Guidelines for National Bibliographies in the Electronic Age

**IFLA Working Group on
Guidelines for National Bibliographies**

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CONTENTS

Introduction

In 2001 the World Library and Information Congress took place in Boston, Massachusetts. The IFLA section on Bibliography celebrated the completion of two major pieces of work: the report, by Bell and Langballe, on the compliance of the world's national bibliographies with the recommendations of the International Conference on National Bibliographic Services, 1998; and Knutsen's survey of the changes to national bibliographies since 1996.

The committee also discussed how national bibliographies should respond to the growing significance of electronic media and, in particular, web publications. As the meeting was drawing to a conclusion, a guest from Azerbaijan, Muzhgan Nazarova, rose and requested that the Section give advice and assistance to National Bibliographic Agencies not yet familiar with the proper methods of producing national bibliographies.

These guidelines are the somewhat overdue outcome of that meeting. A working group was established in 2002 to investigate development and update of guidelines, with examples and references, to help National Bibliographic Agencies start or improve bibliographic services. In the following year the scope of the working group's remit was extended to include guidelines for electronic national bibliographies. The working group was tasked to

- Develop selection principles for incorporation of electronic resources within national bibliographies
- Specify a data model and access points for electronic national bibliographies
- Specify the functionality of the electronic national bibliography

These two seemingly separate strands have intertwined as the work of the group has progressed. The change wrought by the World Wide Web and the explosion of electronic media have called into question many of the assumptions on which national bibliography has been founded. We are all in need of a route map to guide us through uncharted territories.

The intended audience for these guidelines are, in the first place, those charged with the management of national bibliographic services, particularly those charged with the implementation of new national bibliographies. Secondly, these guidelines will be of interest to managers and staff of established national bibliographic agencies who are responding to opportunities and challenges posed by new technology and media.

The document consists of relatively independent chapters, each of them addressing a separate issue. At the same time the guidelines were planned as a whole. Therefore the readers can use the guidelines in both ways: reading all the chapters in sequence or only individual chapters.

IFLA Division IV Bibliographic Control provided funding, which enabled the Working Group to meet on three occasions. These meetings were essential in moving forward the work of the group and could not have taken place without the generous hospitality of the national libraries of the Czech Republic (2004), Lithuania (2005) and France (2006). Members of the Working Group communicated by e-mail and were also able to meet at the IFLA annual conference.

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1 History and Background

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1.1 National bibliographies

"A current national bibliography is a mirror that reflects the culture of a country. By looking at the current national bibliography one is able to learn about the uniqueness of a country. The emphasis on agriculture and technology, the make-up of its society through its various language publications, particular customs and ceremonies important in the life of the nation, the importance of education, literature and science, prominent literary authors of the time and political, social and religious trends within a country are all discernible. A current national bibliography should reflect the interests and unique characteristics of a country much as a mirror reflects the uniqueness of an individual". (Bell, 1998)

Definition

More than 50 years ago the definition was: "The ideal (current national) bibliography is conceived as a complete listing of all books, documents, pamphlets, serials and other printed matter published within the bounds of a single country and within the time limits of the previous year or less" (Conover, 1955).

The newest definition from 1998 is more general: National bibliography in the modern sense of the word is defined as a cumulation of the authoritative and comprehensive records of the national output (i.e., products of the national publishing industry) of a country, published regularly, and with the least possible delay. It is produced in accordance with international standards by the national bibliographic agency. Publication details and authorship are investigated and verified in detail.

The changes in publishing over the last 10 years, which have especially brought a multitude of electronic information resources and the World Wide Web has changed the scope of the national bibliography. This combined with advances in the search-engine technology demands a new definition.

1.2 Legal deposit

To make national bibliographic control function, it is also important to combine the registration of the national bibliography with a legal deposit function of a country. Legal deposit is an obligation by law or another kind of rule to make printers and publishers deliver one or more free copies of their publications to the national library or other "legal deposit libraries". In some countries of the world where the publishers want an early registration of their publications in addition you will find voluntary agreements between publishers and the national bibliographic agencies.

1.3   International recommendations

The national bibliography defined as a bibliographic system or a special national bibliography is relatively new. The phrase "national bibliography" appears in the literature about in the middle of the 19th century primarily as a description of the national lists of books. It was not until the first half of the 20th century that a broader definition was recognized (Madsen, 2000).

An essential condition to extend the definition to all kinds of documents are the great international conferences arranged by UNESCO in 1950, by UNESCO in cooperation with IFLA (International Federation of Library Associations and Institutions) in 1977 and by IFLA in November 1998. The results of the conferences are a line of recommendations that has very much influenced the structure of national bibliographic services throughout the world.

1950 – Conference on the Improvement of Bibliographical Services

The recommendations that derived from the UNESCO Conference in 1950 had the overall intention to emphasize that the national bibliography is not only one list, but a system of bibliographies that together form a registration of the documents published in a country (UNESCO, 1950).

It is characteristic for these recommendations that they start with the request that national bibliographies should include lists of books and pamphlets published and on sale in each country. This is linked to the fact that in several countries among others Great Britain at the time (before 1950) had only so called "booksellers lists" that means lists of books published only by the book trade and publishing firms.

It is stressed that not only books and other printed materials but also audiovisual materials should be included in the national bibliography. Concerning periodical indexes there is a condition of selection. It is only important articles that should be registered.

It is also recommended that directories of institutions and firms selling documents in the country in question should be established.

Besides the very detailed recommendations of what kinds of documents should be registered in the national bibliography, the 1950 recommendations include very short directions as to what demands there could be made to the levels of cataloguing, to the publishing of the national bibliography, to legal deposit and holdings of the documents at the national library.

The 1950 recommendations became central by defining that the national bibliography is not only a list of books but a system of bibliographies and by introducing the idea of the "national bibliographic service".

1977 – International Congress on National Bibliographies

The UNESCO/IFLA Conference in 1977 resulted in the publication of "Guidelines for the National Bibliographic Agency and the National Bibliography" (IFLA, 1979). The guidelines contain a lot of recommendations that not only deal with the frames of what documents should be registered in the national bibliography but also the level of cataloguing and the basis for registration.

In the guidelines the national bibliography is defined as "the cumulation of the authoritative and comprehensive records of the national imprint of a country, published in a printed form (and/or produced in other physical form, such as catalogue cards, machine-readable tapes) regularly, and with least possible delay".

UNESCO/IFLA defines "national imprint" as "the products of the national publishing industry".

That means that it is the home country of the publisher that decides where a document should be registered.

There are great differences between the two sets of recommendations. While in 1950 it was very important to list all the different types of documents that should be registered, the 1977 recommendations give a minimum of what a national bibliography should register:

> National bibliographies, as a minimum, should include the records for monographs and first issues and title changes of serials, including official publications, of the national imprint; and other categories should be included as rapidly as possible to meet the requirements of the national library community and the resources of the national bibliographic agency …

It is also mentioned that "the (national bibliographic) agency may, as a matter of policy, determine that the national bibliography may include not only the records of the national imprint but also certain other categories of material. These generally relate specifically to the country and can be considered part of the national collection, that is, all publications relating to any aspect of the country's cultural, historical, geographical and linguistic environment".

The guidelines stress very much that the national bibliography must secure the basic authoritative registration of a country's imprint including authority control of personal names and corporations, and that the registration should be in accordance with the international rules of cataloguing and classification. Nationally and internationally there should be efforts to make compatibility between the bibliographic formats used.

The national bibliography of a country is part of the universal bibliographic control (UBC), and it is important to be able to exchange and reuse bibliographic data.

1998 - **International Conference on National Bibliographic Services (ICNBS)**

The 1977 recommendations as well as the earlier 1950 recommendations contain instructions concerning the publication of printed national bibliographies. Even if there in 1977 is pointed out that the national bibliography might be published electronically, and one should examine the possibilities of how the national bibliographic data could be part of an international database, the request for printed bibliographies is upheld. The background should be seen in the fact that the recommendations aimed at promoting the national bibliographic system in countries that are not able to utilize information technology.

In the newest set of recommendations that were the results of the 1998 Conference, it is taken into account that the dynamic progress of the information technology gives new possibilities and makes new demands on national filing and registration (IFLA, 2001). And Google was still to come.

As new extensions, the 1998 recommendations stress the role and responsibility of the national bibliographic agencies and the importance of legal deposit:
- Affirming that national libraries and national bibliographic agencies may work cooperatively with other agencies but that the overall responsibility for co-ordination and implementation of standards should rest with the national bibliographic agency.
- Reaffirming the value of legal deposit as a means of ensuring that the cultural and intellectual heritage and linguistic diversity of the State is preserved and made accessible for current and future users.

The most important changes concerning the previous recommendations related to the following subjects:

<u>Legal deposit</u>

It is stressed that legal deposit regulations as the basis for national bibliographic services are a matter of urgency:

- States should, as a matter of urgency, examine existing deposit legislation and consider its provisions in relation to present and future requirements; and, where necessary, existing legislation should be revised.
- States currently without legal deposit legislation are urged to introduce it.

<u>Coverage of the national bibliography</u>

In contrast to the previous recommendations that listed different types of documents, the 1998 recommendations only mention the "current national output". That means all documents published in a country regardless of publication form – they could be printed, be audio-visual or electronic documents – should be covered by the national bibliographic registration. A natural consequence of this could be that all the new document types including internet-documents should be treated on equal terms with the more traditional document types.

However among the future activities in the 1998 recommendations is listed

- IFLA should support revision of existing sets of guidelines to make provision for all new and future forms of publications.

1.4 New recommendations/guidelines

When looking at the evolution of the recommendations from 1950 to 1998 it is remarkable that in 1950 the emphasis was on a very detailed description of what kinds of documents should be registered in the national bibliography, and there is very little about directions as to what demands there could be made to the levels of cataloguing, to publishing of the national bibliography, to legal deposit and holdings of the documents at the national library.

In 1977 there is given a minimum of what kind of documents a national bibliography should register and now the emphasis was put on securing the basic authoritative registration of a country's imprint including authority control of personal names and corporations, and that the registration should be in accordance with the international rules of cataloguing and classification and the need for compatibility between the used bibliographic formats.

The interest has changed from the coverage of the national bibliography to the registration and formatting of the bibliographic data maybe because coverage was thought obvious and the challenge at that time was the possibility of online cataloguing and sharing of bibliographic data.

When we come to 1998 there are no details concerning coverage of the national bibliography. The recommendations are very general in only quoting:

- National bibliographies should include <u>the current national output</u>, and where practicable also provide retrospective coverage. When necessary, selection criteria should be defined and published by the national bibliographic agency.
- The national bibliography should include records for materials in all languages and/or scripts in which publications are produced within a state; and wherever possible these records should include the languages and/or scripts in which the publications originally appeared.

Special for the 1998 recommendations is that they stress the role and responsibility of the national bibliographic agencies and the importance of legal deposit.

When the working group started the revision of existing sets of guidelines to make provision for all new and future forms of publications – we found the 1998 recommendations rather vague, because they do not include guidelines as to how the <u>current national output</u> is defined, and especially we could identify that there is a need to define the inclusion of electronic information resources of all kinds in the national bibliography.

In the recommendations the definition of the national bibliography includes that it is exhaustive

… all books/ (total) current national output published at any time in a specific country. Another distinguishing feature of national bibliography is that it is largely "objective" in the sense that its goal is the complete registration of published documents (within certain formal frameworks) notwithstanding the physical form of the documents concerned, the subjects they deal with, or their quality.

From 1977 where the cataloguing rules etc. came into focus, it has been assumed in the library world that the national bibliography is a complete registration of all publications in a country regardless of publication form and with the same level of cataloguing, which in many places was equal to the highest existing level.

That has made the economically responsible people think that cataloguing is very expensive and therefore there is no need of a national bibliography covering the internet - it is enough with a kind of legal deposit through harvesting and then you can use Google to search the living net.

The Working Group finds that the coverage of the national bibliography is the essential thing and it should be the <u>whole national output</u> in the understanding of all different types of publications, but it should not necessarily be exhaustive. There should be pragmatic formal selection criteria. In the same way all the types of publications are not necessarily going to be catalogued and formatted at the same level and following the same rules. The registrations can be made by different people (cataloguers, producers, etc., in different places) or automatic/semiautomatic systems following different sets of rules depending on user needs and technology. This model could be used because the technology today allows it. It would be wonderful if all the data were published in the same database, but it might not be necessary. It is meanwhile a recommendation that the data could be retrieved from the same interface. It is still important that there is a central institution/ the national bibliographic agency to make/coordinate rules and selection criteria, etc.

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2 Value of National Bibliographies: Use and Users

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2.1 What is the mission of the national bibliography?

A complete and timely national bibliography is an important information resource for:
- selection and acquisition in libraries and similar institutions
- cataloguing (both directly for copy cataloguing and indirectly for cataloguing support)
- verification of authorship and publication history

"Three main objectives have been traditionally assigned to national bibliographic services. The first is to assist cost-effective cataloguing in libraries. The second is to facilitate libraries in their selection and acquisition activities. The third is to further information searching and retrieval for document supply. These objectives are still valid. What is changing today is the environment in which such objectives are implemented" (Vitiello, 1998).

But national bibliographies are (or could be) used also outside libraries, publishing industry and book trade to (Guidelines, 1997):
- give the statistical account of a country's publishing output
- provide evidence of the impact of government policies in relation to education, language, economic programmes, etc.
- reveal the extent of a country's self sufficiency in producing the publications it requires

The national bibliography is therefore an essential tool for selection and acquisition of materials and, consequently, an important promotion of publishing industry. To fulfil this function (Lewis, 1991):
- the data has to be available immediately after publication, preferably even before publication
- for selection, subject and target audience data are essential, as well as price, while for acquisition the data on publisher and distributor, conditions of sale, and, of course, standard identifiers such as ISSN, ISBN etc.
- the format of bibliographic records has to enable simple import of data into local information system or catalogue

As a cataloguer's tool, the requirements are (Lewis, 1991):
- high quality and completeness of records
- full coverage
- timely access to new records
- compliance with national and international standards
- continuity between retrospective and current bibliographies
- simple copying of records into local catalogues

As an information resource, the national bibliography should support (Lewis, 1991):
- sophisticated searching and many access points
- links to local catalogues or full-text to enable access to publications sought

We may claim that there are national and international interests in the production of national bibliographies. Can these interests be in conflict? If so, which aspect should then take precedence?

There is an overlap (and competition) with other products and services, such as books-in-print, national union catalogues, catalogues of big university/research libraries, even Amazon. Is therefore the national bibliography providing something other products and services do not or can not? Is the added value of the national bibliography always obvious, well advertised and known?

And finally: can continuing production of national bibliographies be taken for granted? Considering more and more constraints national libraries (and national bibliographic agencies) are facing, one of our goals is to make a strong case for national bibliographies, based on needs it fulfils and uses it supports. This analysis will also be the basis of recommendations for the data model and functionality of electronic national bibliographies.

2.2 Who are the users?

While there is good evidence and understanding of the use of national bibliographies in libraries, there is lack of substantial data on other users. In some countries (Czech Republic, Norway) national libraries started investigating who the users are and in what context, but broader studies are very much needed. In addition to current users we also have to focus on future and potential users not only to justify the production of the national bibliography, but also to implement the required services.

An interesting view of users and uses is proposed by the new Library of Congress Working Group on the Future of Bibliographic Control (http://www.loc.gov/bibliographic-future/). According to the report of the March 15, 2007 meeting (http://www.loc.gov/bibliographic-future/meetings/2007_mar08.html), "there are two main information user and use environments for bibliographic data: a consumer environment and a management environment. The consumer environment relates to the end-user of the bibliographic data, the information consumer, and services that are designed to assist the end-user in finding relevant information, from search engines to specialized catalogue interfaces. The management environment pertains to resource collection management. Although these two environments represent different perspectives of bibliographic data, they are interrelated, for example, in that data recorded primarily for one environment may also be of use to the other. The creation of authoritative bibliographic data still is necessary to support both environments; however, current bibliographic data do not fully meet the needs of either environment«.

The approach of our Working Group was an analysis of current information requests and typical uses of national bibliographies recorded by different European national bibliographic agencies. The situation varies from country to country, but there are some common traits. The present and potential users therefore include:

End-users

This is the most heterogeneous group ranging from library patrons to users who access the online national bibliography remotely. Formal or informal groups and corporate bodies are included into this category. There is considerable variation between different national models: in the UK, for example, the NB is a commercial product and is not widely used by the general public. In Scandinavian countries, in contrast, the NB is widely used as a complement to union catalogues. But regardless of business models behind the NB, the Working Group identified vast potential of NB for the general public.

Librarians

- *Cataloguers*
  Cataloguers need national bibliographies directly (i.e., for copy cataloguing) or indirectly, as support in cataloguing. In the latter case they look for similar bibliographic records and, probably even predominantly, for authority records (names, corporate bodies)
- *Acquisitions librarians*
  They need national bibliographies to order publications, identify publishers and distributors, publication status.
- *Collection development librarians*
  To *analyse* available publications, to select according to collection development criteria, also awareness of future publications (e.g. using CIP records)
- *Reference librarians*
  They act on behalf of end-users (including library patrons, formal and informal groups, and corporate bodies)
- *Legal deposit management*
  Because of the strong tie of national bibliography with legal (or voluntary) deposit, the data in national bibliographies can be used to analyse and control the deposit.
- *Preservation librarians*
  To determine trends in publishing and plan preservation procedures
- *Digitisation decisions*
  To get an overview of materials and make informed decisions on digitisation priorities.

Book trade (including other media)

- *Publishers*
  Commercial and non-commercial sector, also government and official publishers use national bibliographies to analyse the market and competition
- *Booksellers (including other media vendors)*
  In their needs this group is similar to collection development and acquisition librarians. In addition they may perform the function of a reference librarian and possibly even refer customers to libraries for out-of-print publications.

Agencies

- *Funding bodies*
  To study the impact of existing funding or to plan future funding policies.
- *Official statistics*
  For statistical account of a country's publishing output.

Rights management organisations

Because of high-quality authority control and authoritative data on authorship national bibliography data can be (and is) used to support management of intellectual rights by collecting societies, but also government bodies for management of lending right remuneration.

Others

Many other specific users can be listed. Some examples from Norway:

- printers *identifying* publishers to offer cooperation
- journalists to identify language/genre/origin patterns in publications
- organizers *of* book fairs
- identification of translators from/to specific language
- *identification* of illustrators.

And, finally, we have to be aware that in addition to 'human' users of electronic national bibliographies, there is also computer software which directly accesses national bibliographic records such as federated/distributed searching and harvesting. While not users in the real sense, these cases pose additional technical requirements that have to be taken into account when planning an online national bibliography.

2.3   What are the information needs and requirements?

We have already listed various existing and potential users of national bibliographies. These various users have different information needs and different contexts in which they use national bibliographies. Taking into account the information needs, we have to define the requirements: searching criteria (access points) and the essential data elements which need to be displayed. The Working Group identified:

End-user needs

(to obtain information on authors and their publications, on topics; to identify publications and/or authors; to enable access to publications)

Searching: all access points, particularly:

- author name *(any form)*
- *title words*
- *language/country of publication*
- *publisher*
- *publication year*
- *subject headings or keywords*
- *publication ty*pe/genre/format

Data displayed:

- all *elements* needed to **identify, select** and enable to **obtain** access to publications (FRBR, 1998)

Expectations:

- direct access to electronic resources (taking into account rights, authentication and *authorisation* etc.) or obtaining location information for traditional publications

Cataloguing

Cataloguers use national bibliographies for copy cataloguing and cataloguing support in general. In the latter case they look for similar bibliographic records and, probably even predominantly, for authority records (personal names, corporate bodies). Therefore their typical queries can be classified as known-item searching. To verify the authors' names cataloguers may also search directly in the name authority file.

When searching in the bibliographic file the cataloguers look for the record of the publication in hand, the typical access points are therefore:

- Title
- Author
- Standard identifiers (e.g. ISBN, ISSN, ISMN)
- Publication date

Access points for the personal and corporate name authority files are:

- Corporate body name (any variant)
- Personal name (any variant)

As the result, cataloguers expect the complete bibliographic or authority record in a standard format (…MARC, XML).

Re-use of records

(downloading or export of batches of records into other databases and other computer applications)

Re-use of records includes downloading or export of batches of records into other databases and/or other computer applications (examples include CERL Hand Press Book database, Index Translationum, library catalogues (particularly for retrospective conversion). In addition to the in-library use, the importance for commercial agencies (for example for books-in-print) was recognized, too.

The access points in this case are defined by the record (i. e. material) selection criteria. Any attribute may be considered, but in general the requirements are similar to end-user requirements.

Taking into account that the records are needed to be included in other databases, complete bibliographic records in a standard format are expected as the result. Increasingly there will be the need of XML as export format.

Collection development

To be useful for collection development, NB has to offer subject access and analysis of different aspects of publications. Librarians in charge of collection development need national bibliographies (local and foreign) to analyse available publications and select according to collection development criteria. For that they also need to be aware of future publications (e.g. using CIP records). Commercial and non-commercial (non-profit) sector, including government and official publishers use national bibliographies to analyse the market and competition. Typical access points include:

- Subject headings, classification, keywords for searching on topics
- Date of publication

- Language/country of publication
- Publication type/genre/format

Complete bibliographic records should be presented as results. For collection development a link to publisher data is necessary to obtain:
- Price
- Availability (publication status)
- Terms and conditions (rights, technical requirements)

Sorting on several criteria is needed for big result sets and meaningful clustering (such as using FRBR) is helpful.

Acquisition and booksellers

(including other media vendors) (for ordering of publications)

They need national bibliographies to order publications, identify publishers and distributors, publication status.

In searching this group is similar to cataloguers: they also look for known items and need the same typical access points:
- Title
- Author
- Standard identifiers (e.g. ISBN, ISSN, ISMN)
- Publication date

In requirements for display of results they are similar to collection development; they need complete bibliographic records and a link to publisher data to obtain information needed to order the publication:
- Address and contact for publisher
- Price
- Availability
- Rights

A link to books-in-print may be desired.

Publisher analysis

(to analyse the market and evaluate competition)

Searching:
- On a topic: search by subject headings, class. number or keyword
- Date of publication
- Publisher
- Publication type/genre/format

Data needed:
- Basic publication data (citation format)

General analysis of the publishing sector, official statistics

Searching:
- language of publication
- language of original
- country of publication
- classification code
- date of publication
- target audience

Data needed:
- basic publication data (citation format)

Rights management

(to track publications and identify authors)

Because of high-quality authority control and authoritative data on authorship national bibliography data can be (and is) used to support management of intellectual rights by collecting societies, but also government bodies for management of lending rights remuneration.

The information needs of this group are specific. There are two specific scenarios:
- searching by author name (any form of the name) to obtain either the complete authority record for the author or all publications by the author
- searching by title to obtain the authors and their roles

Access points are therefore:
- Title
- Author/creator/contributor name (any form)
- Relator code

The results are either the complete authority record for the author or a bibliographic record in citation (short) format with creator's roles (relator codes). In case of bibliographic records meaningful clustering according to FRBR is needed, taking into account that FRBR expression is the most important level to which the most important rights are associated.

Computer software (federated searching, distributed searching, harvesting)

Many national libraries are offering their users seamless access to all their information sources via information retrieval portals. In addition to national portals there are new international initiatives such as The European Library, the common portal of European national libraries. To enable the searching, there are technically two different approaches:
- Distributed searching using traditional Z39.50 or newer ZING SRU/SRW
- Central index, created and maintained by harvesting with OAI-PMH

The Bath profile gives explicit guidelines for how to support the standard-defined query terms and term combinations in Z39.50 context. The Bath profile is therefore the minimum that has to be supported.

2.4   Conclusion

Much has changed in the last 20 years: types of publications, publishing process in general, but also the format of national bibliographies from the printed version to CD-ROM and online versions. These are all reasons for a fundamental investigation and a fresh look at national bibliographies and a discussion of the mission of the NB in the new environment. Then the users and their specific needs and requirements have been identified. These are the basis for selection principles and guidelines for cataloguing.

And we are confident that the importance of national bibliographies will not only be reconfirmed, but that new national bibliographies will gain an even broader user base and increased interest.

