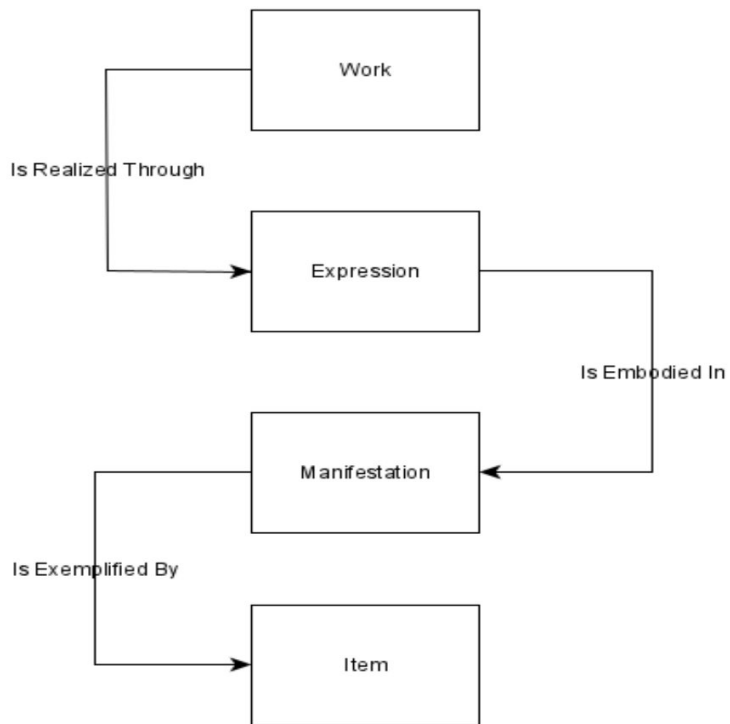
Title Information *

UAL Profile Template Development

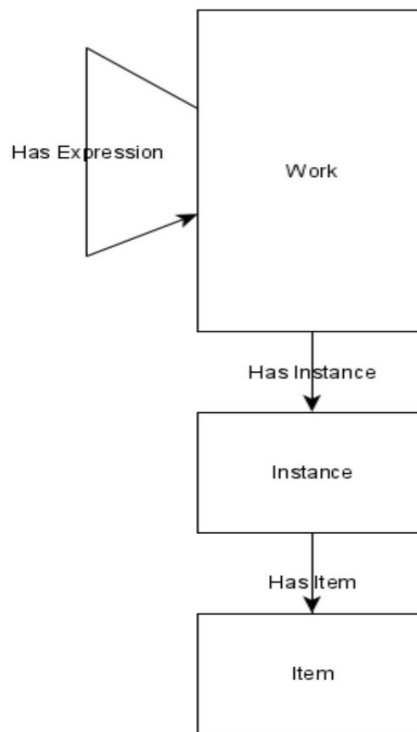
A	B	C	D	E	F	G
Resource Template Label	Type	Mandatory	Repeatable	PropertyURI	PropertyLabel	RDA Instruction/Entry Note
UAL Monograph Work (Un-Nested)	resource	false	true	http://id.loc.gov/ontologies/bibframe/expressionOf	Has Opus	
	resource	false	true	http://id.loc.gov/ontologies/bibframe/hasInstance	Has Instance	
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/identifiedBy	Work Identifier	Used with Unspecified
	resource	false	true	http://id.loc.gov/ontologies/bibframe/contribution	Contribution (Creator/Contributor)	
	resource	true	true	http://id.loc.gov/ontologies/bibframe/title	Title Information	
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/genreForm	Form of Work	http://access.rdatoolkit.org/6.3.html
	literal	false	true	http://id.loc.gov/ontologies/bibframe/originDate	Date of Work	http://access.rdatoolkit.org/6.4.html
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/originPlace	Place of Origin of the Work	http://access.rdatoolkit.org/6.5.html
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/geographicCoverage	(Geographic) Coverage of the Content	http://access.rdatoolkit.org/7.3.html
	literal	false	true	http://id.loc.gov/ontologies/bibframe/temporalCoverage	(Time) Coverage of the Content	http://access.rdatoolkit.org/7.3.html
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/intendedAudience	Intended Audience	access.rdatoolkit.org/7.7.html
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/hasSeries	In Series	URI for series as a work
	resource	false	true	http://id.loc.gov/ontologies/bibframe/note	Notes about the Work	
	resource	false	true	http://id.loc.gov/ontologies/bibframe/dissertation	Dissertation	http://access.rdatoolkit.org/7.9.html
	resource	false	true	http://id.loc.gov/ontologies/bibframe/tableOfContents	Contents	
	resource	false	true	http://id.loc.gov/ontologies/bibframe/summary	Summary	http://access.rdatoolkit.org/7.10.html
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/subject	Subject of the Work	http://access.rdatoolkit.org/rdachp23_rda23-12.html
	resource	false	true	http://id.loc.gov/ontologies/bibframe/classification	Classification numbers	
	lookup	true	true	http://id.loc.gov/ontologies/bibframe/content	Content Type	http://access.rdatoolkit.org/6.9.html
	resource	false	true	http://id.loc.gov/ontologies/bibframe/language	Language of Expression	http://access.rdatoolkit.org/6.11.html
	resource	false	true	http://id.loc.gov/ontologies/bibframe/notation	Script	http://access.rdatoolkit.org/7.13.2.html
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/illustrativeContent	Illustrative Content	http://access.rdatoolkit.org/7.15.html
	lookup	false	true	http://id.loc.gov/ontologies/bibframe/colorContent	Color Content	http://access.rdatoolkit.org/7.17.html
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	resource	false	true	http://id.loc.gov/ontologies/bifc/relationship	Related Works	http://access.rdatoolkit.org/rdachp25_rda25-65.html
	resource	false	true	http://id.loc.gov/ontologies/bibframe/hasExpression	Related Expressions	http://access.rdatoolkit.org/rdachp26_rda26-25.html

