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Reports from the Program for Cooperative Cataloging Task Groups on URIs in MARC & BIBFRAME

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ABSTRACT

The Program for Cooperative Cataloging (PCC) is an international cataloging community that seeks to create trusted, high quality metadata to meet user needs. Part of that mission includes developing best practices for emerging information systems as well as maintaining current standards. This paper sheds light on the works of the PCC task groups involved with developing best practices for linked data in the last couple of years, Task Group on URIs in MARC and BIBFRAME.

The Task Group on URIs conducted a pilot test, compiled findings and comments that served the foundation of several MARC proposals at the 2016 and 2017 American Library Association Annual and Midwinter meetings. The goal of the proposed refinements and expansion of usage of these MARC subfields, e.g. $0, $4, is to prepare and extend the richness of library data to the wider information world with little programmatic intervention.

The BIBFRAME Task Group's charge is to develop community standards and practice for linked data, focusing on BIBFRAME. The group's initial efforts focus on mapping elements from the CONSER Standard Record (CSR) and BIBCO Standard Record (BSR) BIBFRAME version 2 ontology.

Both Task Groups' efforts are to benefit and assist information professionals and researchers conducting their work utilizing Web as a service (WaaS) beyond the traditional library data silos.

KEYWORDS

PCC; URI; IRI; MARC; BIBFRAME; Cataloging; Linked data; RDF; Triple; Ontology; Vocabulary; BSR; CSR.

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Background

The Program for Cooperative Cataloging, commonly referred to as the PCC, is an international cataloging cooperative effort aimed at expanding access to library collections by providing useful, timely, and cost-effective bibliographic records that meet mutually accepted standards of libraries around the world.[1] In the document, *Vision, Mission, and Strategic Directions, 2015-2017* (PCC Program for Cooperative Cataloging 2015),[2] conveying PCC's mission of focusing efficiency in creating and refining metadata that meet user needs for effective resource discovery, the PCC Steering and Policy Committee aligned member activities and resource investments with partners in several strategic directions. Several task groups were established, with standing committees and the Secretariat as oversight body, to ensure holistic approaches to recommendations for the library's changing environment. Moreover, the highest impacts from implementation in a global data environment.

Membership and consultants for the Task Group on URIs in MARC were recruited from the PCC standing committees, national libraries (i.e. National Library of Medicine, the British Library, the Deutsche Nationalbibliothek, etc.), academic libraries (in the United States and Canada), and bibliographic utilities (i.e. OCLC, Koha/Evergreen, Innovative).[3]

The Task Group on URIs conducts bi-weekly discussions via WebEx, meets in-person at the American Library Association Midwinter and Annual Conference gatherings, and agrees upon some basic operating principles. The initial appointment was for one year term, ending on October 1, 2016, with an understanding that the duration may need to be extended or revised. At the preparation of this report, the Task Group looks to finalize its work based on the original charge with recommendations to the PCC community in September 2018.

PCC Task Group on URIs in MARC

As the team began its works to prepare and transition library data from MARC to a linked data environment, the Task Group realized the complexity of the multi-layer library and cultural heritage information landscape. Approaches to overall workflow must be universal with the least disruption to current environment. Implementations should be built upon incremental and replicable processes. Many libraries have been eager to move forward in a linked data environment. There are also many libraries unsure of migration to a linked data environment. Task Group recommendations must accommodate dual processes, MARC and RDF environments, if necessary.

The Task Group began the process by understanding the semantic and syntax of uniform resource identifiers (URIs) (Berners-Lee 2005). Their impact on effective data discovery and retrieval. The group thought a pilot test would be a prudent first step for an environmental scan and landscape evaluation. Months into the formation of the group, it became evident that conducting a test sooner

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[1] http://www.loc.gov/aba/pcc/
[2] http://www.loc.gov/aba/pcc/about/PCC-Strategic-Plan-2015-2017.pdf
[3] https://www.loc.gov/aba/pcc/bibframe/TaskGroups/URI-TaskGroup.html

rather than later would be beneficial to understanding identifier management and the impact of adopting dereferenceable URIs in the current MARC environment.

In preparing for the test, the Task Group surveyed MARC fields and subfields for URIs that have been already provided in MARC bibliographic and authority formats.[4] Working together as a team to carry out the following activities surrounding a pilot test:

1) preparing spreadsheets identifying MARC fields that do and do not already have $0 defined (used both as a reference and to capture analysis),

2) preparing datasets (authority and bibliographic MARC records) for use in testing,

3) refining conversion tools,[5] iteratively process the data sets using the conversion tools, and

4) ingesting the revised data sets in library systems (by the PCC affiliated utility representatives, Casalini and others).