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3 Selection Principles

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Abstract

A key aspect of producing national bibliographies is the determination of its content. The Bibliography Section has as one of its aims to develop "guidelines for selection criteria to assist national bibliographic agencies in making decisions on the inclusion and presentation of remote electronic resources in national bibliographies". This chapter provides guidance on selection criteria that national bibliographic agencies might consider. Particular emphases have been given to digital and web resources. In the digital era, national bibliographic agencies are facing even more pressure to sustain national bibliographies and to assure that they are relevant. Having national bibliographies that reflect digital information output is one way to assure their ongoing usefulness and vitality.

3.1 Introduction

One of the critical facets to be considered by a national bibliographic agency as it contemplates the creation and maintenance of its national bibliography is what goes into the national bibliography. To guide that process, a well-grounded set of selection principles is crucial. Arguably, this is an area where there exists the greatest void, and for good reason. It is the area that is most reflective of the individual characteristic of a given country. As has been presented in an earlier chapter, the very definition of what constitutes a national bibliography is at play here. We have recapitulated the evolving nature (1950 through 1998) of that definition and what coverage is recommended for the national bibliography. By 1998, national bibliographic agencies were advised to "include the current national output, and where practicable also provide retrospective coverage". They were further advised to "include records for materials in all languages and/or scripts in which publications are produced".

With the exponential increase in publishing and information output in the past two decades, if these points of guidance were to be observed, without exercising judicious selection, the national bibliographic agency and the national bibliography would be overwhelmed. It is impossible for any agency to collect, process, and include everything associated with the national patrimony in its national bibliography. Also in 1998, guidance was offered that, "when necessary, selection criteria should be defined and published by the national bibliographic agency". As stated in the IFLA Division of Bibliographic Control brochure, the Bibliography Section has as one of its aims to develop "guidelines for selection criteria to assist national bibliographic agencies in making decisions on the inclusion and presentation of remote electronic resources in national bibliographies".

3.2 General selection criteria

This chapter sets out to present a wide array of selection principles to aid national bibliographic agencies in formulating their selection criteria. There is no one set of selection principles that can be espoused to serve every national bibliographic agency. What this chapter will provide is a discussion of the various criteria to be considered; the rationale to be taken into account; and the

constraints that come into play as each national bibliographic agency tackles the challenge of defining its selection criteria. From this panorama of choices, each national bibliographic agency may devise a framework of selection criteria that meets its needs for administering its country's national bibliography and that fulfils any legal mandates that must be met.

It is noted at the outset that the fundamental aspect of selection principles has not changed as we have moved into the digital era—content remains the basis of selection—not format. It is further acknowledged that the new family of digital formats brings with it an additional, indeed a more complicated, set of issues for managing and offering the resources to the users of the national bibliography. A basic assumption of this chapter is that national bibliographic agencies have a solid foundation in selecting print and other analogue materials—it is for this reason that the focus of this discussion will be on electronic resources. Considering the rapid growth of and swiftly changing nature of electronic resources, national bibliographic agencies will need to be vigilant in monitoring their selection criteria, to ensure that they reflect the ongoing needs of the users of the national bibliography.

3.3   Electronic resources selection criteria

Electronic resources are just one of many formats that a national bibliographic agency collects in support of providing its users with a full range of content that emanates from the home country; that is about the home country; and that is created by citizens residing in or originally from the home country. These electronic resources include a variety of formats—web sites (including blogs or weblogs and other fast emerging resources), online databases, e-journals, e-books, integrating resources, CD- and DVD-ROMs, to name but a few. These may be free, fee-based, or available for purchase. They may be accessed directly or remotely. Remote access resources are those to be used via computer networks; direct access resources are to be used via hand held carriers or through insertion into a computerized device (*Anglo-American Cataloguing Rules,* 2nd ed., glossary). Electronic resources may be linked to, licensed, or acquired. Resources that are acquired may be maintained onsite in a secure and permanent digital repository that is managed by the national bibliographic agency. Alternatively, even if owned by the national bibliographic agency, the resource may be stored remotely under the management of an external agency or organization. These varying methods of collecting add to the complexity of what is represented in the national bibliography.

3.3.1   Specific aspects of electronic resources for consideration

In determining what electronic resources to collect and correspondingly to include in the national bibliography, the considerations accorded traditional formats apply—the cost of the resources themselves, along with the costs of cataloguing, storing, serving and preserving the resources. Additionally, most national bibliographic agencies have in place a set of collecting levels that should be applied for electronic resources, e.g., comprehensive level, research level, instructional support level, general level, minimal level. Minimal level embraces criteria that stipulate the national bibliographic agency collects only a sample of electronic resources of a particular type. Keeping in mind the overriding importance of the content in deciding what should be included, here are key aspects to help determine if a resource is worthy of being selected. It bears repeating that each national bibliographic agency is responsible for developing its own selection criteria, taking these aspects of electronic resources into account to the degree that the agencies find them useful.

- the resources' intellectual/research/scholarly level
- the resources' usefulness for serving the research needs of future users
- the resources' value to the country's diverse or increasingly diverse population
- the resources' contemporary interest (their distinct or unique perspective on the country's social, cultural, or political landscape)

- the resources' creator's/publisher's/producer's reputation
- the resources' uniqueness (the content is only available in digital form—whether created/digitized by the national bibliographic agency or by an external agency)
- the resources' value in relation to an existing analogue collection in the national bibliographic agency (they complement the analogue collection; they continue solely in digital what was formerly analogue, e.g., a journal that started as print and converted to electronic, no longer continuing the print issues)
- the resources' vulnerability to being lost (their "at riskness")
- the resources' reflection of minority, underground, or dissenting views in relation to the home country's history, culture, or social events
- the resources' being representative of digital ephemera that will be of relevance to future researchers
- the resources' technical requirements for use (ease of navigation, range of functionality, server reliability, ease of migration)
- the resources' metadata—the availability of associated metadata
- the resources' being representative of contemporary formats
- the resources' likelihood of being archived by another agency/trusted repository

3.3.2 Examples of electronic resources that are sometimes not selected

The above listing of aspects of electronic resources to be considered in selecting resources for inclusion in the national bibliography provides a palette of exemplars from which national bibliographic agencies might choose to frame selection criteria for the home country. These aspects present the positive approach. In establishing selection policies, it may be instructive also to consider what *not* to include. Following are some of the categories and formats that some national bibliographic agencies report excluding in their selection policies. These examples are illustrative only for the purpose of providing further options for consideration by national bibliographic agencies.

- application programs/software
- bulletin boards
- chat rooms
- cookies
- databases primarily containing statistical and other raw data (e.g., datasets; some national bibliographic agencies are becoming increasingly concerned, however, about the scientific research that is only captured in datasets)
- duplicates of print and other analogue resources
- emails
- games
- informal/incomplete resources (e.g., works in progress, preprints, selected parts of a larger resource)
- newsgroups
- newspapers (online versions for which print versions exist; some national bibliographic agencies consider newspapers of great importance)
- organizations' records
- retail/advertising sites
- theses/dissertations (providing that they are collected by universities or other bodies; some national bibliographic agencies consider these materials of great importance)

While some national bibliographic agencies—at least for the present—indicate not selecting the above resources, arguments can be proffered for the inclusion of one or more of the categories. For instance, games are beginning to be viewed as strong learning devices for the youngest generation of learners. Will future researchers want to have samples of these to see how they evolve in sophistication and support the teaching/learning process? Will having samples of retail/advertising sites enhance assessments that future social scientists make of the changing cultural and social

environment? Will important and perhaps groundbreaking research that is only recorded as part of datasets be lost if national bibliographic agencies do not collect these and record their existence in the national bibliography? These questions underscore the complexity inherent in what national bibliographic agencies must consider in determining selection criteria that will serve the best interests of their users.

3.4 Other issues related to selection

Some other issues, and sometimes constraints, associated with selecting resources for inclusion -- -- particularly electronic resources - are worth addressing.

3.4.1 Legal deposit

While legal deposit is pivotal to what is included in a national bibliography, legal deposit does not equate with the national bibliography and therefore does not necessarily set the defining parameters for a national bibliographic agency's selection criteria. This is especially true for electronic resources, as the legal deposit legislation is at varying stages of revision in each country to incorporate electronic resources. The survey conducted of European national libraries in early 2005 revealed the magnitude of the work that remained in various countries to update the legal deposit law to embrace web and digital resources to the level of fullness that approaches traditional publications of the countries. The encouraging news was that most (twenty-one out or thirty-two respondents) had pending legislation or had started the revision process of the legislation, although it could be several years before the updated legislation was passed. In the interim, national bibliographic agencies in many countries were initiating pilots and other cooperative arrangements with publishers and producers of web content to have them voluntarily deposit digital content with the national bibliographic agency. The status of the legal deposit law in a given country, then, will affect the volume of electronic resources that a national bibliographic agency will have to take into account in its selection process. The following statement from the United Kingdom is indicative of where many national bibliographic agencies find themselves, at present:

> In the UK, incorporation of electronic media into the National Bibliography has been constrained by the restriction, until recently, of legal deposit to printed matter. Since 2000, the B[ritish] L[ibrary] and participating publishers have been operating a limited voluntary scheme, largely for hand-held electronic publications. The successful passage of the Legal Deposit Act through Parliament has extended the scope of legal deposit in principle, but in practice inclusion of other media requires the government to pass enabling measures, which in turn are dependent on negotiation with the 'publishers' and therefore extension of legal deposit to cover new media will be incremental.

3.4.2 Copyright/Intellectual rights

Closely allied with legal deposit are the myriad issues swirling around copyright and intellectual rights protection. Even if the laws of a country allow the national bibliographic agency to collect digital materials, that same law may not grant users free or unrestricted access to the material. National bibliographic agencies must decide whether to include such materials in the national bibliography. One question to be posed: Is the user served by knowing of the existence of the material, even though the material may not be accessed remotely or onsite, either immediately or at a future date?

3.4.3 Geographic boundaries

There is a need to be mindful of the issues related to geographic boundaries. Problems stem from several sources. National bibliographic agencies that wish to include items published in the home country must contend with international publishers that have places of publication and publishing offices in multiple international cities. National bibliographic agencies must decide if they will include publications issued by publishing distributors that are situated in other countries. If the country routinely has a sizeable amount of its publications issued in other countries, the national bibliographic agency will have decisions to make about the inclusion of such publications. Authors from the home country who publish in other countries must be taken into account. There is no clear answer to the questions that arise from these situations—the questions and their answers represent the variety of circumstances that may exist related to a world where geographic boundaries have become blurred. It may be that the national bibliographic agency will have to assess other criteria in making decisions about what electronic resources to include in the national bibliography.

3.4.4 Availability of materials and their inclusion in the national bibliography

Electronic resources present another issue of some importance to national bibliographic agencies. For traditional materials, the inclusion of a bibliographic record in the national bibliography indicated the availability of that item in the agency's collections. In the digital arena, should this still be the case? If an item meets one or more of the selection criteria mentioned in this chapter, but is not owned or archived by the agency, should it be included in the national bibliography? The answer depends on the service that the agency wishes to provide its users—recording that the resource exists or recording only what the agency holds. Which approach best serves the needs of the user? National bibliographic agencies should consider the analogous situation of traditional materials— some representations in the national bibliography were for materials not housed in the collections, e.g., "do not acquire" items.

Another dimension of this issue is the ephemeral nature of many web resources. Is it responsible to include listings in the national bibliography for web sites and other materials that may have disappeared or whose link (URL) is no longer valid? These are decisions that national bibliographic agencies must make in the context of their national service agenda.

3.4.5 Automated selection

Whenever automated means can be employed for a library and information access task, these should be explored. The use of automated selection techniques presents itself most especially in relation to web harvesting. If a search filter can be constructed that screens effectively what is harvested, this will preclude the need for human intervention, helping to mitigate the costs. The first level of selection for most national bibliographic agencies is the country domain, e.g., *.fi* or *.lt*, for Finland and Lithuania, respectively. Using metadata associated with the resource offers another way to take advantage of automation for selection. The quality of a web resource may be revealed by the presence of identifiers, e.g., ISBN or ISSN; by the presence of indicators for type/format/genre; by the presence of indicators for the type of author/creator; by the presence of a rich array of metadata; and by the presence of multiple links to the resource. A national bibliographic agency may use any of these in setting the crawler requirements either to include or exclude what resources are harvested.

A couple of questions arise in contemplating automated selection. One question is how far links are to be followed in web harvesting. Some national bibliographic agencies harvest all websites that are linked to the main site—this allows greater assurance that the full oeuvres of authors are captured. While this might introduce some overlap if more than one country captures fringe links or URLs

associated with the main site, this may be better than missing sites that might otherwise be lost. France, for instance, uses this model. Another question is how much of what a national bibliographic agency harvests is to be represented in the national bibliography. It does not necessarily follow that because a web resource is collected that it should be covered in the national bibliography. Sites may be harvested to ensure that a fuller representation of the home country's web output is captured for posterity; the sites, however, may have varying levels of intellectual value. Some of the sites may only be accessible through the national bibliographic agency's online public access catalogue or comparable database.

3.5   Conclusion

Selection criteria are as vitally important in the digital sphere as they have heretofore been for traditional materials. This chapter has presented the variety of approaches available and the issues to be contemplated as national bibliographic agencies make determinations about what electronic resources to include in their national bibliographies. What is clear, however, is that no national bibliographic agency is in a position to select, and therefore collect, everything. Decisions must be made; it is acknowledged that these will sometimes be difficult decisions. No one size fits all; each agency must deliberate on its user community (see chapter 2, "Value of National Bibliographies: Use and Users," for a discussion on use and users of national bibliographies); on its legal requirements; on its available funding; and on its technical infrastructure/repository capacity. Below are citations to a sampling of online selection criteria that may prove instructive for national bibliographic agencies seeking additional guidance.

Citations to selection criteria available online

http://www.onb.ac.at/about/index.htm -- Austria
http://www.collectionscanada.ca/9/8/index-e.html --Canada
http://www.webarchiv.cz/criteria.html --Czech Republic
http://www.nkp.cz/pages/page.php3?page=weba_weba_pv.html --Czech Republic
http://www.kb.dk/kb/dept/nbo/da/pligtafl/information-en.htm --Denmark (current law)
http://www.kb.dk/kb/dept/nbo/da/pligtafl/newlaw-en.htm --Denmark (new law)
http://www.ddb.de/wir/netzpubl e.htm --Germany
http://www.ddb.de/wir/sammelauftr_cd.htm --Germany
http://www.stjornartidindi.is/servlet/stjrtid/A/2002/20.pdf --Iceland
http://www.nbs.bg.ac.yu/ Web site of National Library of Serbia –Serbia
http://www.e-helvetica.admin.ch/eng/suppliers/eng-suppl_index.htm# --Switzerland

Kopaleva V.A. (2005). Archiving of Internet scientific information resources: The basic conceptual positions. *The Library News*, 2. --Ukraine

http://www.bl.uk/collections/britirish/britishandirish.html -- UK

4   Cataloguing

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4.1   Introduction

The purpose of this chapter is:
- to serve as a practical guide for implementation of the recommendations on cataloguing adopted by the International Conference on National Bibliographic Services (ICNBS) held in Copenhagen in 1998;
- to offer guidance for best practice in integrating cataloguing of electronic resources into national bibliographies.

4.2   Responsibilities of the national bibliographic agency

IFLA has defined the responsibilities of the national bibliographic agency in respect to cataloguing for the national bibliography in a series of recommendations emanating from the international meetings of experts convened in Copenhagen in 1998[1] and in Paris[2] in 1977.

International Conference on National Bibliographic Services (ICNBS) "endorsed the concept of universal bibliographic control (UBC) as a long term programme for the development of a world wide system for the control and exchange of bibliographic information".

(11) The national bibliographic agency should:
- take responsibility for preparing <u>comprehensive</u> bibliographic records of the national imprint (or co-ordinating their preparation);
- adopt national and international standards and principles for cataloguing;
- [adopt] identification systems such as ISBN and ISSN;
- [adopt] national and international standards and principles for] script conversion, authority control, classification schemes, metadata and permanent naming of digital objects.

4.2.1   Scope of cataloguing for the national bibliography

The scope of cataloguing for the national bibliography will be determined by:
- responsibilities imposed on national bibliographic agencies by the national legal deposit framework (see Chapter 6);
- the selection criteria for the national bibliography (see Chapter 3);
- any exclusions defined for the national bibliography (see Chapter 3);

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[1] ICNBS: Copenhagen 25-27 November 1998. Proceedings of the international conference on national bibliographic services, Copenhagen: The Royal Library. ISBN 87-7023-059-5

[2] Guidelines for the national bibliographic agency and the national bibliography. Paris. UNESCO, December 1979. PGI/79/WS/18

- the availability of resources (money, staff and equipment) (see Chapter 6).

4.2.2 Relationship of the national bibliography to the national library catalogue

In many countries responsibility for creation of the national bibliography resides with the national library. The national bibliography is not synonymous with the national library's catalogue. The scope of the national bibliography is different from the scope of the catalogue. The catalogue is a record of the whole library collection. Some material in the collection will be out of the scope of the national bibliography because it is published outside the country or because it has no direct connection with the national literature. The national bibliography is a record of the national published archive. The national bibliography may incorporate material which is not in the national library's collection, as will often be the case if responsibility for collecting and cataloguing the national published archive is distributed among different agencies. The national bibliography may also include records for forthcoming publications, notified to the NBA through a cataloguing-in-publication (CIP) programme. CIP programmes are described in Chapter 4.5.

Each national bibliographic agency will adopt the production model that best meets its needs. For example, the national bibliography may be a product derived from the national library's cataloguing of its own collection; alternatively, records created by the national bibliographic agency may be incorporated into the national library catalogue. Irrespective of the methodology, the overlap between national library catalogue and national bibliography should be exploited to maximise efficiency through the reuse of metadata with minimal manual amendment.

Efficient reuse of metadata is dependent on standardisation on consistency. The same standards must be followed for both products and workflows should be integrated as much as possible. Pre-existing metadata is reused at each stage in the workflow (selection, acquisition, accessioning and description) reusing existing metadata. Metadata that is added for any stage in the workflow should be fit for purpose. Meaning that it is accurate and conforms with standards and policies appropriate to that type of data. Standardised workflows are easier to automate. Exception handling is resource intensive and should be minimised through a process of continuous improvement.

In the real world assignment of product or service specific metadata is sometimes necessary. Metadata may also be necessary for management information or collection management purposes. Give careful consideration to the most efficient and cost effective means of assigning such metadata. Situations in which metadata data required for one purpose or institution are in conflict with metadata assigned for another are inefficient. Conflicts may arise between a general standard and a local practice. In the long term, adherence to standards will prove more efficient than maintenance of local practice.

The challenge of rationalising metadata and workflows should not be underestimated. It can take a lot of time and energy to change entrenched process and policies. However failure to address these issues can be incredibly wasteful. At one national bibliographic agency, standard subject classification and indexing assigned to national bibliography records was stripped off when the records were incorporated into the national library's catalogue and replaced with local classification terms. The local classification was increasingly out of date because there was insufficient resource to maintain the local classification. While these resources were subject indexed twice other resources were not being indexed at all. This is an extreme example of what can go wrong without effective management of policies and workflows.

4.2.3 Changing context of the national bibliography

The national bibliography is typically an aggregation of bibliographic records created by cataloguers to nationally and internationally agreed standards. Traditionally these records have been issued in

printed form, organised by subject, author and title. It is increasingly commonplace for the national bibliography to exist as a database from which electronic or printed products are generated and to which direct electronic access may be offered to end users through the World Wide Web.

Despite these changes to its format the purpose of the national bibliography remains the same. It is a comprehensive record of the national published output. The emergence of new formats and new media has changed the scope of the national published output. The World Wide Web, in particular, has altered our understanding of the national *published* output. The Web has removed many of the traditional barriers to publication. A resource may be considered to have been published if it can be accessed over the Web. The issues this raises for selection have been dealt with in Chapter 3. For cataloguing managers digital resources raise questions of priorities, sustainability and cherished cataloguing practices.

Traditional cataloguing practices, predicated on book-in-hand analysis of resources by highly educated professionals, are not scalable to the whole of the World Wide Web. The proliferation of digital media and formats also raises new challenges for the organisation and presentation of information and provision of access. It is incumbent on national bibliographic agencies to target their limited resources as efficiently as possible to achieve comprehensive coverage while continuing to satisfy existing user needs. The Web has also altered expectations. The public has become accustomed to instant access to resources. The information that a specific resource exists (or even existed at a certain time) is not enough.

Electronic resources pose new challenges for resource description and access. Electronic resources may be related to existing printed resources, but differ in scope or content; they may be available in multiple formats; they may contain multiple components and they may be constantly updated. How is this multiplicity of resources to be conveyed to the user in a meaningful way? How can the national bibliographic record support resource discovery in this confusing new environment?

The challenge posed by electronic resources is one of the issues leading to IFLA's development of *Functional Requirements for Bibliographic Records* (FRBR). *FRBR* is a conceptual model of the bibliographic universe. *FRBR* is derived from a detailed analysis of the resource discovery user task. In the course of this analysis *FRBR* identified the metadata structures required to support resource discovery tasks.

4.2.4   Comprehensive bibliographic records

ICNBS recommended:

"(12) National bibliographic agencies should adopt the components of the Basic Level Record recommended in the final report of the IFLA Study Group on the *Functional Requirements for Bibliographic Records* (Saur: Munich, 1998. UBCIM Publications New Series ; vol. 19.)"

The FRBR Basic Level record is basic in name only. It is sophisticated metadata which satisfies the requirements necessary to support the user tasks FIND, IDENTIFY, SELECT and OBTAIN defined by FRBR as fundamental to resource discovery. Additionally the FRBR basic level record specifies relationships between the resource described and other entities. The identification and description of relationships supports subsidiary functions such as exploration and clustering in a database. The FRBR basic level record is expensive to produce. Extending the coverage of this level of record to match increased output of traditional and electronic media is a challenge for NBAs.

The content of the FRBR basic level record is strongly based in traditional concepts of bibliographic control. If these concepts are still valid in the digital age we need to imagine how we can leverage our processes to produce this level of metadata more efficiently.

4.2.5   Bibliographic control and bibliographic standards

Universal Bibliographic Control is predicated on sharing the effort of resource description and eliminating redundancy by encouraging sharing and re-use of bibliographic data. Efficient collaboration relies upon standardisation. The ICNBS recommendations make many recommendations in respect to Bibliographic Standards.

(13) The national bibliographic agency should take a lead in the updating and maintenance of national and international standards and principles in developing all the bibliographic tools categorised in 11 above, including projects to develop and promote standards, guidelines and methods for authority control to facilitate the international exchange of authority data.

(14) Urgent attention at national and international levels should be paid to ensuring compatibility, convertibility and accessibility among the bibliographic exchange formats of the library, information and publishing communities, taking care that all elements are identified and none lost in the conversion process.

(15) National bibliographic agencies should encourage ongoing work in the harmonization of bibliographic standards established in respect of all forms of publications, beginning with serial publications.

(10) The bibliographic records included in the national bibliography should be:
- based on internationally recognised standards;
- arranged in an appropriate manner and with access points which satisfy the needs of the users in accordance with the characteristics of the format(s) used for distribution.

4.2.6   Content standards

Content standards specify what information is to be recorded and how it is to be presented. Content standards may also include guidelines and instructions regarding the most authoritative source of information within a resource. Adherence to content standards ensures consistency in the published bibliography.

4.2.6.1   Descriptive standards

International Standard Bibliographic Descriptions (ISBD)[3]

ISBDs regularise the form and content of bibliographic descriptions. ISBD deals with description of resources, it is not directly concerned with access. ISBDs have been published for different types of material, but in 2007 these were superseded by the consolidated ISBD. The consolidated ISBD simplifies the application of ISBD and reflects the increasing significance of electronic carriers for all kinds of content.

The ISBD was derived from the Paris principles. The Paris principles are the fundamental expression of the purpose and essential characteristics of library catalogues. The Paris principles were promulgated in 1961, at a time when computers were barely known in libraries. The International Meeting of Experts (IME) is developing an International Cataloguing Code (ICC) to replace the Paris principles with a new set of International Cataloguing Principles, which better reflect the potential of information technology[4].

