

Report on Available Linked Data Training Resources

Environmental Scan Summary
PCC Standing Committee on Training
September 9, 2015
(Revised April 22, 2016)

During the course of the environmental scan, the PCC Standing Committee on Training (SCT) collected 37 resources that are available for training. The PCC SCT prefers to recommend training resources that are freely available to all, however some resources were included even though they are either for purchase or need a subscription, either because of their quality or due to limited availability of free quality training material in a specific area. All resources included in this environmental scan are accessible online, with the exception of the book “Linked Data for Libraries, Archives and Museums: How to Clean, Link, and Publish Your Data” which is only available in print (see section on tools below).

1. Where to start

There is a huge number of resources available on the Web for library staff just beginning to learn about linked data. It can be overwhelming to decide where to start. The PCC SCT recommends the recently released [BIBFRAME Training at the Library of Congress](#) module 1, parts 1 and 2, which consists of an overview of Semantic Web and Linked Data concepts and data model.

[LinkedDataTools.com](#) offers short tutorials on Linked Data and the Semantic Web in general, but also on more specific topics such as RDF, Semantic Modeling, RDFS and OWL as well as on querying the data.

2. Additional general overviews (Introductory)

Some additional important topics, such as URLs, URIs and namespaces; the Turtle Format, data typing in RDF as well as language tags and labels in RDF files, are covered by Dr. Nouredin Sadawi, who posted a series of 14 tutorials (each ca. 8-12 min) on his [YouTube](#) channel.

The Library Juice Academy offers online introductory classes on the [Semantic Web](#) and on [Ontologies and Linked Data](#) (\$175 each), which are part of a larger 6-part certificate program (see Online Courses below).

Though not aimed at libraries, [What is Linked Data?](#), a video posted by Manu Sporny to YouTube, explains Linked Data in an easy to understand, non-technical way. Sporny has also made several linked data related videos available.

[Linked Data - Connect Distributed Data across the Web](#) is a collection of introductory resources on linked data and related topics. The administrator of this site, Tom Heath, is also one of the authors of the book [Linked Data: Evolving the Web into a Global Space](#) (Tom Heath and Christian Bizer, Morgan & Claypool Publishers, 2011) which is freely available online.

The W3C's [Linked Data Cookbook](#) (2011), though aimed at open government data, provides a concise overview of best practices. A similar model is being followed by the [Cookbook for translating Data Models to RDF Schemas](#).

[Introduction to Linked Data](#) by Thomas Meehan (University College London) is a short (12 page) overview of Linked Data specifically aimed at catalogers.

3. Linked Data for Specific Domains (Introductory)

The LODLAM (Linked Open Data in Libraries, Archives and Museums) website is a good starting point to find resources and like-minded professionals in the LAM community.

Particularly, the [LODLAM Training Day Slides and Videos](#), a series of nine videos, contain introductory-level explanations on a number of Linked Data related topics and projects.

The [Special issue of International Standards Quarterly](#), v. 24, issue 2/3 (spring/summer 2012), which focuses entirely on Linked Data for Libraries, Archives, and Museum, highlights several important topics and projects.

3.1 Libraries

Much has been published about Linked Data in libraries. One particularly good article outlining the basic concepts as well as challenges and opportunities lying ahead is [The Academy Unbound](#) by Philip Schreur, published in *Library Resources & Technical Services*, 56(4).

The [W3C Library Linked Data Incubator Group](#) put together a great set of resources & use cases, and report.

Karen Coyle is the author of three issues of the *Library Technology Reports*. [Understanding the Semantic Web: Bibliographic Data and Metadata](#), [RDA Vocabularies for a Twenty-first Century Data Environment](#), and [Linked Data Tools: Connecting on the Web](#) all provide good library-based background reading.

The [presentation slides](#) and [poster session](#) developed by Silvia B. Southwick and Cory K. Lampert of the University of Nevada, Las Vegas are not only good examples of easy to follow introductions to Linked Data, they also give an example of how a library can begin to investigate and implement Linked Data into its workflow.

3.2 Archives

Eric Lease Morgan explains Linked Data concepts as they pertain to archival resources and explains how archival descriptive practices could be changed to better follow LOD principles:

[Linked Archival Metadata: A Guidebook](#)

4. Specific Topics (Intermediate/Advanced)

4.1 BIBFRAME

While there are several introductory PowerPoint presentations on BIBFRAME available on the Web, there is very little real training material due to the early stages of BIBFRAME development. One is Zepheira's "[Linked Data and BIBFRAME Practical Practitioner Training](#)".