Convergence: The Opus

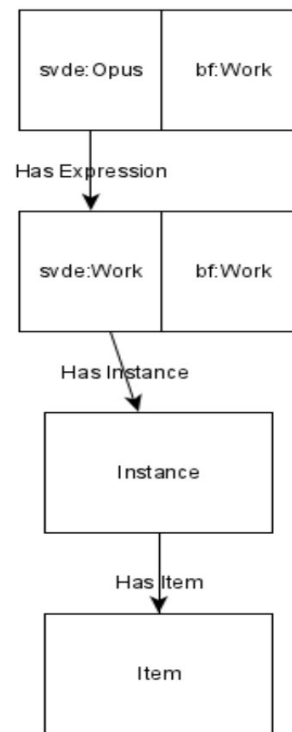
LRM



Bibframe



Share VDE - Option 4



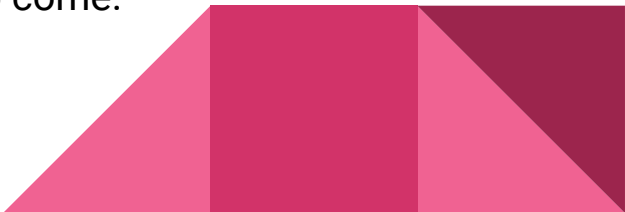
Conformance and Questions

1. Based on RDA 3R, what is RDA?
 - a. Does it require RDA/RDF and if so is it still a content standard
2. If a community chooses to use unconstrained elements is it conformant with RDA?
3. Importantly, different communities will take different approaches either way:

“It is important to remember that RDA and RDA/RDF are two different things. RDA instructions will always be more applicable to traditional library resources than to newly emerging material types. We might also consider that given one of our goals for linked data is to communicate and consume data from beyond libraries, our RDF serialization might need to be more approachable than the complexity of RDA/RDF. As such and because we will probably be in a long-term transition away from MARC, PCC will continue to treat RDA as a loose content standard and participate in RDA/RDF and BIBFRAME discussions to assess our ideal linked data output.”¹

1. “PCC’s Position Statement on RDA”. Program for Cooperative Cataloguing Policy Committee, 2019, <https://www.loc.gov/aba/pcc/rda/PCC%20RDA%20guidelines/PCC-Position-Statement-on-RDA.docx>

