

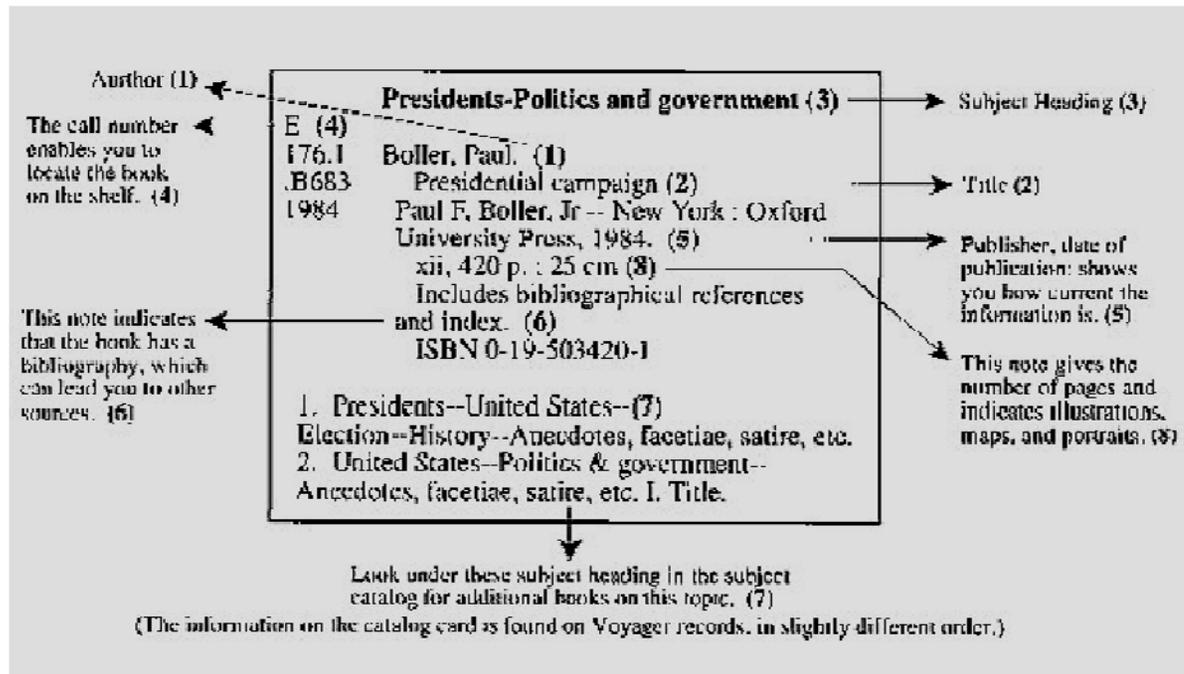
RDA in RDF:
Transitioning to the FRBR Catalog
and the Semantic Web

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ISBD – AACR2 – MARC

Half a century ago...we built ISBD, AACR2 and MARC...



...for transmitting and printing catalog cards



RDA? RDF? LD? Why?

Problems with ISBD, AACR2 and MARC:

- own, separate bibliographic universe
- not enough globally unique identifiers
- insufficient control; fosters inconsistencies



MARC Bibliographic Data

Solution?

- communicate to the broader data universe
- standards and practices built for networked users
- increase consistency, comprehensibility and extensibility





The Linked Data Environment

Linked Data Environment

- use URIs as identifiers
- use HTTP URIs to look up identifiers
- Provide standardized information for each URI
- Reference other URIs

