innovative
a ProQuest Company

WHAT IS **BIBFRAME** AND HOW IT **POSITIONS YOUR LIBRARY FOR THE FUTURE**

TECHNOLOGY HAS PROGRESSED A LOT IN THE PAST 50 YEARS, **AND SO HAVE THE EXPECTATIONS OF LIBRARY USERS.**

Let's take a time machine back to the late 1960s. Lyndon Johnson was president. Vietnam War protesters marched on the Pentagon. The Beatles' "Hey Jude" topped the pop charts. And a computer scientist named Henriette Avram worked with a small team to develop library cataloging data that computers could read.

When Avram delivered the finished product—MARC (Machine-Readable Cataloging)—to the Library of Congress in 1968, it revolutionized library services. Suddenly, library collections could be managed and accessed through a few keystrokes. But as valuable as MARC has been to the library community, technology has progressed a lot in the past 50 years, and so have the expectations of library users.

When MARC was developed in the 60s, computers were bigger than refrigerators and the inventor of the World Wide Web, Tim Berners Lee, was still playing with Tonka trucks and G.I. Joes. Today, the average person spends nearly seven hours online every day, and we carry personal computers around in our pockets.[1]

Unfortunately, these drastic technological changes mean that MARC isn't equipped to serve current library users or carry libraries into the future. Is there a cataloging standard that can bring bibliographic data into the internet age? **The answer is yes—BIBFRAME.**

THE BIRTH OF **BIBFRAME**

When the internet and personal computers exploded in popularity at the start of the new millennium, MARC's weaknesses became impossible to ignore. In his 2002 article "Marc Must Die," library technologist Roy Tennant said that MARC prevented libraries from meeting the current and future needs of library users because it was incompatible with modern programming languages.[2]

In 2008, the Library of Congress Working Group issued a report on the future of bibliographic control that agreed with library technologists like Tennant, saying that MARC was "out of step with programming styles of today."[3]

The Library of Congress Working Group was ready to develop an alternative that would position library technology for the future.[3] This alternative had to work for today's and tomorrow's user. To do that, it needed to help libraries provide relevant, interconnected information in the most convenient, helpful and user-friendly way possible.[3] It also needed to be compatible with the research tools people were using most (like Google) and have a flexible format that could easily adapt as user needs and technology evolved.[3]

In May 2011, The Library of Congress officially launched that alternative: **The Bibliographic Framework Initiative (BIBFRAME).**[4] The main purpose of the project was to convert MARC 21 format to a Linked Data model.[5]

> THE LIBRARY OF CONGRESS WORKING GROUP WAS READY TO DEVELOP AN ALTERNATIVE THAT WOULD **POSITION LIBRARY TECHNOLOGY FOR THE FUTURE.**

WHAT EXACTLY IS BIBFRAME?

Since its launch in 2011, BIBFRAME has been a buzzword in the library industry. But what exactly is it?

BIBFRAME is a descriptive data model that makes library resources visible online. It uses three core classes for bibliographic description:[6]

