MARC 21 AND THE USE OF LINEAR SEPARABLE CONNECTORS

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Abstract

With the increasing quantity of bibliographic data made available through online .systems and the growth in the capability of computers, the trend now is towards review of systems application on the basis of bibliographic data processing through different metadata standards. This paper examines MARC 21 in its intrinsic form showing the wide spectrum which underlies its features as well as revealing its nature of application as it provides maximum amendment to traditional bibliographic description.

Introduction

I have coined the phrase "linear separable connectors" to denote the concept, nature, and application of computers to bibliographic description. Bibliographic description in the online environment requires the use of metadata standards. Examples of .typical metadata standards include the following, MARC 21, Dublin Core, REACH, EAD etc

My attention is however drawn to MARC 21 because it presents a broad spectrum of space required for capturing, recording, storage, retrieval, transfer and use of bibliographic data elements between two and more end systems.

MARC is an acronym for Machine Readable Catalog. MARC was originally developed by the United States Library of Congress in the 1960s to facilitate the transfer of records on magnetic tape. It was precisely in the mid 1960s when effort got underway at the Library of Congress to make cataloging information available nationally- not only in hard copy, as had been done previously but also in Machine Readable Form that could be manipulated by other libraries to meet internal needs. At its conception, according to Crawford (1989) the project for the pilot study conducted on MARC, was broken down into two. MARC I and MARC II. MARC I was completed in 1968.The MARC II format for monographs was influenced by findings from MARC I experiments.

MARC 21 is a result of the combination of the United States and Canadian MARC formats (USMARC and CAN/MARC).MARC 21 is based on the American National Standard Institute (ANSI) standard Z39.2 which allows users of different software products to communicate with others and exchange data (Taylor, 2004).

MARC 21 was designed to redefine the original MARC format for the 21st century and to make it more accessible to the international community.

MARC 21 has 999 useable fields depending on the nature of a record. However, not more than fifteen to twenty of these fields are usually used in a record. The extensive number of available fields shows its wide range of applicability to digital collection which most often provides many challenges.

Marc 21 and Bibliographic Description

Traditionally, the card catalogue provides information that describes the library collection bibliographically. The rules for this description however are based on the general framework for the description of library materials (the General International Standards Bibliographic Description (ISBD) (G) alongside with the stipulations of the Anglo American Cataloguing Rule II and its subsequent revised editions (ISBD)(G), 2000.

According to Morton (1986), ISBD is an effort to standardize practices in content and arrangement of a bibliographic record. With ISBD, data elements in a record can be recognized more easily despite the language of their content. ISBD also facilitate the automated manipulation of data. In the same vein, according to Furie (2003), Anglo American cataloguing Rules (AACR2) are rules or standards responsible for defining the data content record element of MARC formats by providing instruction for bibliographic description. While MARC is the format that processes what has been entered into a field, AACR2 guides the information professional, (the cataloger) on what steps need to be taken when entering descriptive information into the field.

In the online environment, bibliographic record structure is not presented on the card catalog but rather in Machine Readable form. Thurston (2008), observed that the role of MARC 21 format is to organize information in a way that allow the online catalogue to store and display electronic data which describes the resources in our collection.

Cataloguers who do not operate in the online environment make use of "areas" in the organization of a description. "Elements to be included in the descriptive part of the catalogue entry are divided into areas (where an area is a major section of the item being described", (Maxwell, 2004)

Conversely in the online environment, codes are employed to label data elements .These codes are tagged by "fields" where most fields have corresponding "subfields." A subfield contains pieces of data related to those in their correspondent fields. For instance, Publication Distribution area is tagged 260. Three major applicable subfields in this field are subfield "a" which stands for place of publication, subfield "b" stands for publisher while subfield "c" is allocated for.date of publication

Thus it can be observed that machine readable cataloguing allows for specificity, which by its nature presents record-data through linear separable connections. Extensive study through numerous literatures has come to identify the work of one of the early writers in the field, Vickory (1973) whose opinion has given credence to the fact that "machine readable record is a linear string of characters that is linearly scanned"

They are separable in the sense that they are dissociated allowing any field within the record structure to retain a logical and comprehensive unit of information capable of being understood, transferred and used between systems. It is simply for this reason that all subfields within fields are preceded by a delimiter (also called separator). This is unlike the traditional system whereby an area carries a more wholesome chunk of information which, allowed to stand alone, may present some disconnect, despite the available punctuations.

They are linear because they maintain a single line dimension. However, where a line within a record is replicated, the coded tag bearing the field is not introduced more than once in any one record though, they are expected to be multiple coded fields where each is a sequence of the other. The connection between one line and the other is in terms of the flow of information-content maintained by the data elements within the fields.

According to Furie (2003). the bibliographic format tags are grouped in the following structure:

000 = Control information, numbers codes
100 Main entry
200 Titles, edition, imprint
300 Physical description, etc
400 Series statements.
500 -- Notes
600 = Subject area fields
700 = Name added entries or series linking
800 = Series added entries, holdings and locations
900 = locally defined tags

Typical examples representing common fields drawn above may appear as follows.