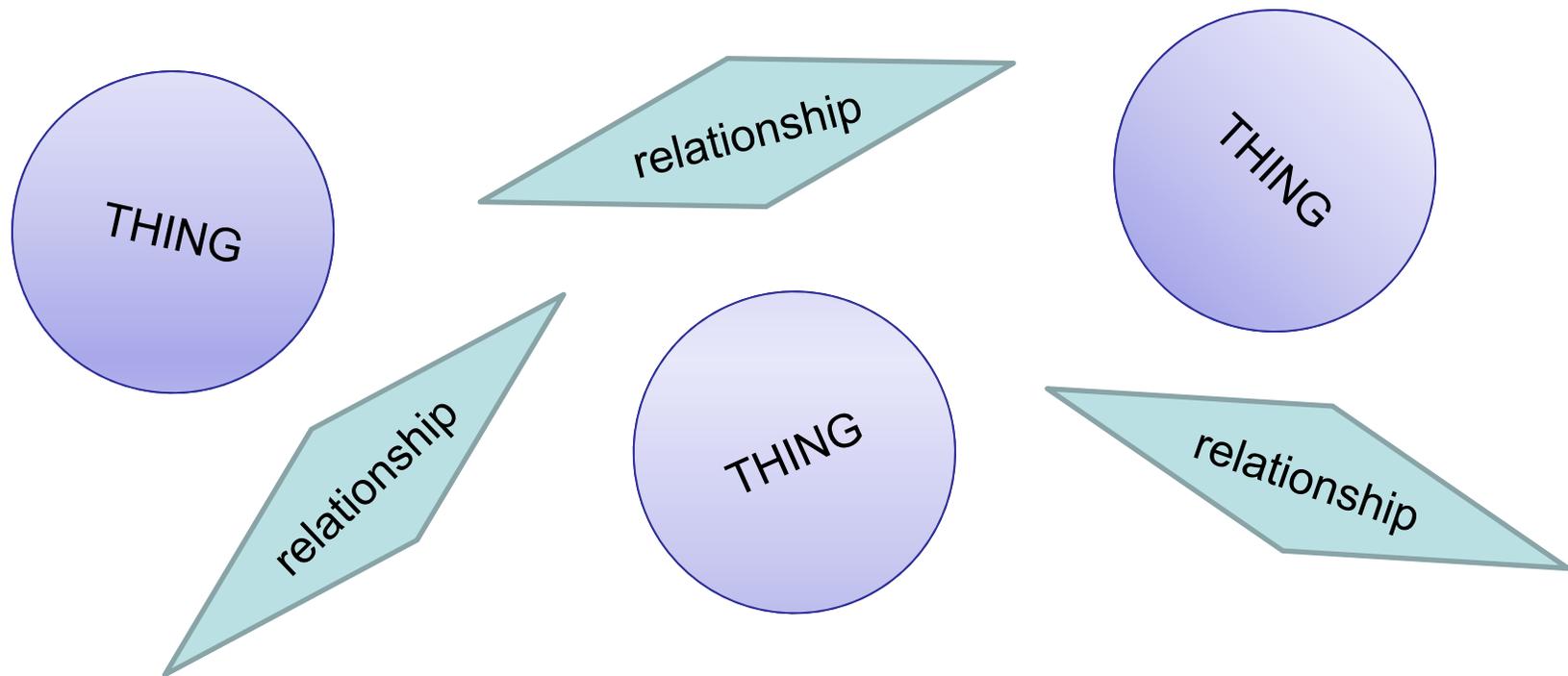
RDA data elements as Linked Data

- Project of the JSC and DCMI since 2007
- Serve as basis for machine interoperation
- Expose library data into Linked Data environment
- Developed independently using RDF



Resource Description Framework is

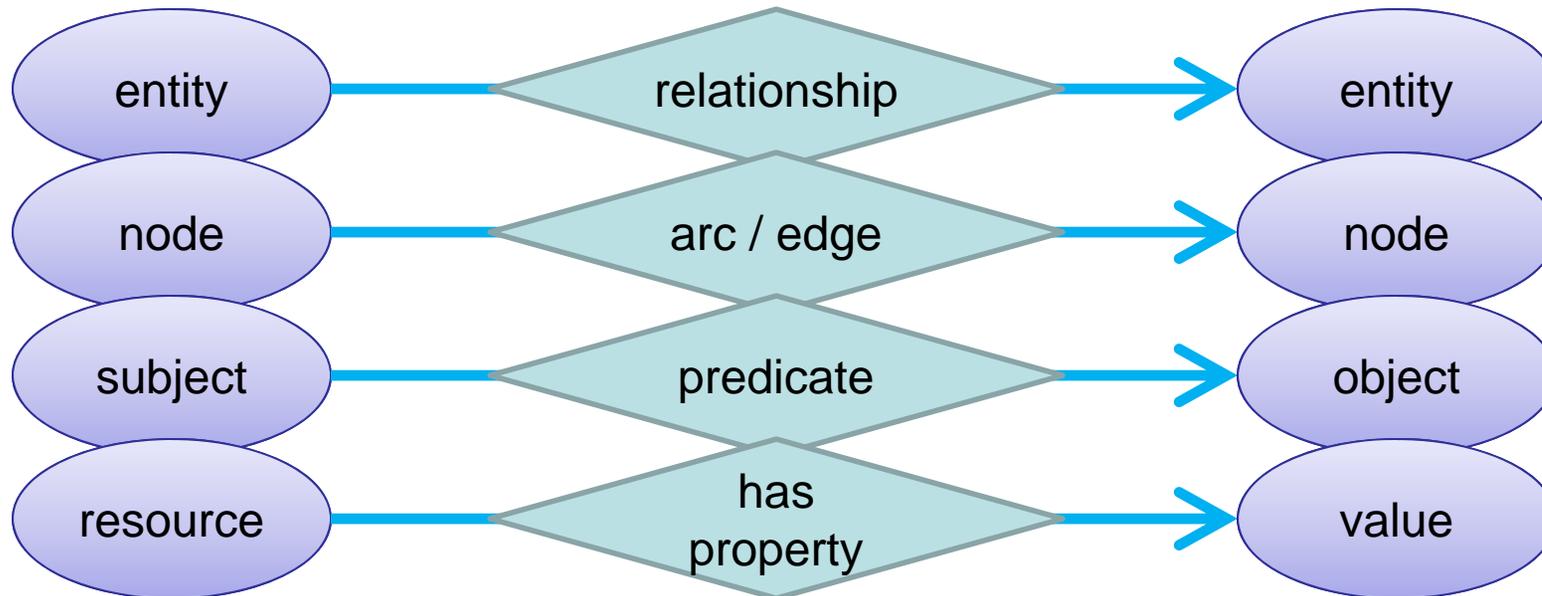
- an abstract data model
- domain-neutral and application-neutral
- provides structure to draw relationships between things



The RDF Triple

In RDF...