In order to conduct the test in a short period, the Task Group focused on adding URIs to $0 only when there was an exact match between the authority heading in the MARC record and an authority source available in RDF format.[6] Verifying the implementation of $4, relator code, in various ILS's, e.g. Voyager, III, Koha/Evergreen, etc., to determine the validity of redefining the relator code subfield, $4 to accommodate a URI.

The pilot test process helped the Task Group addressing, at least in part, several items from its charge from the Steering Committee. In addition, the Task Group decided at the same time to begin examining the status of Real World Objects (RWO) in the library linked data community and those outside the cultural heritage community. In the process, to also collect sources and form strategies to prepare a help document, *Formulating and Obtaining RDF URIs*, serving as a reference for authoritative resources to guide both manual and automated provision of linked data URIs.

Observations and comments from the PCC-affiliated ILSs on the pilot test revealed a disparity of systems' handling HTTP URI data in subfields, $0 and $4. Confusions regarding the URI data in subfield $0, representing the perfect match of all or partial components of a field. As well as the repeatability and ordinal sequencing of $0 and its corresponding field to deliberate and test.

Following the pilot test, the Task Group concluded that initial implementation should focus on elements that can be defined clearly and unambiguously from a machine processing perspective. Some MARC fields may not be as hospitable to URIs. Returns on investment may diminish from trying to add URIs to all MARC fields. As a result, the following subgroups were formed: Real

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[4] There are three subfields, $u (Uniform Resource Identifier), $0 (Authority record control number or standard number), and $4 (Relator code), that potentially can host an HTTP URI representing one of the triple statement elements.

[5] To facilitate the testing, members of the URI Task group, Terry Reese enhanced his Linked data lookup in the MarcEdit application to allow automatic headings query via SPARQL services in batches, http://marcedit.reeset.net/downloads. Gary Strawn added functionality to add URI to his Authority Toolkit, http://bit.ly/1Hl1jST

[6] The narrowly define scope for authority source available in RDF format was to ensure URI can be automatically constructed via SPARQL queries, avoiding human intervention and in bulk. The goal would achieve one of the PCC's Strategic Directions, inserting URIs in a large scale.

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world objects, Work identifiers, MARC objects and reconciliation, and the help document on formulating/obtaining RDF URI.[7]

MARC Discussion Papers and Proposals

To achieve community acceptance of an implementation of dereferenceable URIs in $0, the ideal starting place for the Task Group was to prepare and submit discussion papers and proposals to the MARC Advisory Committee (MAC).[8] Soon after the pilot test, the Task Group began working on two discussion papers to pave the way for establishing uniformity of syntax and semantic of URIs and representation of RDF entities in a MARC environment.

In April 2016, the Task group submitted two discussion papers for worldwide reviews and comments. 2016-DP18: Redefining Subfield $0 to Remove the Use of Parenthetical Prefix (uri), and 2016-DP19: Adding Subfield $0 to Fields 257 and 377 in Bib and Authority.[9]

The 2016-DP18 suggested that linked data applications would be more capable of processing content embedded in URIs if the requirement for the parenthetical string (uri) were removed. The Task Group presented from its test that HTTP URI without the parenthetical phrase was self-referential and actionable. The machine in its original design in a distributed environment will connect users to resources without additional programming need. Thus, facilitated and functioned as intended on a Web-based environment without human intervention.

The 2016-DP19 identified currently in MARC fields that lacked $0 defined in order to carry a URI. Many fields need $0 defined. However, in the process of preparing the discussion paper, only two fields, 257 and 377, met the criteria that the Task Group set up. The aggregation of data in other candidate fields presented scenarios that are more complex. The repeatability of subfields would render it difficult to discern what data in the $0 references.

Both discussion papers were accepted and converted to proposals. The proposals were approved with minor adjustment in wording at the American Library Association (ALA) Annual Conference in June 2016.

In the same meeting, the British Library, in collaboration with the Task Group, submitted a discussion paper, 2016-DP17: Redefining Subfield $4 to Encompass URIs for Relationships in the MARC 21 Authority and Bibliographic Formats.[10] This discussion paper raised the awareness of an alignment of MARC elements and RDF entity by redefining a subfield. The redefining and broadening scope and usage of a subfield began to prepare library community to lay the foundation of representing RDF triple entities.

