

“A plain-language description of BIBFRAME and its potential impact on Canadian libraries”

For more than 15 years, there has been discussion within the global cataloguing community regarding the MARC record format, as well as increasing determination to replace MARC with a data model and vocabulary that can better accommodate description standards such as RDA (Resource Description and Access).

The Bibliographic Framework Initiative (BIBFRAME) is an initiative by the Library of Congress and international library community to replace MARC. To make bibliographic information more useful within and outside of the library community, BIBFRAME describes bibliographic resources using a linked data model. Linked data uses unique links that machines can understand to identify entities (including people, places, things, concepts) and relationships. When a machine looks up a link, it can retrieve not only properties such as what kind of entity (for example, a person, book, subject) the link describes, but the relationships between that entity and other entities.

Most of the library world currently relies on the MARC format to describe and encode bibliographic data. In the MARC format, all of the bibliographic data (authors, works, publishers, subjects, etc.) for a single resource are bundled together in a single record. MARC records are meant to be processed as standalone units, so they repeat data and have difficulty expressing explicit relationships with other resources. The relationship between different editions of a novel, its translations and film adaptations is often expressed only in textual notes that are challenging for machines to make sense of. For example, Figure 1 draws on real MARC records to represent the first edition of the novel *Anne of Green Gables* and its 1985 film adaptation starring Megan Follows. Even though the MARC records share the same title and subject matter, that descriptive data must be repeated in each of the corresponding MARC records.

MARC record 1	MARC record 2
Title: Anne of Green Gables	Title: Anne of Green Gables
Author: Montgomery, L. M. (Lucy Maud)	Producer: Sullivan, Kevin
Subjects: Friendship--Fiction Orphans--Fiction	Subjects: Friendship--Drama Orphans--Drama
Note: "First impression, April, 1908"--t.p. verso.	Note: Based on the novel by Lucy Maud Montgomery.

Figure 1: *Anne of Green Gables*--film and book representation in MARC

In contrast to MARC, [BIBFRAME's conceptual model](#) creates three levels of bibliographic data - Work, Instance, and Item, along with additional key concepts:

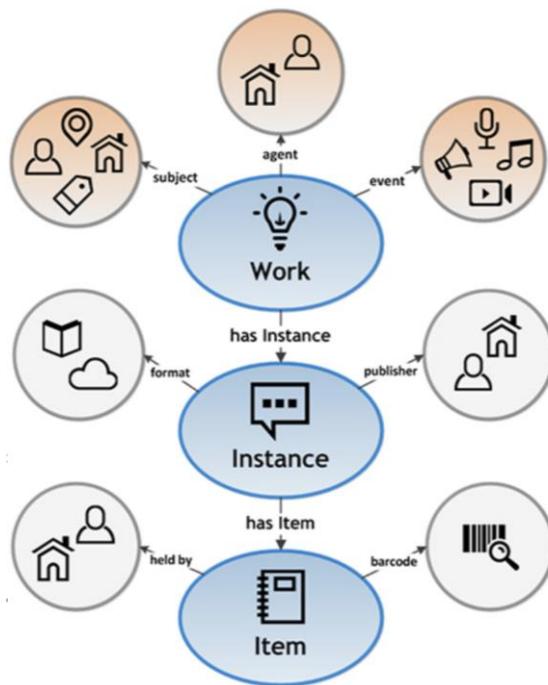


Figure 2a: Visual of BIBFRAME's three levels of bibliographic data and additional key concepts (Source: Library of Congress)

The BIBFRAME page on the Library of Congress website provides the following definitions for these three bibliographic data levels and additional key concepts:

<i>Work, Instance, and Item</i>	<i>Agents, Subjects, and Events</i>
<ul style="list-style-type: none"> • Work. The highest level of abstraction, a Work, in the BIBFRAME context, reflects the conceptual essence of the cataloged resource: authors, languages, and what it is about (subjects). • Instance. A Work may have one or more individual, material embodiments, for example, a particular published form. These are Instances of the Work. An Instance reflects information such as its publisher, place and date of publication, and format. • Item. An item is an actual copy (physical or electronic) of an Instance. It reflects information such as its location (physical or virtual), shelf mark, and barcode. 	<ul style="list-style-type: none"> • Agents. Agents are people, organizations, jurisdictions, etc. associated with a Work or Instance through roles such as author, editor, artist, photographer, composer, illustrator, etc. • Subjects. A Work might be “about” one or more concepts. Such a concept is said to be a “subject” of the Work. Concepts that may be subjects include topics, places, temporal expressions, events, works, instances, items, agents, etc. • Events. Occurrences, the recording of which may be the content of a Work

