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Beyond the Library Catalogue: Connecting Library Metadata to Wikidata

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Keywords: Wikidata; Semantic Web; Library Metadata; Library Catalogue; Wikimedia Projects; Libraries; Open data

Abstract
In this era of semantic web, libraries can leverage the power of Wikdata to enhance the discoverability of their resources, foster interoperability, as well as empower information seekers to navigate a richer and vast network of knowledge bases. This study adopted the review method to theoretically examine the concept of Wikidata and how libraries could benefit from

the technology by linking their metadata to the global knowledgebase, so as to increase the visibility and discoverability of library materials. The study X-rayed the application of Wikidata in libraries, particularly in the area of increasing visibility and discoverability of library of resources. With Wikidata, libraries could create a web of interconnected knowledge bases that transcends boundaries. It emphasized the importance of integrating Wikidata into libraries, as this could help to shape the open knowledge ecosystem and empower libraries to better serve their user communities in an ever-changing World. The study further advocates for the adoption of Wikidata in libraries so as to project library resources for the greater good of mankind.

Introduction

Libraries are known to be a warehouse of knowledge, housing diverse kinds of information resources. A distinctive characteristic of libraries is that information resources are organized following a standard classification and cataloguing system. However, to ensure the discoverability and easy retrieval of resources from the library, librarians prepare a metadata of all resources in the library. According to the national information standards organization as cited in Carnegie Mellon University Libraries (2023), a ”metadata refers to structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource.” It is a structured information that allows library users to identify, locate, and retrieve a resource from the library (Kardos, 2022).

The existence of metadata in libraries ensures that libraries are able to effectively practice the laws of Library Science as propounded by Ranganathan. Overall, the importance of metadata in libraries cannot be overemphasized, as they not only help in the retrieval of information resources in the libraries, but also facilitate the organization, indexing, discovery, analysis, and use of the information resources.

Although library metadata offers a clear pathway to accessing the information resources in the library, poor accessibility to the metadata itself could pose a threat to accessing library materials. While it is important for libraries to develop their own metadata, it is equally extremely important for the metadata to be visible and accessible to all library users. Even with the advent of diverse forms of information technologies, many libraries still battle with poor visibility of their bibliographic records. There is also the challenge ofmany libraries having their bibliographic records in silos which further disconnect one information system from another, thereby limiting the flow of information and reducing the accessibility of library data. However, a novel technology that could help address these limitations and amplify the visibility and accessibility of library metadata is Wikidata. Being a linked data technology, Wikidata is able to work with structured data to connect several knowledge base or metadata repositories together (Evenstein Sigalov & Nachmias, 2023).

Understanding Wikidata

Wikidata is an open knowledge base of structured linked data that can be edited by humans and machines alike (Odell, Lemus-Rojas and Brys, 2022). As a sister project to Wikipedia, Wikivoyage, Wikiquote and other Wikimedia projects, Wikidata was launched in 2012 and it is powered by the MediaWiki API extension. As with Wikipedia, Wikidata offers multilingual benefits, as it can be edited in over 300 languages (Malyshev et al., 2018). As explained onWikidata.org (2024), Wikidata can be described as a free, collaborative, and multilingual knowledge base of linked data that can be edited by humans and machines. The technology represents a powerful tool for improving information discovery and interoperability as it typically contains linked structured data about entities such as people, places, and things.

As observed by Ford and Iliadis (2023), Wikidata is a fact facilitating infrastructure that is being linked to other web technologies, including search engines and virtual assistants. In fact, the interconnectivity with other platforms like Google, Alexa, Amazon, Apple, IBM, and OpenAI enhances the visibility and discoverability of contents in it, hence, offers a new level of discoverability for libraries.

Moreover, Evenstein Sigalov and Nachmias (2023) observed that a key feature of Wikidata is its ability to integrate different data knowledge bases following a well-defined data model. The interaction with Wikidata allows users to engage in crucial tasks such as data curation and data extraction using different tools and techniques (Evenstein Sigalov & Nachmias, 2023). In order to effectively engage Wikidata, it is important for Wikidata users to understand the core components of the data structure in Wikidata. This typically includes Wikidata item and label (that is the main subject of Wikidata entries, representing concepts, objects, places, institutions, people, amongst others); properties (this is typically recognized with a unique P-code). Properties in Wikidata help describe the attributes of the Wikidata item and can include different data types such as numbers, text, date, or even geographic coordinates. The Wikidata's data structure also includes statements. Statements in the context of Wikidata typically consists of an item, property, and a value. In fact, statements in Wikidata refer to key-value pairs that link items to properties and provide specific values for those properties. This data structure allows for complex data relationships and rich interconnected data.

What Makes Wikidata Suitable for Library Metadata?