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[3] ISBD Review Group http://www.ifla.org/VII/s13/isbd-rg.htm

[4] IFLA Cataloguing Section. *IME ICC* http://www.ifla.org/VII/s13/index.htm#IME-ICC

National cataloguing rules

National bibliographic agencies, library associations and other agencies have developed national (and international) cataloguing rules as practical tools for use by cataloguers working in national bibliographic agencies, etc. Most such rules are derived from and closely based upon the ISBDs. Examples of national cataloguing rules include *Anglo-American Cataloguing Rules* (*AACR*) and *RAK*, etc. A new international code, entitled *RDA: Resource Description & Access* is in development as a successor to the widely used *AACR. RDA* is designed to enable the description of any resource, irrespective of format and to support *FRBR. RDA* will be released in 2009.

4.2.6.2 Subject standards

Subject indexing schemes

IFLA recommends provision of subject access to national bibliographies. Subject indexing schemes provide controlled access to the content of resources. Schemes define concepts and relationships between concepts to support user navigation.

Subject classification schemes

IFLA recommends the adoption of subject classification schemes for arrangement of the national bibliography. Classification schemes may be directly related to the subject scheme or independent schemes. There is increasing interest in the potential of classification schemes to identify concepts in a linguistically and culturally neutral way. The IFLA Classification & Indexing section is developing guidelines for subject access to national bibliographies.

4.2.7 Standards for identification

In many countries the NBA acts as the maintenance agency for standard identifiers and assumes responsibility for assignment of identifiers. In other countries the role may be assumed by a trade organisation or a third party.

Standard identifiers support identification and therefore interoperability throughout the supply chain. Standard identifiers are an essential component of resource description. Standard identifiers signify that a resource has been formally published. Standard identifiers can also be used by NBAs to find rich metadata for the resource. The following International Standard Numbers are well established product identifiers.

International Standard Book Number (ISBN) [5]
International Standard Serial Number (ISSN) [6]
International Standard Music Number (ISMN)[7]

It is strongly recommended that NBAs retain standard identifiers whenever associated with resources or present in accompanying metadata.

Unambiguous identification of entities, such as persons, corporate bodies, works etc. will be essential precursors to machine to machine operations and more identifiers are being developed. Whereas the more established identifiers were concerned with products (manifestations in FRBR

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[5] International ISBN Agency http://www.isbn-international.org/

[6] International ISSN Agency http://www.issn.org/

[7] International ISMN Agency http://ismn-international.org/

terms), the newer identifiers are concerned with the identification of aggregations and people or institutions.

4.2.7.1 Linking ISSN (ISSN-L)

The "Linking" ISSN or ISSN-L is a development of the ISSN standard. Electronic journals may be available in a range of different digital formats, e.g. pdf, HTML, NLM DTD, in addition to print, microform, CD-ROM versions, etc. The Linking ISSN provides a common identifier (usually the ISSN of the first format available) for all of these formats to simplify navigation and management.

4.2.7.2 The ISTC or International Standard Text Code

ISTC is a draft international standard[8]. Whereas the ISBN identifies manifestations, the ISTC will identify expressions of works. Although being developed by the book trade to manage back catalogues and intellectual property rights, the ISTC has obvious potential for FRBR implementations. For example, an ISTC identifying a particular translation of a work would relate all the manifestations which have been based on that translation.

4.2.7.3 The International Standard Name / Party Identifier (ISNI / ISPI) [9]

The ISNI is at an earlier stage of development than the ISTC. The ISNI also has applications in rights management and resource discovery. The ISNI is an identifier for persons or corporate bodies and has obvious application in authority control.

4.2.7.4 National Bibliography Number (NBN)

The NBN is not yet a formal standard. Details of the proposed specification can be found in Appendix 1 below.

The purpose of the NBN is to enable persistent resource identification. The NBN enables each entry in the national bibliography to be unambiguously referenced.

It is recommended that the national bibliographic agency assigns a national bibliography number to each record created for the national bibliography.

It is recommended that the NBN is published as part of each entry for each resource described in the national bibliography.

It is strongly recommended that NBNs are not reused.

It is recommended that the NBNs of both entries are retained should it be necessary to merge duplicate entries. The NBN of the superseded entry should be marked as superseded.

4.2.8 Authority control

Authority control (or access point control) refers to the normalisation of controlled access points (headings) and the provision of alternative and related access points. Authority control supports the

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[8] ISO Project 21047 International Standard Text Code (ISTC) http://www.collectionscanada.ca/iso/tc46sc9/21047.htm

[9] ISO Project 27729 International Standard Party Identifier http://www.collectionscanada.ca/iso/tc46sc9/27729.htm

FIND function through the collocation of works by a given author or the collocation of anonymous works by title. It supports the IDENTIFY function through the disambiguation of names of persons, corporate bodies or titles of works and expressions. Authority control is also used to identify and relate resources by subject. The controlled access points for authorised and variant forms created for authority control and the relationships between authority records underpin navigation by the end user.

IFLA has published *Guidelines for authority records and references,* which describe the traditional process and principles for creating authority data[10].

The national bibliographic agency is responsible for "establishing the authoritative form of name for its country's authors, both personal and corporate, and authoritative lists of its country's authors, both personal and corporate"[11]. In practice many countries do not confine their authority list to "national" names but include names of any author whose works have been published or distributed in the country. The scope of authority files may also extend to titles.

The scope of the national bibliography should be reflected in the scope of the authority file. For example, NBAs which include journal articles in the national bibliography should include the authors and contributors to those articles in the authority file. In practice many NBAs cannot afford to catalogue journal articles and are unable to create authority records for their authors. This is an area for stimulating research into more efficient approaches to authority control.

Authority control is an expensive process. Various international initiatives exist with the objective of reducing the cost of authority control through co-operation. For example:

Virtual International Authority File (VIAF) [12]

> A collaborative project involving Library of Congress, Die Deutsche Nationalbibliothek, Bibliothéque national de France and OCLC with the objective of developing methodologies for automated alignment of national authority files.

LC / NACO Authority File [13]

> International name authority file maintained by Library of Congress. The LC/NACO authority file contains over 6 million records and involves hundreds of contributing libraries and programmes around the world. It is a core activity of the Program for Cooperative Cataloging.

Authority control remains a predominantly manual process. Automation of the authority control process is a precondition of scalability. The ISNI and ISTC, described above, may deliver machine readable identifiers for names and titles. Projects such as VIAF and People Australia[14] are experimenting with automated matching of authority data. Publishers are also developing automated approaches to identification of authors, e.g. Elsevier's SCOPUS service[15]. Publishers

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[10] *Guidelines for authority records and references.* (2001). *2nd* Edition / Revised by the IFLA Working Group on GARE Revision. München: K.G. Saur. (UBCIM Publications – New Series Vol 23). Retrieved from http://www.ifla.org/VII/s13/garr/garr.pdf

[11] Universal bibliographic control: a long term policy, a plan for action. / by Dorothy Anderson -

[12] VIAF: the virtual international authority file http://www.oclc.org/research/projects/viaf/

[13] NACO Name authority cooperative program of the PCC http://www.loc.gov/catdir/pcc/naco/

[14] Overview of People Australia: http://www.nla.gov.au/initiatives/peopleaustralia/index.html

Feasibility study: http://www.nla.gov.au/initiatives/peopleaustralia/PeopleAustraliaFeasibilityStudyWebsite.doc

[15] SCOPUS overview. What is it? http://info.scopus.com/overview/what/

are increasingly aware of the potential contribution automated authority process can make to rights management.

4.3   National bibliography and access

The traditional assumption behind legal deposit is that access to a physical collection of the national published archive is guaranteed in perpetuity. The extension of legal deposit to electronic resources calls this assumption into question. Many electronic resources are by their nature evanescent and independent of place.

National bibliographic agencies should take into account the provision made for long term access to electronic resources when allocating funds and staff to the description of electronic resources.

4.4   Level of cataloguing

Current IFLA recommendations and previous guidelines have emphasised the need for national bibliographic agencies to treat all resources equally. In the new context created by the World Wide Web this "one size fits all" approach is no longer sustainable. In the future a graduated approach will be inevitable in which the level of cataloguing appropriate to different types of resource will be determined:
- in relation to the level of metadata already associated with the resource
- in relation to the significance of the resource for the national bibliography

This is a significant change of approach to creation of the national bibliography. The implementation of cataloguing levels will have a direct impact on users of the national bibliography.

4.4.1   Users and uses of the national bibliography: metadata elements

The fundamental user tasks for resource discovery are defined in the *Functional Requirements for Bibliographic Records (FRBR)* as:

to **find** entities that correspond to the user's stated search criteria (i.e., to locate either a single entity or a set of entities in a file or database as the result of a search using an attribute or relationship of the entity);

> example: a search on the title *Harry Potter and the Goblet of fire* returns several hits

to **identify** an entity (i.e., to confirm that the entity described corresponds to the entity sought, or to distinguish between two or more entities with similar characteristics);

> example: the result set is refined to limit the search to expressions of the work as a novel, i.e. excluding the motion pictures and scores, etc.

to **select** an entity that is appropriate to the user's needs (i.e., to choose an entity that meets the user's requirements with respect to content, physical format, etc., or to reject an entity as being inappropriate to the user's needs);

> example: the user chooses an audio book, read by Stephen Fry not by Jim Dale

to acquire or **obtain** access to the entity described (i.e., to acquire an entity through purchase, loan, etc., or to access an entity electronically through an online connection to a remote computer).

example: a copy of the Audio Cassette is reserved at the local public library

The starting point for evaluating the metadata requirements is the analysis of users and uses of the national bibliography. Use or function is possible only if appropriate metadata are available. Groups of users and individual users will have different metadata needs in relation to standard functions, such as FIND, and may additionally have specific needs which may not be shared by other groups or individuals. The analysis makes an assumption that NBAs will not create metadata specific to individuals (although they may offer the facility for users to assign their own tags or annotations). The analysis therefore treats individuals as members of groups of users.

4.4.2 Type of resource and level of metadata

The responsibility of the NBA to create "comprehensive" records of its "national imprint" as recommended by the Paris conference in 1977 and affirmed by the International Meeting of Experts in Copenhagen in 1988 was predicated on predominantly print resources and is no longer sustainable. The "national imprint" now includes electronic resources. Electronic resources, published through the medium of the World Wide Web, may become the predominant type of resource. The expansion of the national imprint may exceed the capacity of the NBA to process resources comprehensively.

NBAs may opt to catalogue electronic resources at different levels. In taking these decisions NBAs must take cognisance of the impact on users and the significance of the electronic resource. The decision on the level of metadata should be based on the content of the resource and NOT on the format.

4.4.3 Level of metadata associated with the resource

As described in Chapter 3, the quantity and quality of metadata associated with an electronic resource is variable. National bibliographic agencies are encouraged to reuse metadata associated with an electronic resource.

Metadata that is reused may not have been created for the purpose of resource discovery. It would be more accurate to think of it as repurposed metadata. Re-purposed metadata is unlikely to function as efficiently as metadata specifically created to support the resource discovery function.

The functional weakness of repurposed metadata derives from non-compliance with content standards developed to support resource discovery. This has consequences for the capability of repurposed metadata to support the full range of resource discovery tasks. It is particularly significant for the more complex tasks, such as IDENTIFY, SELECT and to RELATE the resource to its wider bibliographic or topical context.

The identification and description of relationships between resources remain largely dependent on human intervention. The Library of Congress has experimented with a so-called "access level" record for electronic resources in which the balance of human intervention is transferred to authority control rather than description. LC has reported the potential for substantial savings.[16]

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[16] Library of Congress. LC implementation plans for access level MARC / AACR Records
http://www.loc.gov/catdir/access/accessrecord.html

Metadata is not available for all electronic resources. Pages scraped from the Web or resources acquired through legal or voluntary deposit may not have associated metadata. The significance of this is often played down because full text digital resources can be characterised as self describing. This is true only to the extent that full text resources can be indexed and searched. Indexing all the key words contained in a resource is different from summarising the subject of the resource using a controlled vocabulary, such as a subject indexing system or a classification scheme. The distinction will be manifest in the precision and recall. A search on keywords is likely to include many false drops and may well miss resources in other languages or which employ different jargon.

Many electronic resources are not textual. They may contain images or recorded sound or data or a combination of non-textual resources. Searching for resources of this kind is dependent on the availability of metadata to limit the population. For example searching for appropriate illustrations to include in a presentation is difficult and time consuming without verbal features to organise the illustrations thematically it would be virtually impossible.

The Working Group has categorised four levels of associated metadata.

4.4.3.1 Authoritative

Authoritative denotes the highest level of metadata assigned to a resource. Designation as authoritative asserts that (specified) access points are controlled by authority records and that the description conforms to explicit content standards.

Authoritative metadata offers the most flexible support for resource discovery. Authority control over access points supports accurate identification of resources. Authority control of names and titles supports clustering for economy of display. The reference structure within the authority record supports navigation to related resources, identities or topics.

Authoritative metadata is the most expensive category to assign but bibliographic agencies can have confidence that the record can be reused with minimum intervention. It is recognised that assignment of authoritative metadata to all resources in the national output is likely to be beyond the capacity of most NBAs. NBAs need to develop criteria to determine which parts of the national output will receive this level of metadata. The guiding principle should be content of the resource not the format or carrier of the resource. Chapter 3 contains guidelines.

4.4.3.2 Enriched

Enriched level denotes assignment of comprehensive metadata for description and access. The description explicitly conforms to published content standards but there is no commitment to support any access points with authority records. Examples of enriched metadata may include MARC records, qualified Dublin Core, ONIX or other book seller records.

Enriched medatadata does not fully support user tasks. Failure to control access points with authority records will inhibit clustering in displays, resulting in multiple sequences for individual entities, such as names of authors, works or topics. This results in the degradation of service to the user. The FIND task is not fully supported and navigation between resources is compromised. The unambiguous IDENTIFICATION of resources will be constrained.

4.4.3.3 Enhanced

Enhanced level indicates that the basic resource has been supplemented by assignment of some metadata. Enhanced metadata may not explicitly indicate the contents standards used nor is there any commitment to authority control of access points. Examples of enhanced metadata which could be re-used by the NBA, include unqualified Dublin Core and TEI headers.

Enhanced metadata is not recommended for use in national bibliographies. Enhanced metadata does not adequately support resource discovery tasks. The absence of explicit identification of the content standard means that the NBA cannot be certain of the scope of this failure.

4.4.3.4 Basic

Basic level assumes no metadata have been assigned to the resource, either by the bibliographic agency or by the source. This category is most likely to include resources harvested directly from the Web with no metadata or metadata produced by automatic processing.

Resource discovery is entirely dependent on natural language searching. Results returned will correspond to the query terms. In a standard web browser results will be ranked for display. This approach can be very effective. It is most effective when the resource being sought is readily distinguished, for example by its terminology, or when the user has a general information need which may be satisfied from a range of similar resources. This level is the most economic for the bibliographic agency to create, but the most expensive for the agency to upgrade.

Provision of resource discovery at basic level is achieved by transferring costs to the end user. The end user will not be able to navigate to related resources other than by means of the native links; the end user may obtain a huge result list and may find it difficult to refine results adequately in order to SELECT a specific resource.

This level of metadata is most appropriate to textual resources considered to be of relatively low value harvested from the Web. This level of metadata is not appropriate for graphic or other non-textual resources. Serious consideration should be given to how (or whether) this level of metadata will be incorporated into the national bibliography.

4.4.4 Significance of the electronic resource for the national bibliography

The level of metadata required for discovery of electronic resources in the national bibliography should be determined by the NBA. In making this determination the significance of the resource in relation to the national imprint must be taken into account.

Significance	Definition	Recommended Level
High	Formally published; surrogate for or successor to print resource; may contain standard identifiers. Resources of research value	Authoritative
Intermediate	Resources of high cultural value or innovative sites which are not formally published.	Enhanced

| Low | Personal or ephemeral information judged to be of little interest to contemporary or future audiences. | Basic / Enriched |

4.5   Cataloguing-in-Publication Programmes (CIP)

Many national bibliographic agencies operate a cataloguing in publication programme (CIP) in collaboration with publishers to provide advanced notice of forthcoming publications. The CIP programme can also be an important component in distributed cataloguing programmes.

4.5.1   Overview

CIP programmes serve publishers and libraries. For publishers the programme acts as a bridge to the library book buying market, for libraries it is an alerting service enabling selectors to identify books of interest to the user community.

Publishers provide detailed information about forthcoming publications to the CIP programme. This information is used to create a preliminary or "CIP" record. The preliminary record is published in the national bibliography. A copy of the CIP record may be provided to the publisher who prints it on the book. This makes it much easier for libraries to catalogue the book. In some cases the record is not printed, but the publisher prints a declaration that a CIP record is available from the national bibliographic agency. When the resource is received by the bibliographic agency, the preliminary record is updated to reflect the item in hand and the "upgraded CIP" record is published in the national bibliography.

4.5.2   Establishing a CIP programme

There is no single model for CIP programmes; each national bibliographic agency is different and the programmes evolve to satisfy local requirements. IFLA last conducted a survey of CIP programmes in 1993[17].

The active participation of publishers is critical to the success of a CIP programme. The NBA must advocate the benefits of CIP to publishers and publisher organisations. CIP programmes are voluntary. CIP programmes are free of charge to participating publishers. The programme must not be responsible for disrupting the work of publishers. The national bibliography must ensure that the programme is adequately resourced.

Participating publishers are required to provide data to the national bibliographic agency, usually several months in advance of publication. The national bibliographic agency specifies the data elements to be supplied. IFLA published a recommended standard for CIP in 1986[18]. Many agencies provide an information sheet or webform which the publishers complete.

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[17] The Functioning of CIP - A Survey and a CIP Agency Project. A Vosper Report by Georgeta Clinca, National Library of Romania. 1993. 71 pages.

[18] Recommended Standards for Cataloguing-in-Publication. The CIP data sheet and the CIP record in the book. 1986. III, 30 pages.

4.5.3 Examples of CIP programmes

<u>Canada</u>

In Canada responsibility for coordination of the programme resides with the national library, but the programme is operated through a network of agent libraries providing a tailored service to regional publishers.

<u>United Kingdom</u>

The British Library has found it more cost effective to contract out operation of the CIP Programme to a commercial bibliographic agency. The British Library pays the contractor for delivery a number of CIP records annually and sets criteria for content and quality.

<u>United States</u>

In the United States the service is directly controlled and operated by the national bibliographic agency.

Appendix 1 National Bibliography Number

Structure

At the time of writing there is no internationally agreed specification for the National Bibliography Number. The Conference of Directors of National Libraries (CDNL) has registered a URN (Universal Resource Name) name space identifier for the NBN.

All URNs consist of the letters "URN:" followed by a Namespace Identifier (NID) and a Namespace Specific String (NSS). For national bibliography numbers the NID is "nbn" and the NSS consists of three parts:

1. Prefix:

Either ISO 3166 country code – 2 letter code e.g. GB

Or

Non-ISO prefix e.g. LCCN

The Library of Congress is the global registration agency for the NBN namespace and registers the non-ISO prefixes.

2. Delimiting character

Hyphen – this is always used for separating the prefix and the third part, the NBN string.

Colon – this is used only if a country-code NBN namespace is split further into smaller sub-namespaces assigned to trusted organisations.

e.g.   urn:nbn:fi:st for Statistics Finland

urn:nbn:fi:vn for Finnish State Council

NBN string

This uniquely identifies the electronic document at a national level.

The NBN string may include a checksum to enable validation but this is not mandatory.

This can be schematised as follows:

| urn:nbn:<ISO 3166 country code>-<assigned NBN string> | e.g. urn:nbn:fi-fe976238 |

e.g.: urn:nbn:fi:st-123456

| urn:nbn:<ISO 3166 country code:sub-namespace code>-<assigned NBN string> |

| urn:nbn:<non-ISO registered prefix>-<assigned NBN string> | e.g. urn:nbn:LCCN-9920567 |

Other issues

Guidelines adopted by each national library define when different versions of a work should be assigned the same or differing NBNs. This only applies if assignment is manual.

No resolution system is defined for the NBN. It is suggested in the registration document that resolution would be through national bibliographic databases, or through web indexes or archives.

5   Functionality and Interface

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5.1   Introduction

The electronic national bibliography (NB) is an important information resource for various user groups in different contexts as discussed in previous chapters. The interface should, as much as possible, enable all the functionality needed by these user groups. In the analysis several major user groups with common or similar requirements were identified:

- end-users (including groups, corporate bodies etc, which use the NB as an information source)**:** to obtain information on authors and their publications, on topics…, to identify publications or authors)
- collection development and publisher analysis (to analyse available publications (including awareness of future publications))
- acquisition and booksellers (to select and order publications)
- cataloguing (for copy cataloguing or cataloguing support)
- re-use of records (downloading or export of records into other databases and other computer applications: CERL, Index Translationum, library catalogues (for retrospective conversion))
- rights management (to track publications and identify authors)
- computer software (federated searching, distributed searching, harvesting etc.)

The list of user groups is long and it is clear that their information needs, contexts, and, consequently, requirements differ very much. In order to serve best all the users, we analyse the requirements regarding:

- interfaces
- access points (search forms)
- display formats
- added functionality

5.2   General recommendations

The interfaces of national bibliographies share characteristics of both OPACs and bibliographic databases in general.

There are many studies of OPAC interfaces and use in general, including some which are critical of the way current OPACs are designed (e.g. Borgman, 1996; Calhoun; 2006, Yee, 2006). Studies resulted in several recommendations for OPAC design from early ones (Matthews, 1987; Shires et al., 1992) to newer suggestions (Calhoun, 2006; Bates, 2003).

Bibliographic databases are the ones that were designed to be used primarily by end-users (non-librarians). Therefore the interface has to be simple, clear and tolerant to mistakes. End-users do not want to use complex systems, they want to avoid lengthy training and usually do not use the

system frequently enough to memorize its characteristics. In addition, the popularity of Google as a search tool has had an impact on users' expectations in searches and for interfaces. Librarians themselves are increasingly critical of the OPAC[1] and are seeking ways to respond to the users' requirements. There have been a number of attempts to improve interfaces, in particular by re-using bibliographic data to present more options to the user to refine searches and to enable direct user participation. Examples of this are the Endeca software, being developed in North Carolina (http://www.lib.ncsu.edu/catalog/), and the WOPAC at Plymouth State University (example search: http://www.plymouth.edu/library/opac/search/joe+monninger?s=joe+monninger)

5.2.1 Query formulation

Most research in user interfaces actually focuses on this phase, which is considered central and most important. The user can formulate the query in different ways:
- by entering a series of search terms (keywords)
- filling-in a template
- choosing from lists (or menus) of search terms
- formulating a logical statement
- in natural language

The first and the last alternative share some common characteristics. Neither of them requires the user to be familiar with the terminology of the database, which makes them apparently very user-friendly, but on the other side the user may be mislead into believing that the system 'understood' his/her request.

Templates are a very common and user-friendly method, particularly when the system is expected to be used by inexperienced users. The designer of the system decides in advance which typical queries will be supported, which makes this method less flexible. After the terms are entered into the template, they are combined into a logical statement implicitly (AND between fields is the most common) or explicitly, when the user chooses the logical operators between fields. The advantage of the latter is increased flexibility; the disadvantages are the same as with logical statements in general.

Command mode was historically the first method of query input. Logical statements with Boolean operators (and extensions such as proximity operators) stay in use both for commercial databases and library catalogues. Research has shown repeatedly (Larson, 1992; Cooper, 1988; Ensor, 1992; Harman, 1992) that users have problems when using Boolean operators, particularly conceptual problems with the formulation, too big or too small sets of (unranked) results, lack of weighting. For that reason several improvements have been developed: ranking of the results, feedback, weighting of terms, proximity operators…

Selection from lists of terms is usually combined with either templates or logical statements. It enables users to select terms from indexes (or dictionaries) and include them directly into the search statement.

