UNIT 6 PRINCIPLES AND EVOLUTION OF BIBLIOGRAPHIC DESCRIPTION

Structure

6.0 OBJECTIVES

In the previous Units, you have learnt about the concepts of information processing and organisation. The organisation of documentary information requires describing the documents in terms of their surrogates. For this purpose, a number of standards have been developed over the years. In the recent times, a new form of document – electronic documents have also come for which standards/guidelines have been developed. This Unit describes the evolution of standards for description of documents.

After reading this Unit, you will be able to:

1   understand need, purpose and meaning of bibliographic description;

ı   identify the scope and areas of application of bibliographic descriptions of documents;

ı   trace the process of development of standards for bibliographic descriptions over the years;

ı   know the concepts of entities, attributes and their relationships in bibliographic universe and analyse principles, objectives and rules of bibliographic description; and

ı   map bibliographic entities, attributes and relationships to user tasks.

6.1   INTRODUCTION

A user seeks information to satisfy his or her information need which may be available in varieties of documents stored a library / information centre. Library catalogues (both card catalogue and OPAC) and other bibliographic databases act as an interface between users and their documents of interest. Users approach to the documents, that can satisfy his/her information need, can be categorised into two groups [Bhattacharya, 1979] – Known document approach and Unknown document approach. In the first case, user can specify a document by using the name(s) of its author(s), or collaborator(s), or series, or by its title. When the query for the document is formulated by using the name-of-subject contained in it, the approach is termed as unknown document approach. The treatment of a document as unknown document in catalogues or bibliographic databases requires subject description and bibliographic description. Similarly, the treatment of a document to satisfy known document approach calls for bibliographic description and headings or access points derived from bibliographic description.
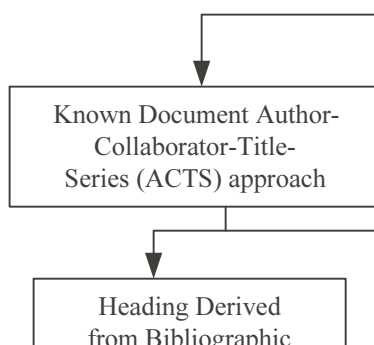
```
                            ┌──────────────┐
                            ▼              │
        ┌──────────────────────────┐      │
        │ Known Document Author-   │      │
        │ Collaborator-Title-      │      │
        │ Series (ACTS) approach   │      │
        └──────────────────────────┘      │
                    ┌───────────┬─────────┘
                    ▼
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        │ Heading Derived          │
        │ from Bibliographic       │
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Fig. 6.1: Approach to access of document

Bibliographic description is the process of recording details for describing and identifying bibliographic items. The process of bibliographic description requires standardisation, for making bibliographic file to be consistent. The development of national, international and regional systems for the exchange of machine readable bibliographic information will not be possible unless a high level of standardisation is attained. A standard related to bibliographic description is a set

of general rules agreed to internationally or nationally. The practice of standard bibliographic description in the development of library catalogues and bibliographic databases requires a series of operations. The identification of these unit operations leads to the formulation of principles of bibliographic description and general rules of procedures. The principles and general rules of bibliographic description provide a scientific basis to the field of cataloguing and to the creation of bibliographic records. The application of ICT to the cataloguing process has brought with it demands for precision and logic in the recording of bibliographic data. For bibliographic control, the first principle is *standardisation, compatibility and integration*. Within the same principle standards may vary. Easy interchange of bibliographic records requires agreement on standards governing the medium of exchange.

Bibliographic data are generated by bibliographers, cataloguers, abstractors & indexers, publishers & booksellers and appear in a range of products, including but not limited to library catalogues, online databases, publishers & booksellers lists, abstracting & indexing services and bibliographies. The nature of bibliographic and cataloguing data appears to be identical, but bibliographic data have an independent existence and need separate consideration. Cataloguing, in fact, is one of the many applications of bibliographic data management. Haggler and Simmons [1982] define bibliographic data as "elements of information, which help to identify a piece of recorded communication as a physical object". They identified three types of functional data groups:

ι   Data that uniquely identify a particular document and distinguish it from others;