In the ALA 2017 Midwinter meeting, the British Library and the Task Group incorporated feedback received from the previous discussion paper and submitted a proposal, 2017-01: Redefining Subfield

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[7] The appropriateness of transcribed versus recorded data for URIs in MARC which is not in scope for the Task Group for URIs in MARC. It is worthwhile for other groups to deliberate.

[8] http://www.loc.gov/marc/mac/advisory.html

[9] https://www.loc.gov/marc/mac/list-dp.html#2016

[10] Ibid.

$4 to Encompass URIs for Relationships in the MARC 21 Authority and Bibliographic Formats.[11] Proposal 2017-01 successfully gained support from the library community and was approved.

With approval of the above proposals, the Task Group succeeded in setting the principle of $0 for recording URIs that represent *objects*, and $4 to represent *predicates* in RDF triple statements.

The Task Group submitted two additional discussion papers in the Midwinter 2017 meeting. 2017-DP01: Use of Subfields $0 and $1 to Capture Uniform Resource Identifiers (URIs) in the MARC 21 Formats. 2017-DP02: Defining Field 758 (Related Work Identifier) in the MARC 21 Authority and Bibliographic Formats.[12] Both discussion papers tried to address the need of recognizing the value and contributions from library and non-library communities while facilitating the ability to encode specific linked data relationships in MARC.

The creation of $1 to capture identifier for a real world object and a new 758 MARC field to house an identifier generated from algorithmic processes recognize a world beyond library walls and its aid to the richness of library authority data. Both discussion papers faced an uphill battle within the library community. The subgroups that put forth these discussion papers presented with screen shots and examples to illustrate and articulate the value and benefits of the creation of $1 and 758 field. The MAC community had lively discussions when the two discussions paper were circulated. Their comments helped the subgroups clarify some points by providing additional user cases when submitting the discussion paper as proposal in the ALA 2017 annual conference in this past June.[13]

Activities Expected in 2017

The Task Group expects to publish a white paper on URI for Thing ($1) and for authority data ($0), and to release a help document, *Formulating & Obtaining URIs: a Guide to Commonly Used Vocabularies and Reference Sources.* Additional work on identifier in 024 for authority data and $5 for Cultural Heritage Organization will be postponed.

Many libraries have begun experimenting embedding URI in $0 locally. The Task Group is preparing a survey to gauge the needs and practices from the community for policies, training, and best practices.

After the pilot test, the Task Group began to pursue plans with OCLC to develop functionalities in its cataloging module converting its controlled headings to HTTP URI upon data export. This functionality may be available to OCLC member libraries soon. This goal will fulfill one of the Task Group's action items. The objective is to provide options and enable libraries to set their preference based on local needs with regard to identifier upon bibliographic record export as a string or an HTTP URI or both. This functionality may be realized in the fourth quarter of 2017 or first quarter of 2018.[14]

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[11] https://www.loc.gov/marc/mac/2017/2017-01.html

[12] https://www.loc.gov/marc/mac/list-dp.html#2017; http://www.loc.gov/marc/mac/list-p.html#2017

[13] At the writing of this article, the two discussion papers were turned into proposals submitted, discussed and approved.

[14] OCLC is preparing for this functionality in its new cataloging utility not in the current Connexion client.

Community Efforts

Several linked data projects are underway, e.g. LD4P funded by Mellon and IMLS's BIBFLOW and Shareable Authorities Forum. These projects are in the process of releasing their activities reports. Other PCC task groups' work that are either in progress or at final stage. Members and consultants of the Task Group on URIs are equally involved in these efforts. Reports from the respective groups will help inform and shape the URI Task Group's direction of its future action items.[15] The Task Group continues reaching out to archival community, ILS vendors and other service providers ensuring its efforts are in sync and addressing the needs.

PCC BIBFRAME Task Group

The PCC Cooperative Online Serials Program (CONSER) formed the sixteen-member CONSER BIBFRAME Task Group (CONSER BF) in Fall 2015.[16] An important part of the charge of this Task Group was to develop a mapping of the program's CONSER Standard Record (CSR) guidelines, originally developed for cataloging in a MARC environment, to BIBFRAME 1.0. The mapping of CSR to BF 1.0 was completed by April 2016.