As a collaborative knowledgebase of linked open data, Wikidata offers many benefits and are suitable for GLAM (Galleries, Libraries, Archives, and Museum) institutions, especially in building linking bibliographic records. Tharani (2021) noted that the Wikidata technology allows libraries to link local metadata to the global knowledge, thereby enhancing the visibility and discoverability of the materials in the library. In fact, the Wikidata infrastructure is suitable for library cooperation as libraries are able to share and link their bibliographic records with other libraries.

As observed by Tharani (2021), integration and interoperability of authority data are two of the many reasons why Wikidata is suited for libraries and other GLAM institutions.

Furthermore, Aycock (n.d) noted that Wikidata is used among GLAM communities for cooperative cataloguing practice and increasing visibility of collections on the shelf. Ultimately, Wikidata helps bring better visibility to affiliated persons, organizations, and collections in an institution. Moreso, Nkiko and Okuonghae (2021) observed that the Wikidata is suitable for the 21st century library as it enhances the visibility and discoverability of library collections, as well as interoperability among libraries. With Wikidata, the share ability and usability of library data is enhanced. In addition, Lemus-Rojas and Pintscher (2018) maintained that Wikidata query service (SPARQL query service) offers great potentials for analyzing and querying library data. Given that the Wikidata is a data based of structured linked data, libraries can easily query and analyze their bibliographic data using the SPARQL query service. Thus, making the technology a suitable match for library operations.

Linking Library Metadata to Wikidata: Answering the "How"

Although anyone with a computer and internet can edit Wikidata, linking library metadata to Wikidata requires a bit more knowledge about the Wikidata structure and properties. As with Wikipedia, there are often several ways to achieve a result in Wikidata, including in linking library metadata to Wikidata. Ultimately, library bibliographic records could be linked to Wikidata using either the manual approach or the batch upload approach using the Wikidata Quick statements.

Manually create Wikidata items: One way to link library metadata to Wikidata is by creating Wikidata items for each of the bibliographic records and adding an external identifier to link the resources back to its origin or back to where it can be found. The advantage with this method is that librarians are more likely to get more precise and accurate data since each record is entered one after the other.

Batch Upload Using the Wikidata Quick statement: batch upload of library bibliographic record is also allowed in Wikidata by using a Wikidata tool known as Quick statement. Quick statement allows for the creation and linking of multiple records to Wikidata at a go. The method is faster compared to the manual method and it is often adopted by big libraries. Although, precision and accuracy level of the batch upload is often lower than the manual method.

Libraries Connecting their Metadata to Wikidata: Practical Examples

There are several practical examples of the use of Wikidata in promoting library metadata. In fact, different types of libraries have embraced the idea of connecting their data to the global knowledge base of linked open data. For instance, the National Library of Wales has linked thousands of items to Wikidata for im-

proved visibility and easy access to tools for querying and visualizing the collections (Evans, 2023). The library also uses Wikidata to create interactive timelines of its collections. Furthermore, the University of Texas Libraries has created over 1,000 items for its Benson Latin American Collection on Wikidata by using a tool called Mix'n' match that matches external catalogues with Wikidata entries. In addition, Williams (n.d) noted that the London School of Economics Library has connected part of its bibliographic records to Wikidata so as to improve discoverability and linking them to other sources such as VIAF, ISNI, LCNAF.

Moreover, several pilot programs have been set up in different libraries across the world. In 2023, a team of Wikimedians in Nigeria organized a Wikibase Pilot project in Nigerian libraries (https://meta.wikimedia.org/wiki/Wikibase_in_Nigerian_Libraries). In the same vein, the Smithsonian libraries organized a PCC Wikidata pilot project to link the library data to Wikidata.

Challenges to Connecting Library Metadata to Wikidata

As with other technologies, the adoption of Wikidata in libraries is faced with several challenges, including among libraries from the global north. A common challenge with connecting library metadata to Wikidata is the issue of sustainability. The responsibility of linking library metadata to Wikidata is not a one-off affair. As libraries increase in collections, so will their bibliographic data increase. However, more often than not, it is difficult to keep editing Wikidata or linking library metadata to Wikidata because the action does not support daily library routine. Hence, it is difficult to sustain the practice. Another glaring challenge to connecting library metadata to Wikidata is that it is time consuming. Whether items are manually created or the batch upload method is adopted, the process involved in linking library metadata requires significant amount of time. This can be problematic especially in libraries with limited staff strength. The implication of this is that it is likely to negatively impact other library services. The processes involved in connecting library bibliographic records to Wikidata require the librarian to learn new skills (Wikidata skills) and these are often not taught in library schools.

In addition, there is the issue of lack of control over data that is being shared. A situation where the library does not have control over the global knowledge graph and cannot easily delete records at will poses a serious challenge and in fact, may hinder many libraries from embracing the innovation.

Conclusion

The promise of Wikidata extends across libraries worldwide, offering substantial prospects for the future of information management. connecting library metadata to Wikidata offers numerous benefits for libraries, especially in the area of discoverability of information resources, collaboration and resource sharing,

amongst others. Given that the future favours linked open data, connecting library metadata to Wikidata is now a matter of necessity rather than a mere option.