- a statement, a “triple” is made of three ordered parts
- triples are “directed” and “labeled”
- triples are best visualized as graphs



The RDF Triple

URI references can refer to a thing, a class of things, or a property

<http://id.loc.gov/authorities/names/n79107741.html>

refers to the name authority file for “Beethoven, Ludwig van, 1770-1827”

<http://rdvocab.info/uri/schema/FRBrentitiesRDA/Manifestation>

refers to the FRBR class of objects “Manifestation”

<http://rdvocab.info/uri/schema/FRBrentitiesRDA/Name>

refers to the FRBR class of objects “Name”

<http://rdvocab.info/ElementsGr2/name>

refers to RDA property “Name”

http://marc21rdf.info/elements/1XX/M1001_a

refers to the MARC 21 property labeled “Personal name in Main Entry-Personal Name (Surname)”
i.e. Field 100 1# subfield a



The RDF Triple

URIs have human-readable “Labels”

Ludwig van
Beethoven

refers to the name authority file for
“Beethoven, Ludwig van, 1770-1827”

Manifestation

refers to the FRBR class of objects “Manifestation”

Name

refers to the FRBR class of objects “Name”

Name

refers to RDA property “Name”

Personal name in
Main Entry-Personal
Name (Surname)

refers to the MARC 21 property labeled “Personal
name in Main Entry-Personal Name (Surname)”
i.e. Field 100 1# subfield a



RDA's RDF Properties

RDA elements are expressed in RDF as “properties”

RDA properties are designed to work with FRBR entities

Some FRBR entities for RDA

FRBR	RDF Label	URI
	Work	http://rdvocab.info/uri/schema/FRBRentitiesRDA/Work
	Expression	http://rdvocab.info/uri/schema/FRBRentitiesRDA/Expression
	Manifestation	http://rdvocab.info/uri/schema/FRBRentitiesRDA/Manifestation
	Item	http://rdvocab.info/uri/schema/FRBRentitiesRDA/Item
	Subject	http://rdvocab.info/uri/schema/FRBRentitiesRDA/Subject
	etc...	



RDA's RDF Properties

Some RDA properties are specific to the FRBR entity

Note correspondence with MARC

MARC	RDF Property	URI
245a	Title (Manifestation)	http://rdvocab.info/Elements/titleManifestation
245a 240a	Title of the work	http://rdvocab.info/Elements/titleOfWork
245b 245c	Parallel title proper (Manifestation)	http://rdvocab.info/Elements/parallelTitleProperManifestation
245c	Statement of responsibility relating to title proper	http://rdvocab.info/Elements/statementOfResponsibilityRelatingToTitleProper
246a	Variant title (Manifestation)	http://rdvocab.info/Elements/variantTitleManifestation



RDA's RDF Properties

Some are more straightforward ...

MARC	RDF Label	URI
336a	Content type (Expression)	http://rdvocab.info/Elements/contentTypeExpression
337a	Media type (Manifestation)	http://rdvocab.info/Elements/mediaTypeManifestation
336a	Carrier type (Manifestation)	http://rdvocab.info/Elements/carrierTypeManifestation



RDF Triple

Imagine a spreadsheet with information about books.

The rows and columns represent classes of things.

Each row is a “resource”

Title	Author	Standard ID
Romeo et Juliette	Peter Ilich Tchaikovsky	0-4862-5217-5
The holy sonnets of John Donne	Benjamin Britten	028941742827
Romeo and Juliet	William Shakespeare	0-4864-7573-5

Each column header is a “property” followed by a list of “values”

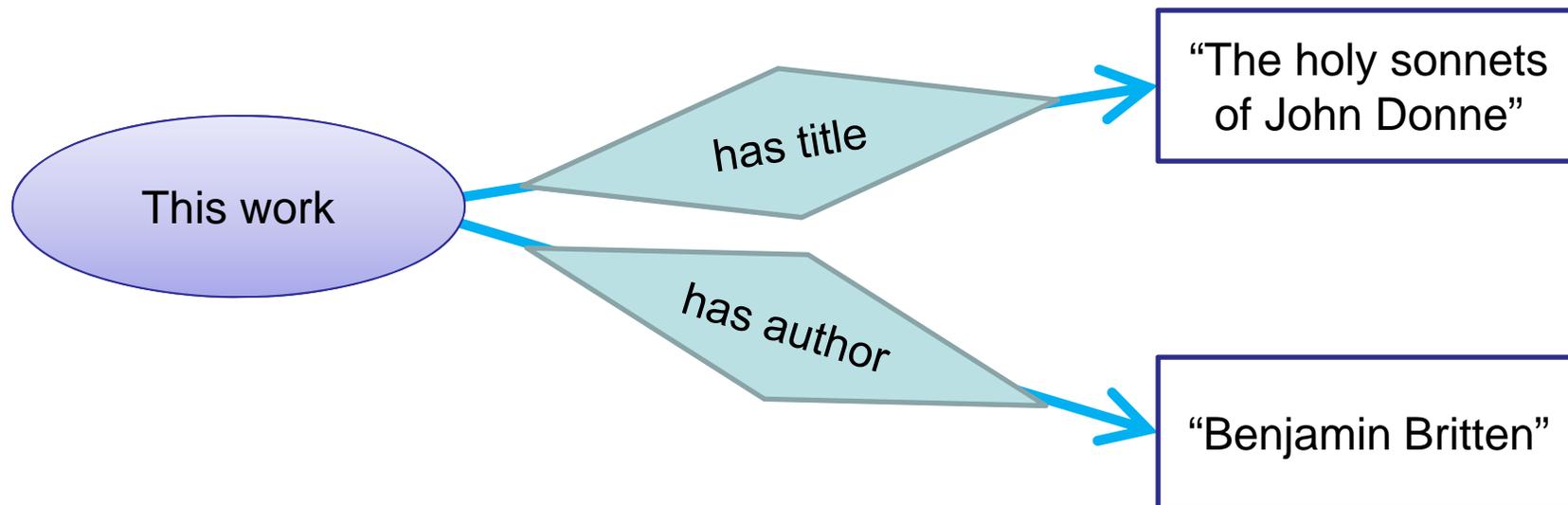
Title	Author	Standard ID
Romeo et Juliette	Peter Ilich Tchaikovsky	0-4862-5217-5
The holy sonnets of John Donne	Benjamin Britten	028941742827
Romeo and Juliet	William Shakespeare	0-4864-7573-5