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[1] See for example the series of articles and subsequent discussion in ALA TechSource beginning with:
http://www.techsource.ala.org/blog/2006/03/how-opacs-suck-part-1-relevance-rank-or-the-lack-of-it.html

5.2.2 Examination of the results

The result of a query is a set of records which has to be examined and their relevance has to be determined. The interface should facilitate this function. The list of results has to be clear and should, ideally, be sorted according to expected relevance (compliance with the query) and support relevance feedback. In addition to that there are some common objectives of the presentation of results (Schneiderman, 1998):

- consistency of data display (layout, formats, fonts, colours, terminology etc.)
- efficient information assimilation by the user (proper layout and spacing, comprehensive labels…)
- minimal memory load on user
- compatibility of data display with data entry
- flexibility for user control of data display (several formats, sorting…)

5.2.3 Saving or extraction of the results

After a set of relevant records has been obtained, users usually want to save them either for future reference or for further manipulation and use within other computer applications. Direct printing is the first option and it caters for the first need, while saving into a file caters for both. The format of the records saved into a file depends particularly on the expected future use of records.

5.2.4 Help

Regardless of the type of user interface users will need help when using the system. Information retrieval systems should ideally be designed in a way to enable the end-user to use them without outside help, special documentation or training.

There are several forms of online help, the most common being: online tutorial, online manual, context-sensitive help, and online guidance. Error and other system messages should be considered a part of online help as well. General guidelines regarding online help can be summarized as:

- online help should be available at all times
- it should be easy both to enter and exit the help facility
- the help facility should be well constructed and should reveal its structure to the user
- help should be well presented
- it should be well written and the language used should be friendly
- it should accommodate more than one user level.

5.3 Common requirements

Specific needs of various user groups have been discussed in previous chapters. Here the needs are analysed as a whole and summarised.

5.3.1 Access points

The basic requirements, discussed in a previous chapter, are listed in the table.

Use/user	Author	Title	Publisher	Date	Lang./ country	Genre/ format	Subject	Identif.	Target audience
End-users	x	x	x	x	x	x	x		
Cataloguing	x	x		x				x	
Re-use	x	x	x	x	x	x	x		
Collection development				x	x	x	x		x
Acquisition	x	x		x				x	
Publisher analysis			x	x		x	x		x
Statistics				x	x	x	x		x
Rights management	x	x							
Computer software	x	x		x			x	x	

In the table only the core access points are listed. It has to be mentioned that in case of author access point, searching on any author name should be supported (main heading or variant), which means that name authority control has to be fully implemented. For rights management author role (relator code) is essential, too.

Clearly the access points, listed in the table, present the core, which should be supported in all electronic national bibliographies.

The challenges of portal implementation were listed by Hakala (2003):
- Different MARC formats used. A good MARC format converter such as USEMARCON is a possibility.
- A wide variety of character sets and different encoding. UNICODE is the current solution.
- Different Z39.50 targets provide different semantics (search terms). The Bath profile gives explicit guidelines for how to support the standard-defined query terms and term combinations in Z39.50 context. The Bath profile is therefore the minimum that has to be supported.
- Different Z39.50 targets and clients support different sets of services and service features (parameters) defined in the standard. Again, the Bath profile offers guidance: Search and Present are sufficient.

5.3.2 Subject access

Ensuring efficient access to information is one of the primary goals of libraries and information centres. The librarians' mandate has always been to develop tools and means that will connect their library users to the information contained in the rich collections of documents. The librarians' task is to continuously develop ways that a library user can find, discover and select information that will meet his/her many personal and research needs. The challenge of libraries is to make sure that

every type of information needs are satisfied: from the most basic information to the latest development in any particular branch of knowledge. For what is at stake is the recognition of the value of information and the many roles that information plays in society and in the lives of individuals.

Libraries have therefore worked in organising information in order to facilitate efficient retrieval. They have traditionally invested resources in creating, developing and fostering bibliographic and authority control in order to properly organise information on and about documents. This work forms the basis of library catalogues and bibliographies, which enable users to find documents. The search strategies developed by librarians and information specialists focused on the various ways information can be accessed; either searching for a known item for which author, title or any other factual information is known or seeking documents on a particular subject, users usually conduct such queries by browsing subject index files or by entering precise subject headings terms and by browsing collections by the use of a classification.

Research (Matthews et al., 1983; Markey, 1984; Bates, 2003) continuously indicates that subject access, i.e. searching on a topic, is the predominant type of end-user searching in bibliographic data. Studies have generally indicated that up to 50% of searches conducted in library catalogues are related to subject searches. In the various sources cited by Bates (2003), subject searches range from 53% (Matthews, 1983) to other studies such as Larson and Hildreth that showed that subject searches are often hidden in keyword searches. The difficulties in determining precisely the proportion of subject searches in various studies are accounted for principally by the fact that users often use "keyword search" or other types of searches to conduct subject searches. In the pre-automation era, prior to the 1980s, library users could more easily move between the alphabetical catalogues usually organised by authors and titles and the subject catalogues, either organised by disciplines based on a classification scheme (classified catalogues) or by a list of subject headings (alphabetical subject catalogues). At that time, library users had a fairly clear idea of the kind of searches they were conducting and studies done in the USA usually indicated a rate of between 20 to 50% of subject searches. Bates (1977) explained the discrepancies in the subject searches results by the academic expertise of users; the more advanced users conducted fewer subject searches as they could rely on more known information relating to their research.

Subject access in online bibliographic databases is a complex process involving a number of components and their interaction: the database, the languages used for subject analysis, the (local) policy and practice of their application, the users, and the hardware and software allowing the users to interact with the system. All the components have to work together for successful subject retrieval. Online databases have been the standard form of bibliographic access since the 1980s and the World Wide Web has enabled libraries to make their databases available to a vast world-wide audience. The situation is even more heterogeneous with portals and distributed/federated searching across different resources and services. But the principles of subject access (as known and developed in libraries) can be applied to any of these situations.

Information retrieval systems, which enable retrieval of works on the basis of their subject, can be divided into three basic groups. The first indexes works with the actual words used in the document and/or its title and/or its abstract. This group uses what is called 'uncontrolled' or 'natural language'. The other two groups use 'controlled' (or 'prescribed') indexing language. "Controlled indexing languages are indexing languages in which both the terms that are used to represent subjects, and the process whereby terms are assigned to particular documents, are controlled or executed by a person" (Rowley, 1994). One of these groups uses prescribed words to describe a work's subject, the other uses a notation (numbers, letters or combinations) to express subject matter. Classed and alphabetical file arrangements, controlled and uncontrolled subject indexing languages all have advocates and their relative advantages and disadvantages have been studied for decades.

The development of computer software and online catalogues has made possible the combination of different indexing languages and approaches in one database. This ability conforms to what

seems to be the general consensus: controlled as well as uncontrolled systems should be available to the user, because they tend to complement each other.

A controlled indexing vocabulary (Olson & Boll, 2001):
- Authorises only one term or notation for any one concept
- Establishes its size or scope
- Usually explicitly records its hierarchical and affinitive/associative relations
- Controls variant spellings
- Explicitly identifies the multiple concepts expressed by homonyms, by means of adjectives, qualifiers, or phrases and precise terminology

A controlled indexing vocabulary based on an authority list is intended to aid indexing and searching, because (Olson & Boll, 2001)
- It increases the probability that both the indexer and the searcher will express a particular concept in the same way
- It increases the probability that both the indexer and the searcher will be led to a desired topic by the syndetic features (such as "broader term", "narrower term", "related term")
- It increases the probability that the same term will be used by different indexers and ensures indexing consistency
- It helps searchers to focus their thoughts when they approach the system without a full and precise realisation of what information they need.

The high input cost is often mentioned as the main disadvantage of controlled vocabularies. Quite often it is claimed that "the natural language of scientific prose is fully adequate for indexing and retrieval" (Klingbiel, 1970). But Olson and Boll (2001) offer a good counter-argument: "The language of science is, indeed, highly controlled and standardised because all sciences tend to be taxonomic in nature; taxonomy implies definition and, therefore, control of the meaning of words. However it is wrong to generalise from science in particular to written language in general. Research has shown that precision of terminology used in text, or in the title of a text (and therefore needed for uncontrolled retrieval) varies with the field in question." For example A.B. Buxton and A.J. Meadows (1977) showed that "the use of informative words in titles of articles (that is, the kinds of words that would be logical to use in uncontrolled retrieval) ranges from very high in journals of chemistry and botany to very low in the social sciences, with philosophy lowest". Other authors, such as T. Mann (1993, 2005), have argued that controlled subject headings and classification interact to provide subject access even if the searcher has no subject expertise and that traditional cataloguing principles of "uniform heading" and "specific entry" permit better retrieval results than keyword searching.

Enabling subject access to national bibliographies is therefore essential. A detailed analysis of the issue and development of guidelines is beyond the scope of this document. The guidelines for subject access to national bibliographies are being prepared by a working group of IFLA's Classification and Indexing Section and will be published as a separate document.

5.3.3 Presentation of results

In general, the presentation of results should enable users to evaluate relevance of the results as easily and quickly as possible. Typically, results are first listed in a summary display and a choice of formats is available.

Current display of bibliographic information is being criticised (Carlyle, 2002). FRBR offers a more intuitive and meaningful clustering of (particularly large) result sets. While the new FRBR-based

cataloguing rules are being developed, the first FRBRisation experiments prove that the library community is aware of the need to change our current practice[2]. National bibliographies seem to be the best starting point for both FRBRisation (because of their coverage) and original FRBR cataloguing.

As a minimal requirement the following formats should be available:
- complete bibliographic/authority format (display of all fields of the bibliographic record)
- citation format (such as ISO 690, APA, MLA, etc.) with all information needed to identify a publication

In addition, other formats may be provided: labelled user format, ISBD.

Hyperlinks should be provided to enable direct navigation to, for example, works of the same author, on the same subject. For acquisitions, a link to publisher information (such as address and contact for publisher, price, availability, rights) is necessary.

5.3.4 Functionality

Google, Amazon and similar tools have changed expectations and information seeking behaviour of users. Many are used to large result sets and low precision. But on the other hand many systems, such as electronic journals, offer more precise searching. More research is needed in ways people prefer to search for information in different contexts.

Simple keyword searching should be available, but is probably not sufficient for more sophisticated users and for more specific information needs. For those more specific queries are needed, such as searching within a particular access point and (implicit or explicit) use of Boolean operators. Search forms seem to be the most intuitive option. To make the query formulation easier, indexes should be available for browsing and chosen values should be directly transferred to the search statement.

Searching on author names (both individual and corporate bodies) is, according to our analysis, frequently needed, authority control is therefore very important.

Authority control, as currently practised, is the process of maintaining consistency in the verbal form used to represent an access point in a catalogue, but also a means of showing the relationships among names, works, and subjects. It enables the identifying and collocation functions of the catalogue.

Taking a more international view, *authority control* is becoming more *access control*; in an international situation there is no single 'authorized form', but rather a cluster of equivalent variants, depending on language and rules.

Authority control enables and enhances the identifying and finding function of the catalogue through the use of consistent forms of access points with references from forms not used. In a system under authority control a user can assume that all works relating to a name will be retrieved together and will be connected with references.

Two important auxiliary functions are related to manipulation of the results: sorting and export of records.

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[2] See for example the catalogue of Louvain University (search author Shakespeare) http://bib.sipr.ucl.ac.be/cgi-bin/gw_48_0_3_3c/chameleon

Sorting is important for large result sets, which are not unusual for national bibliographies. Several sorting keys should be available, e. g. for manifestations

- publication date (increasing and decreasing)
- author relationship
- publisher

5.4 Interoperability

The adoption of internationally approved standards and principles is a crucial recommendation for national bibliographic agencies which are in charge to prepare comprehensive bibliographic records for national and international exchange. Standards and principles in the field of national bibliographies apply to cataloguing rules, formats, authority control, classification schemes, identifiers, script conversion and character sets.

National libraries have, since quite a long time, advocated for standardization of file formats, cataloguing rules and communication protocols. This was a direct consequence the Universal Bibliographic Control (UBC), an IFLA core program that can be traced from the *International Meeting of Cataloguing Experts* held in Copenhagen in 1969.

In 1977 UNESCO sponsored a first International Congress on National Bibliographies (ICNBS) that has influenced the development of national bibliographies. Twenty years after, the bibliographic landscape had dramatically changed, not only with the format of published bibliographies, which were increasingly available online rather than in print, but also with the format of the publications which national bibliographies are recording, especially through the Internet. It was therefore timely to re-examine the 1977 guidelines and for this purpose IFLA sponsored a new conference in November 1998 in Copenhagen.

As it is described before, national bibliographies are used in many different ways by a lot of different types of users. Most of the use of bibliographies is accomplished by deriving bibliographic records from the original source file.

Common rules are therefore necessary for the creation of data and to give access. This is necessary for communication, for the processing and for the understanding of data.

5.4.1 Cataloguing rules compatibility

The cataloguing rules compatibility is as important as the format compatibility. If the format is the structure, cataloguing rules are the manner one must fill the format.

Two events marked the beginning of the international work devoted to the definition of compatible cataloguing rules: in 1961, the Paris Principles made recommendations on the choice, form and structure of headings for names and for titles, and in 1969 an IFLA International Meeting of Cataloguing Experts held in Copenhagen produced a resolution that proposed creation of standards to regularize the form and content of bibliographic descriptions.

5.4.2 International Standard Bibliographic Description (ISBD)

The International Standard Bibliographic Description (ISBD) for printed books appeared in 1971. At that moment it was considered that the core concepts which govern the definition of what is the "bibliographic information" are supposed known and shared by all the actors: when new needs appear, cataloguing rules are adapted in a pragmatic manner, without any drastic questioning. So

the first ISBD was followed by 7 other similar standards, one for each type of resources: serials, cartographic material, printed music, non-book material, antiquarian, and electronic resources. National cataloguing rules are quite all derived from the ISBDs, but with a part of significant interpretations.

But from the IFLA common set of ISBDs, most countries have derived their own interpretation and application. In 1999, to get more consistency and to facilitate and simplify the updates of the set of standards and to gain consistency it was decided to merge all these standards in one "consolidated" ISBD.

More about ISBD:
- [Family of ISBDs](http://www.ifla.org/VI/3/nd1/isbdlist.htm), IFLA ISBD Review Group, 2004 (accessed June 15, 2007). See: http://www.ifla.org/VI/3/nd1/isbdlist.htm

5.4.3 Functional Requirements for Bibliographic Records (FRBR)

From the beginning of the 1990's, professionals felt uncomfortable with the set of ISBDs which are not well adapted to the new technical environment. New information systems are focussed on end-users' needs. Therefore we have to make sure that the rules we are applying to describe the resources and to display the information fill their needs. This is why IFLA's Cataloguing Section worked on the Functional Requirements for Bibliographic Records (FRBR), published in 1998. This data model proposes the creation of two new bibliographic entities (the "work" and "the expression") and a new way to formalise relations between bibliographic entities. Management of access points is also modified, mainly with the abandon of the notion of "main entry," and a "basic level record" is defined. ISBDs remain the recommended descriptive standard, but some elements are declared optional depending to the user needs of a given database. Terminology is also impacted by this new model of bibliographic data.

More about FRBR:
- [Functional Requirements for Bibliographic Records](http://www.ifla.org/VII/s13/frbr/frbr_2008.pdf), IFLA Study Group for Bibliographic Records, 1998 with amendments 2008(accessed April 20, 2008). See: http://www.ifla.org/VII/s13/frbr/frbr_2008.pdf

5.4.4 Functional Requirements for Authority Data (FRAD)

The Functional Requirements for Authority Data (FRAD) are a conceptual model, initiated in 1999, as an extension and expansion of the FRBR model. The purposes of FRAD is to provide a clearly defined and structured frame of reference for relating the authority data to the needs of the users of such data, and to assist in an assessment of the potential for international sharing and use of authority data both within the library sector and beyond. At the time of writing these guidelines, the document was available only as draft.

More about FRAD:
- [Functional Requirements for Authority Data : a conceptual model](http://www.ifla.org/VII/d4/wg-franar.htm) [work in progress], IFLA Working Group on Functional Requirements and Numbering of Authority Records, 2007. See: http://www.ifla.org/VII/d4/wg-franar.htm

Important remarks

FRBR and FRAD are conceptual data models and cannot be easily implemented directly in cataloguing rules. The International Cataloguing Code is inspired by the models, and will provide

"only" general principles but not cataloguing rules ready for implementation. Rules makers needed such reference works to be able to define practical cataloguing rules with a chance to develop interoperability in the field.

5.4.5 The harmonized and consolidated ISBD

The "basic level record" recommended by FRBR in 1998 is built on the ISBDs, and the Statement of International Cataloguing Principles recognized that the descriptive portion of the bibliographic record should be based on an internationally agreed standard which is currently, for the library community, the set of ISBDs. What remains highly valuable in the ISBD is the definition of the data elements required for a national bibliographic agency to establish a bibliographic description, and the rules to apply to transcribe these elements according to preferred sources of information. The order of the data elements and the prescribed punctuation between these elements are certainly of less importance nowadays.

More about the Consolidated ISBD:http://www.ifla.org/VII/s13/pubs/ISBD-consolidated-July2006.pdf

5.4.6 International Cataloguing Code (IME ICC)

In 2003, IFLA set up a series of International Meetings of Experts on an International Cataloguing Code (IME ICC) to update the Paris Principles adopted in 1961. Five meetings took place throughout the world: Europe (Frankfurt, 2003), Latin America (Buenos-Aires, 2004), Middle East (Cairo, 2006), Far East (Seoul, 2006) and Africa (Pretoria 2007). The final "Principles," inspired by FRBR and FRAD conceptual models, could be published in late 2007 or in 2008. All types of resources and all types of access points (including subject headings, classification numbers, and standardized identifiers) are taken into account. All access points are considered to be on the same level for the bibliographic records (there are no more "principal" and "secondary" entries) but some "indispensable" access points are defined to improve search capabilities: to provide reliable retrieval of bibliographic and authority data and to limit search results. Authority control is recommended and cataloguing rules should concern authority records as well as bibliographic records.

The final Principles should be published in 2008.

More about IME ICC:
- Fifth meeting of experts on an international cataloguing code (IME ICC 5), IFLA Cataloguing Section, 2007 (http://www.imeicc5.com/ accessed June 15, 2007).Statement of International Cataloguing Principles [work in progress], IME ICC, 2007 (http://www.nl.go.kr/icc/down/070412_2.pdf)

5.4.7 Resource Description and Access (RDA)

At the same time as the International Cataloguing Code is still ongoing, the Joint Steering Committee for Development of RDA is involved in a thorough revision of AACR2. Initially the third edition of the rules was called AACR3, but to emphasize the break from the past it was renamed Resource Description and Access (RDA). The goals are to conform to the FRBR and FRAD models and to the International Cataloguing Code, to adapt the rules to the electronic environment which affect databases and the resources recorded in databases, and finally, to aim at universality. The final structure of the rules is still being determined. RDA is expected to be published in July 2009.

RDA will be a complete and detailed set of cataloguing rules (including authority control requirements which is not the case of the consolidated ISBD), in accordance with the revised

International Cataloguing Code. Because AACR2 is a de facto standard of international use (translated into more than 30 languages), RDA is in a good position to become, at the end of the revision process, "the" international cataloguing rules. Without a doubt, this will work in favor of interoperability.

More about RDA:
- RDA : Resource Description and Access, Joint Steering Committee for Development of RDA, 2007 (accessed June 15, 2007) http://www.collectionscanada.ca/jsc/rda.html

5.4.8 Bibliographic format compatibility

The format is the structure that enables data (cataloguing) element to be processed in a computer. In that regard, a lot of formats can exist as far as the structure is understood by a computer. But the question here is the interoperability of data from library to library, from one country to another. This is why standardized formats are recommended in opposition to local home made solutions.

5.4.8.1 MARC formats

For encoding their printed and audiovisual material libraries are still currently using MARC (MAchine-Readable Cataloging Record) formats which are applications of the ISO 27.09 file standard. This is a very old format (sequential) which was put in place first at the Library of Congress in the end of the sixties. If the vast majority of library software available in the world is still using the MARC format, there is a big move to go to XML format as this mark-up language is far more powerful to process, index and display information.

Since the first LC-MARC format, many countries have developed a national version of the original MARC, in order to accommodate local specificities. One step taken to address this multiplicity of MARC formats was the creation of an international format dedicated to exchanges among national libraries. UNIMARC was the result. More about MARC format:
- Understanding MARC Bibliographic, Library of Congress, 2003 (http://www.loc.gov/marc/umb/ accessed June 15, 2007)
- Understanding MARC Authority records, Library of Congress, 2004 (http://www.loc.gov/marc/uma/index.html accessed June 15, 2007)

5.4.8.1.1 UNIMARC

UNIMARC has been designed to be a platform allowing the reformatting process to accommodate the export and the import of data. UNIMARC is now a set of four formats - Bibliographic, Authorities, Classification and Holdings.

UNIMARC has been developed by a number of countries (mainly European) to become a production format. It has also been used by UNESCO for its library products, mainly to help developing countries to move to automated library management systems and standardized data format.

More about UNIMARC:
- UNIMARC Forum : a dedicated web site prepared by the IFLA UNIMARC Core Activity (http://www.unimarc.org/ accessed June 15, 2007)

5.4.8.1.2 MARC 21

MARC 21 is the current version of the old LC-MARC (which became US-MARC in the 80s). It is the most used of the MARC formats in the world and a de facto standard. It has been designed to be both a production format and an exchange format.

More about MARC 21:

- MARC Standards, Library of Congress, 2007 (http://www.loc.gov/marc/ accessed June 15, 2007)

5.4.8.2 XML formats

All mark-up languages are derived from SGML (Standard Generalized Mark-up Language), which was used in the 80s, in professional environments for technical and scientific publishing. Based on the same formalism, the different "formats" are linked to Document Type Descriptions (DTD) which are the records profiles.

XML is more widely used across different communities. It is also more powerful than MARC formats bringing a lot more functionalities, in particular for electronic bibliographies. It is easier to process as it is processed by non library specific software. It is more powerful for searching, screen display (or print) hierarchical or analytical information. Furthermore, it allows a good management of links between bibliographic (and authority) records and to digital resources.

It is important to list how these formats are used in the library and archives world, as well as in the publishing and book trade industry:

a) In the library world

5.4.8.2.1 MARCXML

MARCXML is a Document Type Definition (DTD) describing in an XML language, the MARC 21 format. It is used by many applications at the Library of Congress and in WorldCat of OCLC. It can become a good option for the evolution of bibliographic formats toward XML applications insuring a compatibility with bibliographic data already created by libraries. It seems also to be the way most library management system will accommodate the management of data in the short term.

More about MARCXML:

- MARCXML, MARC21 XML Schema : official web site, Library of Congress, 2006 (http://www.loc.gov/standards/marcxml/ accessed June 15, 2007)

5.4.8.2.2 MarcXchange

MarcXchange specifies the requirements for a generalized XML-based exchange format, which will hold records describing all forms of material capable of bibliographic description as well as other types of records. This new XML DTD, in the process of becoming an ISO standard (DIS 25577), describes a generalized structure, a framework designed primarily for communication between data processing systems. It may also be relevant for use as a processing format within systems. MarcXchange is an extension to the MARC21 XML Schema MARCXML as well as ISO 2709. It is too early to predict the success of this new XML DTD. There is no application operational in this structure.

b) In the publishing and book trade industry

5.4.8.2.3 ONIX (Online Information eXchange)

This is the standard XML DTD (format) for publishers and booksellers. It has been created by the Association of American Publishers (AAP) and became a standard in January 2000. It applies the same rules as other mark-up languages. It is a very comprehensive format defining 200 data elements, in order to allow as much functionality as possible in the different environments. It is thus quite sophisticated. ONIX is maintained by the Book Industry Study Group Inc. (http://www.bisg.org/index.html) in USA, in collaboration with EDItEUR in Europe and the Book Industry Communication (BIC) in UK.

An open source reformatting routine to go from ONIX to MAR21 is available on the Library of Congress web site. Libraries are using this conversion to derive draft records from publishers' databases. Those records are converted into MARC format and they are enhanced afterwards to be used in the catalogue and to make national bibliographies. The British Library uses it in that way. Other routines exist that allow going from a basic format (i.e., Excel) to a simple ONIX: http://www.btlf.qc.ca/onixWebConverter/Convertisseur.aspx .