Figure 2b: Definitions of BIBFRAME's three levels of bibliographic data and additional key concepts (Source: Library of Congress)

A representation of our *Anne of Green Gables* book and film example in BIBFRAME could look something like the diagram in Figure 3. Both the Text (book) and MovingImage (film) Work entities relate to a unifying Work entity; that entity explicitly groups the works together. The unifying Work entity provides a single set of statements about the subject matter and title. The same entity states that the Agent “Lucy Maud Montgomery” is a creator of the set of related works, while the Text entity states a more refined relationship of author to the same Agent. Note that while the diagram uses text to represent the names of entities, relationships, and values, in a true BIBFRAME implementation most of these would instead be identified by links. Machines can then retrieve data about those links, including labels in different languages, to generate views that can be searched and understood by humans.

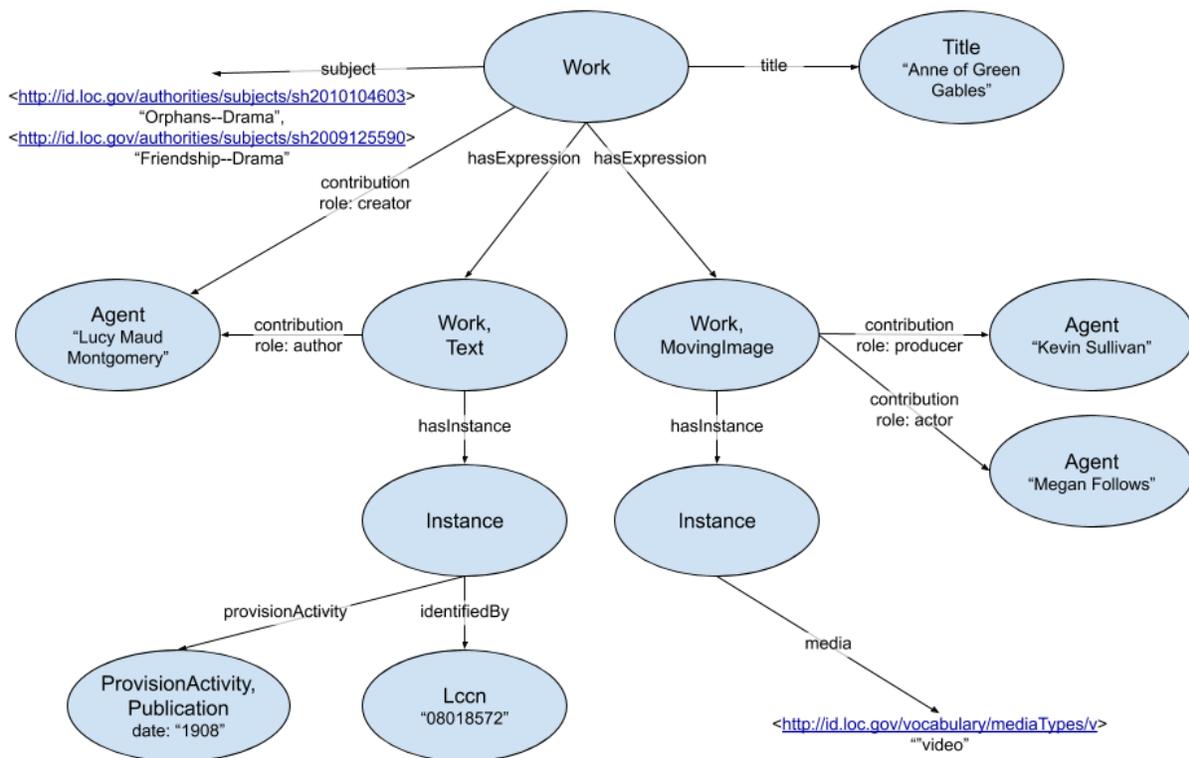


Figure 3: *Anne of Green Gables*--film and book representation in BIBFRAME

This careful separation of the data required to describe a bibliographic work into entities and their relationships generates very granular metadata. That metadata can then be used more efficiently within libraries and is more accessible and usable outside of libraries.

The [BIBFRAME Vocabulary](#) lists the specific classes and properties that are used to identify bibliographic entities and to describe the relationships among Works, Instances, Items, Agents, Subjects, Events, and more. Each of the classes and properties in the vocabulary is represented by a unique link to enable their use in linked data applications.

