

Universal Bibliographic Control and International MARC Core Programme (UBCIM)



Standards for International Bibliographic Control Proposed Basic Data Requirements for the National Bibliographic Record

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Abstract

The IFLA Section on Cataloguing sponsored a study in 1991 that sought to develop a framework that would identify and clearly define the bibliographic entities of interest to users of bibliographic records, the attributes of those entities, and the types of relationships that may operate between entities. Through this study, the specific attributes and relationships were identified. As a result, the study results became the basis of a proposed basic level of functionality and data requirements for bibliographic records created by national bibliographic agencies. At the study's outset it was anticipated by its framers that the results would meet parallel objectives identified by the Conference of Directors of National Libraries. The final report was approved by the IFLA Standing Committee on Cataloguing in September 1997 and published by K.G. Saur in early 1998 as part of the UBCIM Publications - New Series, vol. 19. This paper reviews the findings of the study as they relate to proposed data requirements, while using several different potential material formats; selectively compares these requirements to current and emerging standards; and then discusses how these standards might facilitate international bibliographic control for national bibliographic agencies.

The International Federation of Library Associations and Institutions (IFLA) has long promoted international bibliographic standards through its UBCIM Programme and the IFLA Division of Bibliographic Control with its three standing committees. IFLA's many achievements over the years have resulted in several serious re-examinations of cataloguing theory and practice. The study I will be discussing in this paper is part of a proud tradition going back to 1961 and now leads us to dawn

of the twenty-first century. As many of you may remember, the first major IFLA initiative took place in 1961 at an international conference in Paris during which a set of cataloguing principles were approved—now known as the Paris Principles. In 1969 another influential IFLA-sponsored conference was held in Copenhagen, whose purpose was to consider a resolution to establish international standards for the form and content of bibliographic descriptions. The results of this far-reaching resolution have been the *International Standard Bibliographic Description for Monographic Publications*, first published in 1971, and its successor standards for all formats. Another event of consequence took place in 1997 when the Standing Committee of the IFLA Section on Cataloguing approved the final report of a study on functional requirements for bibliographic records. The report contained a series of recommendations that could have far-reaching consequences for international bibliographic control standards.

With this as a backdrop to my paper, I will first provide a brief background on the reasons behind IFLA's decision to conduct this important study. The report's principles for the basic national bibliographic record will then be discussed followed by the proposed data requirements for the record. The data requirements will include both general descriptive and organizing elements. In addition, I will discuss the suggested relationships that should be provided by the basic national bibliographic record. In order to place these recommendations into context, I will provide a brief description of the scope and methodology used to conduct the study from which the recommendations follow. My concluding remarks will cover what might be the implications of these recommendations, the potential impact the study might have on international bibliographic control standards, and brief commentary about the model itself.

Background to Standards Development

The genesis for the IFLA study largely evolved from a series of recommendations that grew out of the deliberations of an influential seminar on bibliographic control held in August 1990 in Stockholm Sweden. The seminar was sponsored by the IFLA UBCIM Programme and the IFLA Division of Bibliographic Control. Differing views of the bibliographic record and the functions it performs emerged from the seminar discussions, thereby putting into potential conflict two strongly voiced interests. One interest was decreasing the high costs associated with bibliographic and authority control. The other interest was maintaining and increasing quality in reaction to a growing international interest in shared bibliographic data with a growing emphasis on emerging technologies. Regardless of the wide-variety of participants' views, all shared the view that a fundamental reexamination of the bibliographic record was necessary, largely to balance both potentially divergent views.

Following this seminar, the Conference of Directors of National Libraries and the IFLA Division of Bibliographic Control voiced interests in addressing these same issues. Both believed that such a study should reflect a variety of users, evolving and new forms of materials, and the rapidly changing nature of access. Also of mutual interest was the acknowledgment that the national bibliographic agency should be responsible for ensuring the recording of the national published output in all media.

I must note here that this study did not cover the relationship of bibliographic records to authority control nor did it define what should be the minimal requirements for authority control by national bibliographic agencies. The IFLA Section on Cataloguing is conducting a study on authority control data, which includes names, subjects and classification schemes.