More about ONIX:
- ONIX (Online Information Exchange), (http://www.bisg.org/documents/onix.html accessed June 15, 2007)
- ONIX to MARC21 mapping, Library of Congress, 2005 (http://www.loc.gov/marc/onix2marc.html accessed June 15, 2007)

5.4.8.3 Dublin Core

The Dublin Core Metadata Element Set is an ISO Standard (ISO 15836) well known in the Web sphere as well as in the library world as a standard that defines 15 data elements for resource description in a cross-disciplinary information environment. *The Dublin Core Element Set – Reference Description* has been translated into 24 languages. It has been created to give easy access to electronic resources through a basic bibliographic description. See the standard at: http://www.niso.org/international/SC4/n515.pdf

The Dublin Core Metadata Initiative (DCMI) is an organization dedicated to promoting the widespread adoption of interoperable metadata standards and developing specialized metadata vocabularies. Information on Dublin Core Metadata Initiative is available at: <http://dublincore.org>. This initiative began in 1995 with an invitational workshop in Dublin, Ohio, that brought together librarians, digital library researchers, content providers, and text markup experts to improve discovery standards for information resources. The original Dublin Core emerged as a small set of descriptive elements that quickly drew global interest from a wide variety of information providers in the arts, sciences, education, business, and government sectors. There has been steadily growing interest in resource descriptions that are easy to create and that almost anyone can understand. In September 2001, the Dublin Core metadata element set was approved by ANSI (American National Standards Institute) as ANSI/NISO Z39.85-2001 standard. In 2003 it was approved as ISO Standard 15836.

5.4.8.3.1 The DCMI Library Application Profile

The concept of *application profiles* (see http://www.ariadne.ac.uk/issue25/app-profiles/) has emerged within the Dublin Core Metadata Initiative as a way to declare which elements from which namespaces are used in a particular application or project. Application profiles are defined as schemas which consist of data elements drawn from one or more namespaces, combined together

by implementers, and optimised for a particular local application. The DCMI-Libraries Working Group has explored various uses of the Dublin Core Metadata Element Set in library and related applications and has provided the following possible uses:

- to serve as an interchange format between various systems using different metadata standards/formats;
- to use for harvesting metadata from data sources within and outside of the library domain;
- to support simple creation of library catalog records for resources within a variety of systems (e.g. using MARC equivalents of Dublin Core elements);
- to expose MARC data to other communities (through a conversion to DC);
- to allow for acquiring resource discovery metadata from non-library creators using DC.

A *library application profile* will be a specification that defines the following:

- required elements
- permitted Dublin Core elements
- permitted Dublin Core qualifiers
- permitted schemes and values (e.g. use of a specific controlled vocabulary or encoding scheme)
- library domain elements (to be registered)
- library domain qualifiers (to be registered)
- additional elements/qualifiers from other application profiles that may be used (e.g. DC-Education: Audience)
- refinement of standard definitions

This document proposes a possible application profile that clarifies the use of the Dublin Core Metadata Element Set in libraries and library-related applications and projects.

More information on DCMI Library application profile:

- http://dublincore.org/documents/2001/10/12/library-application-profile/ (visited 16 June 2007).

5.4.9 Character coding compatibility

Character coding always was an essential matter. But it is even a bigger issue now as we really need to share and exchange data all over the world. It is essential to be able to code and display correctly all the elements of a bibliographic record in any script needed. Even in a single catalogue or bibliography it is not rare to find different scripts in a single record even if transliteration is still needed for indexing in a homogenous script.

The current character coding in computer processing is ASCII (American Standard Code for Information Interchange). But since the very beginning of library automation, there was a need for more than the basic Latin character set to be coded in bibliographies. This is why many standards for character sets were developed in the 70s. The most used is the ISO 5426 (extended Latin). Anyway it was always difficult to express other script than Latin (by escape sequences).

The need for data exchanges led to standardized universal character set coding: Unicode.

In 1991, the ISO Working Group responsible for ISO/IEC 10646 (JTC 1/SC 2/WG 2) and the Unicode Consortium decided to create one universal standard for coding multilingual text. Since then, the ISO 10646 Working Group (SC 2/WG 2) and the Unicode Consortium have worked together very closely to extend the standard and to keep their respective versions synchronized. The ISO 10646 standard was first published in October 2002 and was revised in December 2003.

Unicode (or ISO 10646) has the advantage of embedding almost every script and avoiding ambiguity generated by escape sequences. It can be used in a 16 bits set (UTF-16) or in a 8 bits set (UTF-8). The latter is recommended for bibliographic data exchanges.

Even if Unicode is less used in the coding information for the time being than pure ASCII or ISO 5426, or Latin1 for library applications, it is more and more used in the web environment and is certainly the best choice for the near future, for bibliographic records and library data processing.

For more information on Unicode, see: http://www.unicode.org.

5.4.10 Protocol compatibility

The need for accessing online different bibliographic databases through ones own interface was expressed quite early. Different communication protocols have been developed.

5.4.10.1 Z 39.50 (ISO 23950)

It is the most popular synchronous protocol used in the library world. It is based on a client/server architecture and MARC formats structures.

The Maintenance agency is the Library of Congress: http://lcweb.loc.gov/z3950/agency

One can find information on the standard on the American National Information Standards Organization: http://www.niso.org/standards/resources/Z3950_Resources.html

A list of freeware or commercial products can be found on the Maintenance Agency web site: http://lcweb.loc.gov/z3950/agency/resources/software.html along with an implementation register: http://lcweb.loc.gov/z3950/agency/register/entries.html

 One can find Z39.50 clients like: ZNavigator ; ZSearcher ; Bookwhere

Z39.50 supports bibliographic attribute sets, to be found on the Maintenance Agency web site http://lcweb.loc.gov/z3950/agency/defns/bib1.html as well as a useful Glossary: http://lcweb.loc.gov/z3950/agency/markup/02.html

When implementing the protocol, profiles need to be defined. One can find a directory of Z39.50, profiles at the following addresses:
- in English: http://www.ukoln.ac.uk/dlis/zdir/
- in French: http://www.enssib.fr/bibliotheque/autres/bibfranc/z3950.html

The most popular and simple profile is the Bath profile: http://www.nlc-bnc.ca/bath/

A Z39-50 Implementers Group does exist, is active and its web site gives a lot of useful information: http://lcweb.loc.gov/z3950/agency/zig/.

A short Z39.50 bibliography online:
- http://www.biblio-tech.com/html/z39_50.html
- http://www.ariadne.ac.uk/issue21/z3950/intro.html
- http://scd.uhp-nancy.fr/SCD/scdmed/Infospro/Vubis/z3950.htm

5.4.10.2 SRU / SRW

SRU (Search/Retrieve via URL) is a standard synchronous search protocol for Internet search queries, utilizing CQL (Common Query Language) which is a standard query syntax for representing queries.

SRW (Search Retrieve Web Service) is a companion protocol to SRU. The Library of Congress serves as the maintenance agency for these standards. For more information see: http://www.loc.gov/standards/sru/

Other emerging standards for information protocols are reviewed in a paper given by Sally McCallum at IFLA 2006 in Seoul: McCallum, Sally H. A look at new information protocols: *SRU, OpenSearch/A9, CQL and Xquery*. IFLA 2006, Seoul.

5.4.10.3 OAI-PMH

OAI-PMH (*Open Archive Initiative – Protocol for Metadata Harvesting*) is a protocol specification that enhances the description of resources (digital but also non digital) on the web. It does allow exchange and diffusion of metadata but not of digital object. Metadata information is here on:
- Description of the resource (title, author, date of publishing, publisher etc.);
- Location of the resource on the Internet indicated by the URL.

OAI-PMH allows two functions:
- Data provider: The library exposes its own metadata (it can be the bibliographic records in Dublin Core) on a server to let them be harvested by other institutions or by Internet search engines;
- Service provider: The library harvests metadata coming from other institutions in order to integrate them into its own index to be used in its own research user interface.
- The protocol is based on a client/server architecture. The client sends a request to the server which response is an XML flow. The minimum of metadata needed is non-qualified Dublin Core.

OAI-PMH is an asynchronous protocol, which means that the end user does not search directly on the distant server, but into the local database where the metadata have already been harvested. Only the metadata are transferred. The resource is displayed on the original site. The search is much quicker in this case than with synchronous protocols as the search is local, even if the resource has still to be reached on the distant server. In the case of national bibliographies, they can be well indexed by web search engines and be publicly accessed from everywhere. In the case of collaborative bibliographies, the whole set of data is searched on-site.

The frequency of harvesting must correspond to the update frequency on the OAI distant server.

5.4.11 Persistent identifiers

Persistent identifiers are identifiers that can be cited to retrieve the information in the long term. Even if the resource moves within the catalogue or the digital storage, the identifier still remain the same as a system resolves the correspondence between the identifier publicly known and the current address. (See: http://bibnum.bnf.fr/identifiants/identifiants-200605.pdf)

To locate resources on the World Wide Web the identifiers used are: URL (Uniform Resource Locator), which both identifies and gives the location of a resource by including a protocol syntax (domain name and the actual name of the file within which the resource currently resides).

But as such, an URL does not ensure to link to the resource if it has been moved in the repository. A persistent and unique identifier would preserve access to that resource regardless of its current location. This form of mapping is generally undertaken via a resolver database.

The best overview of the problem of persistent identifiers can be found on the PADI web site: http://www.nla.gov.au/padi/topics/36.html and

International preservation news: a newsletter of the IFLA core activity on preservation and conservation, n° 40, December 2006, p.22-27 (http://www.ifla.org/VI/4/news/ipnn40.pdf)

5.4.11.1 Uniform Resource Name (URN)

A Uniform Resource Name (URN) is a standard, persistent and unique identifier for digital resources on the Internet. URNs and URLs are forms of Uniform Resource Identifiers (URIs). As it is describe by PADI:

"All URNs will include a Namespace Identifier (NID) code and a Namespace Specific String (NSS). The NID indicates the identification system being used for the URN and facilitates the interpretation of the NSS. The NSS is the local code that identifies the individual document (see IETF:RFC 1737 , Functional requirements for Uniform Resource Names; IETF: RFC 2141, URN Syntax) (http://www.ietf.org/rcf/rcf1737/.txt).The international ISBN and ISSN agencies are registering URNs using 'ISBN' and 'ISSN' as the NIDs. A URN based on National Bibliography Numbers (NBNs) with 'NBN' as the NID has been registered and adopted by the Nordic Metadata Projects."

To link to the resource from the URN, a resolver service is required.

5.4.11.2 The Handle System

The Handle System, developed by the Corporation for National Research Initiatives (CNRI, http://www.cnri.reston.va.us/), is "a comprehensive system for assigning, managing, and resolving persistent identifiers, known as "*handles*", for digital objects and other resources on the Internet" (Handle System Introduction) (http://www.handle.net/introduction.html), through a global handle service.

5.4.11.3 Digital Object Identifier

The development of the Digital Object Identifier (DOI) system was initiated by the Association of American Publishers, and is now managed by the International DOI Foundation (http://www.doi.org/). The DOI system of unique identifiers is based on the Handle System and allows the allocation of a unique digital identifier to commercial digital publications.

5.4.11.4 Persistent URL (PURL)

The Persistent Uniform Resource Locator (PURL) was developed and implemented by the OCLC as a naming and resolution service for general Internet resources. It is intended as an interim system to be used until the URN framework is well established. A PURL looks just like a URL, except it points to a resolution service instead of the actual location of the digital resource. The resolution service then redirects the user to the appropriate URL.

5.4.11.5 ARK (Archival Resource Key)

The ARK system, which is location and protocol independent, is a new approach to persistent identification. It was developed in 2001 by John Kunze for custodians of archived digital objects, and emphasises the principle of stewardship of resources and their naming schemes over time.

The Archival Resource Key (ARK) identifier is a naming scheme for persistent access to digital objects (including images, texts, data sets, and finding aids), currently being tested and implemented by the California Digital Library (CDL).

An identifier is an association between a string (a sequence of characters) and an information resource. That association is made manifest by a record (in the case of this service, a METS record) that binds the identifier string to a set of identifying resource characteristics. The ARK identifier is a specially constructed, globally unique, actionable URL.

The scheme is underpinned by three requirements:
- a link from the object to a promise for stewardship;
- a link from the object to metadata which describes it;
- a link to the object itself (or appropriate substitute).

Information on the ARK persistent identifier is available at: http://www.cdlib.org/inside/diglib/ark/

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6 Organisation and Management of National Bibliographies

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6.1 Purpose & scope of this chapter

The purpose of this chapter is to introduce the key issues and decisions to be taken when establishing or restructuring an agency charged with exercising national bibliographic control. The key issues are described and discussed in general terms and illustrated with examples from real life. This is not an instruction manual. Every context is unique and one size does not fit all. The emphasis is on offering options and identifying the strengths and weaknesses of different approaches.

6.2 Responsibility for national bibliographic control

National bibliographic control is the responsibility of the national bibliographic agency. The national bibliographic agency is:

"the organizational unit established within a country's library system, which undertakes responsibility for the preparation of the authoritative and comprehensive bibliographic records for each new publication issued in the country, making the records in accordance with accepted international bibliographic standards and publishing them with the shortest possible delay in a national bibliography, which appears on a regular basis".[1]

The functions of the national bibliographic agency are often exercised by the national library, but administrative practices vary between countries. In practice the agencies carrying out the function of national bibliographic control may be designated by a variety of names and organized in accordance with a range of administrative structures, for example:
- A department, division, section of a national library
- A processing centre serviced by several specialized national libraries
- A bibliographic centre

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[1] Guidelines for the National Bibliographic Agency and the National Bibliography / prepared by the IFLA International Office for UBC. Paris, 1979, p. 7.

- A bibliographic institute
- Any other name appropriate to national bibliographic tradition

6.3 Structures for administration of national bibliographic control

There is no "correct" administrative model. What matters, is that the national bibliographic agency:
- has the authority necessary to establish and sustain national bibliographic control
- is endowed with resources commensurate with its responsibility for national bibliographic control.

6.3.1 National Library as national bibliographic agency

The IFLA Section on National Libraries defines the tasks of a national library in the following manner: "National libraries have special responsibilities, often defined in law, within a nation's library and information system. These responsibilities vary from country to country but are likely to include: the collection via legal deposit of the national imprint (both print and electronic) and its cataloguing and preservation; the provision of central services (e.g., reference, bibliography, preservation, lending) to users both directly and through other library and information centres; the preservation and promotion of the national cultural heritage; acquisition of at least a representative collection of foreign publications; the promotion of national cultural policy; and leadership in national literacy campaigns. National libraries often serve as a national forum for international programmes and projects. They may have a close relationship with national governments, may be concerned with the development of national information policies, and may act as a conduit for the views of other sectors of the profession. Occasionally they also serve the information needs of the legislature directly".

The defining characteristics of a national library make them the most appropriate choice to host the national bibliographic agency. National libraries have national responsibility, often enshrined in law. This gives them the authority to negotiate with publisher and trade representatives on legal deposit, digital rights managements and other issues of national significance. It also affords national libraries the security to plan for the long term. The national library may also be relatively well resourced to provide leadership and to manage sustainable services.

6.3.2 National bibliographic agencies in other institutions

In many countries national libraries have additional functions. The national library may also be an institutional library. It is quite common for the national library to also serve a university, or the public, or a legislature. Assigning the functions of the national bibliographic agency to an institutional library can be very effective. The institutional library possesses valuable resources in terms of collections, staff and experience which will benefit the national bibliographic agency.

The mission, users, tasks and services of the host institution will be affected by the imposition of responsibility for national bibliographic control. National bibliographic functions must be adequately resourced. A clear distinction should be maintained between the national and institutional roles. Responsibilities for each aspect of the service must be clearly defined.

There is a risk that the national functions may suffer under the day to day pressures of maintaining services to the host institution. Management structures must ensure that responsibilities are clearly defined; performance monitored and managers are held accountable.

6.3.3 Collaborative & distributed national bibliographic agencies

Responsibility for national bibliographic control is often distributed between agencies responsible for different types of material. For example, textual material may be the responsibility of the national library, whereas film and television are the responsibility of the national film archive. Responsibilities within these different domains may be centralised or further delegated or distributed. In many countries several libraries obtain legal deposit copies. These libraries may share responsibility for compiling the national bibliography

A collaborative or distributed structure can mobilise scattered resources and direct them toward the common purpose of bibliographic control. Sharing responsibility spreads the burden of managing the legal deposit system but it may be difficult to maintain consistency and standardisation in a distributed system. Strong leadership and good communication will be necessary to involve partners in contributing towards the common goals and to manage change.

Despite these problems collaborative models will become increasingly important. No institution can collect everything. Management structures must ensure that, even in a distributed model, responsibilities are clearly defined, performance is monitored and managers are accountable.

6.3.4 Independent national bibliographic agencies

The national bibliographic agency may be established as an independent agency, with responsibility for processing the national published output. An independent agency may lack the authority and resources necessary to manage an effective bibliographic service. An independent agency would have to work closely with the institutions responsible for managing national collections. Even if the national bibliographic agency is administratively independent there are strong arguments for its physical collocation with the national library or other national collection.

6.3.5 National agencies for bibliographic standards

National responsibility for application and maintenance of bibliographic standards is often assigned to the national bibliographic agency. The NBA has appropriate expertise and authority. The workflows for assigning identifiers such as ISSN or ISBN overlap with national bibliographic control.

6.4 Legal deposit legislation / voluntary deposit

How does the national bibliographic agency secure the collection, recording, preservation and availability of the national output? For most countries the most effective way of collecting the national output is through legal deposit. ICNBS reaffirmed, "the value of legal deposit as a means of ensuring that the cultural and intellectual heritage and linguistic diversity of the State is preserved and made accessible for current and future users."

6.4.1 Legal deposit

Legal deposit is a statutory obligation imposed on publishers, distributors and, in some countries, printers to give copies of publications to the national collection. The scope is being extended in many countries to include non-print media, including electronic resources. The legislation may also impose obligations on the national bibliographic agency with regard to preservation, description and access to material received through legal deposit. It may also impose restrictions on the use/disposal of such material.

Discrete or incorporated legislation

In some countries legal deposit is the subject of discrete legislation; in other countries provision for legal deposit may be incorporated into another act or law (e.g., the national library act). Experience shows that a discrete legal deposit act is more effective than legislation which forms a small part of another legislative matter (e.g., a freedom of expression act). A legal deposit act will generally establish the basic principles of legal deposit. It is usually accompanied by regulations or another type of legal instrument that specifies the details of the system, such as the categories of material to be deposited, the number of copies, timeliness matters etc. Irrespective of the type of legislation, the act must address compliance and provide mechanisms for extending the scope of deposit to new media.

Introduction of legislation

The ICNBS recommendation number 2 states that countries presently without legislation are urged to introduce it. There is also a recommendation for evaluating legal deposit legislation to make sure that it meets present needs. Generally speaking older legislation tends to leave out newer types of materials, such as audio-visual or electronic materials. The IFLA /UNESCO Guidelines for Legal Deposit Legislation from 2000 provide excellent information and recommendations on all aspects of legal deposit and should be scrutinized before any action is taken.

Recommendation 3 from ICNBS summarises requirements for legal deposit legislation. : "New deposit laws, or regulations pursuant to such laws, should state the objective of legal deposit; should ensure that the deposit of copies is relevant to achieving the goals stated above; should be comprehensive in terminology and wording to include existing types of materials with information content and others which may be developed; and should include measures for enforcement of the laws. Such legislation may take into account the possibility of sharing responsibility for deposit among more than one national institution"

In general all types of published material should be subject to legal deposit regardless of format. This includes audio-visual material and online electronic documents. If any forms of publications are left out it should be on the grounds of content, not information carrier. For further details on selection criteria, please consult Chapter 3.

Number of copies

The number of copies to be deposited varies a lot from country to country. There is a general tendency to reduce rather than increase the number of copies deposited. This is based on the evidence that producers of information are more reluctant to deposit when the number of copies is high and especially when the documents are expensive to produce. The Guidelines for Legal Deposit Legislation suggest that a minimum of two copies should be deposited, one for preservation and the other for public use.

Enforcement

Many countries report that they do not have provisions for enforcing legal deposit legislation. Enforcement of deposit, whether legal or voluntary is a problem. Deposit is an expense which some publishers would prefer to avoid. IFLA recommends that legal deposit laws should include mechanisms for enforcement. The national bibliographic agency needs the sanction of the law to meet its responsibilities, but enforcement is generally viewed as the last resort. Imposing penalties on publishers does not encourage their participation in bibliographic control. Penalties lose their deterrent effect when they fail to keep up with inflation. Experience in the United Kingdom suggests that prompt claiming has a significant impact on compliance. In some countries, copyright registration offers an incentive for publishers to deposit. National bibliographic agencies should

encourage deposit through the efficiency and timeliness of their operations. Publishers must be made aware of their obligations and the public good and commercial benefits to publishers must be emphasised. In conclusion, it is important to build a good working relationship with publishers.

Timelines

The IFLA guidelines suggest that deposit should take place as soon as possible after publication. In terms of the timeliness of the national bibliography this is a crucial point. If the national library is to take the role as the main producer of national bibliographic records it is important that it supplies the data as close to the day of publication as possible. Timeliness is also of value to the publisher wishing to promote his product. Publishers who would like to deposit "in bulk" to avoid unnecessary expenses in terms of postage can be made aware of the implications for the appearance of their publication in the national bibliography.

6.4.2 Voluntary deposit

Voluntary deposit is an agreement by which publishers commit to deposit material with the national bibliographic agency. The national bibliographic agency may also make commitments in respect to long term preservation, access and description. An effective voluntary agreement will exhibit many of the qualities of legal deposit agreement and agencies working with publishers to reach a voluntary agreements should be guided by the IFLA Guidelines for legal deposit.

6.4.2.1 Examples of national legal deposit models

Norway

The Norwegian Act of Legal Deposit of Generally Available Documents of 9 June 1989 came into effect on 1 July 1990. It was one of the first legal deposit acts to include digital publications, both offline and online. The act covers documents of paper-like medium (e.g., books, periodicals, postcards, and photographs), sound fixations, films, videos, recordings of broadcasts and digital publications. Harvesting of the whole Norwegian domain has been carried out on a regular basis since 2005. A more selective harvesting approach is also being used e.g. event based harvesting, and downloading of newspapers.

Lithuania

The revised *Act of the Government of the Republic of Lithuania* of 11 November 2006 which substituted *the Act of the Government of Lithuania* of 22 November 1996 covers books, periodicals, printed music, micro-forms, audio-visual, cartographic, pictorial and electronic publications as well as materials published in Braille.

Lithuania was one of the first European countries to start archiving (in 2002) the Lithuanian domain and bibliographic control of web documents.

Switzerland

There is no federal law on legal deposit in Switzerland. However, the Swiss National Library (NL) has set up agreements with the two national publishers associations; Schweizerischer Buchändler–und Verleger–Verband (SBVV) and l'Association Suisse des Diffuseurs, Editeurs et Libraires (ASDEL), formerly SLESR, to build up its collections. According to this agreement, publishers deposit at the NL a copy of each new published document and the NL lists these in *The Swiss*

Book, the national bibliography and in Helveticat, the online catalogue. The NL ensures the conservation of these publications and establishes annual statistics on Swiss literary output. Additionally, the NL buys around 11'000 titles annually.

<u>United Kingdom and Ireland</u>

The United Kingdom and Ireland are considered together because, although each country has its own legislative framework, the legal deposit obligations imposed on publishers operated across national boundaries.

In the United Kingdom, *the Legal Deposit Libraries Act* 2003[2], and, in Ireland, *the Copyright and Related Rights Act*, 2000[3] make it obligatory for publishers and distributors in the United Kingdom and Ireland to deposit their publications

Publishers and distributors in the United Kingdom and in Ireland have a legal obligation to deposit published material in the six legal deposit libraries which collectively maintain the national published archive of the British Isles. These are:

1. The British Library
2. The Bodleian Library, University of Oxford
3. Cambridge University Library
4. The National Library of Scotland, Edinburgh
5. The Library of Trinity College, Dublin
6. The National Library of Wales, Aberystwyth

Publishers are obliged to send one copy of each of their publications to the British Library within one month of publication. The other five libraries have the right to claim items. In practice many publishers deposit their publications with all six libraries without waiting for a claim to be made. In the UK a court order may be obtained to enforce compliance and, in the last resort, compensation awarded to the library. In Ireland, publishers may be required to deposit up to 13 copies and failure to comply with the legal deposit requirements can result in a substantial fine.

