

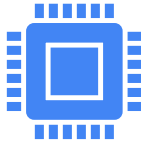
SVDE model interoperability

SVDE and the BIBFRAME
interchange structure

Jim Hahn, University of
Pennsylvania Libraries

jimhahn@upenn.edu

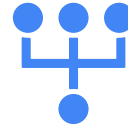
An approach to interchange



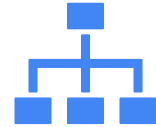
One approach to interchange borrows from a method that was used to great effect in making all manner of ebook content interoperable across a range of mobile devices.



The OEBPS or Open eBook Publication Structure was a success in interoperability. This success lives on as the EPUB format.

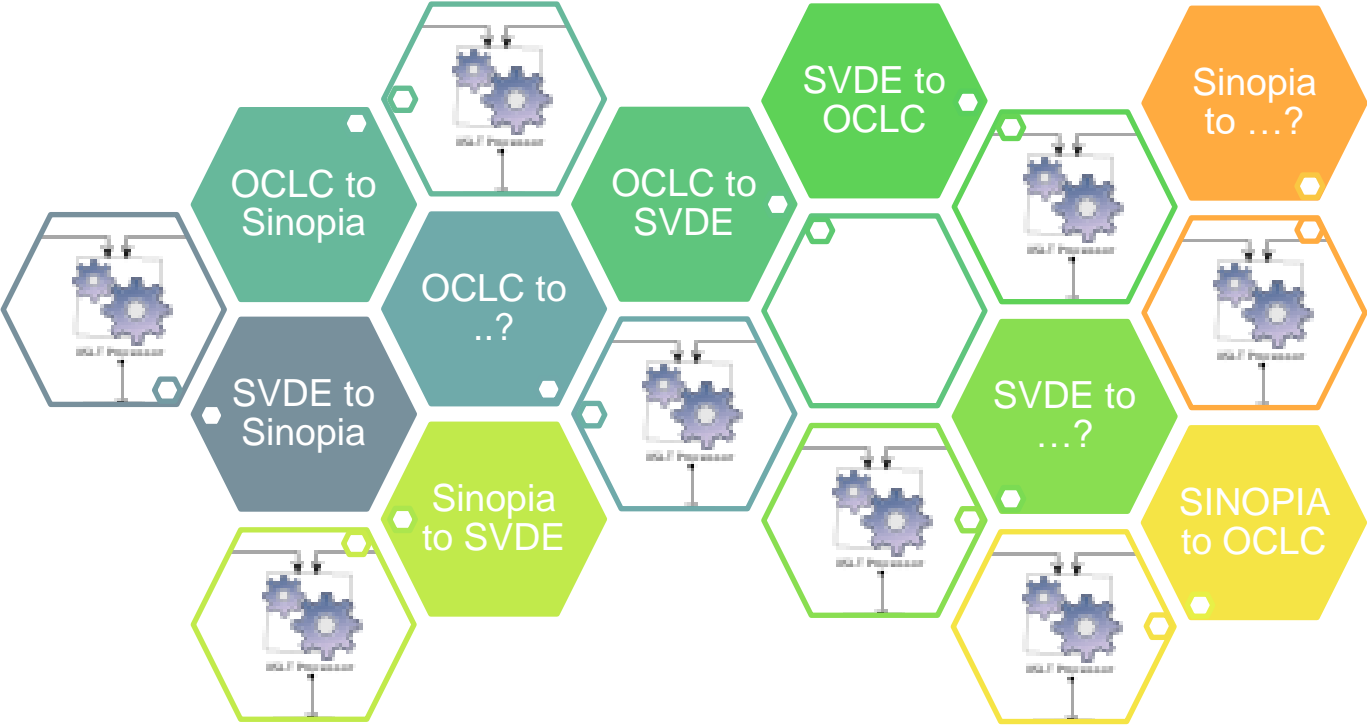


The OEBPS used an intermediary shape, which we can call *I* and this intermediary shape (*I*) is what disparate vendors transformed their data into.