RDF Triple

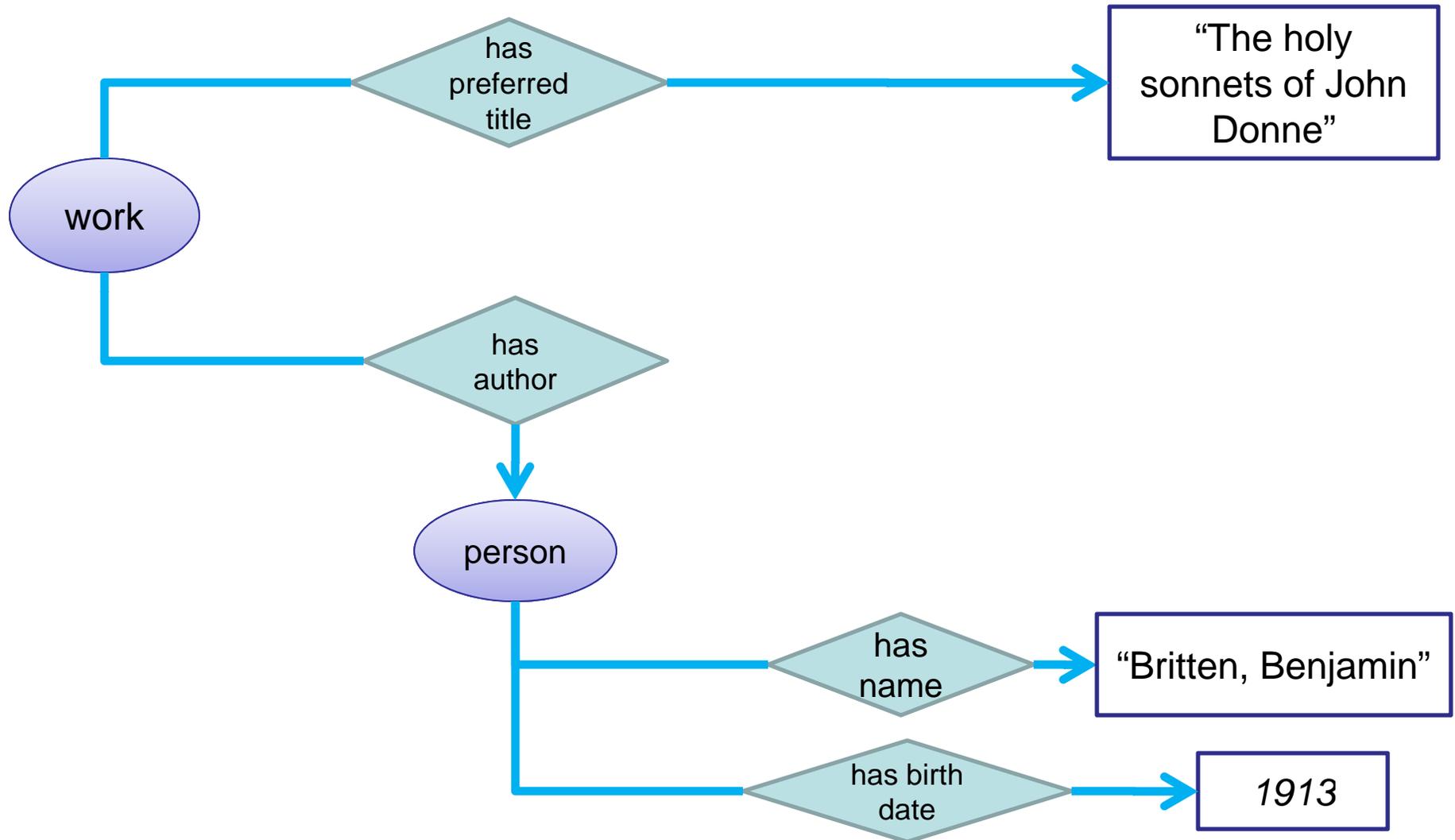
Each cell is a RDF triple

Title	Author	Standard ID
Romeo et Juliette	Peter Ilich Tchaikovsky	0-4862-5217-5
The holy sonnets of John Donne	Benjamin Britten	028941742827
Romeo and Juliet	William Shakespeare	0-4864-7573-5