BIBFRAME adoption around the world

BIBFRAME is now seeing broader experimentation and implementation in the international community. The European library community has developed through the European BIBFRAME Workshops held in 2017 and 2018. The Swedish National Library became the first national library to fully transition to linked data with an implementation of BIBFRAME in July 2018. Linked Data for Production: Pathway to Implementation (LD4P2)¹ is the second phase of a collaborative project among four institutions in the United States of America, which is working alongside the Library of Congress and the [Program for Cooperative Cataloguing](#) (PCC) to make its work more extensible and sustainable by partnering with other PCC institutions working towards linked data implementation. The SHARE Virtual Discovery Environment (SHARE VDE) project will convert roughly 100 million MARC records from LD4P2 institutions, the library community, and the Library of Congress to BIBFRAME. Discovery of BIBFRAME data is being tested by the SHARE Virtual Discovery Environment, and the Blacklight discovery system is being developed through the LD4P2 project to provide an open source option for linked data discovery. Other work on implementation can be found on the Library of Congress [BIBFRAME implementation register](#).

What Does This Mean For Canadian Libraries?

The Library of Congress is implementing BIBFRAME and, due to the ongoing reliance on the Library of Congress for cataloguing leadership and standards in North America (and beyond), this decision will significantly impact Canadian libraries. Moreover, University of Alberta is currently working on implementation of BIBFRAME along with 20 other large research libraries in the LD4P2 cohort. A critical mass is emerging that indicates the beginning of the library community's transition from MARC to BIBFRAME. Although support will be in place for the MARC format for the foreseeable future, very soon BIBFRAME data will be created by various sources in addition to, or instead of, MARC records. That is, BIBFRAME will be part of the cataloguing landscape even if an individual library chooses not to adopt it immediately.

Over time it is likely that more and more BIBFRAME data will be created by libraries and more library systems will be built around the BIBFRAME model and vocabulary. Conversion tools have been created to allow for MARC to be converted to [BIBFRAME](#) which should make the transition to BIBFRAME more immediately accessible to libraries. The Library of Congress has commissioned a tool to convert BIBFRAME-created metadata to MARC format, and libraries can expect changes to the MARC format to support parallel MARC and BIBFRAME workflows. MARC that is produced from BIBFRAME will likely look very different from current practice.

Some BIBFRAME services are already available through ILS/LSP vendors and other groups:

- [Library of Congress BIBFRAME Editor](#)
- [Sinopia BIBFRAME Editor](#)
- [ExLibris](#)

¹ [LD4P2 Project Background and Goals](#).

- [Zepheira](#)
- [FOLIO](#)
- [OCLC](#)
- [SHARE Virtual Discovery Environment](#)
- [LD4P2 Cloud-based environment for original metadata creation](#)
- [Annual BIBFRAME workshop in Europe](#)

Especially important and essential in Canada is that BIBFRAME offers improved multilingual support. It enables libraries to model different worldviews and more contextually appropriate descriptions through search and display of controlled vocabulary terms such as subject headings and creator names not just in English and French, but across the 60+ Indigenous languages used in Canada. Through search engine optimization and linkages from other discovery sources, BIBFRAME provides the potential to enhance web discoverability of a library's collections for external users, internal users, and machine applications. As BIBFRAME is designed to work with any variety of description standards, it will allow for greater collaboration among archives, libraries, and museums.

As the BIBFRAME environment becomes more developed, new questions are emerging within the Canadian library community. What is our current level of understanding and how can Canadian libraries join the conversation around BIBFRAME? When will each of our libraries be ready to transition from MARC, and what training and education will Canadian libraries need to successfully implement BIBFRAME? Further, what impact will the necessary changes in technology have on our budgets and workflows?

The [Canadian BIBFRAME Readiness task force](#) was struck in 2018 to:

- outline the impact of migrating from MARC to BIBFRAME on libraries in Canada,
- assess the understanding of and readiness for BIBFRAME transition in libraries in Canada, and
- make recommendations for how CMSC-CNCM and CFLA-FCAB and FMD can support Canadian libraries' transition to BIBFRAME.

The task force will partially accomplish its mandate through the publication of this plain-language description, through the analysis of a survey to be distributed to Canadian libraries in 2019, and through the submission of a list of recommendations to CMSC-CNCM and FMD in 2020.