Because the intermediary shape was known to all and allowed any namespaces into the structure (with some exceptions); the transformation from any given format into the (*I*) structure respected local variation, while providing a target for interchange.

Problem: combinatorial explosion of “BF Flavors” ...

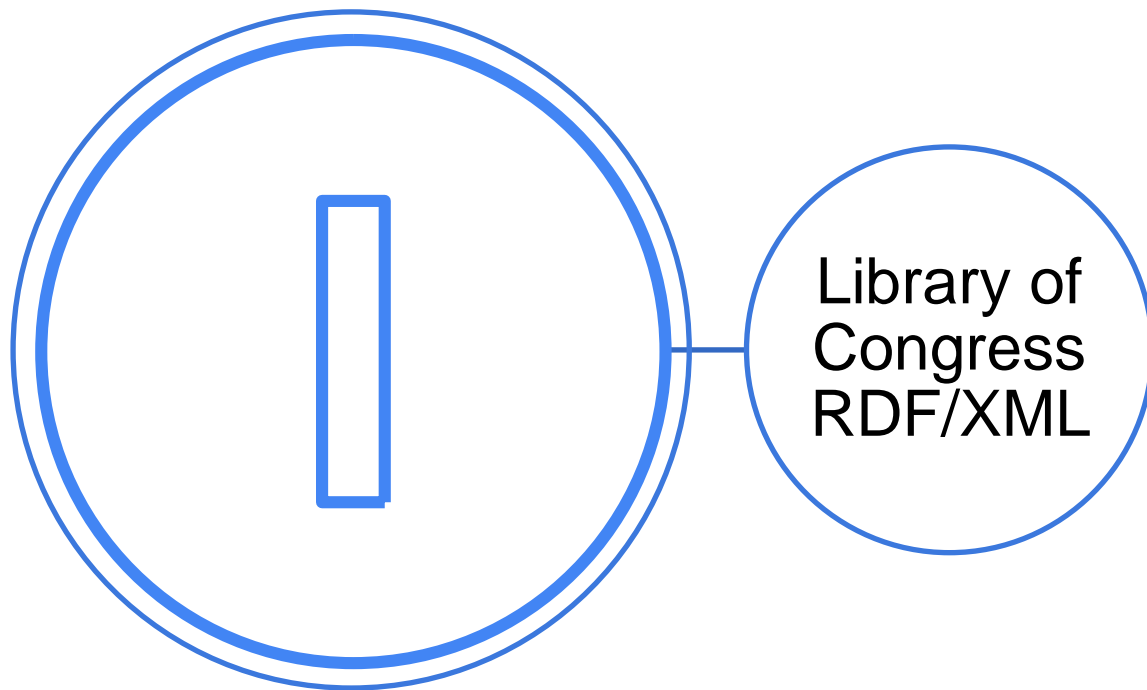


BIBFRAME from Library of Congress

For the purposes of this pilot test the BIBFRAME structure from Library of Congress was proposed as the Interchange format. The structure of Library of Congress BIBFRAME in RDF/XML was the target for /

SVDE data is natively in the N-Quad syntax, but it can be processed into RDF XML. The RDF Syntax Processing tool Raptor was used to explore how the process could work.