BIBFRAME

WORK

The creative, intellectual content being cataloged *(includes information like authors, languages and what it is about).*
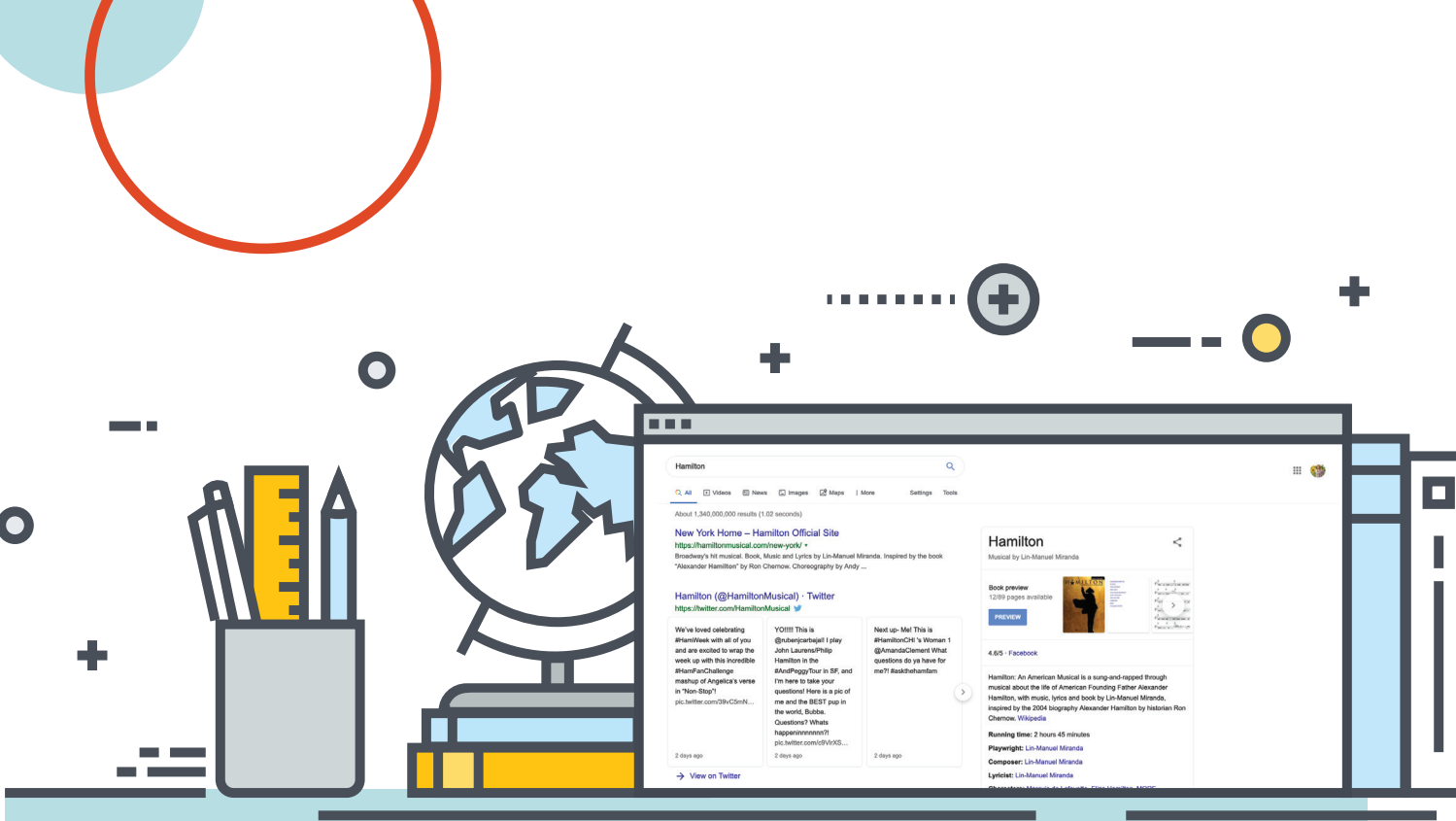
INSTANCE

The physical embodiment of the work *(includes information like publisher, place and date of publication and format).*
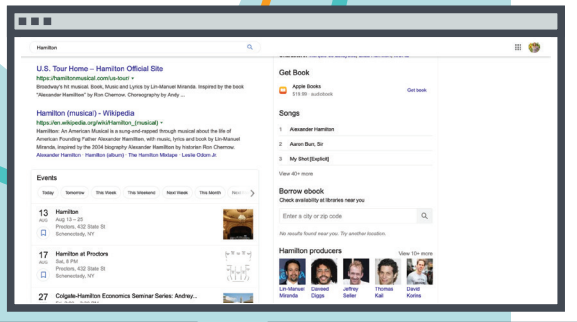
ITEM

The actual copy of an instance being cataloged *(includes information like location, shelf mark and barcode).*

The purpose of BIBFRAME is to make library metadata more useful inside and outside the library community by exposing, sharing, and connecting pieces of data, information, and knowledge on the Semantic Web using Linked Data principles.[6;7] That means, to fully understand BIBFRAME, you also have to understand the Semantic Web and Linked Data.