Whither RDA/RDF or BIBFRAME


- While RDA is certainly comparable to BIBFRAME, there are notable differences, for example with some elements having one to many or many to one relationship.
 - Nevertheless, as demonstrated by work on Sinopia application profiles, core element sets can clearly be mapped and utilized from one to the other, and this should also support mappings for interchange, or indeed the use of both in a shared data set.
 - Minimally if multiple implementation scenarios emerge we need to map out core elements for the purposes of interchange.
 - Practically speaking though, according to RDA conformance documentation and pure RDA/RDF, there are few tools for working with RDA in production environments:
 - Does it make sense to duplicate effort for conversion processes, editors, and assessment of resulting data when we can could instead work on this all at once?
 - Recreating similar tools solely for RDA/RDF would take considerable time and likely mean that the new RDA will not be implemented for many years to come.
- 

What surprises do we find in MARC?

1. Changes across time:
 - a. The evolution of standards and practices (AACR2-RDA-RDA3R for instance)
 - i. Ex. 245\$h[GMD] vs MARC 336/7/8
2. Changes across space
 - a. Communities of practice and approach to use of elements of description
 - i. Ex. 700\$a\$t vs usage in 76X-78X


Work in the Share-VDE community with a wide range of institutions in North America and Europe has highlighted the need to account for such differences for conversion specifications. A prime example included testing of 1985 and 2015 data separately through conversion to account for changing standards.

To handle such differences requires decisions, specific solutions, and sometimes compromises. If each community makes such decisions separately, what will it mean for bibliographic control?



What Should BIBFRAME and BIBFRAME Infrastructure Look Like?

To support the move from MARC to BIBFRAME we need:

- BIBFRAME data output from each MARC to BIBFRAME conversion process to be interoperable with BIBFRAME data created natively in RDF
 - BIBFRAME data created natively in RDF by any one community to be interoperable with other BIBFRAME stores
 - BIBFRAME data in various flavors to be converted to MARC with similar consistency to meet MARC use case requirements
 - New tools and processes need to support various serializations of BIBFRAME (RDF XML, n-triples, n-quads, turtle, JSON-LD), or a community decision on which to use for development
- 

Search SHAREVDE ALBERTA

meditations

Search



Sinopia search: use * as wildcard; default operator for multiple terms is AND; use | (pipe) as OR operator; use quotation marks for exact match. For more details see [Searching in Sinopia](#).

Label / ID	Class	Context	
Meditations http://share-vde.org/sharevde/rdfBibframe/Work/4513129	http://id.loc.gov/ontologies/bflc/Hub http://id.loc.gov/ontologies/bibframe/Work	Contributor: Hope, Elmo., Elmo Hope Trio.	
Meditations http://share-vde.org/sharevde/rdfBibframe/Work/4513129-2	http://id.loc.gov/ontologies/bibframe/Work http://id.loc.gov/ontologies/bibframe/Audio	Content: performed music Contributor: Elmo Hope Trio.	
Meditations http://share-vde.org/sharevde/rdfBibframe/Work/20183668	http://id.loc.gov/ontologies/bflc/Hub http://id.loc.gov/ontologies/bibframe/Work	Contributor: Aurelius, Marcus., Casaubon, Meric,1599-1671.	
Meditations http://share-vde.org/sharevde/rdfBibframe/Work/20183668-1	http://id.loc.gov/ontologies/bibframe/Work http://id.loc.gov/ontologies/bibframe/Text	Content: text Contributor: Aurelius, Marcus.	
Meditations http://share-vde.org/sharevde/rdfBibframe/Work/5956326	http://id.loc.gov/ontologies/bflc/Hub http://id.loc.gov/ontologies/bibframe/Work	Contributor: Krishnamurti, J.1895-1986.(Jiddu),	
Meditations http://share-vde.org/sharevde/rdfBibframe/Work/5956326-1	http://id.loc.gov/ontologies/bibframe/Work http://id.loc.gov/ontologies/bibframe/Text	Content: text Contributor: Krishnamurti, J.1895-1986.(Jiddu),	

_PCC BF2 Work (Monograph)