Example: single common interchange format



- SVDE to LoC
- Sinopia to LoC
- OCLC to LoC
- ... to LoC

Recall the Library of Congress RDF/XML structure

20647316.rdf x

rdf:RDF

```
1 <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
2   xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
3   xmlns:bf="http://id.loc.gov/ontologies/bibframe/" xmlns:bflc="http://id.loc.gov/ontologies/bflc/"
4   xmlns:owl="http://www.w3.org/2002/07/owl#" xmlns:skos="http://www.w3.org/2004/02/skos/core#"
5   xmlns:dcterms="http://purl.org/dc/terms/" xmlns:cc="http://creativecommons.org/ns#"
6   xmlns:foaf="http://xmlns.com/foaf/0.1/">
7   <bf:Instance rdf:about="http://id.loc.gov/resources/instances/20647316">
8     <rdf:type rdf:resource="http://id.loc.gov/ontologies/bibframe/Print"/>
9     <bf:issuance>
10    <bf:Issuance rdf:about="http://id.loc.gov/vocabulary/issuance/mono">
11      <rdfs:label>single unit</rdfs:label>
12    </bf:Issuance>
13  </bf:issuance>
14  <bf:provisionActivity>
15    <bf:ProvisionActivity>
16      <rdf:type rdf:resource="http://id.loc.gov/ontologies/bibframe/Publication"/>
17      <bf:date rdf:datatype="http://id.loc.gov/datatypes/edtf">2017</bf:date>
18      <bf:place>
19        <bf:Place rdf:about="http://id.loc.gov/vocabulary/countries/nyu">
20          <rdfs:label>New York (State)</rdfs:label>
21        </bf:Place>
22      </bf:place>
23    </bf:ProvisionActivity>
24  </bf:provisionActivity>
25  <bf:copyrightDate rdf:datatype="http://id.loc.gov/datatypes/edtf">2017</bf:copyrightDate>
26  <bf:identifiedBy>
27    <bf:Lccn>
28      <rdf:value> 2017278617</rdf:value>
29    </bf:Lccn>
30  </bf:identifiedBy>
31  <bf:identifiedBy>
32    <bf:Isbn>
33      <rdf:value>0190874864</rdf:value>
34    </bf:Isbn>
```

Sample SVDE: N-Quad syntax

<https://svde.org/pcc/rdfBibframe/Instance/PCCon1111651871> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type>
<http://id.loc.gov/ontologies/bibframe/Instance> <https://svde.org/pcc/rdfBibframe/Provenance/PCCon1111651871> .

<https://svde.org/pcc/rdfBibframe/Instance/PCCon1111651871> <http://id.loc.gov/ontologies/bibframe/media>
<http://rdaregistry.info/termList/RDAMediaType/1007> <https://svde.org/pcc/rdfBibframe/Provenance/PCCon1111651871> .

<http://rdaregistry.info/termList/RDAMediaType/1007> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type>
<http://id.loc.gov/ontologies/bibframe/Media> <https://svde.org/pcc/rdfBibframe/Provenance/PCCon1111651871> .

<http://rdaregistry.info/termList/RDAMediaType/1007> <http://www.w3.org/2000/01/rdf-schema#label> "unmediated"
<https://svde.org/pcc/rdfBibframe/Provenance/PCCon1111651871> .

<http://rdaregistry.info/termList/RDAMediaType/1007> <http://id.loc.gov/ontologies/bibframe/source>
<https://svde.org/pcc/rdfBibframe/Source/400e939f-6c78-3db3-ab41-66d938186d35>
<https://svde.org/pcc/rdfBibframe/Provenance/PCCon1111651871> .

Rapper commands: incorporate source namespace

```
rapper -i nquads -o rdfxml-abbrev -f 'xmlns:owl="http://www.w3.org/2002/07/owl#"' -f  
'xmlns:svde="http://share-vde.org/rdfBibframe/"' -f  
'xmlns:rdam="http://rdaregistry.info/Elements/m/"' -f  
'xmlns:bf="http://id.loc.gov/ontologies/bibframe/"' -f  
'xmlns:bflc="http://id.loc.gov/ontologies/bflc/"' -f  
'xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"' -f  
'xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"' -f  
'xmlns:prov="http://www.w3.org/ns/prov#"' -f  
'xmlns:mads="http://www.loc.gov/mads/rdf/v1#"' PCCon1111651871-instance.nq  
> PCCon1111651871-instance.xml
```