The **Semantic Web** is an extension of the traditional web you're already familiar with. However, on the Semantic Web, information follows specific principles and is coded in a way that allows machines to understand its meaning, rather than simply report data based on keywords. Once information is organized through semantic web principles, related information can be linked together, creating what's known as Linked Data.[8]
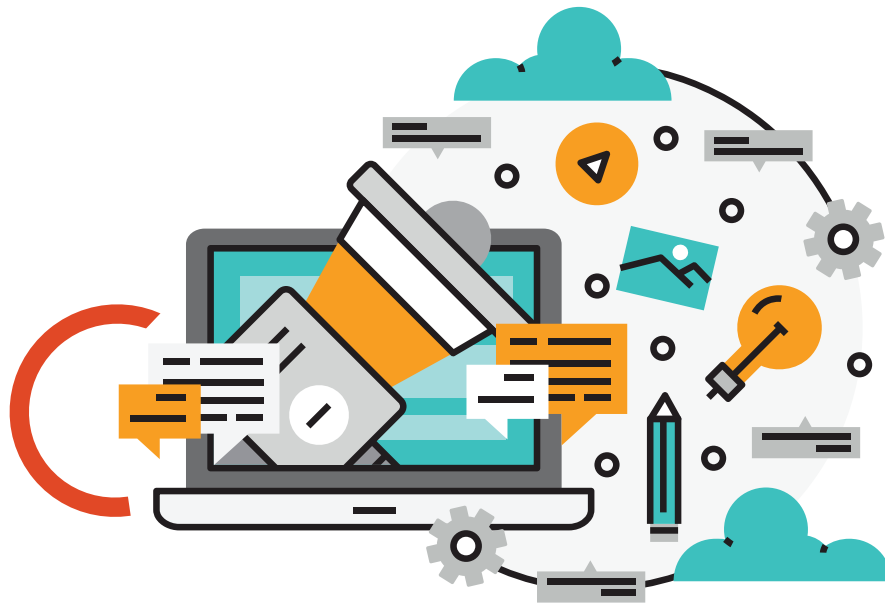
Here's an example of the Semantic Web in action: If you Google "Hamilton," you get a list of times the play is showing in your city, a link to the book, a list of songs in the play, ways to borrow the eBook and other potentially helpful information in the sidebar of your search page.

HOW DOES GOOGLE KNOW TO COMPILE THIS RELEVANT INFORMATION FROM DIFFERENT PARTS OF THE WEB?

Well, through semantic web principles, "Hamilton" is assigned a unique identifier called a universal resource identifier (URI). So is every other play, book, person, etc. on the web. When the people producing information on the web use these unique identifiers and other Semantic Web principles, machines understand the information they're creating and can connect related information.

Libraries already have large collections of rich metadata that can be shared on the web and connected to other relevant resources. But that metadata needs to be converted to a language machines outside of the library industry can understand, so search engines like Google can find this information and link it to related data on the web. That's where BIBFRAME comes in.

BIBFRAME BRINGS BIG ADVANTAGES

Anyone who works in the library industry knows that changing the library cataloging standards that have been in place for 50 years won't be easy. But there are plenty of reasons why the transformation of Marc to BIBFRAME will bring big advantages to libraries:

BIBFRAME
MAKES LIBRARY DATA INTERNET READABLE.

As you saw with the "Hamilton" example, BIBFRAME can make library data accessible on the web in a way that MARC can't. Say a high school student searches Google for "The Great Gatsby," because she needs to read it for English class. Her local library may own several copies. But if her library's record for the book is created in MARC, she'd never know this from her Google search. Her library won't turn up anywhere in the search results. That's because MARC data can't be indexed by search engines. But BIBFRAME uses data standards and programming languages like Extensible Markup Language (XML), Resource Description Framework (RDF) and universal resource identifiers (URIs) to make library data compatible with the Semantic Web.[9] As a result, library data can be read directly by computers, found in internet searches and attract new users.

MARC records aren't designed to easily make connections between one record and another, let alone resources and information outside the library catalog. But BIBFRAME treats authorities as objects with resources, concepts and people linked to them— both inside and outside the library collection.[10] This allows users to make useful connections between resources and uncover rich networks of information.