All printed publications come within the scope of legal deposit. Under *the Legal Deposit Libraries Act* 2003[4], electronic publications will also come into scope. This will be effected in due course through secondary legislation which will be introduced incrementally through government Regulations, format by format, as recommended to the Secretary of State by an Advisory Panel. In the meantime, a code of practice exists in the United Kingdom for the voluntary deposit of electronic publications, and also for microform and other non-printed publications. In Ireland, the *Copyright and Related Rights Act,* 2000 has extended legal deposit to electronic formats.

In the absence of legal deposit legislation covering audio-visual materials, the British Library Sound Archive has a long-standing agreement with the British Phonographic Industry Ltd (BPI), through which its members agree to deposit up to two copies of all UK recordings free of charge. In practice intake of BPI members' and other record companies' output is dependent on resources available to monitor output and request deposit.

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[2] United Kingdom. Legal Deposit Libraries Act 2003. http://www.opsi.gov.uk/acts/acts2003/20030028.htm

[3] Ireland. Copyright and Related Rights act, 2000. Chapter 22, Section 198 covers legal deposit.
http://www.irishstatutebook.ie/2000/en/act/pub/0028/index.html

[4] United Kingdom. Legal Deposit Libraries Act 2003. http://www.opsi.gov.uk/acts/acts2003/20030028.htm

6.5 Business model

The choice of business model depends on the clients and goals of the national bibliography, the resources available to produce it, and the organizational or political context of the national bibliographic agency. For example, decisions on whether to charge for the bibliography or associated products may be affected by the ability and willingness of potential clients to pay. The particular prices and methods of charging may need to balance an ability to generate revenue with that of attracting (or not deterring) potential customers. Some governments do not allow national bibliographic agencies, which are also government agencies, to keep the revenue generated by selling national bibliographic products. For these and other reasons, it is important to articulate the purpose and scope of the national bibliography before developing a business model.

6.5.1 Purpose and scope of the national bibliography

The national bibliographic agency should determine the purpose or purposes of the national bibliography and its intended clients, in order to decide on an appropriate business model. A national bibliography may serve one or more purposes. It may be:
- A list of a country's publications to support the country's political or cultural goals or national identity
- A comprehensive list of all titles published in a country, to provide a record of their existence and to identify them unambiguously
- A comprehensive list of all publications for statistical purposes, for use in monitoring publishing as a cultural industry
- A partial list of significant titles published in a country, for specialized uses or clients
- A current awareness service to alert readers when publications in their sphere of interest are published in the country
- A retrospective record of the publishing history of a country during the course of the country's history

Similarly, a national bibliography can be of interest to a number of different audiences, such as:
- Librarians, for purposes of bibliographic verification, acquisitions and copy cataloguing
- Booksellers for bibliographic verification and ordering
- Publishers as a marketing or promotional aid
- Bibliographic utilities who remarket bibliographic records to libraries and the book trade for profit
- General public as a general awareness tool for new publications
- Historians, bibliographers and other researchers as an aid to research, both current and retrospective
- International / foreign researchers, libraries, publishers, booksellers who seek access to the publications of the country in question

Answers to these two key questions (what are the national bibliography's purposes and who are clients) will determine the business model for the national bibliography. Conditions vary from one country to another and so pricing policies cannot be determined without reference to funding structures and fiscal policy.

6.5.2 Paying for the national bibliography

The business model should take account of the direct costs, such as marketing, production and distribution. The costs of implementing the national bibliographic service should be considered as capital costs and separated from the recurring costs for delivering the service. The extent to which indirect costs, such as claiming, cataloguing and overheads are included in the recurring costs will

very much depend on the context in which the national bibliography is being created. The context will also determine the terms on which the national bibliography is offered.

The first question is whether the national bibliography will be a free or priced service. Be realistic. It may be desirable to deliver a free service, but it may not be affordable. The market for bibliographic information is unlikely to bear the price of full cost recovery. It may be feasible to recover direct costs. Government policy and national competition policy may determine whether and at what level a charge may be levied.

<u>Free National Bibliography</u>

All services and products are offered free of charge. The cost is usually underwritten by national government. Government policy may determine that information paid for from government money should be offered to the public free of charge. Alternatively funding may be attracted by developing a business case which delivers government policy objectives. Funding may be attracted from different government departments or agencies, such as education, culture, trade and innovation. The national bibliography is offered free of charge in many countries as a public good. The business case is founded on the stimulation free access to information gives to the educational, cultural and economic life of the nation. Value may accrue to other bibliographic agencies and libraries which are able to reuse bibliographic data produced for the national bibliography.

<u>Priced Service</u>

For any national bibliography service it is important to understand the costs and the market. It is particularly important if the service is to be supported in whole or part by charges. Control your costs rigorously. Ensure that products and services for which you are charging do genuinely recover direct costs. Be ruthless with value added services and products that fail to return a profit. Differential pricing structures can ensure that access for schools and those less able to pay, such as students, the unwaged, is subsidised by those better able to afford it. A range of services and products may be offered under the national bibliography brand.

- machine-readable bibliographic records which it provides to clients such as bibliographic utilities, libraries and booksellers
- set subscription price for paper copies of a printed national bibliography, or bibliography in any physical format such as CD-ROM or microform
- re-marketing of the bibliographic records for profit
- value-added services, e.g. current awareness; subsets tailored to specific user profiles

New technology creates opportunities to reduce production and distribution costs by migration of the national bibliography to the web. However, new technology is not a panacea. It may be costly to implement and requires support by skilled technicians.

6.5.2.1 Retrospective coverage

ICNBS made recommendations to extend coverage retrospectively. For newly established national bibliographies this is probably not practical. It is better to record as much as possible of the current national heritage and, as time and resources allow, eventually try to record older publications. Even for more established national bibliographies retrospective coverage is a challenge. Since the extension of legal deposit lags behind the expansion of media, there will always be carriers of information that have not been collected because they were produced prior to the legal deposit legislation coming into effect.

6.5.2.2   Examples of different national business models

<u>Canada</u>

The Canadian national bibliography, *Canadiana*, includes publications from Canadian publishers, by Canadian authors, and on Canadian topics. It was published as a monthly printed bibliography from 1953, then on Computer Output Microfiche; both the microfiche and the printed versions ceased in the 1990s. A MARC Records Distribution Service to distribute Canadiana MARC records to libraries and other subscribers began in the 1970s, and the Canadiana records were made available online in the 1980s. In addition, an annual Canadiana CD ROM has been published since 1998. Information on the national bibliography is available at the Library and Archives Website at http://www.collectionscanada.ca/index-e.html.

The Library and Archives Canada is the national bibliographic agency for Canada. As it is a department of the federal government, any revenues it may generate are added to the General Revenue Fund on behalf of the people of Canada, and are not directly added to the library's budget. The business model for *Canadiana* can be summarized as follows:

- Canadiana records online in the database AMICUS are provided free of charge. These records are also available via Z39.50.
- A price of approximately $130.00 Canadian is charged for purchase of the annual CD ROM edition, to defray the incremental costs of production. However, under a national program of free distribution of government publications to certain libraries, many copies of the CD ROM are distributed free of charge.
- A moderate price is charged for subscriptions to weekly or monthly updates of Canadiana MARC records; however, charging for this service has been suspended since 1997. Subscribers to this service include large libraries and bibliographic service providers in Canada and elsewhere.

<u>France</u>

La Bibliothèque nationale de France (BnF) is the national bibliographic agency for France. *La Bibliographie nationale française* has been published since 1811, in print form until 1999. Since 1999, the bibliography has appeared as a distinct publication on the BnF website, divided into five parts, each with different frequencies: books (26 issues per year); serials (11 issues per year); music (3 issues per year); audiovisual (6 issues per year); and cartography (2 issues per year). These are freely available and downloadable. The records are also accessible via Z39.50 search.

The BnF also provides a MARC records distribution service, offering records in both UNIMARC and INTERMARC formats on a subscription basis. This service is offered for a fee ranging from 60 euros to 550 euros per year; however, French public libraries are not required to pay the fee. Retrospective files or customized files are also possible, for variable prices. Information on price and availability of the national bibliography is available on the BnF Website at http://www.bnf.fr/default.htm.

Irrespective of the protocol used to access records BnF has stated a principle of offering records from its catalogue as well as from the national bibliography free of charge when users are downloading themselves the records whatever the protocol used.
As an example, the BnF is currently publishing the French national bibliography on its web site and the records can be easily and anonymously downloaded free of charge. It is the same for the library catalogue when using Z 39.50.

In addition, the BnF is publishing sets of records as bibliographic products: National bibliography for books, national bibliography for serials, national bibliography for audiovisual, national bibliography

for scores, national bibliography for maps) and users have to subscribe for receiving the issues (monthly for books or serials). These bibliographic products are charged for companies, but are offered free of charge for libraries. Nevertheless the prices are quite low and comparable with other national library bibliographic services.

The BnF has publicized its legal framework for bibliographic records usage on its web site. The main points are:

- Any person extracting bibliographic records from the BnF database, can freely use, adapt, modify and distribute them as far as they are included in a value added derived product or service
- In return of this free usage, the customer commits himself to permanently store in the computer record, the reference of the source, which means the content of the 001 field of the BnF record in the adequate field of the target format (i.e. the 035 field in Unimarc)
- The transfer of bibliographic records taken from the BnF to a third party, i.e. unless changes have been made by the user to produce a value added product or service is forbidden

Lithuania

The Lithuanian national bibliography includes publications from Lithuanian publishers, by Lithuanian authors and on Lithuanian topics. The current national bibliography was published as a monthly printed bibliography from 1928 till 1943 and from 1947 till now.

UNIMARC-based records of the national bibliography began in 1998 and at present bibliographic records of Lithuanian documents and documents related to Lithuania are available online for free without limitations (http://www.libis.lt:8080/en/welcome.html).

The National Library of Lithuania has been performing the role of the national bibliographic agency for Lithuania since 1992. The business models for the Lithuanian national bibliography are the following:

UNIMARC records, online in the National Bibliographic Data Bank as well as in catalogue of the national library are free of charge. Those records are also available via Z39.50

A moderate price is charged for subscription of published national current and retrospective bibliography. Subscribers to this service include academic, public libraries, and other institutions of Lithuania and worldwide

Sweden

The Swedish national bibliography, *Svensk bokförteckning*, was published in printed form until 2003. The compilation of the national bibliography was carried out by Kungl. Biblioteket (the National Library of Sweden), but the product was sold through the publisher Tidningsaktiebolaget Svensk bokhandel and distributed through Seelig.

From 2004 the national bibliography has been accessible in an online version via Libris, the national union catalogue of research libraries. (http://websok.libris.kb.se/websearch/form?lang=eng)

Access to Libris has always been cost free. The same applies to the downloading of records from the database. The national bibliographic agency is funded by government to create national records, charging for records has therefore never been seriously considered. Besides, the records created by the National Library of Sweden are in some instances based on other libraries' cataloguing, which would make charging complicated.

The Swiss Book is the national bibliography of Switzerland published by the Swiss National Library (NL). This bibliography lists all Swiss publications on all mediums: books, maps, music scores, electronic media and multimedia, periodicals, newspapers, annual publications and series. A publication is considered Swiss if:

- at least one third of the authors are Swiss
- or the publishing house is Swiss
- or at least one third of the content concerns Switzerland

A publication is included in *The Swiss Book* if:

- its content is public
- it has at least 6 pages;
- and it is less than 10 years old

Publications, whose content is the work of Swiss translators, compilers (editors) or contributors or by authors residing in Switzerland, are collected by the Swiss National Library but are not included in *The Swiss Book.*

The Swiss Book is accessible in an online version via Helveticat, the NL catalogue or in a static version in PDF format. Access is cost-free. (http://www.helveticat.ch/schweizerbuch/)

United Kingdom

New books and serials have been recorded in the *British National Bibliography* (BNB) since 1950. The scope has been extended to electronic publications following the extension of legal deposit to this class of material in 2003. The BNB also includes details of forthcoming books. Under the Cataloguing-in-Publication Programme (CIP) information on new titles appears up to 16 weeks ahead of the announced publication date.

BNB is published by the British Library. It is currently available in print, CD-ROM or as MARC exchange files. The British Library offers a range of subscriptions for the BNB, which is a revenue earning product.

6.5.3   Intellectual property and rights issues

Copyright law protects:

- the right of creators to be recognised and rewarded for their work;
- the public interest in freedom of access to information and ideas.

The copyright position in respect to print materials is established and well understood. The situation in respect to electronic resources is not yet clear. Access to electronic resources is often restricted by contract and by technical protection measures. Contracts issued with digital works may impose conditions on access or constrain access in ways that go beyond the restrictions that obtain in respect to printed resources.

These restrictions on electronic media not only inhibit access, but may also constrain other functions carried out by national bibliographic agencies. For example, security devices embedded in electronic resources may prevent the resource being copied for preservation or prevent access to the resource after a specified period of time has elapsed.

The copyright situation in every country is different. National bibliographic agencies must recognise that creators and publishers have a legitimate right to protect their creations. NBAs must work with

publishers and creators to build confidence that access to electronic resources deposited with the agency will be secure. There are various means of achieving this.

- Restrictions may be imposed on the location from which resources may be accessed, e.g. computers physically located inside the national library
- Restrictions may be imposed on the number of simultaneous users who may access a legal deposit resource.
- Restrictions may be imposed on who can access a legal deposit resource, e.g. a registered user of the national bibliographic agency.

However, national bibliographic agencies must also protect the interests of their own stakeholders. There is a public good inherent in the free access to information. National bibliographic agencies should work with government to ensure that these protections are not eroded[5].

6.5.4 Promotion and marketing

National bibliographic agencies as a class have not been very effective in promoting national bibliographies. It seems that libraries, considered as interest groups, did not need to be made aware of the existence of national bibliographies. Periodical information on national bibliographies in library journals and contributions in general events, such as conferences, symposiums etc, were the only, indirect means by which national bibliographies were advertised.

The penetration of information and communication technologies has raised the cost of producing and distributing national bibliographies tremendously. The high costs cannot be justified without adequate numbers of sales. Systematic promotion and marketing strategies are now more common.

Because of the specialised nature of the market, promotion is mainly addressed to libraries, although the presence of national bibliography stands in national and international book fairs shows an ambition to go beyond the library world. Sales promotions include price reductions, special offers, free samples, and demonstration packages and other classic means of promoting a product. Brochures and other information materials are a very common accompaniment.

Librarians are now more aware that commercialising national bibliographies is a separate business, which demands specialised marketing techniques and skills. German, French, Spanish and many other national bibliographies are being distributed through commercial companies and publishing houses.

Increasingly, promotion of national bibliographies is achieved via the Web. If a national bibliographic agency publishes the national bibliography on its website, it would be important to ensure that the national bibliography is indexed by major search engines such as Google, Yahoo, etc. which provide an ease of access which promotes use and awareness of the national bibliography. It is also important to provide a direct and clear link to the national bibliography from the Web home page of the national bibliographic agency. Some agencies use techniques such as RSS feeds to promote the national bibliography through the dissemination of newly-published national imprints to individuals according to their specific interest profiles. Similarly, a "new books" webpage can call attention to recently released publications. Mass promotion through emails sent to listservs with a URL link to the national bibliography can also be effective.

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[5] The British Library response to the Gowers Review of Intellectual Property (IP) http://www.bl.uk/news/2006/pressrelease20061207.html.

Intellectual property: a balance. The BritishLibrary manifesto. http://www.bl.uk/news/pdf/ipmanifesto.pdf

6.6 Organization of national bibliographic data

There is a choice about how to organize and present national bibliographic data. There is no consensus on whether the national bibliography should be a separate file or in the catalogue of national library. Different solutions will be appropriate to different national circumstances. Further information pertinent to this issue will be found in the chapters on cataloguing (Chapter 4) and on functionality and interoperability (Chapter 5). However the following general points may assist with decision making.

- Create data once, but use it for many purposes
- The national bibliographic data can appear in several contexts
  - in the national bibliography (in different manifestations)
  - to describe the national collection in the national library catalogue
  - distributed to union catalogues or in institutional catalogues
- Ensure that you can import and export data
  - Many ILS systems have rather superficial support for import and export
  - Will you need to convert from different formats
  - Will you need to convert character sets?
  - Can you select different datasets to suit different purposes?
- Look for extensible system solutions which can be layered rather than trying to solve all the problems with one system
- Look for opportunities to share investment with other institutions – without compromising your fundamental requirements
- Be aware of open source solutions as well as expensive proprietary software. Library specific products may be more expensive than generic products
- Whatever your solution, make sure you have the resources to sustain it
  - ILS vendors may require you to commit to frequent updates, which may be very demanding in terms of staff resources and hardware upgrades
  - Open source solutions may be difficult to sustain over time.

Electronic resources have created a set of new challenges for storage and organization of data. The "digital library" duplicates the full range of services and operations required to support traditional media. The challenge for the national bibliographic agency is how to resource this transition while maintaining "traditional" services around the printed collections. The challenge is not merely a matter of purchasing or developing new systems, but of reskilling- and re-profiling the workforce. As resources move to electronic media only, the number of manual handling jobs is in irreversible decline. Automated processing will handle ingest of the bulk of electronic resources, but exception handling will require a much more sophisticated set of technical skills than previously. These skills will also be in demand by other sectors of the economy and may be consequently difficult or expensive to acquire and retain.

6.6.1.1 Examples

Canada

The Canadian national bibliography is held in conjunction with other source records and the Canadian union catalogue records.

Croatia

National bibliographic records are available only through the national library catalogue are Croatia.

http://www.nsk.hr/opac-crolist/crolist.html

Lithuania's National Bibliographic Data Bank contains all bibliographic records of all publications of Lithuania and is kept as a separate file within Lithuanian Integrated Library Information System (LIBIS) of the country. At the same time the records of Lithuanian publications are reflected in the catalogue of the national library (http://www.libis.lt:8080/en/welcome.html)

United Kingdom

The migration of 13 million bibliographic records, from distributed legacy systems architecture, to an Integrated Library Management System provided the opportunity for the British Library to review the relationship of *British National Bibliography* data to its catalogues and other bibliographic data. The historic separation of the BNB from the British Library catalogue was inefficient and resulted in considerable overheads for record creation as well as unsustainable costs for maintenance.

A single production database was specified for the ILS database from which various "products" could be selected. Catalogue-in-publication and BNB records contributed by other Legal Deposit Libraries in UK and Ireland are fed into the same database. The products derived from this "production database" include the *British National Bibliography*; the ISSN UK file and the British Library Integrated Catalogue (BLIC). Critical to the realization of this vision was the presence of the BNB number as an identifier for BNB records. The BNB number enables records to be selected for BNB. The range and complexity of the British Library's bibliographic products is such that a separate system, Catalogue Bridge, has been developed to manage exports.

6.7 Presentation of the national bibliography

6.7.1 Currency

Recommendation 7 from the ICNBS conference states: "The national bibliography should list material as soon as possible after publication. Provision should be made for its effective distribution and it should appear in a regularly updated form to meet the needs of the users, thereby enabling them to acquire the material listed there without delay".

The listing of material as soon as possible after publication is an essential requirement for a current awareness service. Currency is dependent on the timely deposit of publications by the publisher. The national bibliographic agency has an obligation to process these publications without delay.

Agencies must take care to monitor the currency of the national bibliography and take action in response to declining currency. The appropriate action will depend on the reason for the delay. Processes should be continually improved to ensure that resources move through the process as efficiently as possible.

Cataloguing-in-publication arrangements, by which publishers provide bibliographic information in advance of publication, are a means of improving the currency of information as well as enhancing the value of the national bibliography for collection development.

6.7.2 Choice of media for delivery of the national bibliography

ICNBS provides some guidance in respect to the format and design of the national bibliography. The recommendations focus on print publications rather than online products. Chapter 5 therefore

deals in more details with the functionality of the online national bibliography. Chapter 4 discusses the levels of cataloguing and authority control.

Over recent years there has been a change by the NBAs from print, then CD-ROM to on-line as the most preferred distribution channel for data. The choice that a given country makes will reflect the level of automation in the country. The choice will also be influenced by the business model and resources available.

6.7.2.1 Paper

Paper remains widely used and printed national bibliographies can still deliver an effective service. Rising production and distribution costs are likely to render paper uneconomic in the short to medium term.

6.7.2.2 Microfiche

Microfiche is obsolete as a medium for delivering current services. It is expensive to produce and distribute and inconvenient to use.

6.7.2.3 Electronic access

Electronic access supports different functions. It supports resource discovery through distribution of information retrieval interfaces via hand-held or online media. It also supports exchange of bibliographic data in structured formats, such as MARC.

6.7.2.4 CD-ROM

The findings and recommendations of the European 'National Libraries Project on CD-ROM' were widely used in the production of national bibliographies on CD-ROM. In general CD-ROM complemented rather than replaced the printed versions. Most countries which publish their national bibliography on CD-ROM also offer the same data online, some as a separate database, others as a part of their national library catalogue. CD-ROM delivered some specific benefits in terms of information retrieval and distribution of machine readable data over other formats. However currency was an issue and distribution costs were relatively high. CD-ROM was popular during the 1990s, but is now being superseded. The software developed to support national bibliographies on CD-ROM is showing its age when compared with contemporary Web interfaces.

6.7.2.5 On-line access

The Web is becoming the preferred means of offering access to the national bibliography. Web access enables data to be regularly updated and can be available to users anywhere in the world whenever they want it. It offers the potential for offering additional services, such as: RSS feeds tailored to the user's personal profile; or access to the full text of electronic resources. Premium online services may be the means of monetizing bibliographies on the web.

6.8 Measuring the effectiveness of the national bibliography

In order to justify the investment in the national bibliography and the continued commitment to that process, it is important to consider how the effectiveness of the national bibliography is to be measured. In some countries funding for the national bibliographic agency is directly linked to

performance indicators, such as percentage of the national output collected and processed by the national bibliographic agency.

Good management information is essential to provide timely and accurate answers to enquiries received from publishers, government or the media. The national bibliographic agency must collect its own statistics. Employing an independent third party to monitor or audit performance may enhance the credibility and authority of performance metrics, particularly with external audiences.

6.8.1 Coverage

What percentage of national output is covered by the national bibliography? This can be determined by comparison of the content of the national bibliography with the output of national publishers over a given period. Data may be available from national publisher associations or from agencies serving the book trade. Be aware of different accounting methods. Publishers count products and this may differ from accounting practices for the national bibliography. For example for the purposes of the national bibliography a single record may serve for different bindings, but to publishers and book sellers these are different products.

Data for formally published electronic resources should be covered by trade sources. Electronic resources may emanate from new publishers who are not covered by traditional accounting practices. Decisions may also need to be made in respect to print on demand services. Additional arrangements will be necessary to account for the percentage of the national web domain harvested.

6.8.2 Currency

The usefulness of the national bibliography depends on its currency. Many customers of national bibliographies work in purchasing, selection or acquisition in the book trade, libraries or other information centres. Advanced notice of forthcoming publications and prompt alerting to current publications are essential.

Currency can be measured by regular snapshots of the currency of sample records in the national bibliography. From 1974 to March 2005 UKOLN managed the BNB currency survey. The survey measured the hit rate achieved on a sample of records at the point of ordering and at the point of cataloguing. The hit rate on the samples was measured again after 6 months. Although this was a sound methodology for measuring the hit rate, the measure was discontinued in 2005 when it proved impossible to enlist libraries to conduct the survey.[6]

6.8.3 Usage of the national bibliography

It is important to know who is using the national bibliography and what they are using it for. It may be possible to find out who the customers are from distribution lists for physical media and registrations for online media. However, the person who purchases the national bibliography may not be the end user. This must be kept in mind when planning market research. Ensure that your survey includes real users.

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[6] UKOLN BNBMARC Survey http://www.ukoln.ac.uk/bib-man/surveys/bnbmarc/

6.9   Learning from others

As the examples in this chapter illustrate, there are many approaches to successfully meeting the challenge of implementing a national bibliographic service or extending an existing service to e-media. New technology can solve some problems, but new media raise new challenges.