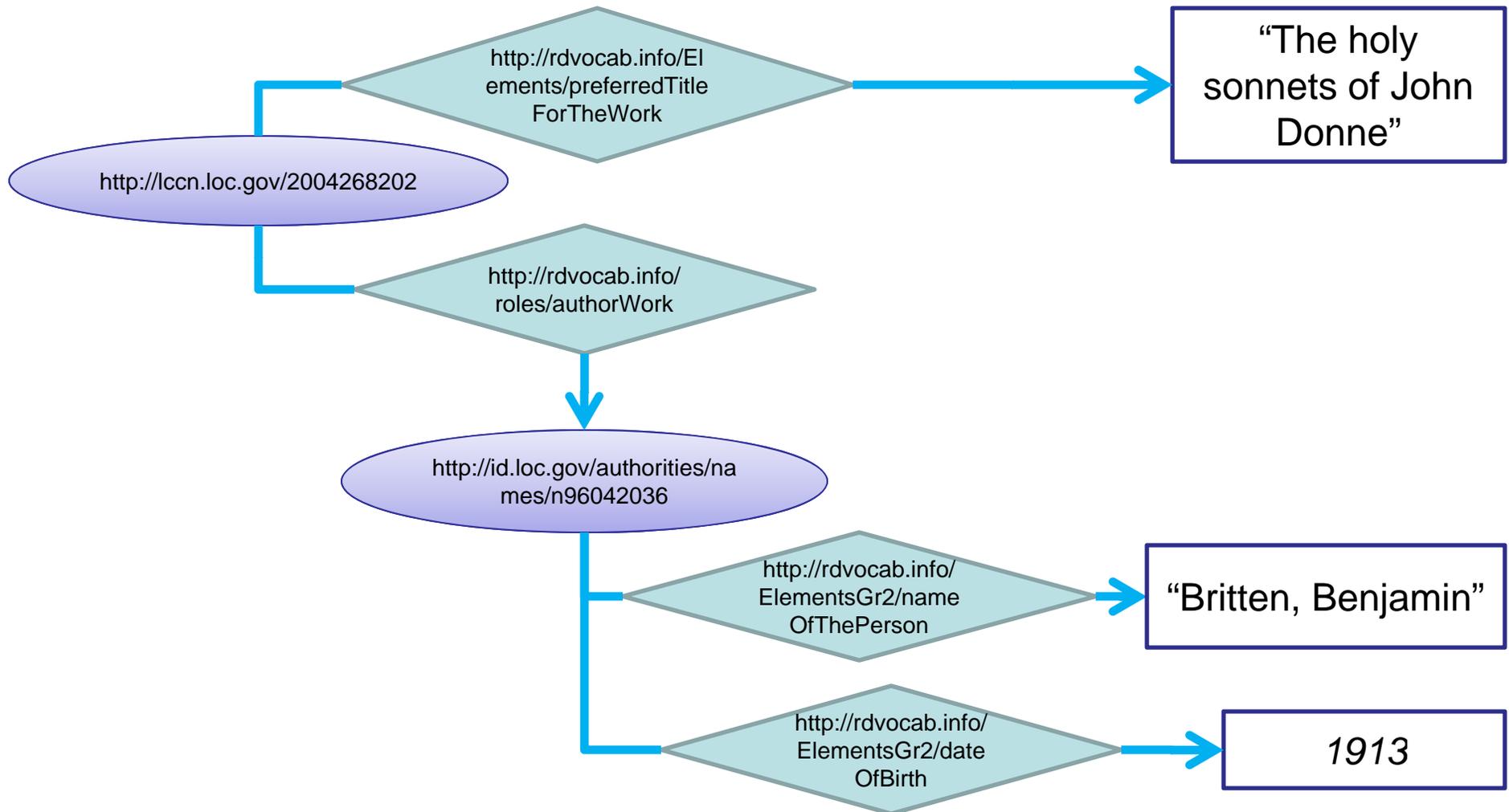
RDF Graph

RDF graph for a work, showing labels



RDF Graph

The same graph using URIs

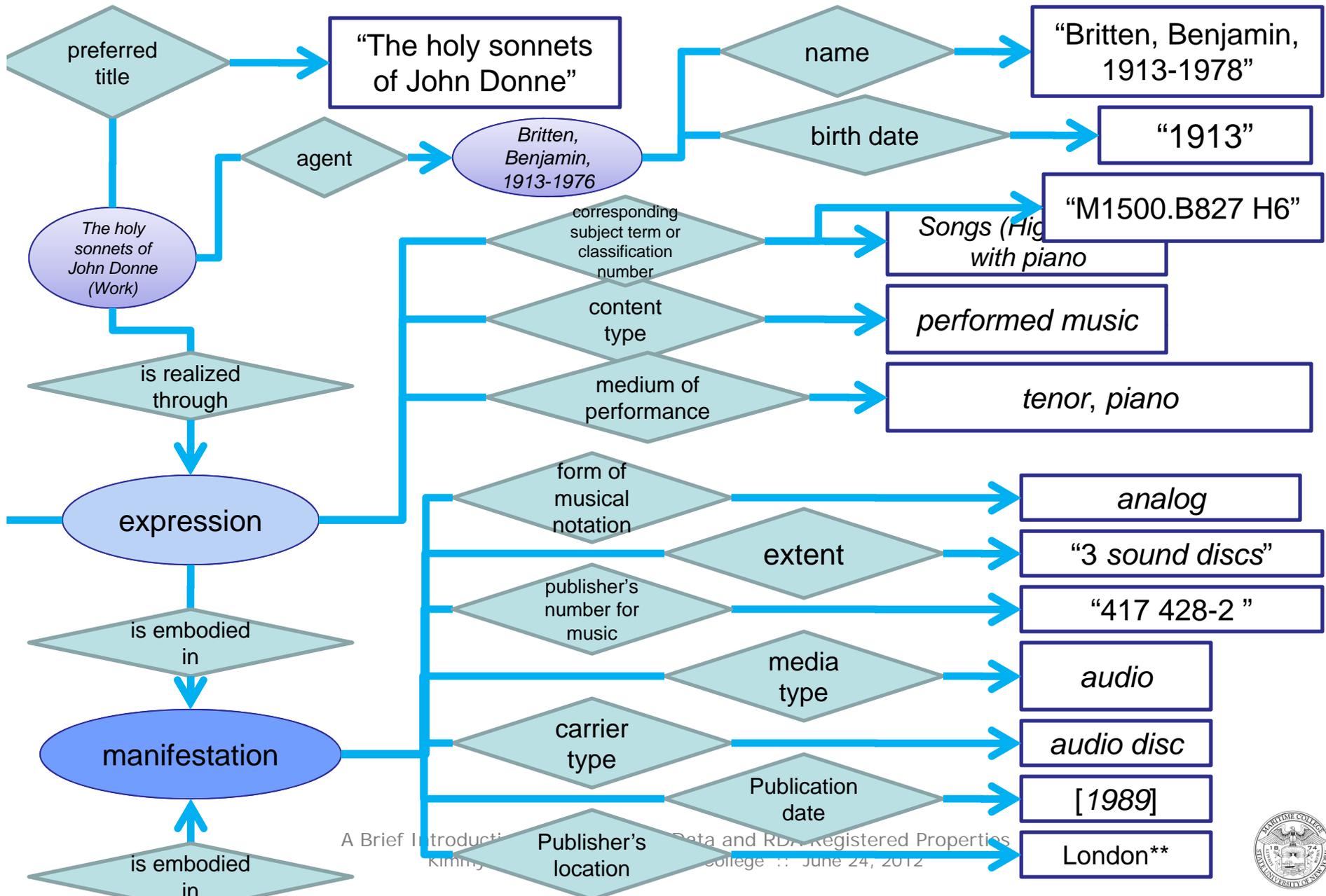


RDA in RDF: Example

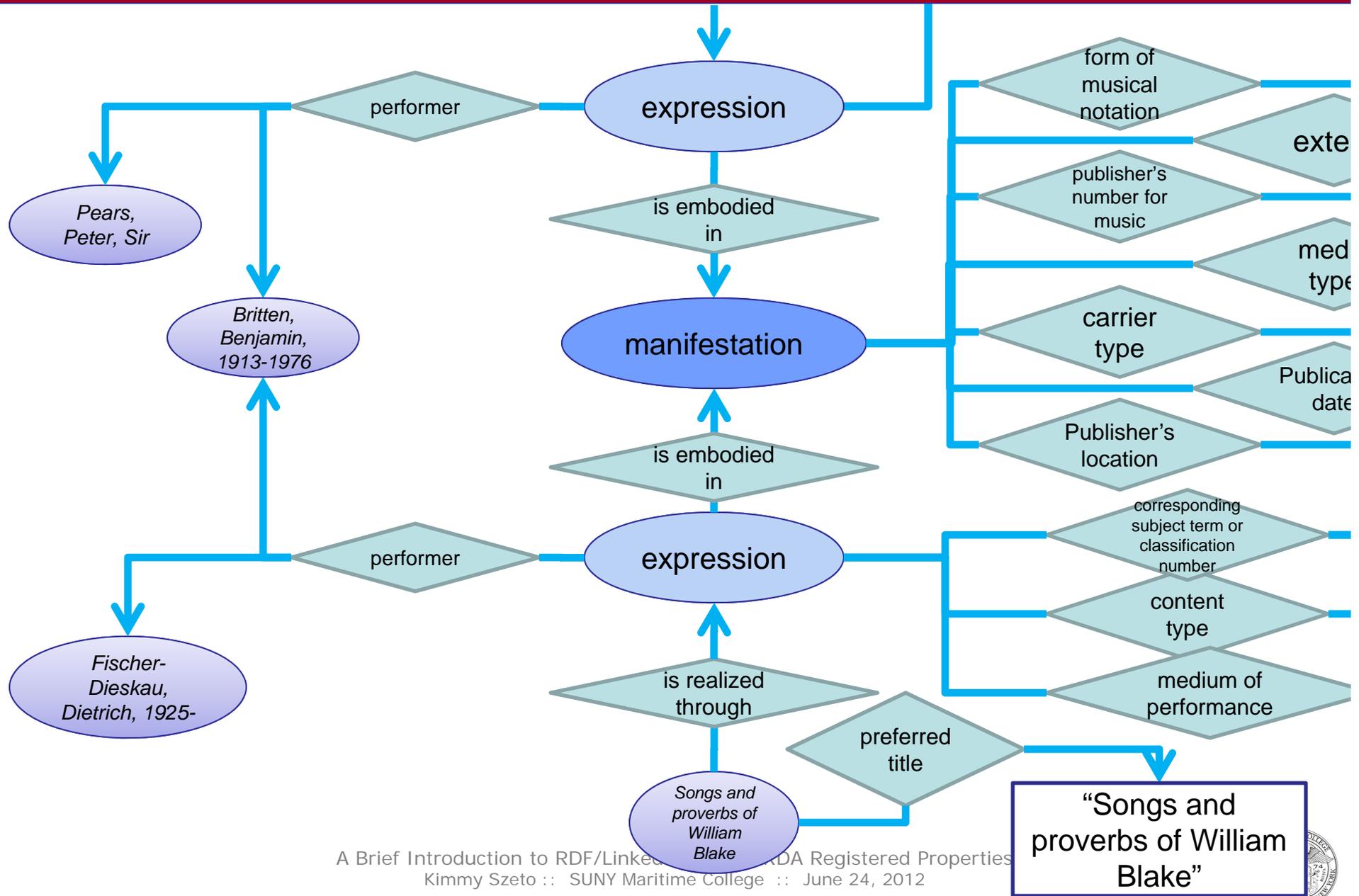
040 RBN †c RBN †d OCL †d IUL †d OCL †d JNA †d OCL †d NZCPL †d
JTA †d BTCTA †d ORX †d YQU †d OCLCG †d OCLCA †d MTG †d OCL †d IK2
†d EUX
028 00 417 428-2 †b London
050 4 M1500.B827 †b H6
100 1 Britten, Benjamin, †d 1913-1976.
240 10 Vocal music. †k Selections
245 14 The holy sonnets of John Donne †h [sound recording] ; †b
Songs and proverbs of William Blake ; Billy Budd / †c Britten.
260 London : †b London, †c [1989]
300 3 sound discs : †b digital, stereo. ; †c 4 3/4 in.
500 Compact discs; analog recordings.
505 0 The holy sonnets of John Donne, op.35 -- Songs and proverbs
of William Blake, op.74 -- Billy Budd, op.50.
650 0 Songs (High voice) with piano.
650 0 Songs (Medium voice) with piano.
650 0 Operas.
600 10 Donne, John, †d 1572-1631 †v Musical settings.
600 10 Blake, William, †d 1757-1827 †v Musical settings.
700 10 Donne, John, †d 1572-1631.
700 10 Blake, William, †d 1757-1827.
etc.



