

Take the LAM Data, Your Imagination and Run with It: A Grant Report to BI International.¹
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“The Semantic Web isn't just about putting data on the web. It is about making links, so that a person or machine can explore the web of data.”

Sir Tim Berners-Lee (2009)

<http://www.w3.org/DesignIssues/LinkedData.html>

“I/We believe that everyone benefits from the visibility of libraries and their content on the Web.”

Dr. Eric Miller. SWIB14 (2014)

http://swib.org/swib14/slides/miller_swib14_57.pdf

My participation at SWIB14 Conference³ would not be possible without the generous support from BI- International.⁴ Thank you very much for giving me such a wonderful opportunity and funding to attend SWIB for the first time. I would also like to give many thanks to the SWIB Programme Committee.⁵ The programs were excellent and the hands-on workshop, *Introduction to Linked Open Data*, was wonderful for the firsthand experience of linked data applications. Getting to network and connect with new colleagues over delicious meals and coffee breaks was also a major plus. A few years from now, when I look back at SWIB14, I believe that it will be marked as a great turning point in my career.

In my grant application, I wrote that my goal for attending this conference was to learn about linked data and to plan for additional training for my staff in Cataloging and Metadata Unit at my university libraries. At the end of the conference, I realized that what I learned had much wider impact; for the whole libraries. Thus what I gained from SWIB14 was beyond my expectation. As a result, I decided to write a briefing paper on linked data and Semantic Web in libraries and recommendations to my libraries' administration on action plans for my own staff's training, possible projects to apply linked data and for the libraries' assessment and planning for the transition to BIBFRAME and post-MARC changes to come. I emphasized in the paper that it is an imperative for the libraries to draft a plan for actions to prepare for these changes sooner than

¹ All the websites included in this report were accessed on January 3, 2015.

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³ *Semantic Web in Libraries Conference (SWIB14)*, Friedrich Ebert-Stiftung, Bonn, Germany, December 1-3, 2014. <http://swib.org/swib14/index.php>

⁴ Bibliothek & Information International (BI-International): <http://www.bi-international.de/>

⁵ SWIB Programme Committee: <http://swib.org/swib14/index.php>

later. In addition, I set my own goal to come back as a presenter at SWIB15 in Hamburg, Germany.

For other benefits from attending SWIB14, here are the highlights:

1. **The workshop: Introduction to Linked Open Data.**⁶ I took an introductory course on XML and RDF over a year ago. The workshop gave me an opportunity to brush up my (rusty) coding skills, as well as to learn how the triples store and SPARQL query language work with RDF codes.

2. **Linked Open Data (LOD) Projects.** SWIB14 presentations⁷ introduced me to new applications and projects to explore, especially for the mainstream library operations, such as, Viewshare⁸ and BIBFLOW⁹ at the University of California – Davis University Library. I hope to apply these projects' concepts and tools to some potential projects at AUC Libraries. Annotation¹⁰ is another feature that I would like to explore adding to Viewshare, if feasible. SKOSMOS¹¹ has a potential for a project to create a mini-thesaurus for local geographic names used in local maps and architectural plans in Cairo, Alexandria and some other parts of Egypt. Not the least were references throughout the conference on Libhub Initiative,¹² LOD projects in GitHub,¹³ and Zepheira's training information.¹⁴ Unfortunately, due to my planned annual leave days in January 2015, I could not take advantage of the special discount offered by Zepheira at this time. But I will certainly check out BIBFLOW as a model to analyze our libraries' functions to assess our readiness for the transition to BIBFRAME and LOD. Beyond the libraries, SWIB14's presentations on LOD and Semantic Web projects and applications, such as BBC's and other projects, gave me a better perspective on the potential of linked data and how the Semantic Web can be actualized in various contexts.

⁶ We used three metadata sources and our own to mark up the page: FOAF, DBpedia, Dublin Core and the local data, <blank>, we added ourselves. We also used RDF Turtle: <http://www.w3.org/TR/turtle/#predicate-lists> and stored our 'triples' at the Triples Store at: <http://db.graphthinking.com>

⁷ SWIB14's presentation slides added to the programme: <http://swib.org/swib14/programme.php>

⁸ Library of Congress. [2011]. *Viewshare*. Washington, DC: LoC. <http://viewshare.org/>

⁹ University of California-Davis University Library and Zepheira. 2015. *BIBFLOW*. Davis, CA: UC-Davis. <http://www.lib.ucdavis.edu/bibflow/>

¹⁰ Whaley, Dan. 2014. *All knowledge, annotated*. Bonn, Germany: SWIB14 Conference. http://swib.org/swib14/slides/whaley_swib14_51.pdf

¹¹ Ylikotila, Henri and Osma Suominen. 2014. *Publish your SKOS vocabularies with Skosmos*. Bonn, Germany: SWIB14 Conference. http://swib.org/swib14/slides/ylikotila_swib14_12.pdf

¹² Zepheira LLC. 2014. *Libhub Initiative*. Reston, VA: Zepheira. <http://www.libhub.org/>

¹³ GitHub, Inc. 2015. GitHub. [San Francisco, CA]: GitHub. <https://github.com/>

¹⁴ Zepheira LLC. 2014. *Zepheira Linked Data and BIBFRAME practical practitioner training*. Reston, VA: Zepheira. <http://zepheira.com/solutions/library/training/>

3. The Alignment between BIBFRAME and Schema.org. At first, I learned about these two schemas as the parallel development. SWIB14 presentations by Eric Miller,¹⁵ Zepheira's President, and Richard Wallis,¹⁶ OCLC's Technology Evangelist, alerted me to the plan to align the two schemas. After the conference I searched for more information on BIBFRAME and Schema.org and discovered Godby's paper¹⁷ analyzing this alignment. Without attending SWIB, I would be oblivious to this connection of the two schemas. But to be fair, the year 2013 was an extraordinary year for me when I took a grand adventure to become a new Head of Cataloging and Metadata at the American University in Cairo Libraries in Egypt, where I hardly know the language, Egyptian Arabic, nor the Egyptian culture, except for the popular knowledge on the Ancient Egypt. We were also in the midst of RDA's implementation and reorganization at AUC. Therefore I did not have much time beyond following RDA's and BIBFRAME's development amidst the occasional chaos and violence around us in Egypt during the past one and a half years.