In response to the seminar's recommendations, in 1991 the Standing Committee of the IFLA Section of Cataloguing commissioned a study to define the functional requirements for bibliographic records. The charge was defined in a document entitled "Terms of Reference for a Study of the Functional Requirements for Bibliographic Records." The study was to be based on the primary functions users perform while using bibliographic records and take into account all types of materials they may have interest in. It was intended to be theoretically based and would use the entity relationship modeling technique while avoiding bias towards any existing cataloguing codes. The results of the study were to be a set of recommended data elements that a national bibliographic record would need to perform its primary functions.

Following a worldwide review of a draft report in 1996, the working group completed its study and made its formal recommendations in a final report. As mentioned earlier, the IFLA Standing Committee of the Section on Cataloguing approved this report at its meeting on September 5, 1997 in Copenhagen, Denmark. In early 1998 K.G. Saur published it as part of the *UBCIM Publications-New Series*, vol. 19.

Principles for the Basic National Bibliographic Record

Of first importance is to review the recommended principles for the basic national bibliographic record. The principles are based on the working group's careful entity analysis. These principles are designed to articulate how the basic national bibliographic record should assist the user in doing the find, identify, select and obtain functions:

- Find all manifestations embodying:
 - the works for which a given person or corporate body is responsible
 - the various expressions of a given work
 - works on a given subject
 - works in a given series
- Find a particular manifestation:
 - when the name(s) of the person(s) and/or corporate body(ies) responsible for the work(s) embodied in the manifestation is (are) known
 - when the title of the manifestation is known
 - when the manifestation identifier is known
- Identify a work
- Identify an expression of a work
- Select a work
- Select an expression
- Select a manifestation

- Obtain a manifestation

To fully understand these principles, one must go to the study for its definitions for work, expression, manifestation and item.

- **Work:** the distinct intellectual or artistic creation. This is an abstract entity that enables us to give a name and draw relationships to the abstract intellectual or artistic creation. When we speak of Jane Austin's *Sense and Sensibility* as a work, we are not referring to a specific edition or text; rather it is the intellectual creation.
- **Expression:** the intellectual or artistic realization of a work. It encompasses the specific words, sentences, paragraphs, etc. that result from the realization or expression of a work and provides distinction in intellectual content between one realization and another of the same work. For example, a French translation of the original English text of James Joyce's *Ulysses* represents two expressions of the same work.
- **Manifestation:** the physical embodiment of an expression of work. In other words, the expression that is issued or published. It represents a wide-range of all the physical objects that bear the same characteristics in respect to both intellectual content and physical form and permits us to describe the shared characteristics. For example, within a library's catalogue there could be two manifestations of J.S. Bach's Goldberg variations by Glen Gould that was recorded in 1981: the recording released in 1982 by CBS Records on a 33 1/3-rpm sound disc and the recording re-released on compact disc in 1993 by Sony.
- **Item:** a single exemplar of a manifestation. It is in many instances a single physical object. This is the physical object one holds or has access to in one's collection. An example might be two copies of the same book, with only one being autographed by the author. It should be noted that the data requirements at the item level are pertinent only to the actual "owner" of the item, for example, an individual library.

Data Requirements for the Basic National Bibliographic Record

The report concludes by listing the minimum data requirements for a basic national bibliographic record for all identified formats. The list is arranged in two broad groupings: descriptive and organizing elements. I will next review the descriptive and organizing elements for the basic national bibliographic record. I will then discuss briefly the two format types of immediate interest to the IFLA Section on Cataloguing and the wider cataloguing community: serials and electronic resources accessible through the worldwide Web. Please note that I am not including elements that are required only under unique or special circumstances.

General Descriptive and Organizing Elements

The following elements provide the descriptive part of the basic national bibliographic record. These elements potentially pertain to all formats.

Descriptive elements

Title and statement of responsibility area

- title proper (including number/name of part)
- statement(s) of responsibility identifying the individual(s) and/or group(s) with principle responsibility for the content

Edition area

- edition statement
- additional edition statement

Publication, distribution, etc. area

- Place of publication, distribution, etc.
- Name of publisher, distributor, etc.
- Date of publication, distribution, etc.

Physical description area

- specific material designation

Series area

- title proper of series

Notes area

- note on distinguishing characteristic of expression
- note on edition and bibliographic history-revision
- note on edition and bibliographic history-translation
- note on use/access restrictions

Standard number (or alternative) and terms of availability area

- standard number

Organizing Elements

The proposed basic level national bibliographic record also contains standards relating organizing data elements that correspond to relevant descriptive elements such as authors and series as well as subject access.