First Pass of RDF Syntax Processing: SVDE as RDF/XML

rdf:RDF bf:Media

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <rdf:RDF xmlns:bf="http://id.loc.gov/ontologies/bibframe/"
3   xmlns:bfcl="http://id.loc.gov/ontologies/bfcl/" xmlns:mads="http://www.loc.gov/mads/rdf/v1#"
4   xmlns:prov="http://www.w3.org/ns/prov#" xmlns:rdam="http://rdaregistry.info/Elements/m/"
5   xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
6   xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
7   xmlns:sharebf="http://share-vde.org/rdfBibframe/">
8   <bf:Status rdf:about="http://id.loc.gov/vocabulary/mstatus/invalid">
9     <rdfs:label>invalid</rdfs:label>
10  </bf:Status>
11  <bf:Carrier rdf:about="http://rdaregistry.info/termList/RDACarrierType/1049">
12    <bf:source
13      rdf:resource="https://svde.org/pcc/rdfBibframe/Source/bc931840-3296-3982-b508-ca1f96e02fbc"/>
14    <rdfs:label>volume</rdfs:label>
15  </bf:Carrier>
16  <bf:Media rdf:about="http://rdaregistry.info/termList/RDAMediaType/1007">
17    <bf:source
18      rdf:resource="https://svde.org/pcc/rdfBibframe/Source/400e939f-6c78-3db3-ab41-66d938186d35"/>
19    <rdfs:label>unmediated</rdfs:label>
20  </bf:Media>
21  <rdf:Description rdf:about="https://svde.org/pcc/rdfBibframe/AdminMetadata/PCCon1111651871">
22    <bf:identifiedBy
23      rdf:resource="https://svde.org/pcc/rdfBibframe/Local/6427a124-2f06-3adb-bf0a-5667818580bc"/>
24  </rdf:Description>
25  <bf:Extent
26    rdf:about="https://svde.org/pcc/rdfBibframe/Extent_300/eb723e54-0fe8-3047-9283-aaf3fb4f0530">
27    <bf:dimensions>24 cm</bf:dimensions>
28    <rdfs:label>xvi, 350 pages :</rdfs:label>
29  </bf:Extent>
30  <bf:Instance rdf:about="https://svde.org/pcc/rdfBibframe/Instance/PCCon1111651871">
31    <bf:carrier rdf:resource="http://rdaregistry.info/termList/RDACarrierType/1049"/>
32    <bf:dimensions>24 cm</bf:dimensions>
33    <bf:extent
34      rdf:resource="https://svde.org/pcc/rdfBibframe/Extent_300/eb723e54-0fe8-3047-9283-aaf3fb4f0530"/>
```

Normalization Efforts:

- bf: issuance
- bf: instance type

add bf:issuance property

```
<bf:issuance>  
<bf:Issuance  
rdf:about="http://id.loc.gov/vocabulary/issuance/mono">  
<rdfs:label>monograph</rdfs:label>  
</bf:Issuance>  
</bf:issuance>
```

add type for the instance

```
<bf:Instance  
rdf:about="http://id.loc.gov/resources/instances/21108376"  
>  
<rdf:type  
rdf:resource="http://id.loc.gov/ontologies/bibframe/Print" />
```

Proposed RDF/XML of normalized SVDE

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <rdf:RDF xmlns:bf="http://id.loc.gov/ontologies/bibframe/"
3   xmlns:bf:lc="http://id.loc.gov/ontologies/bflc/" xmlns:mads="http://www.loc.gov/mads/rdf/v1#"
4   xmlns:prov="http://www.w3.org/ns/prov#" xmlns:rdam="http://rdaregistry.info/Elements/m/"
5   xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
6   xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
7   xmlns:sharebf="http://svde.org/pcc/rdfBibframe/">
8 <bf:Instance rdf:about="https://svde.org/pcc/rdfBibframe/Instance/PCCon1111651871">
9   <rdf:type rdf:resource="http://id.loc.gov/ontologies/bibframe/Print"/>
10 <bf:issuance>
11 <bf:Issuance rdf:about="http://id.loc.gov/vocabulary/issuance/mono">
12 <rdfs:label>monograph</rdfs:label>
13 </bf:Issuance>
14 </bf:issuance>
15 <bf:provisionActivity>
16 <bf:ProvisionActivity>
17 <rdf:type rdf:resource="http://id.loc.gov/ontologies/bibframe/Publication"/>
18 <bf:provisionActivityStatement>Louisville, Colorado : University Press of Colorado,
19 [2020]</bf:provisionActivityStatement>
20 <bf:date rdf:datatype="http://www.w3.org/2001/XMLSchema#date">[2020]</bf:date>
21 <bf:place>
22 <bf:Place>
23 <rdfs:label>Louisville, Colorado</rdfs:label>
24 </bf:Place>
25 </bf:place>
26 <bf:agent>
27 <bf:Agent rdf:about="https://svde.org/pcc/rdfBibframe/Publisher/4332">
28 <rdfs:label>University Press of Colorado,</rdfs:label>
29 </bf:Agent>
30 </bf:agent>
31 </bf:ProvisionActivity>
32 </bf:provisionActivity>
33 <bf:dimensions>24 cm</bf:dimensions>
34 <bf:identifiedBy>
```