4. Planning for the post-MARC future. SWIB14 gave me a pause and a reason to carve out my time to do research on the larger context of BIBFRAME, Linked Open Data, Semantic Web and the future direction for my libraries. That exploration resulted in a briefing paper¹⁸ with the background information on these concepts and my recommendations to the libraries' administration on the transition planning for my own unit and for the libraries as a whole.

The paper covers the following topics: introduction to Semantic Web and Linked Open Data (LOD), LOD and BIBFRAME in libraries, LOD applications and LOD's computing/data architecture model and the action items for AUC Libraries. The action items include the future challenges and opportunities for libraries and cultural organizations in the LOD environment with my recommendations for AUC Libraries' planning for transition to BIBFRAME and to LOD environment. Specifically, my recommendations stress the needs of training for basic skills in XML and RDF for my staff. I also proposed a few projects we can experiment with.

5. Semantic Web and artificial intelligence (AI). At the metaphysical level, there is a deeper context of LOD and Semantic Web. An article¹⁹ featured in *MIT Technology Review* on the founding of Zepheira and the influence of artificial intelligence on its operation made me ponder

¹⁵ Miller, Eric. 2014. *Moving from MARC: how BIBFRAME moves the Linked Data in Libraries conversation to large-scale action*. Bonn, Germany: SWIB14 Conference. http://swib.org/swib14/slides/miller_swib14_57.pdf

¹⁶ Wallis, Richard. 2014. *Entification: the route to 'useful' library data*. Bonn, Germany: SWIB14 Conference. http://swib.org/swib14/slides/wallis_swib14_2.pdf

¹⁷ Godby, Carol Jean. 2013. *The Relationship between BIBFRAME and the Schema.org 'Bib Extensions' model: a working paper*. Dublin, OH: OCLC. <http://www.oclc.org/content/dam/research/publications/library/2013/2013-05.pdf>

¹⁸ Panigabutra-Roberts, Anchalee. 2014. *BIBFRAME, Linked Open Data and the Semantic Web in Libraries: the implication for AUC Libraries*. Unpublished briefing paper.

¹⁹ Borland, John. 2007. "A smarter Web: new technologies will make online search more intelligent—and may even lead to a "Web 3.0." *MIT technology review*, March/April 2007. <http://www.technologyreview.com/featuredstory/407401/a-smarter-web/>

the Web and linked data at the philosophical level, especially on the human - machine relationship. Whereas the popular culture in films such as, *2001: A Space Odyssey*,²⁰ *the Matrix Trilogy*,²¹ or a concept such as singularity,²² have been given AI and computer technology a bad rap, the Semantic Web and LOD, particularly in the LAM communities, have been built by leveraging the capabilities that human and machine, together, can create a better connected world. The world in which is based on the ideals of openness, sharing and collaboration. There is a certain beauty and deeper meaning in this approach to the Semantic web and its version of AI. The negatives exist, certainly, from the terrorists using social networks, web news of tragedies and disasters, governments' control on the freedom of information and expression, violation of privacy, and so on. On the other hand, the Web's content on arts, cultures and innovation has proliferated over the years to advance ideas and to uplift human experience. And the fact that we can stay connected across the different time zones and geographical barriers instantaneously speak volumes of the Web's benefit. We cannot always dwell on the dark side of the moon. The sun is there for us too. Thus I will continue to focus on the positive effects of LOD and Semantic Web on the libraries and the world.

On that note, SWIB14 Conference called upon all of us to re-imagine the libraries, archives and museums (LAM) as Linked Open Data resources on the Web. We need to let our LAM data be free and linkable in RDF format. We need to move beyond the relational databases and records to think in terms of data objects and their relationships. Our keynote speakers asked us to break down the silos of our LAM organizations and mash LAM data up into new shapes, to multiply our interpretation, cool visualization tools, and to allow for data mining and analyses. SWIB14 also introduced me to new colleagues who work on interesting LOD and Semantic Web projects at their organizations. They inspired me to plan for my own LOD projects. And I wholeheartedly agreed with Eric's tweet on December 4, 2014:

And finally thanks to all for such a brilliant event. [#swib14](#) was one of the best Semantic Web meets Library conferences i've ever attended. @erimille

In closing, from the Memex²³ to Linked Open Data and the Semantic Web, I have been a part of this journey and look forward to the ride into the future with like-minded colleagues. The Semantic Web, for some, may seem like a pipe dream, but, collectively, we may get there together, one code at a time.

²⁰ *2001: a space odyssey*. 1968. United States: MGM Studio.

²¹ *The matrix*. 1999. Burbank, CA: Warner Bros. Pictures; *The matrix reloaded*. 2003. Burbank, CA: Warner Bros. Pictures; and *The matrix revolutions*. 2003. Burbank, CA: Warner Bros. Pictures.

²² Kurzweil, Ray. 2005. *The singularity is near: when humans transcend biology*. New York: Viking.

²³ Bush, Vannevar. 1945. "As we may think". *Atlantic*. 176 (1). <http://theatl.in.tc/1ahQVW2>