Name headings

- name heading(s) for person(s) and/or corporate body(ies) with principal responsibility for the work(s)
- name heading(s) for person(s) and/or corporate body(ies) with principal responsibility for the expression(s)

Title headings

- title heading(s) for the work(s)

Series headings

- heading for the series

Subject headings/classification numbers

- subject heading(s) and/or classification number(s) for the principal subject(s) of the work(s)

Descriptive Elements for Serials and Electronic Resources

Two formats covered by the report are receiving now considerable attention—serials and electronic resources. I might add that electronic serials intersect both format discussions.

Serials: In addition to the general basic descriptive elements listed above, the report recommends the following additional elements for serials.

Material (or type of publication) specific area

- Numbering

Note area

- Frequency statement
- Referential notes for preceding/succeeding works or expressions, and/or supplements.

While the report provides the above standards for data elements for serials, the working group fully acknowledged that several issues remain open. In particular, the issue of seriality needs additional study. Moreover, whether these standards, coupled with those for electronic resources to be discussed next, account fully for the descriptive and access needs for electronic serials remains under question. The IFLA Standing Committee of the Section of Cataloguing has begun a review of the ISBD(S) and these particular issues and others are being carefully considered.

Electronic Resources: In addition to the general basic descriptive elements, the report recommends the following additional elements for electronic resources available through the worldwide web.

Notes area

- Note on system requirements
- Note on mode of access—mode of access (remote access electronic resources)
- note on mode of access—access address (remote access electronic resources)

One pertinent question that was raised in the study discussions at the 1997 IFLA conference was whether or not the recommendations were flexible enough to deal with "emerging" materials, particularly electronic ones. This is particularly critical to the viability of these standards as many of

the current "formats" as we know them are also available in an electronic form—for example, a full electronic text of a novel or poem; a digitized version of a slide, photograph or map; or, as mentioned above, an "electronic" version of a paper journal.

In part out of curiosity, I decided, for the purposes of this paper to attempt to "validate" the study's recommendations with an emerging international standard for networked electronic resources, primarily available through the Internet. This standard is known as the Dublin Core and it provides guidelines for what is called "metadata," or data about data. The Dublin Core was "intended to facilitate the discovery of electronic resources" and "originally conceived for author-generated descriptions of Web resources." It represents one of many guidelines being discussed in the area of electronic resources. Using the study's terminology, these are "Internet manifestations." In the context of the Dublin Core, metadata includes what is generally referred to as bibliographic description whose elements may be used to find, identify, select and obtain resources available through the WWW. Currently the Dublin Core includes fifteen data elements that constitute a core or basic form of description. It also discusses the critical issue of relationships to other works, expressions and manifestations, much in the same way as the IFLA standard does.

However, in brief, what are the differences between these two standards? In comparing the two standards for description and organizing elements, I included those IFLA data elements defined as important or significant to the medium. I found that fourteen of the fifteen Dublin Core elements were "loosely" in common with the recommended IFLA data elements. The only Dublin Core element missing in the IFLA standard is the specific element of resource type. The resource type represents a textual description of the content of the resource or content description in the case of visual resources (e.g., poem, dictionary, or musical recording). While the IFLA study group recognized its importance to the select function as an attribute of an expression (context for the expression), it gave it a low core value. In the future, as the pertinent IFLA standards are reviewed in terms of format specificity, the inclusion of this element might represent potential revision.

Importance of Relationships

The study group also examined a wide-variety of potential relationships within the context of find, identify, select and obtain for possible inclusion in the national bibliographic record. This is an essential part of the study as relationships were "examined in the context of the entities defined for the model, i.e., they are analyzed specifically as relationships that operate between one work and another, between one expression and another, between a manifestation and a item, etc." In addition, other relationships are essential to document in the national bibliographic record—for example, the creator to the work, the publisher to the manifestation, the holding library to the item, etc.

For the cataloguer, one key to building a relationship among works, expressions and manifestations is when the publishers or authors use terms such as "translation of..." "based on..." "continues..." etc. The importance to this study is the role these types of relationships may play for users when they navigate the bibliographic universe. These relationships are described often within series statements or notes, and access to the elements so described is provided by the organizing elements.