Upon the release of BIBFRAME 2.0 in April 2016, the CSR to BIBFRAME mapping group began work on converting that mapping to BIBFRAME 2.0 and developing samples of RDF coding, serialized in Turtle (Terse RDF Triple Language), to provide a concrete example of how each element in the CSR might be encoded with BIBFRAME.

Building on the CONSER BIBFRAME Task Group's effort, in August 2016, the PCC BIBFRAME Task Group was formed.[17] The original CONSER group was then folded as a subgroup (informally known as the CSR to BIBFRAME mapping group), under the auspice of this umbrella group.

At the same time, the BIBFRAME Task Group BIBCO subgroup of thirteen members (BIBCO BF) was charged to map the BIBCO Standard Record (BSR) to BIBFRAME 2.0 and collaborate in defining a BIBFRAME Profile to support BIBCO community's descriptive practices (PCC BIBFRAME BIBCO Subtask Group 2016). Membership of both groups came from the libraries participating in any of the PCC programs, BIBCO, CONSER, NACO and SACO. In May 2017, both groups were working on its final report to the PCC Task Group.

This BIBFRAME Task Group is an ongoing committee. Members have a one-year renewable commitment beginning on August 4, 2016. This Task Group oversees the subtask groups that were working on identified issues such as mapping PCC standard records to BIBFRAME. Monitors and formulates responses to BIBFRAME 2.0 vocabulary draft specifications. Identifies issues that are of interest to BIBCO, CONSER, NACO, and SACO members to share and/or formulate responses on PCC's behalf. It also evaluates the outcomes of subtask group's activities on an annual basis and readjust charges of subtask groups or other efforts as needed.

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[15] Several task groups are in the final phase of task group's commitment. For instance, the Linked Data Advisory Committee published its white paper, in June 2017 (Baxmeyer et al. 2017).

[16] https://www.loc.gov/aba/pcc/conser/bf/

[17] http://www.loc.gov/aba/pcc/documents/PCC-BF-TG-Charge.docx

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Mapping CSR to BIBFRAME

The process began with an earlier mapping exercise based on the PCC's BIBCO Standard Record (BSR) to Zepheira's BIBFRAME Lite, a collaborative effort among the National Library of Medicine, George Washington University Libraries and the University of California at Davis Library.

The CONSER BF first matched the RDA data elements in the CSR to BIBFRAME properties:

RDA Instructions & Elements	RDA-RDF property	BF 2.0 Property	Context	Used With	Expected Value
The name of the RDA instruction or data element, as presented in the RDA Toolkit (http://access.rdatoolkit.org/). (T)= Transcribed element	The rda-rdf property, as defined by the RDA registry (http://www.rdaregistry.info/)	The BIBFRAME property used to encode the RDA data element.	each triple needed for the mapping listed separately: Subject > predicate > Object , indicates subclass/subproperty of the preceding class/property prefixes included for non-BIBFRAME properties/classes	if BF allows multiple classes or says "undefined," the one actually used for CSR mapping in **bold**	the type of value expected as the object of the rdf triple
Title proper (T)	rdam:titleProper (p30156) (http://rdaregistry.info/Elements/m/P30156)	**mainTitle** (associated with Instance)	Instance > title > Title Title > mainTitle > Literal	Title	Literal
Title proper: designation of part, section or supplement (T)	rdam:titleProper (p30156) (http://rdaregistry.info/Elements/m/P30156)	**partNumber** (associated with Instance)	Instance > title > Title Title > partNumber > Literal	Title	Literal
Title proper: title of part, section, or supplement (T)	rdam:titleProper (p30156) (http://rdaregistry.info/Elements/m/P30156)	**partName** (associated with Instance)	Instance > title > Title Title > partName > Literal	Title	Literal
Parallel title proper (T)	rdam:parallelTitleProper (P30203)	**mainTitle** with subject ParallelTitle	Instance > title > Title, VariantTitle, ParallelTitle ParallelTitle > mainTitle > Literal	Work, **Instance** or Item	Title (has subclass ParallelTitle)
Other title information (T)	rdam:otherTitleInformation (P30142)	**subtitle**	Instance > title > Title Title > subtitle > Literal	Title	Literal

Figure 1: CSR to BIBFRAME Spreadsheet

The group also developed mock-ups of sample coding in Turtle (see example below) for each data element to facilitate understanding of the transition from MARC to RDF.