Case Study

The *Interchange RDF/XML* of an *SVDE Instance*, loaded into a locally hosted Marva editor.



Create new record

My Templates

Name	Based on profile	Modified	⚙
Loading templates...			
▶ Copy Template Using ID			

Profiles

Name	Type	Modified	⚙
Monograph	● Work ◆ Instance		
Monograph (Non-Latin)	● Work ◆ Instance		
Notated Music	● Work ◆ Instance		
Serial	● Work ◆ Instance		
Cartographic	● Work ◆ Instance		
Sound Recording: Audio CD	● Work ◆ Instance		
Sound Recording: Audio CD-R	● Work ◆ Instance		
Sound Recording: Analog	● Work ◆ Instance		
Sound Recording: Cassette	● Work ◆ Instance		
Moving Image: BluRay DVD	● Work ◆ Instance		
Moving Image: 35mm Feature Film	● Work ◆ Instance		
Rare Materials	● Work ◆ Instance		
Prints & Photographs	● Work ◆ Instance		
Hub	⚙ Hub		

▶ Show All Profiles

- My records
- Everyone's records
- Create new record
- Load existing record
- Settings
- Help

Summary

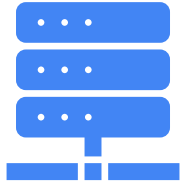
We have shown here that interoperability is achieved by :

1. Normalizing the N-Quads from SVDE to more closely resemble Library of Congress
2. Processing the source SVDE: N-Quads with syntax processors into SVDE:RDF/XML

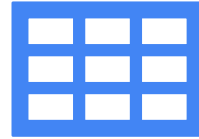
Thereafter, interoperability can enable a form of copy cataloging using PCC data that was enriched and clustered into a BIBFRAME network by SVDE.

3. Load the native BIBFRAME as RDF/XML into a metadata editor (local Marva system)
4. Make edits to the RDF/XML in the metadata editor
5. Post native BIBFRAME as RDF/XML to the ILS using APIs configured in the local Marva.

Copy cataloging SVDE enhanced PCC data



Pull in an Instance from
SVDE XML/RDF (PCC
data pool)



Make Edits in Marva
configured for RDF/XML



Post to Alma Sandbox at
Penn

Acknowledgments

Many thanks to the members of the Working Group on Data Exchange that emerged out of the LD Interoperability Summit last September, 2021 at the Library of Congress.

I am especially grateful to the contributions by Nate Trail at Library of Congress and Kirk Hess at OCLC for their input on syntax processing tools and RDF/XML normalization approaches.

Thank you to Matt Miller at Library of Congress who helped support the output of RDF/XML in the Alma structure.

I am also grateful to the developers at ExLibris who have implemented API changes for posting RDF/XML into the Alma system.

Thanks to all the members of the Share-VDE SEI Working Group who provided input on the BIBFRAME interchange updates.

Works consulted

Allen Renear & Gene Golovchinsky (2001) Content Standards for Electronic Books, *Journal of Library Administration*, 35:1-2, 99-123,

DOI: https://doi.org/10.1300/J111v35n01_07

Jerome McDonough (2008) Structural Metadata and the Social Limitation of Interoperability: A Sociotechnical View of XML and Digital Library Standards Development. *Balisage: The Markup Conference. August 12 - 15, 2008.*

<https://www.balisage.net/Proceedings/vol1/html/McDonough01/BalisageVol1-McDonough01.html>