Embedded within the descriptive elements listed above are the following relationships that require necessary descriptive and access elements for works, expressions, and manifestations:

- Whole/part relationships (e.g., series)
- Translations
- Arrangements
- Revisions
- Supplements
- Complements
- Preceding/succeeding

Relationships also occur within this model for entities such as persons, corporate bodies, and subjects. The entities in this group are linked to the first group (work, expression, and manifestation) due to the creation of the intellectual or artistic content of the work. The logical connections may also be the "realized or created by" relationship, the "produced by" relationship, and the "owned by" relationship. Of importance also is the "has as subject" relationship, which permits a user to identify works within a particular subject.

General Description of the Study's Methodology and Results

The theoretical underpinnings for these recommended data requirements and relationships came from the study. While I will not go into detail into the methodology and its results, I do what to emphasize that they account for the strengths of the recommendations. The study's framework was built on the ways data contained in bibliographic records are used through a variety of user tasks. While the study is described as being based on user needs it did not involve studies of how many different types of users approach and make use of bibliographic records. Rather, functions that any one or more of these users perform were examined carefully. In other words, the study endeavored to define exactly what information the user expects to find in a bibliographic record and how that information is used.

Another key element of the study was that it recognized that bibliographic records are used by a broad spectrum of users, including both clients and staff in libraries, publishers, distributors, and retailers, and by the providers and users of information services outside traditional library settings. The study also took into account the wide range of applications in which bibliographic records are used—such as purchasing, cataloguing, circulation, interlibrary loan, preservation, reference, and information retrieval. As a result, the study recognized the breadth of use that is made of bibliographic information and the importance of both content and form of the materials described in bibliographic records to their users.

The study group defined a bibliographic record as the aggregate of data that are associated with entities often but not exclusively described in library catalogues and national bibliographies. To start with, the report defined the functional requirements for bibliographic records. They were defined in terms of the generic tasks that are performed by users when searching and making use of national bibliographies, library catalogues, bibliographic databases, etc. and are as follows:

- Using the data to **find** materials that correspond to the user's stated research criteria;
- using the data retrieved to **identify** an entity;
- using the data to **select** an entity that is appropriate to the user's needs; and
- Using the data in order to **acquire or obtain** the entity described.

The entity relationship analysis technique that formed the basis for the methodology began by isolating the entities that are the key objects of interests to users of bibliographic records. Three groups were defined:

1. The first and primary group contains four entities that I defined earlier:
 - Work: the distinct intellectual or artistic creation
 - Expression: the intellectual or artistic realization of a work
 - Manifestation: the physical embodiment of an expression of work
 - Item: a single exemplar of a manifestation
2. The second group includes entities responsible for the intellectual or artistic content, the production, or ownership of entities in the first group (e.g., persons and corporate bodies). Examples of these entities could be Leo Tolstoy, Michelangelo, UNESCO, and the British Library.
3. The third group includes entities that represent concepts (such as Quantum Physics), objects (such as the ocean liner, the Titanic), events (IFLA 1998 Conference in Amsterdam), and places (Barcelona, Spain). In this study, entities in the third group as well as those in the first two groups may form the subject of a work.

The study then identified the characteristics or attributes associated with each entity and the relationships between entities that are most important to users. The attributes provide the means by which users formulate queries and interpret responses when seeking information about a particular entity. The attributes were expressed as a user might view them. The working group's consultants (who were responsible for directing the study and were the primary authors of the report) used attributes reflected in *International Standard Bibliographic Descriptions (ISBDs)* and the *Guidelines for Authority and Reference Entries (GARE)* as their starting point.

In order to assess the relative value of each of the attributes and relationships associated with the various entities, the study group next focused on the importance of each attribute or relationship to the user's efforts to find, identify, select, or obtain a particular entity or group of entities. The study group drew on a wide range of sources and identified data pertaining to a broad spectrum of medium such as text, cartographic material, audio-visual, graphic, three-dimensional materials, film, optical media, and acoustic, electric, digital, and optical recording modes.