RDA in RDF: Example

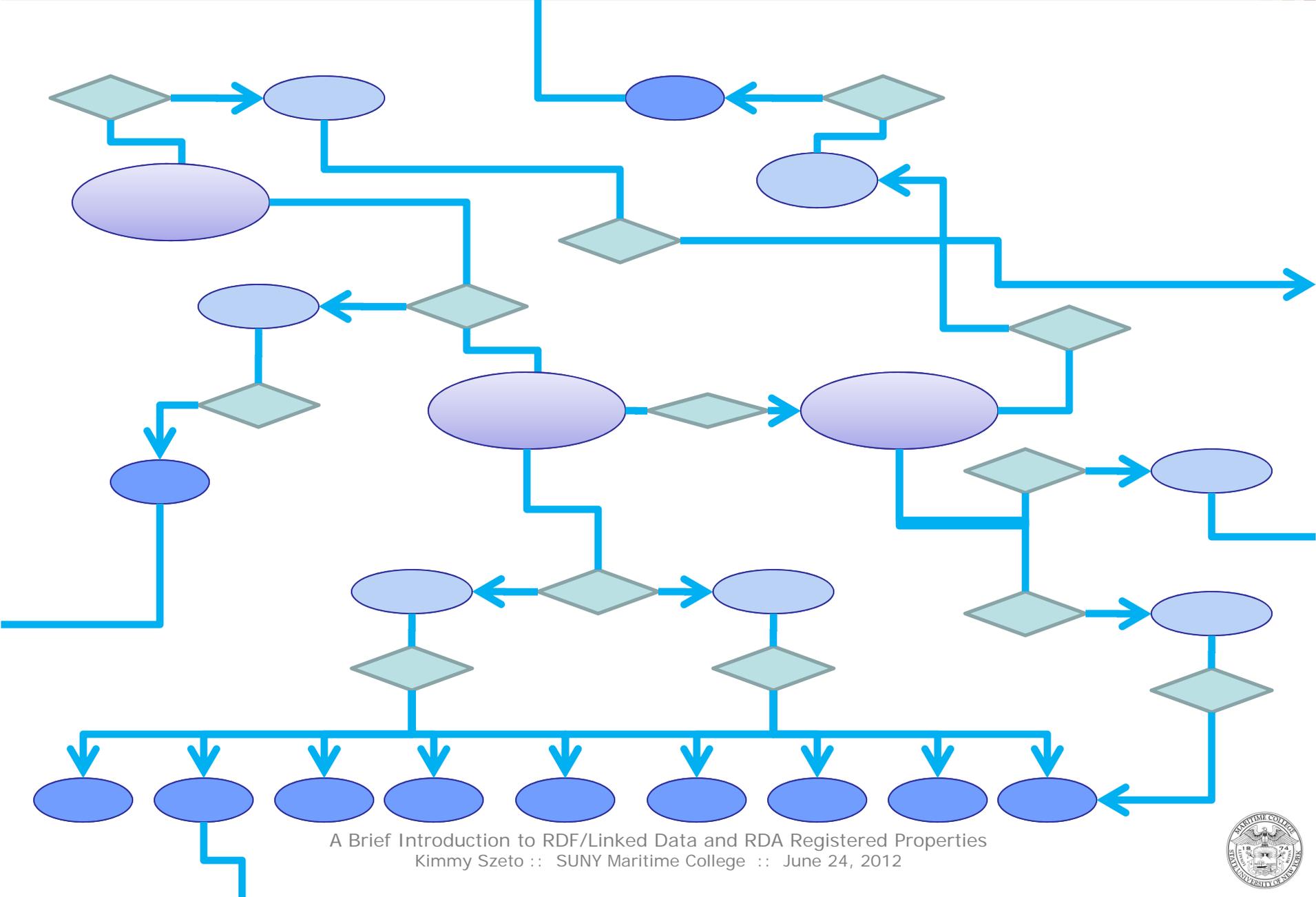


RDA in RDF: Example





Linked Data



RDA in RDF: Example

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
3   xmlns:rdaElementsGp1="http://rdvocab.info/Elements"
4   xmlns:rdaElementsGp2="http://rdvocab.info/ElementsGr2"
5   xmlns:frbrEntities="http://rdvocab.info/uri/schema/FRBREntitiesRDA"
6   xmlns:frbr="http://iflastandards.info/ns/fr/frbr/frbrer/"
7   xmlns:rdaRoles="http://rdvocab.info/roles/">
8
9 <!-- NOTE! THIS EXAMPLE IS VERY INCOMPLETE. ITS PURPOSE IS SOLELY TO ILLUSTRATE THE PRINCIPLES
10    INVOLVED, NOT PROVIDE COMPLETE DATA ABOUT THIS MANIFESTATION, THE WORKS ON IT, OR ANY ASSOCIATED
11    ENTITIES. KTHXBAI. -->
12
13 <!-- Manifestation data -->
14 <rdf:Description about="http://www.librarydata.org/manifestation/ocm21529894">
15   <rdf:type rdf:resource="http://rdvocab.info/uri/schema/FRBREntitiesRDA/Manifestation" />
16   <rdaElementsGp1:titleProperManifestation>The holy sonnets of John Donne ; Songs and proverbs of William Blake ; Billy Budd</rdaElementsGp1:tit
17   <rdaElementsGp1:publishersNumberForMusicManifestation>417 428-2</rdaElementsGp1:publishersNumberForMusicManifestation>
18   <rdaElementsGp1:publishersNumberForMusicManifestation>417 429-2</rdaElementsGp1:publishersNumberForMusicManifestation>
19   <rdaElementsGp1:publishersNumberForMusicManifestation>417 430-2</rdaElementsGp1:publishersNumberForMusicManifestation>
20   <rdaElementsGp1:publishersNumberForMusicManifestation>417 431-2</rdaElementsGp1:publishersNumberForMusicManifestation>
21   <rdaElementsGp1:extentManifestation>3 sound discs</rdaElementsGp1:extentManifestation>
22   <!-- Digital -->
23   <rdaElementsGp1:typeOfRecordingManifestation rdf:resource="http://rdvocab.info/termList/typeRec/1002" />
24   <!-- Stereo -->
25   <rdaElementsGp1:configurationOfPlaybackChannelsManifestation rdf:resource="http://rdvocab.info/termList/configPlayback/1002" />
26   <rdaElementsGp1:dimensionsManifestation>12 cm</rdaElementsGp1:dimensionsManifestation>
27   <!-- CD audio -->
28   <rdaElementsGp1:encodingFormatManifestation rdf:resource="http://rdvocab.info/termList/encFormat/1007" />
29   <rdaElementsGp1:publicationStatementManifestation rdf:nodeID="abc"/>
30   <!-- isEmbodimentOf -->
31   <frbr:P2004 rdf:resource="http://www.librarydata.org/expression/123" />
32   <frbr:P2004 rdf:resource="http://www.librarydata.org/expression/456" />
33   <frbr:P2004 rdf:resource="http://www.librarydata.org/expression/789" />
34 </rdf:Description>
35
36 <!-- Blank node with Manifestation publication statement -->
37 <rdf:Description rdf:nodeID="abc">