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Poza katalogiem bibliotecznym: łączenie metadanych bibliotecznych z Wikidata

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Omorodion Okuonghae jest dyrektorem ds. usług e-bibliotecznych na Uniwersytecie Glorious Vision w Ogwa w stanie Edo w Nigerii. Uzyskał tytuł licencjata i magistra bibliotekoznawstwa i informacji naukowej na Uniwersytecie Stanowym Delta w Abraka w Nigerii. Opublikował liczne publikacje naukowe w renomowanych krajowych i międzynarodowych czasopismach z zakresu bibliotekoznawstwa i informacji naukowej. Wygłaszał również referaty na wielu konferencjach lokalnych, krajowych i międzynarodowych. Omorodion otrzymał kilka nagród i wyróżnień, w tym nagrodę „Najlepszy prezenter referatu" na 57. konferencji i dorocznym walnym zgromadzeniu Nigeryjskiego Stowarzyszenia Bibliotek oraz ogólne wyróżnienie dla najlepszego absolwenta na Wydziale Bibliotekoznawstwa i Informacji Naukowej Uniwersytetu Stanowego Delta w Abraka w Nigerii. Omorodion jest pasjonatem bibliotekarstwa, nowych technologii w bibliotekach, umiejętności informacyjnych i komunikacji naukowej. Jest członkiem NLA. Google Scholar: https://scholar.google.com/citations?hl=pl&user=SXYe37MAAAAJ

Słowa kluczowe: Wikidane; Sieć semantyczna; Metadane biblioteki; Katalog biblioteczny; Projekty Wikimedia; Biblioteki; Otwarte dane

Streszczenie: W erze sieci semantycznej, biblioteki mogą wykorzystać moc Wikdata, aby zwiększyć wykrywalność swoich zasobów, wspierać interoperacyjność, a także umożliwić osobom poszukującym informacji poruszanie się po bogatszej i rozległej sieci baz wiedzy. W tym badaniu przyjęto metodę przeglądu do teoretycznego zbadania koncepcji Wikida-

nych i tego, w jaki sposób biblioteki mogą skorzystać z tej technologii poprzez powiązanie swoich metadanych z globalną bazą wiedzy, aby zwiększyć widoczność i wykrywalność materiałów bibliotecznych. W badaniu prześwietlono zastosowanie Wikidanych w bibliotekach, szczególnie w obszarze zwiększania widoczności i wykrywalności bibliotek zasobów. Dzięki Wikidanym, biblioteki mogą stworzyć sieć wzajemnie połączonych baz wiedzy, które przekraczają granice. Podkreślono znaczenie integracji Wikidanych z bibliotekami, ponieważ może to pomóc w kształtowaniu otwartego ekosystemu wiedzy i umożliwić bibliotekom lepsze służenie społecznościom użytkowników w ciągle zmieniającym się świecie. Badanie dodatkowo rekomenduje przyjęcie Wikidanych w bibliotekach w celu projektowania zasobów bibliotecznych dla większego dobra ludzkości.

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Jenseits des Bibliothekskatalogs: Verknüpfung von Bibliotheksmetadaten mit Wikidata

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Schlüsselworte: Wikidata; semantische Netzwerke; Bibliotheksmetadaten; Bibliothekskatalog; Wikimedia-Projekte; Bibliotheken; offene Daten

Zusammenfassung: In der heutigen Zeit der semantischen Netzwerke können die Bibliotheken die Macht von Wikidata nutzen, um die Auffindbarkeit ihrer Sammlungen zu erhöhen, die Interoperabilität zu unterstützen und den Informationssuchenden die Navigation

durch ein reichhaltigeres und umfassenderes Wissensnetzwerk zu ermöglichen. In dieser Studie wurde eine Übersichtsmetode verwendet, um theoretisch das Konzept von Wikidata zu untersuchen, aber auch das, wie Bibliotheken von dieser Technologie profitieren könnten, indem sie ihre Metadaten mit einer globalen Wissensdatenbank verknüpfen, um die Sichtbarkeit und Auffindbarkeit von Bibliotheksmaterialien zu erhöhen. Die Studie beleuchtet die Anwendung von Wikidata in Bibliotheken, insbesondere im Bereich der Erhöhung der Sichtbarkeit und Auffindbarkeit von Bibliotheksressourcen. Mit Wikidata könnten Bibliotheken ein Netzwerk verknüpfter Wissensdatenbanken schaffen, das Grenzen überschreitet. Die Bedeutung der Integration von Wikidata in Bibliotheken wird hervorgehoben, da dies zur Gestaltung eines offenen Wissensökosystems beitragen und den Bibliotheken eine bessere Unterstützung der Nutzergemeinschaft in einer sich ständig verändernden Welt ermöglichen könnte. Die Studie befürwortet auch die Einführung von Wikidata in Bibliotheken zur Verwaltung von Bibliotheksressourcen zum Wohl der Menschheit.