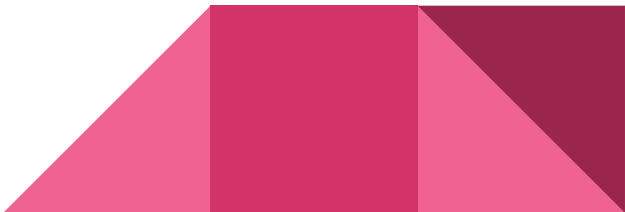
Unable to load the entire resource. The unused triples are:

Format:

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<http://rdaregistry.info/termList/RDAContentType/1020> <http://id.loc.gov/ontologies/bibframe/source> <http://share-vde.org/sharevde/rdfbibframe/Source/cdbb03a1-b7b2-3986-a1ff-210505b440a5> .
<http://rdaregistry.info/termList/RDAContentType/1020> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://id.loc.gov/ontologies/bibframe/Content> .
<http://share-vde.org/sharevde/rdfbibframe/Agent/2701550> <http://id.loc.gov/ontologies/bflc/name00Marckey> "1001 $aAurelius, Marcus. $1http://share-vde.org/sharevde/rdfbibframe/Agent/2701550 $1http://viaf.org/viaf/24543399" .
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<http://share-vde.org/sharevde/rdfbibframe/Work/20183668-1> <http://id.loc.gov/ontologies/bflc/primaryContributorName00MatchKey> "Aurelius, Marcus." .
<http://share-vde.org/sharevde/rdfbibframe/Work/20183668-1> <http://id.loc.gov/ontologies/bibframe/subject> <http://id.loc.gov/authorities/subjects/sh2002009926> .
<http://share-vde.org/sharevde/rdfbibframe/Work/20183668-1> <http://id.loc.gov/ontologies/bibframe/subject> <http://id.loc.gov/authorities/subjects/sh2008103325> .
<http://share-vde.org/sharevde/rdfbibframe/Work/20183668-1> <http://id.loc.gov/ontologies/bibframe/subject> <http://id.loc.gov/authorities/subjects/sh85128242> .
```

✓ [Contribution \(Creator/Contributor\)](#)

Contribution (Creator/Contributor)



BIBFRAME “Shape” and Serializations

- Differences in BIBFRAME modeling across projects and communities results in data and tooling incompatibilities
 - Ex. LC’s BIBFRAME to MARC converter XSLT released in May 2020 non workable for converting BIBFRAME data created using Sinopia application profiles
 - Ex. Differences between Sinopia and LC modeling or Sinopia and Share-VDE as highlighted in the Task Group on PCC Sinopia Application Profiles Final Report
- BIBFRAME serialization choices impact tool development and usability
 - Ex. LC’s BIBFRAME to MARC converter XSLT only works with BIBFRAME data serialized in RDF/XML



Harnessing Innovation


“[The BIBFRAME] model, like MARC, must be able to accommodate any number of content models and specific implementations, but still enable data exchange between libraries. It needs to support new metadata rules and content standards that emerge, including the newest library content standard - RDA (Resource Description & Access). The BIBFRAME model must therefore both broaden and narrow the format universe for exchange of bibliographic data.”

-[Bibliographic Framework as a Web of Data: Linked Data Model and Supporting Services](#), Library of Congress, 2012



Harnessing Innovation

To date, experimentation and innovation by libraries and library partners around BIBFRAME has resulted in:

- BIBFRAME ontology updates
 - Unique community extensions
 - Format specific application profiles
 - Mappings between emergent and project-specific library linked data models
 - Systems to support the conversion, creation, management, and discovery of BIBFRAME data
- 

Maintaining Control

- Define core BIBFRAME elements necessary for resource description
- Define standard BIBFRAME model and “shape” to support conversion and data re-use
- Define MARC use cases in a BIBFRAME environment
- Define implementation scenarios for the use of RDA 3R in BIBFRAME



Maintaining Control

- Develop a community of practice and ensure open feedback loops between LC, large scale projects and BIBFRAME implementers, and the wider linked data community
- Prioritize transparency around ongoing and future developments to the BIBFRAME ontology and technical infrastructure (along with supporting analyses and user testing data)
- Develop and coordinate implementation timelines for RDA and BIBFRAME
 - This does not need to reflect when everyone moves to linked data, but when both standards are supported for application and exchange.



Thank You!

Questions?

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