The study group then mapped the attributes and relationships to the four user tasks: to find, identify, select and acquire/obtain. In doing so, the attributes and relationships were rated as to the importance to each user task. This was a lengthy and thorough effort and was the basis of the

recommendations for the essential components of a national bibliographic record. It is important to note that at a national or institutional level, these values could change dramatically due to the mission and/or objectives of any given collection of resources. Furthermore, decisions regarding the importance of a given attribute, such as title for a work, expression and manifestations, varied as to the find, identify and select functions. However, in all cases when the value for a given attribute, such as title, was rated as high or moderate for any function, that attribute was deemed necessary components of a national bibliographic record.

Implications and Conclusions

In conclusion, how might these standards for data requirements be of value to the international cataloguing community and in particular to national bibliographic agencies. To begin with, the results of the worldwide review of the earlier draft document provided a strong endorsement of the methodology and results. Furthermore, the IFLA Standing Committee of the Section on Cataloguing endorsed it unanimously with strong praise. However, for the standards to have any influence, far more work needs to be done in promoting them, evaluating them within national and international contexts, and implementing them through such vehicles as the ISBDs, cataloguing codes and guidelines, online cataloguing display formats, etc.

The central goals of this study were to assist in decreasing the costs of cataloguing by encouraging the sharing of bibliographic data records and to recommend the most useful and important data elements in those records for their users. To do this means that the quality and expected content of bibliographic records must meet international expectations. The obvious solution is to agree upon a shared set of standards for what those bibliographic records should contain based upon a shared view of what users expect and need. The enormous success of the ISBDs indicates the value of this type of approach. This study's recommendations follow this tradition. Clearly, the IFLA Section on Cataloguing hopes that this report's recommendations for international standards for basic data requirements for national bibliographic records could serve as the foundation for this type of international cooperation. A first step might be the review of data requirements of your existing standards and compare them to this standard. A next step could involve developing a set of standards for all formats that all agencies that are or might be interested in cooperative sharing of bibliographic data might follow. No doubt some agencies will find that their existing standards are "higher" than these are. This type of standardization might also influence regional cataloguing guidelines and facilitate national sharing of bibliographic data where that may not fully exist.

It is important to state that the entity relationship analysis technique model and the conclusions made as a result of this analysis are deliberately general in nature and do not attempt to provide detailed applications for specific media or for the various methods of accessing and displaying bibliographic records. It represents a first and important step.

For your information, the Standing Committee of the IFLA Section on Cataloguing has begun a review of the complete set of ISBDs using the results of the study as the initial benchmark in determining appropriate data elements by format. As mentioned before, the ISBD for Serials is the

first standard under review. This review will take into account electronic serials, metadata and, as mentioned earlier, the notion of seriality itself.

Beyond the ISBDs, other international and national standards might benefit from the study recommendations. The European Library Automation Group (ELAG) has undertaken one important study of the model in a workshop convened at the 1998 European Library Automation Group conference at the Koninklijke Bibliotheek in Den Haag, The Netherlands. Six workshop attendees wrote a paper that describes the review of the model and discusses the benefits of the model for users (end users and library technical staff) as well as future benefits of the study in the "real world." In particular the strength of the model was seen in its four-level model. "In strict modelling terms it allows information to be placed at the correct level of abstraction so that it is shared by the succeeding level objects... This cleaner model is easier to maintain, has the increased flexibility of representation, may be better searched and may be more accurately processed according rule based processing." The authors also envisioned the model being applicable for the design of new search engines and system designs.

An important result of the study report is the model itself and how it could be applied to any number of other studies and approaches for creating a more fully developed data model for bibliographic entities. The model developed for this study represents an initial attempt to establish a logical framework to assist in the understanding and further development of conventions for bibliographic description. The study showcases the usefulness of the entity relationship analysis technique used by the study group and its applicability to other studies such as those involving the creation, management, and use of bibliographic data. Such work could benefit framers of national cataloguing codes in their work to improve provisions for the specific media that they cover. Moreover, the analysis of entities, attributes and relationships reflected in the model might serve as a useful logical framework for a re-examination of the structures and conventions used to compile, store, display and communicate bibliographic data.

As mentioned above, this IFLA study may represent an initial and important step towards the creation of a fully developed international conceptual data model for all bibliographic entities. It may also serve as an important step towards facilitating and promoting stronger international bibliographic data resource sharing.

References and Notes

[absent in this version]

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