1. If your country has no experience in national bibliographic work, seek advice from others. There are some lessons to be learned from others successes and failures!
   - If possible, choose a partner in a neighbouring country similar to yours
   - Bear in mind that local provisions will have to be made, as every country has some special features which will have to be taken into consideration
   - Attending or arranging a regional workshop which brings together expert practitioners and local knowledge can provide a good starting point

2. Hiring or asking for technical assistance from a local, regional or international community may be a good way of moving from a planning to an implementing phase
   - This conforms with ICNBS recommendation 19, "Where needed, IFLA should assist national bibliographic agencies to develop their national bibliographic activities - for example: establishing pilot schemes to develop national bibliographies, establishing guidelines for producing national bibliographies, and organizing national, regional or international seminars and training workshops"

3. Seeking partners for cooperation within your own country
   - The national bibliography is subject to complex usage and a diversity of user groups varying from the general public to very specialized users, including publishers and other libraries
   - Forming a forum where the different voices can be heard and where the mission, structure, presentation, functionalities and development of the national bibliography can be discussed may prove valuable. This will create common ground and hopefully improve decision making and strengthen the national bibliography as a main tool for accessing the national output
   - If the compiling of the national bibliography is shared between several institutions it is important to form an editorial board with representatives from all the institutions involved. This board should have expertise in legal deposit issues as well as bibliography to ensure a holistic approach to bibliographic control
   - The guidelines place the responsibility for using and developing national as well as international standards with the national library. The NBAs should take a lead in this, but heavily involve other bibliographic communities and expertise nationwide in this work

4. Co-operation with publishers in the production of the national bibliography is a very import area. (See also Chapter 7)
   - Publishers are the source of information for the national bibliography
   - The successful operation of legal deposit is dependent on publisher co-operation
   - Publishers (and tax payers) have a right to expect that the national bibliographic agency processes legal deposit securely and efficiently
   - Publishers should benefit from a successful national bibliography
   - Co-operation is more likely to benefit the NBA than coercion

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2007 from http://www.ifla.org/VII/s1/gnl/legaldep1.htm

7 Cooperation with publishers: One scenario for getting resource from author to user, including the flow of metadata

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7.1 The Path of the Resource

7.1.1 Explanations to the diagrams

This chapter, through two diagrams, displays one path of the resource in a modern technical environment.

Initially there is an author who decides to create a work. The expression of the work is realised either in analogue or digital format. Sometimes the author decides to publish the work himself, but usually there is an agreement with a publisher to publish the work, from now on called the resource.

When the resource has been prepared for publication it is sometimes sent to an intermediary distributor that deals with the physical distribution of the resource. In a few cases the publisher manages the distribution himself.

The publisher and the distributor, to manage the stock they have, record information about the resources in their own internal databases. The records in these databases can be stored in many formats, but one format that is quickly gaining ground is the Online Information Exchange (ONIX) format that is XML based. Even if the internal format is another one, the ONIX format is very suitable for exchange between publishers/distributors and/or libraries.

The printed and electronic resources are also made available to bookshops and libraries to sell and for lending purposes. As far as electronic resources are concerned they can also be stored in digital archives, either for accessing purposes for those who purchase access to the resource or for the purpose of preserving the national digital heritage. The national digital archive, repository, may be maintained by the National Library, but may also be run on another basis, e.g. by a private company. The non-electronic resources are usually preserved by the National Library.

From the publishers and/or distributors metadata can be sent to bookshops for inclusion in their internal sales systems and to libraries for further inclusion in library catalogues or just as a support for librarians when cataloguing the resource. To be able to receive the metadata from the publishers/distributors library catalogues need to be able to handle the formats that are provided by the publishers/distributors, e.g. ONIX. Between ONIX and MARC21 there are already conversion tables provided by the Library of Congress.
Of course there may be many ways of delivering metadata to the libraries, also by using forms produced by the libraries, or produced by private vendors, forms that then automatically create a bibliographic record.

When a resource is sent from the publisher to the book trade or to a library a metadata file is sent at the same time, or before, to the publishers and distributors databases and to the library databases,

above all to the database of the national bibliographic agency (NBA). When the file ends up in the database of the NBA a message should automatically be sent to a cataloguer saying that there is a new preliminary bibliographic record in the database to be checked.

If the resource is an electronic one that resource is sent to the digital archive (repository) and as soon as it ends up there a message should also be sent to a cataloguer who then knows that there is a digital file to open, that he/she has to check and compare to the automatic bibliographic record that was created from the metadata sent earlier. In today's catalogues that bibliographic record is usually in the MARC format.

Once the bibliographic record has been completed by the NBA it can be exported to other systems, above all library systems, but not only to these, also back to the databases of the publishers and distributors to make them more complete.

In the best of worlds there is also an automatic feed of authority metadata from the author/publisher/distributor to the national bibliography, metadata that is then later checked by a librarian.

7.1.1.1 Metadata from authors, publishers and distributors

Publishers and distributors, and in some cases even authors, all can, and should, be encouraged to co-operate closely with the library sector, the benefits of which must be clearly stressed in all communication between the two sectors. The best way of co-operation is by having the publishing industry create metadata for the resources that are being published / distributed. Metadata can be of several kinds, e.g., descriptive metadata, rights metadata and technical metadata. The metadata should be created following an internationally accepted standard, such as ONIX or Dublin Core.

The metadata should at least follow the requirements specified in the paragraph on metadata below, but can also be enhanced by added value data, such as tables of contents, cover images and subject headings.

Information on forthcoming publications can be made available much earlier if the union catalogue is provided with metadata at an early stage. By making this information available before the resources are actually published, not only the library catalogue benefits, but also the authors, publishers and distributors themselves, since their output is being made more visible. This is a fact that should be stressed in negotiations with the book industry. By making the metadata that they already have in their internal systems publicly available they also make their own publications better known and in the end face a chance of reaching a wider audience.

At a later stage national libraries can benefit from reusing metadata in the production of national bibliographies. Data once entered into the library catalogue should never be re-keyed again, but re-used. Owing to this fact it is important that, even though the data received initially is preliminary, it should still be of as high quality as possible to avoid unnecessary work when the bibliographic record is being made complete.

7.1.1.2 Resources of various kinds (printed books, e-books etc)

Actors, i.e. authors, publishers and producers (including distributors) create, produce and supply resources, the format or medium/bearer of which is of no importance for the national bibliography. All kinds of resources should be included.

National legal deposit legislation in a country defines who must submit legal deposit copies to national libraries or national bibliographic agencies (e.g. publisher, manufacturer of a publication or printer). In some countries the submitting of legal deposit materials is based on (voluntary)

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agreements and in other countries this is valid only for some parts of the resources, e.g. digital resources.

7.1.1.3 Metadata in a standardized format (e.g. ONIX in XML)

Creators, producers, or publishers provide metadata belonging to a publication in a standardized format and deliver the metadata to the NBA when the publication is delivered to the NBA; prior to the publication of it; or, as is the case with many digital resources, together, embedded with the resource.
The metadata can consist of:

- record of forthcoming publication/ bibliographic preliminary metadata in accordance with the ISBN standard (2005)

- a CIP record in accordance with the Cataloguing-in-Publication (CIP) Program

- metadata based on the provisions of national legal deposit legislation (e.g. in Finland the draft government bill for a new Legal Deposit Act (2007) also contains provisions of metadata of electronic materials)

- according to contracts

The record can also include publication's tables of contents, illustrations, subject headings made by publishers, summaries, reviews, or jacket images. The more metadata that is provided initially, the easier the handling of the resources received at the NBA.

7.1.1.4 Authority data in standardized format e.g. XML

Producers may, and should be encouraged to, provide authority information by using standardized templates which may be included in a network service. The data can be transferred to:

- national library or national bibliographic agency

- producers' own databases

Thus the author is able to confirm that information in the authority record concerning himself/herself (or of a corporate body) is correct.

7.1.1.5 Collection & Digital Archive (repository)

The publication will be stored in a national collection or digital archive, more commonly known as a repository. In the repository all digital resources will be kept in a format that is readable for the users accessing the repository. For example many resources need to be converted or transferred from one format to another as times change to make them accessible even when old programs no longer exist. For example, a PDF file may not work 100 years from now and needs to be transformed to a format that makes it readable in the future. When converting files for the future it may be advisable to also always keep a copy of the original resource.

7.1.1.6 MARC record

MARC (Machine Readable Catalogue) is one, and still the most common, way of storing bibliographic metadata. In MARC most metadata received can be stored, but not all. Bibliographic and rights metadata can usually find places within MARC, but it is more difficult for technical metadata to be handled within MARC.

7.1.1.7 Automatic message that a bibliographic record has been created

Message received by cataloguer of the national library/NBA. The cataloguer will compare the received resource to the preliminary bibliographic record received, and verify that the metadata is valid. The bibliographic record will be accepted and updated in the national bibliography database.

7.1.1.8 Automatic message that a book / file has been delivered

Message received by cataloguer of national library/NBA. When that message is received the cataloguer collects the book or accesses the file and makes the preliminary bibliographic record in the database complete.

7.1.1.9 Automatic mapping tables

The bibliographic description record and name authority record of the resource will be converted automatically into the national library's/NBA's format in which it stores its metadata (usually a MARC record). For example, today a mapping program between the book industry's ONIX format and the MARC21 format already exists, a mapping program developed by the Library of Congress.

7.1.1.10 National bibliography / National bibliographic agency

The national bibliography contains metadata of all resources issued in the country; The NB can contain bibliographic records described using different bibliographic levels, all according to decisions taken by the NBA. Publishers and bookshops can re-use national bibliography information in their own information management in various ways. For example, they can update their article information with full bibliographic and authority information from the NBA database, if they so wish. Libraries within the country and also abroad can access and download bibliographic records to their databases or make the records accessible through various search interfaces.

The way of the resource and its metadata
- a possible solution
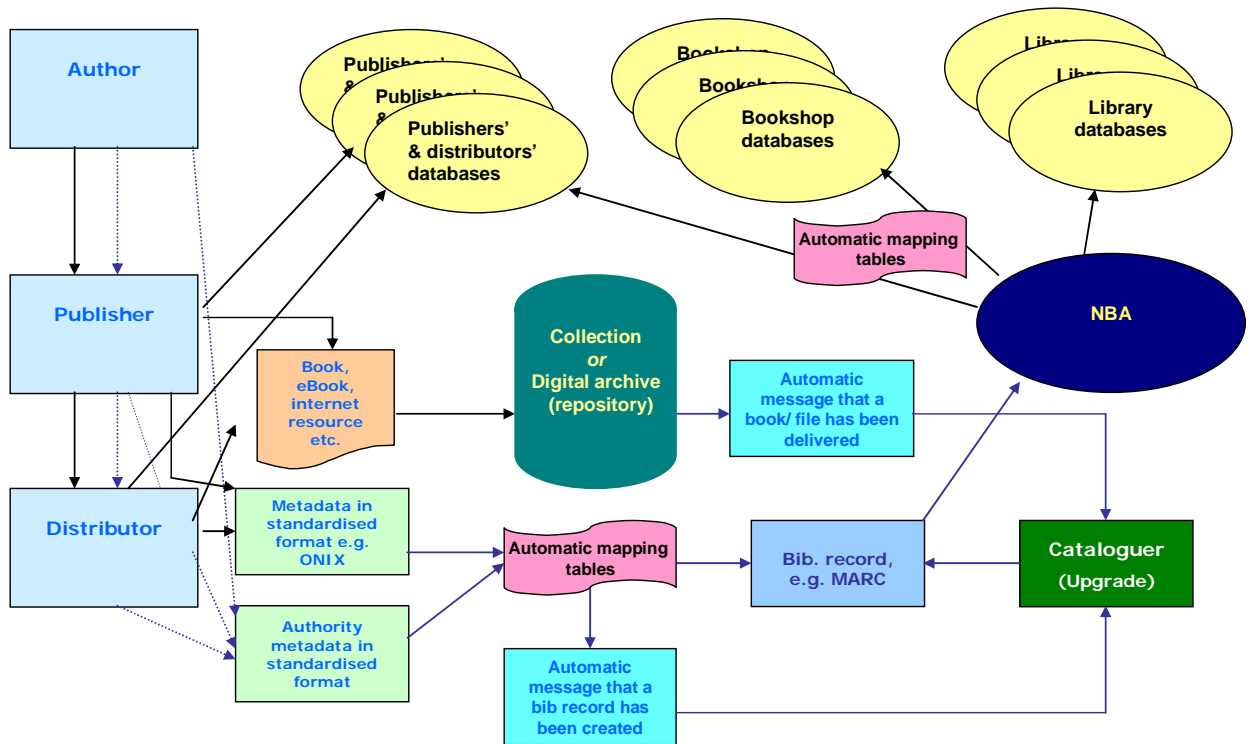
Metadata flow from author to client
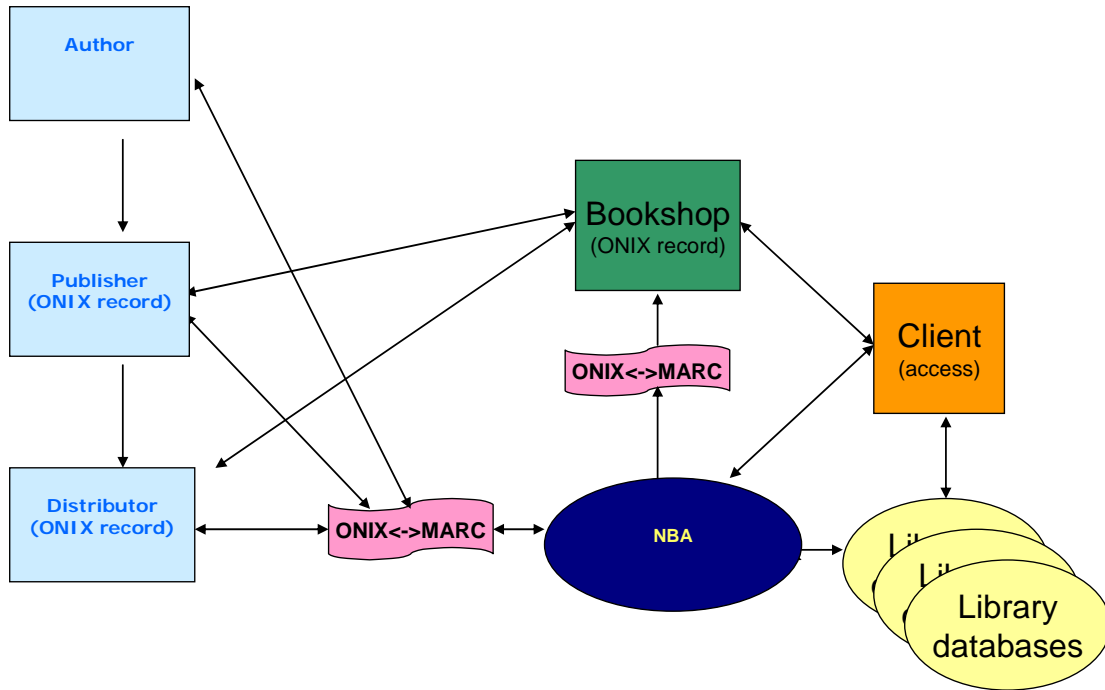
8   Glossary

Authority control

The control of access points by establishing and using consistent headings. [LibrarySpeak : a glossary of terms in librarianship and information management / Comp. by Mary Mortimer. -- 4th ed.. -- Canberra : DocMatrix, 2001. -- p. 25]

The procedures by which consistency of form is maintained in the headings (names, uniform titles, series titles, and subjects) used in a library catalog or file of bibliographic records through the application of an authoritative list called an authority file to new items as they are added to the collection. [Dictionary for library and information science / Joan M. Reitz. – Westport : Libraries Unlimited, 2004. – p. 53]

Bibliographic control

Bibliographic control requires the development and maintenance of the system of descriptions of documents that are arranged according to accepted standards for cataloguing, indexing and classification, in order to ensure the identification, retrieval of and access to the documents [The Bibliography Section of IFLA]

The activities involved in creating, organising, managing, and maintaining the file of bibliographic records representing the items held in a library or archival collection, or the sources listed in an index or database, to facilitate access to the information contained in them". Bibliographic control includes the standardisation of bibliographic description and subject access by means of uniform catalogue code, classification systems, name authorities, and preferred headings; the creation and maintenance of catalogues, union lists, and search aids; and the provision of physical access to the items in the collection. Bibliographic control is also defined as: "The systematic identification of recorded information and the mechanism for gaining subsequent access to such information" [The definition of bibliographic control in the Online Dictionary for Library and Information Science, http://lu.com/odlis/]

Bibliographic record

A description of an item in card, microtext, machinereadable or other form containing sufficient information to identify the item. [LibrarySpeak : a glossary of terms in librarianship and information management / Comp. by Mary Mortimer. -- 4th ed.. -- Canberra : DocMatrix, 2001. – p. 29]

An entry representing a specific item in a library catalog or bibliographic database, containing all the data elements necessary for a full description, presented in a specific bibliographic format. In modern cataloging, the standard format is machine-readable, but prior to use of computers, the traditional format was the catalog card. [Dictionary for library and information science / Joan M. Reitz. – Westport : Libraries Unlimited, 2004. – p. 71]

Bibliographic resource

An expression or manifestation of a work or an item that forms the basis for bibliographic description. A bibliographic resource may be in any medium or combination of media and may be tangible or intangible.

Cataloguing (USA cataloging)

The process of creating entries for a catalog. In libraries, this usually includes bibliographic description, subject analysis, assignment of classification notation, and all the activities involved in physically preparing the item for the shelf, tasks usually performed under the supervision of a librarian trained as a cataloger. [Dictionary for library and information science / Joan M. Reitz. – Westport : Libraries Unlimited, 2004. – p. 122]

Cataloguing-in-publication (CIP)

CIP was pioneered in the Library of Congress in 1971, and the British programme which closely resembles the US system became fully operational in 1977. The aim of the programme is to provide bibliographic data for new books in advance of publication, and it depends heavily on the voluntary co-operation of publishers. Records are compiled from information supplied by publishers on a standard data sheet. The records also appears in the book itself, usually on the verso if the title-page. [Harrod's Librarians' Glossary and Reference Book / Compiled by Ray Prytherch. – Aldershot : Ashgate Publishing Limited, 2005. – p. 115]

Copyright

The exclusive right given by law to authors, composers or publishers to sell, reproduce or publish a work during a stated period of time. It is a form of protection for works, such a novels and journal articles, which result from the skill and labour of a creator, and for other subject matter which results from the investment of a producer, such as a film. [LibrarySpeak : a glossary of terms in librarianship and information management / Comp. by Mary Mortimer. -- 4th ed.. -- Canberra : DocMatrix, 2001. -- s. 50]

Current national output

All documents published in a country regardless of publication form.

Electronic publications

Publications issued in an online format or on discrete physical digital media such as magnetic tapes, magnetic discs or, more commonly, optical disks of some kind, such as CD-ROM or DVD. [Statement on the development and establishment of voluntary deposit schemes for electronic publications / Conference of European national librarians/Federation of European publishers]

Electronic resource

Material consisting of data and/or computer program(s) encoded for reading and manipulation by a computer by the use of a peripheral device directly connected to the computer or remotely via network such as the Internet (AACR2). The category includes software applications, electronic texts, bibliographic databases etc. [Dictionary for library and information science / Joan M. Reitz. – Westport : Libraries Unlimited, 2004. – p. 244]

Interoperability

The ability of computers to communicate which each other using a common set of protocols. [LibrarySpeak : a glossary of terms in librarianship and information management / Comp. by Mary Mortimer. -- 4th ed.. -- Canberra : DocMatrix, 2001. -- p. 96]

Initiatives to create, and to encourage the take-up by systems suppliers, of standards, protocols and recommendations that facilitate the working together of computer systems, or the perception of their integration when seen from perspective of the end user. One of the key starting points was Open Systems Interconnection and the Word Wide Web – itself a major contributor to interoperability – has provided further incentive to develop systems, particularly for the interchange of Metadata. Interoperability of the library catalogue data has been a feature of the Bath Profile and Z39.50. [Harrod's Librarians' Glossary and Reference Book / Compiled by Ray Prytherch. – Aldershot : Ashgate Publishing Limited, 2005. – p. 376]

Integrated Library System (ILS)

An automation system that enables library functions, such as circulation, requests, cataloging, serials, notices, and reports. [http://www.selco.info/help/glossary]

LC/NACO Authority File

International name authority file maintained by Library of Congress.

Legal deposit

An obligation by law or another kind of rule to make printers and publishers deliver one or more free copies of their publications to the national library or other "legal deposit libraries".

A method whereby certain libraries are entitled by law to receive one or more copies of every book or other publication which is printed or published in the country. [Harrod's Librarians' Glossary and Reference Book / Compiled by Ray Prytherch. – Aldershot : Ashgate Publishing Limited, 2005. – p. 411]

Metadata

Descriptive information used to describe and provide access to information resources, especially Internet sites and documents. [LibrarySpeak : a glossary of terms in librarianship and information management / Comp. by Mary Mortimer. -- 4th ed.. -- Canberra : DocMatrix, 2001. -- p. 114]

Structured information used to describe information resources/objects for a variety of purposes. Although AACR2/MARC cataloging is formally metadata, the term is generally used in the library community for nontraditional schemes such as the Dublin Core Metadata Element Set, the VRA Core Categories, or the Encoded Archival Description (EAD). Metadata can be categorizes as descriptive, structural, and administrative. [Dictionary for library and information science / Joan M. Reitz. – Westport : Libraries Unlimited, 2004. – p. 448]

National bibliography

The cumulation of the authoritative and comprehensive records of the national imprint of a country, published in a printed form (and/or produced in other physical form, such as catalogue cards, machine-readable tapes) regularly, and with least possible delay

A bibliography which lists all the books and other publications published, or distributed in significant quantity, in a particular country. Sometimes the term is used in respect to the new publications published within a specific period, and sometimes in respect to all those published within a lengthy period of many years. It is also used to indicate a bibliography of publications about a country (whether written by its nationals or not) and those written in the language of the country as well as those published in it. [Harrod's Librarians' Glossary and Reference Book / Compiled by Ray Prytherch. – Aldershot : Ashgate Publishing Limited, 2005. – p. 472]

National bibliographic agency

The organizational unit established within a country's library system, which undertakes responsibility for the preparation of the authoritative and comprehensive bibliographic records for each new publication issued in the country, making the records in accordance with accepted international bibliographic standards and publishing them with the shortest possible delay in a national bibliography, which appears on regular basis. [Guidelines for the National Bibliographic Agency and the National Bibliography / prepared by the IFLA International Office for UBC. Paris, 1979, p. 7]

National Bibliographic control

The activities to discover, identify and record all the publications produced in a country in order to build up the national library and archival collections, satisfy the information needs of the nation, contribute to the development of an integrated library, documentation and archival infrastructure. [Guidelines for the National Bibliographic Agency and the National Bibliography / prepared by the IFLA International Office for UBC. Paris, 1979. p.2]

National imprint

The product of the national publishing industry.

Online Public Access Catalog (OPAC)

A digitized catalogue of books, journals, and other materials held in the library. [http://www.nova.edu/library/help/misc/glossary.html]

Publisher

One who issues or makes available publications to the public.

Publication

(1) Information, data, intellectual output or other content which is issued or made available to the public in [x, where x is the name of the country], or (2) the act of issuing or making available such material to the public, where that material has not previously been published in [x] in the same or another medium.

The ISBD (CR) called this Bibliographic resource.

Persistent Identifier

A persistent Identifier is a code that identifies a digital resource (document, object or bibliographic record) without any ambiguity and that can be cited for information retrieval in the long term. Even if the resource moves within the information system, the persistent identifier still remain the same thanks to a resolver system making a permanent correspondence between the identifier publicly known and the physical current address in the system. http://www.ifla.org/VI/4/news/ipnn40.pdf

SRU (Search/Retrieve via URL)

A standard search protocol for Internet search queries, utilizing CQL (Common Query Language) which is a standard query syntax for representing queries.