The self-paced course takes about 5 weeks and prices vary by group size. The course covers primarily Linked Data, the BIBFRAME data model, and data modeling basics.

The Library of Congress is planning on posting additional modules to their [BIBFRAME Training at the Library of Congress](#) that will focus on the BIBFRAME data model, vocabulary and tools.

4.2 RDF

Introduction to RDF (w3schools.com) consists of ten brief chapters that provide a good basic definition of RDF. [Tutorial 2](#) of LinkedDataTools.com focuses on RDF/XML. The W3C's [RDF 1.1 Primer](#) is not quite as accessible for beginners, but should be consulted when learning more about RDF.

4.3 SKOS

[Introducing SKOS](#) by Peter Mikhaleiko is an excellent basic introduction on this topic.

4.4 RDF-Schema

A very short, one page [overview of RDFs](#) is available from w3schools.com. The video of Barry Norton's presentation on [RDF Schema](#) provides more detail and both OWL and RDFS are addressed by the online tutorial "[Learn OWL and RDFS](#)" by Cambridge Semantics.

4.5 Ontologies/OWL

[Ontology Development 101: A guide to Creating Your First Ontology](#) (Natalya F. Noy and Deborah L. McGuinness) is an excellent introduction. Again, the W3C's documentation [OWL 2 Web Ontology Language Primer](#) already requires some basic understanding, but should be consulted when learning about OWL2.

Library Juice Academy offers a month-long online course on [Ontologies and Linked Data](#) (price: \$175) which forms part of the Certificate in XML and RDF-Based Systems.

"[Semantic Web for the Working Ontologist](#)" by Dean Allemang and Jim Hendler is a book highly recommended by many LOD practitioners. It can be purchased in print or as e-book.

5. Tools

The environmental scan did not focus on tools specifically, however, the Website, video tutorials and books on using LODRefine/OpenRefine do contain easy to understand Linked Data introductions, plus examples from libraries, archives, and museums, as well as an explanations on how to get existing data linked data ready, see [Free Your Metadata](#) (Videos) and publications, especially "[Linked Data for Libraries, Archives and Museums](#)", available in print only.

6. Online Courses

The environmental scan also lists two online courses. Zepheira's "[Linked Data and BIBFRAME Practical Practitioner Training](#)" has already been mentioned above under BIBFRAME. Another series of courses worth pointing to is The Library Juice Academy's [Certificate in XML and RDF-based systems](#), consisting of 6 courses (\$175 each). This 6-course program covers XML, XSLT,

Xquery, general Semantic Web introduction, RDFa, Ontologies and Linked Data. The classes provide a solid foundation upon which the participants can build further on their own.

7. Projects

There are two projects aimed at educating professionals in the use of Linked Data. One is the European [EUCLID](#) (Educational Curriculum for the usage of Linked Data) project. The other is the [Learning Linked Data](#) project. This project is more specifically aimed at educating information professionals and is continuing as *Linked Data for Professional Education (LD4PE)* under an IMLS grant through December 2016. The institutional lead for this project is the University of Washington. The portal, the [LD4PE Linked Data Exploratorium](#), is now available.

8. Conclusion

We don't believe that additional Linked Data introductions need to be developed at this point. There are several good resources already freely available online. The continuation of the Learning Linked Data project, called *Linked Data for Professional Education (LD4PE)*, looks promising and we recommend closely monitoring the outcome of this project. It is aimed at putting the available learning resources into context and improving discovery of appropriate training. However, developing a practical course for PCC catalogers in BIBFRAME and BIBFRAME tools may be necessary once the vocabulary has stabilized.

This report lists the best available resources in English that are known to the members of the Standing Committee on Training as of August 5, 2015. Keeping the list of Linked Data resources updated will prove to be challenging. Instead of duplicating work by maintaining our own collection of Linked Data learning and training resources, the PCC SCT instead recommends contributing to other existing initiatives, such as the above mentioned *Linked Data for Professional Education (LD4PE)* project, as the best way forward. The Standing Committee on Training has been in communication with the LD4PE Project Director, Mike Crandall, who is receptive about future collaboration.