From the 0xx field, 020, which stand for International standard book number (ISBN) can emerge. There can also emerge from the 000 the 040 field which stand for cataloguing source. 041 is the language code. This field gives a three letter code for the language of the work if it contains more than one language or if the language of summaries, abstracts, table of contents or accompanying material differs from the language of the work. etc.

From 100 fields,100, 110, 111 can emerge and these represent personal name main entry, Corporate body main entry and meetings entry respectively .Thus, it can be explained that 1xx field is being used when the author of a work is the main entry. This means that the author can be a person, a corporate body or a conference.

200 field ; 245-246,Titles. 245 is used for title and statement of responsibility

246 is used for the varying form of title or additional title. 250 is the edition statement field. This is used for edition statement if one appears on the work. Thus in this field, the cataloger is expected to transcribe the elements of the edition statement in the order that they appear, etc.

300 field is for physical description. This field is expected to accommodate everything that has to do with paging, illustrations, tables etc.

The 400 which is for 400 410 411 is Series statements and can be traced under personal, corporate, or conference. These fields are no longer used.490 is presently used if series title statement is untraced or traced differently. If the series statement on the item does not match the series authority record, record the series statement exactly as it appears on the item in 490.

500. Notes are recorded in the 500 fields in the MARC record. There currently nearly fifty separate types of notes fields and new fields are constantly being added.

600 Subject Headings.600, 610, 611 are used for materials when the subject is a person, a corporate body or a conference. 630 is for uniform title while 650 is for topical subject heading.

Similarly the700 represent added entry that is 700 is used for additional authors. Editors and compliers also go into this field

800 is used for series statement traced under personal name.

810 and 811 are for series statement traced under corporate or conference author.

Indicators are characters that may be in one or two positions in a MARC 21 record usually after tags 010-900 only. Indicator values can be any digit from 0-9, while two indicators may sit next to one another they are read separately. The use of indicators reflects the nitty-gritty requirements for description as stipulated by international standards such as AACR2 and ISBD. When librarians think about using MARC, they normally focus on numeric fields within the records which contain various data elements. However. MARC really consists of three components (1) the physical structure, of the MARC record, (2) the set of tags which are numeric values and markup elements most librarians think about.

The 000 fields contain the controlled information number-codes. These are called "fixed fields", within which some are repeatable (020) while some others are not (e.g.040). If real coded values are placed against the fields representing different aspects of a record, then one has gotten a complete MARC record with the usual three components comprising of an enhanced record structure and a well sustained content designation. All these are maintained with appropriate data content (Furie, 2003). The brevity of any record is dependent on the encoding level and the available data taken from the chief source of information. The 999 tags in the MARC projects is seen only as a theoretical possibility.

A typical record with MARC 21 structure from the OPAC database of Kashim Ibrahim Library, Ahmadu Bello University, Zaria is displayed below

008 - - 11051
021 - - \a 09537325
040 - - \a NGZaABU
050 0 4 \a T1 \b Tec
245 0 - \a Technology Analysis and strategic management /\c edited by Harry Rothman \h [Text]
260 - - \a Oxfordshire \b Routhlege \c 2008
300 - - \a 140p. 149-206p, 207-387p, 388-520p. 521-648p.
311 - - \a Six times a year
362 - - \a Vol 1.2. 3.4.5. (Jan., March. May, July, Septs., 2008)
500 - - \a Purchased
650 - - \a Technology
650 - - \a Science
700 1 -\a Rothman, Harry
852 - -\a NG-ZaABU \b KIL \c Serials

BENEFITS OF MARC

Far back as the early 1960s, Machine Readable Cataloguing (MARC) was seen to be a realistic proposal for the automation of the library system. Some of the usefulness of MARC as envisioned by the Library of Congress and those unearthed by other participating agencies over the years are listed below:

-MARC is widely used by libraries and other information agencies to exchange bibliographic and related information between systems.

-The organization of data within fields and subfields make room for specificity which facilitate manipulation and retrieval of information within machines.

-It is a solution for storing massive amounts of electronic data in a compact format.

Widespread use of MARC standards has helped libraries to acquire predictable and reliable cataloguing data, make use of commercially available library automation systems, share bibliographic resources, avoid duplication of effort and ensure that bibliographic data will be compatible when one automation system is replaced with another.

CONCLUSION

Evaluating MARC against other standards for exchanging bibliographic information shows that it is still the best for capturing, storing and transmitting information. In a highly detailed analysis, however, Yee(2004) notes that there are many identified problems with MARC record in the electronic environment stressing that future research makes it prone to challenges from other potential technologies. Despite the problem observed with its technical limitations and how it is virtually unknown outside the library community, MARC is

still the only practical method for library systems.
Of all the technical library standards, MARC is by far the most widely implemented and has most greatly impacted on library services because new systems and standards must be able to accommodate the enormous amount of data that already exists MARC will heavily influence library automation for a long time.

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