38   <rdaElementsGp1:placeOfPublicationManifestation>London</rdaElementsGp1:placeOfPublicationManifestation>
39   <rdaElementsGp1:publishersNameManifestation>London</rdaElementsGp1:publishersNameManifestation>
40   <rdaElementsGp1:dateOfPublicationManifestation>1989</rdaElementsGp1:dateOfPublicationManifestation>
41 </rdf:Description>
42
```



The RDF Graph Model

- conceptual framework that enables Linked Data
- independent of any specific syntax or metadata encoding
- encourages the use of controlled vocabulary

RDA in RDF – The End Result...

- many inter-connected controlled vocabularies
- no fixed bibliographic “records”
- data gathered from unbounded range of sources...



Implementation

- identify trusted data sources
- manipulate external objects, properties, and classes
- intelligent data caching
- globally shared cataloging
- enforce (!?) best practices in the library community
 - metadata creation
 - metadata management
 - resource sharing
 - exposure and discovery systems



RDA as RDF Registered Properties



[sign in / register](#) | [about](#)

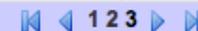
Search Vocabularies

Search Element Sets

Element Sets

Label ▲	Owner	Last Updated	Updated by	Actions
RDA Relationships for Works, Expressions, Manifestations, Items	Metadata Management Associates	2009-11-08	DianeH	
RDA Roles	Metadata Management Associates	2011-04-11	DianeH	
RDF	Metadata Management Associates	2008-08-05	Jon Phipps	
RDF Schema	Metadata Management Associates	2008-08-05	Jon Phipps	
Resource Identity & Provenance	Analekta Ltd.	2008-07-17	bbater	
Rising Stars	Necula Sabina	2011-07-14	sabinanecula	
SAAP Vocabulary	Matt Boris	2010-11-07	mjboris	
SKOS (Simple Knowledge Organization System)	Metadata Management Associates	2008-08-05	Jon Phipps	
SKOS Community Extensions	SKOS Community	2011-01-18	aliman	
test	otnc	2008-12-12	gmdr	
Thematic Indexes	Damian Iseminger	2011-06-07	Damian Iseminger	
Title	Chandana Patra	2009-08-20	chandana	
Trials and Tests	Chris	2011-12-05	ChrisC	
z test	Richard F	2011-07-07	Richard F	

54 results



Browse...

- [Resource Owners](#)
- [Vocabularies](#)
- [Element Sets](#)
- [SPARQL](#)

Feedback





Current Linked Data Projects



What the Library Community has done...

- RDA as registered properties in the Open Data Registry
- Library of Congress Bibliographic Framework Transition Initiative
- W3C Library Linked Data Incubator Group
- Stanford University Linked Data Workshop Technology Plan
- PCC Acceptable Headings Implementation Task Group - LC/NACO authority file conversion
- LC Genre/Form Headings
- Harvard Library Bibliographic Dataset