Identifier for the Manifestation

BIBFRAME Vocabulary and Definitions
Classes
    Identifier
    Issn
Properties
    identifiedBy

Turtle Examples
```
ex:instance12345 bf:identifiedBy [
                              a bf:Identifier, bf:Issn ;
                              rdf:value "1234-5678"] .
```

Figure 2: Mockup of an Instance in Turtle

In the process, the CONSER BF isolated the CSR elements that were without their BF counterparts and provided feedback to LC's BIBFRAME developers. The CONSER BF group also recommended and developed best practices to the serials community.

This exercise highlighted some issues that will require in-depth deliberations from the serials community:

1) *Changes to the Description.* Descriptive data for serials are not static. Over time, updates are necessary to maintain the accuracy of serial descriptions. The BIBFRAME vocabulary does not provide clearly designated methods for updating descriptive data, though there may be solutions in linked data infrastructure to allow for these updates.

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2) *Literal vs. Machine Actionable Data.* Some CSR data are defined by RDA as transcribed elements for identification of resources (e.g. publication, production, etc.). In some cases, these transcribed elements could also be represented as machine actionable relationships in BF. The promise of linked data is in those machine actionable relationships, though the group recognizes the usefulness of transcribed data for identification purposes.

3) *Enumeration and Chronology Data.* This is used in different contexts in serial bibliographic descriptions and institutional holdings. The group recommends developing a common structure to represent this data throughout bibliographic and holdings descriptions to facilitate consistency across serials data.

4) *Administrative Metadata.* Serials descriptions are often a collaborative effort, requiring communication among catalogers across institutions about a serial description. BIBFRAME has some rudimentary administrative metadata, but needs further development in this area.

5) *Modeling and Relationships.* During the mapping exercise, several conceptual models were at play: FRBR's 4-level WEMI hierarchy as realized through RDA, BIBFRAME's 3 level model, and the IFLA's Library Reference Model (LRM). Additionally, the NISO 3297 ISSN standard that is currently under revision, which will affect identification and description of serials in future. The serials landscape is complex, and serials data is frequently used in contexts that extend library bibliographic data into other contexts such as link resolvers, citation servers, etc. The group recommends that CONSER continue its engagement in modeling serial bibliographic data and ensuring its continued functionality in a variety of contexts.

The CSR to BIBFRAME mapping group's report will be submitted to the PCC BIBFRAME Oversight group in late July 2017 and will include a brief description of the methodology and process of mapping, recommendations for BIBFRAME development and PCC practice, as well as recommendations for further PCC work on some issues.

Mapping BSR to BIBFRAME

The BIBCO BF's work on mapping BSR to BIBFRAME benefitted greatly from the CONSER BF's work. A member from the PCC BIBFRAME Task Group conducted a Turtle training session for the BIBCO BIBFRAME Task Group, enabling members to experiment with creating examples employing Turtle syntax for the use cases to demonstrate mapping outcome.

Organization of the work was simple and straightforward. However, the process was comparatively more elaborate and complex. The BIBCO BF group followed the roadmap and methodology established by the CONSER BF group. They divided the mapping spreadsheet into sections assigned to different task group members and completed the preliminary analysis of BSR elements to BF 2.0 based on BF's Classes and properties. The spreadsheet was organized by columns as shown below for RDA instructions and elements, RDA instruction number, BSR notes, MARC coding, RDA-RDF property, Context for triple statements, LC BF2.0, Anticipated value, TG notes on BF2.0 and Questions.