BIBFRAME MAKES IT **EASIER TO CREATE CONTEXT.**

BIBFRAME COULD **MAKE IT EASIER TO CATALOG COMPLEX RESOURCES** LIKE SERIALS, AUDIOVISUAL MATERIALS, AND RARE BOOKS/ MANUSCRIPTS.

While MARC, AACR2, and RDA make it easier to catalog books, the same is not true for more complex colletions like serials, audiovisual materials, and rare books/manuscripts.[10] But BIBFRAME's more flexible and still-evolving format offers the opportunity to better accommodate these resources. Unlike MARC, BIBFRAME's framework creates a distinct separation between the physical properties of a resource and its intellectual contents, and each element in a BIBFRAME record is an independent piece of data.[10] This structure gives catalogers more autonomy in how they choose to describe more complex resource types.

BIBFRAME IN ACTION:
PRESENT AND FUTURE

In 2015, the Library of Congress launched the first phase of its BIBFRAME pilot project. The library trained 40 of its catalogers in Linked Data and BIBFRAME, then had them create records in BIBFRAME.[6] The project was a success, and they launched the second phase of the pilot program in 2016 with 23 additional catalogers.

The Library of Congress also enlisted the help of early experimenters to test BIBFRAME and provide feedback.[10] Since then, the library has collected extensive feedback from early adopters and incorporated it into the BIBFRAME model to make it as user-friendly and efficient for libraries as possible. In fact, in 2016, the Library of Congress launched a new and improved version of BIBFRAME based on user feedback—BIBFRAME 2.0.[11]

With the Library of Congress propelling it forward, it's clear that BIBFRAME is the future of library cataloging. **But what will that future look like?**

As a Linked Data model, BIBFRAME's future will include milestones like:[11]

- **SHORT-TERM**
  Making library records visible online
- **MID-TERM**
  Building the network of libraries using BIBFRAME
- **LONG-TERM**
  Developing a rich network of data

If everything goes according to plan, BIBFRAME will eventually result in a large collection of interconnected, authoritative data from libraries across the country that is easy to access, promotes intuitive discovery for library users and helps expose new users to library resources.[11]

WHY **BIBFRAME** MATTERS TO YOU

It's only a matter of time before MARC is replaced by BIBFRAME, and library professionals need to begin preparing now for the transition. The Library of Congress isn't ready for libraries to make the mass exodus to BIBFRAME yet, but there will come a day when a cataloger creates the last MARC record.[6]

Change isn't easy. But the transition to BIBFRAME will ultimately help you serve your library users better. It will bring library records out of the online shadows, expose your library's resources to more people and help them uncover eye-opening connections between information and resources that they would have missed in a MARC-only world.

ENDNOTES

1   https://www.digitalinformationworld.com/2019/02/internet-users-spend-more-than-a-quarter-of-their-lives-online.html

2   http://soiscompsfall2007.pbworks.com/f/marc+must+die.pdf

3   https://www.loc.gov/bibliographic-future/news/lcwg-ontherecord-jan08-final.pdf

4   https://www.loc.gov/bibframe/pdf/marcld-report-11-21-2012.pdf

5   https://www.loc.gov/bibframe/news/bibframe-052212.html

6   https://www.emeraldinsight.com/doi/full/10.1108/LHT-06-2018-0085

7   http://www.loc.gov/bibframe/docs/BIBFRAME2-model.html

8   https://www.w3.org/RDF/Metalog/docs/sw-easy

9   https://www.emeraldinsight.com/doi/abs/10.1108/LHT-08-2017-0176

10 http://www.loc.gov/bibframe/faqs/

11 https://medium.com/library-link-network/linked-data-goals-for-the-future-a147829f75be

ABOUT INNOVATIVE

Innovative builds and delivers technology solutions that enable libraries to connect people with information all over the world. Innovative offers one of the most comprehensive portfolios of library automation products on the market today, serving academic, public, national, corporate, special libraries, and consortia. Headquartered in Emeryville, California, Innovative has a global presence—serving thousands of libraries in 66 countries and offices worldwide.

To learn how Innovative can help your library meet people with new experience for today's digital world, contact us at sales@iii.com.