SRW (Search Retrieve Web Service)

A companion protocol to SRU. The Library of Congress serves as the maintenance agency for these standards. For more information see: http://www.loc.gov/standards/sru/

Standards

Any code of rules or procedures established by national and international library organizations to govern bibliographic control, such as the MARC record format, CIP, and the ISBN/ISSN adopted by the publishing industry. [Dictionary for library and information science / Joan M. Reitz. – Westport : Libraries Unlimited, 2004. – p. 680]

Standard identifiers = Standard numbers

An ISBN, ISSN or any other internationally agrees upon standard number which identifies the item uniquely. [LibrarySpeak : a glossary of terms in librarianship and information management / Comp. by Mary Mortimer. -- 4th ed.. -- Canberra : DocMatrix, 2001. -- p. 165]

The unique identification number assigned to an edition at the time of first publication, in accordance with an internationally standardized identification system, usually appearing somewhere on the item. In books published in hardcover, the International Standard Book Number (ISBN) is printed on the verso of the title page and usually on the front flap of the dust jacket. In paperback editions, it appears on the verso of the title page and on the back cover (usually in the lower-right-hand corner). In serials, the International Standard Serial Number (ISSN) appears in the masthead or with the table of contents of each issue or on the copyright page of each volume or part of a series. In printed music, the International Standard Music Number (ISMN) appears on the copyright page. In AACR2, the standard number is entered in the standard number and terms of availability

area of the bibliographic description. [Dictionary for library and information science / Joan M. Reitz. – Westport : Libraries Unlimited, 2004. – p. 680]

Universal bibliographic control and International MARC (UBCIM)

The Universal Bibliographic Control (UBC) programme was set up in 1974 by IFLA to encourage international conformity in the exchange of bibliographic data, following activity from 1969 by cataloguing experts. The international MARC Programme was amalgamated with UBC in 1986 to form UBCIM. Much was achieved, and the programme had become redundant; it was closed in 2003. The UNIMARC format, which had been one of the major projects of UBCIM, is to be continued by the National Library of Portugal. Other aspects of the programme will be continued by ICABS (The IFLA-CDNL Alliance for Bibliographic Standards). [Harrod's Librarians' Glossary and Reference Book / Compiled by Ray Prytherch. – Aldershot : Ashgate Publishing Limited, 2005. – p. 717]

Virtual International Authority File (VIAF)

A collaborative project involving Library of Congress, Die Deutsche Nationalbibliothek and OCLC with the objective of developing methodologies for automated alignment of national authority files.

Z39.50

A client server protocol for searching and retrieving information from remote computer databases. It is covered by ANSI/NISO standard Z39.50, and ISO standard 23950. The standard's maintenance agency is the Library of Congress.

Abbreviations and Acronyms

AACR2	Anglo-American Cataloguing Rules, 2nd ed.
AAP	Association of American Publishers
ANSI	American National Standards Institute
ASCII	American Standard Code for Information Interchange
APA	American Psychological Association
ARK	Archival Resource Key
BIC	Book Industry Communication
BLIC	British Library Integrated Catalogue
BNB	British National Bibliography
BnF	La Bibliotheque nationale de France (The French national Library)
CDL	California Digital Library
CDNL	Conference of Directors of National Libraries
CD-ROM	Compact Disk Read Only Memory
CENL	Conference of European National Librarians
CERL	Consortium of European Research Libraries
CIP	Cataloguing-in-Publication
CNRI	Corporation for National Research Initiatives
CQL	Common Query Language
DC	Dublin Core
DCMI	Dublin Core Metadata Initiative
DDC	Dewey Decimal Classification
DOI	Digital Object Identifier
DTD	Document Type Definition
DVD	Digital Video Disc

EAD	Encoding Archival Description
FEP	Federation of European Publishers
FRAD	Functional Requirements for Authority Data
FRANAR	Functional Requirements and Numbering of Authority Records
FRBR	Functional requirements for bibliographic records
FTP	File Transfer Protocol
GUI	Graphical user interface
HTML	HyperText Markup Language
IANA	Internet Assigned Numbers Authority
ICBC	International Cataloguing and Bibliographic Control
ICNBS	International Conference on National Bibliographic Services; International Congress on National Bibliographies
IEC	International Electrotechnical Commission
IFLA	International Federation of Library Associations and Institutions
IME ICC	International Meetings of Experts on an International Cataloguing Code
ISBD	International Standard Book Description
ISBN	International Standard Book Number
ISMN	International Standard Music Number
ISO	International Organization for Standardization
ISSN	International Standard Serial Number
JSC	Joint Steering Committee
LC	Library of Congress
LCC	Library of Congress Classification
LCCN	Library of Congress Control Number
LC-MARC	Library of Congress Machine Readable Cataloging
LIBIS	Lithuanian Integrated Library Information System

MADS	Metadata Authority Description Schema
MARC	Machine Readable Cataloging
METS	Metadata Encoding & Transmission Standard
MIME	Multipurpose Internet Mail Extensions
MLA	Modern Language Association
MODS	Metadata Object Description Schema
NACO	National Coordinated Cataloging Operations
NAF	NACO Authority File
NB	National Bibliography
NBA	National Bibliographic Agency
NBN	National Bibliography Number
NID	Namespace IDentifier
NISO	National Information Standards Organization
NSS	Namespace Specific String
OAI	Open Archives Initiative
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
OCLC	Online Computer Library Center
ONIX	Online Information Exchange
OPAC	Online Public Access Catalog
PADI	Preserving Access to Digital Information
PDF	Portable Document Format
PREMIS	PREservation Metadata Implementation Strategies
PUC	Permanent UNIMARC Committee
PURL	Persistent Uniform Resource Locator
RAK	Regeln für die alphabetische Katalogisierung = rules of alphabetical catalogization
RDA	Resource Description and Access

RFC	Request for Comments
SACO	Subject Authority Cooperative Program
SGML	Standard Generalized Markup Language
SRU	Search/Retrieve via URL
SRW	Search Retrieve Web Service
SUDOC	Système universitaire de documentation
SWD	Schlagwortnormdatei = Subject Headings Authority File
TEI	Text Encoding Initiative
UBC	Universal bibliographic control
UBCIM	Universal Bibliographic Control and International MARC
UDC	Universal Decimal Classification
UKOLN	The UK Office for Library and Information Networking
UNESCO	United Nations Educational Scientific and Cultural Organization
UNIMARC	Universal MARC
URI	Uniform Resource Identifier
URL	Uniform resource locator
URN	Universal Resource Name
VIAF	Virtual International Authority File
XML	eXtensible Markup Language

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Useful links

Principles:

International Conference on Cataloguing Principles (Paris : 1961). Report.

Known as "Paris Principles". Recommendations approved by the International Conference on Cataloguing Principles in 1961. Serve as a basis for international standardization in cataloguing, most of the cataloguing codes that were developed worldwide since that time followed the Paris Principles.

The final recommendations of the International Conference on National Bibliographic Services (1999 : Copenhagen) http://www.ifla.org.sg/VI/3/icnbs/fina.htm

Recommendations concerning to specific topics of national bibliographic services, eg., legal deposit, coverage and presentation of national bibliographies and international standards used.

Statement of International Cataloguing Principles (Draft) http://www.nl.go.kr/icc/down/070412_2.pdf

Draft approved by the IFLA Meeting of Experts on an International Cataloguing Code,1st, Frankfurt, Germany, 2003 with agreed changes from the IME ICC2 meeting, Buenos Aires, Argentina, 2004 and the IME ICC3 meeting, Cairo, Egypt, 2005.

The IME ICC4 meeting took place in Seoul, South Korea, on August 16-18, 2006, for the Asian countries and was reported on by Barbara Tillett during the 72nd IFLA General Conference and Council. Additional revisions of the draft of the Principles document were recommended and are being considered by all previous IME ICC participants; its proceedings will be published in Chinese, English, Japanese and Korean in the IFLA Series on Bibliographic Control. The fifth and last one took place in Pretoria South Africa, on August 14-15, 2007, for the African countries. New principles should replace and broaden the Paris Principles, cover all types of materials and all aspects of the bibliographic and authority records used in library catalogues.

Conceptual models:

Functional Requirements for Bibliographic Records http://www.ifla.org/VII/s13/frbr/frbr.pdf

Conceptual model serves as the basis for relating specific attributes and relationships (reflected in the record as discrete data elements) to the various tasks that users perform when consulting bibliographic records. The model is now being updated http://www.ifla.org/VII/s13/wgfrbr/expression-invitation.htm

Functional Requirements for Authority Records (Draft) http://www.ifla.org/VII/d4/FRANAR-ConceptualModel-2ndReview.pdf

Conceptual model serves as the basis for relating specific attributes and relationships (reflected in the record as discrete data elements) to the various tasks that users perform when consulting authority records.

Applications

RDA (draft) http://www.collectionscanada.ca/jsc/rda.html

RDA (Resource Description and Access) is the successor to the AACR2 (Anglo-American Cataloguing Rules, 2nd edition). The Joint Steering Committee in the body responsible for developing RDA. RDA evolved out of a desire to modernize AACR2 for the digital world of the 21st century, reorganize the rules for more consistency, make the rules more international, and appeal to other metadata communities outside the library world in order to faciliate better exchange of data with providers and users of information resources in all formats. RDA is designed to be a Web-based tool, but there will also be a print version. Publication is expected in 2008.

Recommendations:

ISBDs http://www.ifla.org/VI/3/nd1/isbdlist.htm

More about the Consolidated ISBD (draft): http://www.ifla.org/VII/s13/pubs/ISBD-consolidated-July2006.pdf

The ISBDs (International Standard Bibliographic Description) specify the requirements for the description and identification of items, assigns an order to the elements of the description, and specifies a system of punctuation for the description.

Formats:

MARC21 http://www.loc.gov/marc/

Standard for the representation and exchange data in machine-readable form. Maintenance and update of MARC 21, now a set of five formats - Bibliographic, Authorities, Classification, Holdings and Community - is the responsibility of the Library of Congress. The structure of MARC records is an implementation of national and international standards, e.g., Information Interchange Format (ANSI Z39.2) and Format for Information Exchange (ISO 2709).

UNIMARC http://www.ifla.org.sg/VI/8/up.htm

Standard for the representation and exchange of data in machine-readable form. Maintenance and update of UNIMARC, now a set of four formats - Bibliographic, Authorities, Classification and Holdings - is the responsibility of the Permanent UNIMARC Committee.

*The **structure** of MARC records is an implementation of ISO 2709 Format for Information Exchange.*

USEMARCON Plus - The Universal MARC Record Convertor
http://www.bl.uk/services/bibliographic/usemarcon.html

USEMARCON is a software application that allows users to convert bibliographic records from one MAchine-Readable Cataloguing (MARC) format to another.

Standard numbers etc.:

ISO 2108 ISBN

ISO standard for international standard numbers assigned to books by designated agencies in each country participating in the program.

ISO 3297 ISSN

ISO standard for international standard numbers assigned to serials by designated agencies in each country participating in the program.

ISO 10957 ISMN

ISO standard for international standard numbers assigned to printed music by designated agencies in each country participating in the program.

Using National Bibliography Numbers as Uniform Resource Names
http://www.ietf.org/rfc/rfc3188.txt

Persistent Identifier http://www.ifla.org/VI/4/news/ipnn40.pdf

National bibliography numbers (persistent and unique identifiers assigned by the national libraries) can be supported within the URN (Uniform Resource Names) framework and the syntax for URNs defined in RFC 2141.

Metadata

Dublin Core Metadata Element Set (ISO Standard 15836)
http://www.niso.org/international/SC4/n515.pdf

The Dublin Core Metadata Initiative (DCMI) began in 1995 with an invitational workshop in Dublin, Ohio that brought together librarians, digital library researchers, content providers, and text markup experts to improve discovery standards for information resources. The original Dublin Core emerged as a small set of descriptors that quickly drew global interest from a wide variety of information providers in the arts, sciences, education, business, and government sectors. There has been steadily growing interest in resource descriptions that are easy to create and that almost anyone can understand. In September 2001, the Dublin Core metadata element set was approved by ANSI (American National Standards Institute) as ANSI/NISO Z39.85-2001 standard. In 2003 it was approved as ISO Standard 15836. Here the standard defines 15 data elements for resource description in a cross-disciplinary information environment. The Dublin Core Element Set – Reference Description has been translated to 24 translations.

Dublin Core Metadata Element Set, Version 1.1: Reference Description
http://dublincore.org/documents/dces/

The Dublin Core metadata element set is a standard for cross-domain information resource description. There are no fundamental restrictions to the types of resources to which Dublin Core metadata can be assigned.

The more comprehensive document "DCMI Metadata Terms" (http://dublincore.org/documents/dcmi-terms/) includes the latest and authoritative term declarations for the Dublin Core Metadata Element Set, Version 1.1.

DCMI Metadata Terms
http://dublincore.org/documents/dcmi-terms/

This document is an up-to-date, authoritative specification of all metadata terms maintained by the Dublin Core Metadata Initiative - elements, element refinements, encoding schemes, and vocabulary terms (the DCMI Type Vocabulary).

DCMI Type Vocabulary
http://dublincore.org/documents/dcmi-type-vocabulary/

The DCMI Type Vocabulary provides a general, cross-domain list of approved terms that may be used as values for the Resource Type element to identify the genre of a resource. The terms documented here are also included in the more comprehensive document "DCMI Metadata Terms" at http://dublincore.org/documents/dcmi-terms/.

MIME Media Types
http://www.iana.org/assignments/media-types/

Specification of Content Types and Subtypes. MIME (Multipurpose Internet Mail Extensions) refers to an official Internet standard that specifies how messages must be formatted so that they can be exchanged between different email systems.

In Dublin Core, "Format" Term may be used to determine the software, hardware or other equipment needed to display or operate the resource. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of MIME Media types defining computer media formats).

RFC2045 (http://www.isi.edu/in-notes/rfc2045.txt), RFC2046 (http://www.isi.edu/in-notes/rfc2065.txt) specifies that Content Types, Content Subtypes, Character Sets, Access Types, and conversion values for MIME mail will be assigned and listed by the IANA (Internet Assigned Numbers Authority).

Procedures for registering MIME Types can be found in RFC4288 (http://www.isi.edu/in-notes/rfc4288.txt) and RFC4289 (http://www.isi.edu/in-notes/rfc4289.txt).

MODS - Metadata Object Description Schema
http://www.loc.gov/standards/mods/

The Library of Congress' Network Development and MARC Standards Office, with interested experts, has developed a schema for a bibliographic element set that may be used for a variety of purposes, and particularly for library applications. As an XML schema, the "Metadata Object Description Schema" (MODS) is intended to be able to carry selected data from existing MARC 21 records as well as to enable the creation of original resource description records. It includes a subset of MARC fields and uses language-based tags rather than numeric ones, in some cases regrouping elements from the MARC 21 bibliographic format. MODS is expressed using the XML schema language (http://www.w3.org/xml/shema) of the World Wide Web Consortium (http://www.w3.org). The standard is maintained by the Network Development and MARC Standards Office (http://www.loc.gov/marc/ndmso.html)of the Library of Congress with input from users.

MODS schema version 3.2((http://www.loc.gov/standards/mods/v3/mods-3-2.xsd) is the current schema.

PADI – Preservation metadata
http://www.nla.gov.au/padi/topics/32.html

Research Overview of work done in preservation metadata in the library community (dated Feb 2003).
Essential to ensuring long-term accessibility is the development of structured ways to describe and record information needed to manage the preservation of digital resources. This is commonly called preservation metadata.
Preservation metadata is intended to store technical details on the format, structure and use of the digital content, the history of all actions performed on the resource including changes and decisions, the authenticity information such as technical features or custody history, and the responsibilities and rights information applicable to preservation actions.

Data Dictionary for Preservation Metadata: Final Report of the PREMIS (PREservation Metadata:
Implementation Strategies) Working Group
http://www.oclc.org/research/projects/pmwg/premis-final.pdf

*This publication includes the PREMIS Working Group Final Report, the Data Dictionary, and
Examples. The report and the PREMIS Data Dictionary version 1.0 are the culmination of nearly
two years of effort by PREMIS members.*

*This Data Dictionary defines and describes an implementable set of core preservation metadata
with broad applicability to digital preservation repositories. This report is intended to put the Data
Dictionary into context, explain the underlying assumptions and data model, and provide additional
information about the meaning and use of semantic units defined in the Data Dictionary.*

Digital Libraries: Metadata Resources http://www.ifla.org/II/metadata.htm

General resources and indices.

Protocol compatibility

Z39.50   http://www.loc.gov/z3950/agency/

*Z39.50 (ISO 23950) is a standard for information retrieval. It is formally known as ANSI/NISO
Z39.50-1995 - Information Retrieval (Z39.50): Application Service Definition and Protocol
Specification. This document specifies a set of rules and procedures for the behaviour of two
systems communicating for the purposes of database searching and information retrieval.*

SRU/SRW   http://www.loc.gov/standards/sru/

*SRU (Search/Retrieve via URL) is a standard XML-focused search protocol for Internet search
queries, utilizing CQL (Contextual Query Language), a standard syntax for representing queries*

OAI-PMH   http://www.openarchives.org/pmh/

*OAI-PMH (Open Archive Initiative – Protocol for Metadata Harvesting) is a protocol specification
that enhances the description of resources (digital but also non digital) on the web. It does allow
exchange and diffusion of metadata but not of digital object.*

Subject access

Resource Description and Classification
http://xml.coverpages.org/classification.html

*A collection of references on matters of Subject Classification, Taxonomies, Ontologies, Indexing,
Metadata, Metadata Registries, Controlled Vocabularies, Terminology, Thesauri, Business
Semantics*

*A collection of references and survey based upon links and cribbings from various resources on the
Internet. An unfinished and non-authoritative reference document. The references cited in this
document are only incidentally related to XML; the survey was conducted in connection with work
on the OASIS Registry and Repository Technical Committee (Fall 1999/Spring 2000).*

The role of classification schemes in Internet resource description and discovery
http://www.ukoln.ac.uk/metadata/desire/classification/

Classification schemes have a role in aiding information retrieval in a network environment, especially for providing browsing structures for subject-based information gateways on the Internet. Advantages of using classification schemes include improved subject browsing facilities, potential multi-lingual access and improved interoperability with other services. Classification schemes vary in scope and methodology, but can be divided into universal, national general, subject specific and home-grown schemes. What type of scheme is used, however, will depend upon the size and scope of the service being designed. A study is made of classification schemes currently used in Internet search and discovery services, particular reference being given to the following schemes: Dewey Decimal Classification (DDC); Universal Decimal Classification (UDC); Library of Congress Classification (LCC); Nederlandse Basisclassificatie (BC); Sveriges Allmäma Biblioteksförening (SAB); Iconclass; National Library of Medicine (NLM); Engineering Information (Ei); Mathematics Subject Classification (MSC) and the ACM Computing Classification System (CCS). Projects which attempt to apply classification in automated services are also described including the Nordic WAIS/WWW Project, Project GERHARD and Project Scorpion.

Authority control: a basic glossary of terms
http://ublib.buffalo.edu/libraries/units/cts/ac/def.html
A basic glossary of terms on authority control compiled from various sources

Web world of authority control
http://www.lib.byu.edu/%7Ecatalog/catalogwebsite/authority/index.htm

A bibliography listing that includes tools, thesauri, Library of Congress sites, articles, workshops, journals, ALA committees, listservs, libraries, and vendors that deal with authority control or may be helpful in establishing authorities. This list is an attempt to help Authority Control Librarians and other librarians to do authority work easier and faster prepared from many sites on the Internet dealing with Authority Control.

MADS - XML Format for Authorities Data
http://www.loc.gov/standards/mads/

The Library of Congress' Network Development and MARC Standards Office, with interested experts, has developed the Metadata Authority Description Schema (MADS), an XML schema for an authority element set that may be used to provide metadata about agents (people, organizations), events, and terms (topics, geographics, genres, etc.). MADS was created to serve as a companion to the Metadata Object Description Schema (MODS). As such, MADS has a relationship to the MARC 21 Authority format, as MODS has to MARC 21 Bibliographic -- both carry selected data from MARC 21. MADS is expressed using the XML schema language of the World Wide Web Consortium. The standard will be developed and maintained by the Network Development and MARC Standards Office of the Library of Congress with input from users.

Subject Authority Cooperative Program (SACO)
http://www.loc.gov/catdir/pcc/saco/

The Subject Authority Cooperative Program (SACO) was established to provide a means for libraries to submit subject headings and classification numbers to the Library of Congress via the Program for Cooperative Cataloging (PCC).

Tools for Authority Control--Subject Headings
http://www.loc.gov/cds/lcsh.html

The list contains tools for Authority Control--Subject Headings offered by Cataloguing Distribution Service.

Subject Headings Authority File (SWD)
http://www.ddb.de/eng/standardisierung/normdateien/swd.htm

The Subject Headings Authority File provides a normed, terminologically controlled vocabulary. The sources employed for it are listed in the "Liste der fachlichen Nachschlagewerke" (List of information resources available for the Authority Files). It contains listing and reference protocols for subject headings determined in accordance with the "Rules for the Subject Catalogue" and " Rules for Application of the RSWK and SWD" . The subject headings cover all fields of knowledge and are classified by ISO country code and SWD Subject Groups. The SWD is produced and updated daily by the indexers of the participating libraries.

Universal Decimal Classification
http://www.udcc.org/

The Universal Decimal Classification (UDC) is the world's foremost multilingual classification scheme for all fields of knowledge, a sophisticated indexing and retrieval tool. It was adapted by Paul Otlet and Nobel Prizewinner Henri La Fontaine from the Decimal Classification of Melvil Dewey, and first published (in French) from 1904 to 1907. Since then, it has been extensively revised and developed, and has become a highly flexible and effective system for organizing bibliographic records for all kinds of information in any medium (it is well suited to multi-media information collections). It is structured in such a way that new developments and new fields of knowledge can be readily incorporated. The code itself is independent of any particular language or script (consisting of arabic numerals and common punctuation marks), and the accompanying class descriptions have appeared in many translated versions. UDC is in worldwide use, and has been published in whole or in part in 23 different languages. The English-language editions are extensively used both in anglophone countries and those where English is co-official or a working language (the British Isles, Canada, Australia, New Zealand, India, several African countries) and have a significant presence in other cultures as well.

Dewey Decimal Classification (DDC)
http://www.oclc.org/dewey/

The Dewey Decimal Classification (DDC) system, devised by library pioneer Melvil Dewey in the 1870s and owned by OCLC since 1988, provides a dynamic structure for the organization of library collections. Now in its 22nd edition, and available in print and Web versions, the DDC is the world's most widely used library classification system.

The DDC provides a logical system for organizing every item in your library's unique collection, offer library users familiarity and consistency of a time-honored classification system used in 200,000 libraries worldwide.

The DDC provides meaningful notation in universally recognized Arabic numerals, well-defined categories and hierarchies, and a rich network of relationships among topics

Library of Congress Classification Outline
http://www.loc.gov/catdir/cpso/lcco/lccowp.html

The list contains the letters and titles of the main classes of the Library of Congress Classification. Clicking on any class to view an outline of its subclasses. The complete text of the classification schedules in printed volumes may be purchased from the Cataloging Distribution Service. Online access to the complete text of the schedules is available in Classification Web, a subscription product that may also be purchased from the Cataloging Distribution Service.

Listservs of interest to authority control librarians

AUTOCAT
http://ublib.buffalo.edu/libraries/units/cts/autocat/
AUTOCAT is a semi-moderated international electronic discussion list. It serves as an electronic forum for the discussion of all questions relating to cataloging and authority control in libraries.

AUTOCAT: List of Files
http://ublib.buffalo.edu/libraries/units/cts/autocat/
An AUTOCAT information page.

Information on subscribing to the Fiction Listserv
http://lcweb.loc.gov/catdir/pcc/gsafdlst.html

An unmoderated discussion list for those interested in providing subject access to individual works of fiction in library databases and catalogs. Discussion focuses on theoretical and practical problems in assigning topical, character, setting and genre headings to individual works of fiction, drama, etc. Only subscribers may post directly to the list.

Classification and Indexing Section
http://www.ifla.org/VII/s29/

Bibliography Section

Surveys & studies
http://www.ifla.org/VII/s12/index.htm

The IFLA section is primarily concerned with the content, arrangement, production, dissemination and preservation of bibliographic information, especially (but not exclusively) where these pertain to national bibliographic services. It is also concerned with the promotion of the importance of the discipline of bibliography to library professionals in all types of library (not just national libraries), to publishers, distributors and retailers and also to end-users. Whilst taking full account of technological possibilities, the Section is aware that such developments are not yet available in some areas of the world, and it will ensure that its solutions are not necessarily dependent on particular technologies.

The Section is closely associated, where appropriate, not only with the other Sections within the Division of Bibliographic Control and with the UBCIM Programme, but also with the Sections on Information Technology and of National Libraries.