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RDA Instructions & Elements The name of the RDA instruction or data element, as presented in the RDA Toolkit (http://access.rdatoolkit.org/). (T)= Transcribed element	RDA No.	BSR Notes	MARC Coding	RDA-RDF The rda-rdf property, as defined by the RDA registry (http://www.rdaregistry.info/)	Context each triple needed for the mapping listed separately: Subject > predicate > Object Subjects = BF Classes (distinguished by uppercase) predicates = BF properties (distinguished by lowercase) Objects either BF classes or Literal , indicates subclass/subproperty of the preceding class/property prefixes included for non-BIBFRAME properties/classes	LC BF 2.0 The BIBFRAME property used to encode the RDA data element	Anticipated Value	TG Notes on BF 2.0	Questions
Identifying Manifestations & Items								
Title proper (T)	2.3.2		245 $a, $n, $p	rdam:titleProper(p30156)	Instance > title > Title Title > mainTitle > Literal Title > partNumber > Literal Title > partName > Literal	mainTitle; partNumber; partName	Literal		
Parallel title proper (T)	2.3.3	Record all	245 $b, 246	rdam:parallelTitlePoper (P30203)	Instance > title > Title, VariantTitle, ParallelTitle ParallelTitle > mainTitle > Literal	ParallelTitle	Literal		
Other title information (T)	2.3.4		245 $b	rdam:otherTitleInformation(P30142)	Instance > title > Title Title > subtitle > Literal or Work > title > Title Title > subtitle > Literal	subtitle	Literal		
Variant title (T)	2.3.6	PCC *recommends* additional variant titles that are deemed important to identification or access, according to cataloger judgment and/or local policy. PCC Core for **rare materials**; record variant titles that are required by the appropriate DCRM module.	246	rdam:variantTitle (P30128)	Instance > title > Title, VariantTitle VariantTitle > mainTitle > Literal	VariantTitle	Literal	There are 4 subclasses under VariantTitle: KeyTitle, AbbreviatedTitle, ParallelTitle, CollectiveTitle; and a property variantType to define the types of variation: acronym, cover, spine, earlier, later, series version	

Figure 3: BSR to BIBFRAME Spreadsheet

Members claimed ownership of a particular section. Questions were documented and discussed at the monthly meetings.

Similar to the CONSER BF group's findings, a BSR main section on required non-RDA and MARC data was excluded from mapping. In its April report, the BIBCO BF group applied similar themes in reference to the CONSER BF group's report to lend a support for action on similar issues for literal vs machine actionable data and administrative metadata. The BIBCO BF group lists the uniquely monographic resource issues.

1) *Notes.* Both BIBCO and CONSER BF groups concurred on recommending PCC to adopt a best practice to use specific BIBFRAME property over the more general bf:note property. Where using a note property is necessary, both groups recommend using the RDA registry vocabulary of specific note types rather than BIBFRAME's general bf:note property.

2) *Series.* There are issues related to series that affect both groups. A joint BIBCO/CONSER group is recommended to work on the following identified issues, e.g. numbering, chronology, series/subseries, and BF 2.0 conversion mapping.

3) *Creator, Person, Family or Corporate Body associated with a Work; and Contributor.* Both BIBCO and CONSER BF group recommend adopting "role" from RDA Registry to avoid creating blank nodes.

In addition, the BIBCO BF group found some BSR terms are not established in BF2.0, e.g. Other title information of series, Statement of responsibility relating to series, other details of cartographic materials, etc., and suggested adding new terms to BIBFRAME to meet the required RDA elements.

1) *Date of publication.* There is a need for starting date and ending date to accommodate date range that is common for multi-volume monographic series. This can also be useful for continuing resources. The CONSER BF group's report also concurred that BIBFRAME models start and end dates separately. This will make data more machine actionable.

2) *Date of work.* Same as above.

3) *Note on title.* Add an entity to pair up with the radm:noteOnTitle (P30063) or give cataloging professionals the flexibility of employing noteType to define special types of note.

4) *Dissertation or thesis information.* Elements of related data, e.g. granting institution, year, and degree, etc. could possibly be incorporated into ProvisionActivity class as a subclass and property.

Overall, both BIBCO and CONSER BIBFRAME groups found that the mapping of PCC's BSR/CSR (RDA core elements) to BIBFRAME mostly aligned. The RDA elements required by BSR and CSR can be expressed in BIBFRAME 2.0. The bibliographic data will meet the PCC BIBCO and CONSER standards. A number of issues raised by both group will be consulted with respective communities, which are most familiar with their relevant issues. These include the recommendation of a separate group to lead the investigation of required MARC elements listed in both CSR and BSR remain applicable or necessary in a linked data environment; distinctive characteristics for types of manifestation or expression, e.g. music, religious, legal, cartographic, etc.

This mapping exercise is one step in what is going to be a long journey toward a truly integrated and functional linked data environment.

Conclusion

The PCC Task Groups on URIs in MARC and BIBFRAME have identified important issues that must be addressed to move libraries into linked data environments. Reports from both task groups will be forwarded to the PCC community when completed. MAC proposals that have been approved will be forwarded to bibliographic utilities and ILSs to incorporate for adoption. These changes will move library data closer to align with linked data. The library community can expect the PCC's leadership in developing standards and practices for linked data to benefit users more as the community moves forward to a future of linked data environment.

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