ι   Data, which reveal an association of two or more documents (e.g., common authorship, continuation or reprint); and

ι   Data, which describe some characteristics of the intellectual content of a document (e.g., statement of subject).

6.2   BIBLIOGRAPHIC DESCRIPTION: AN OVERVIEW

Organisation of bibliographic data elements leads to the creation of bibliographic records. Bibliographic record has been defined as the sum of all the areas and elements, which may be used to describe, identify or retrieve any physical item of information content. Bibliographic description is the assemblage of data elements sufficient to identify a bibliographic item and to distinguish it from others. In manual systems (e.g., card catalogue), a collection of bibliographic data elements are grouped under the main access points or headings as per the cataloguing code in use. Such record of an item in a catalogue is called an 'Entry'. Entries are usually identified by the kind of access they provide e.g., 'author entry' or 'subject entry'. The distinction between bibliographic record and entry is most visible in computerised environment where the master bibliographic record is stored in the machine and computer programmes generate entries from it. Dempsey [1989] identified three groups of bibliographic dataset – bibliographic description and control data (data describing, identifying and providing controlled access to items), subject data and content description. The first two groups of data generally appear in library catalogues and bibliographic databases. They include:

ι   data naming an item (e.g., title, alternative title);

ι   data naming persons or bodies connected with the creation of an item (e.g., author, artist, cartographic agency);

ι   data describing hierarchical, lateral or lineal relationships between items (e.g.,

component part, host item, numbering in series, companion item, name of earlier edition or version);

ı data indicating intellectual content (e.g., subject heading, abstract);

ı data naming persons or bodies connected with the production of an item as a physical object (e.g., publisher, designer);

ı data indicating form or nature of item (e.g., bibliography, documentary, novel);

ı data indicating mode of expression or communication (e.g., verbal, pictorial);

ı data describing the physical appearance, characteristics and constituents of an item (e.g., map, film, dimensions, number of volumes or parts, technical information needed for use); and

ı data assigned by a bibliographic or other agency for purpose of identification and control (e.g., ISBN).

The above list shows that bibliographic description deals with two categories of data – data providing access and data describing items. The level and extent of bibliographic description depends on the application and purpose of bibliographic records. The major application domains are the production or creation of:

ı authoritative national records and national bibliography;

ı bibliographic records for international exchange;

ı bibliographic records for cooperative systems;

ı records for use in individual libraries;

ı records for abstracting and indexing services;

ı records for subject bibliographies/ authors' bibliographies;

ı records for use in online information retrieval systems (including WWW); and

ı records in book trade.

Bibliographic record may be viewed as a package of data, the content of which varies according to the different needs and purposes for which it is intended. The selection and inclusion of data elements for the bibliographic record must be based on user needs. The aggregate of data in a bibliographic record are broadly divided into following groups:

ı Descriptive data elements (as defined in the ISBDs);

ı Data elements used in headings for persons, corporate bodies, titles and subjects. They function as filing devices or index entries;

ı Data elements used to organise a file or file of records (such as classification numbers, abstracts, summaries or annotations); and

ı Data specific to the copies of the library collections (such as accession numbers and call numbers).

Bibliographic record should be constructed according to the agreed rules and standards. There are many widely used standards for constructing bibliographic records (e.g., AACR2 for national bibliographies or library catalogues) but the most striking contribution has been made by IFLA, with its programme of ISBDs. ISBD(G) [Genereal International Standard Bibliographic Description] is intended to provide the generalised framework for descriptive information required in a range of different bibliographic activities. The bibliographic data elements which are required for this purpose are set out in eight areas: Title and statement of responsibility – Edition – Material specific data – Publication, distribution data – Physical description – Series – Notes – Standard number and terms of availability.

Each of these areas is further divided into discrete elements. The elements are cited in given order and separated by the punctuation prescribed. The complete set of ISBD data is sufficient to ensure identification of bibliographic item and many cataloguing codes (including AARC2) have adopted ISBD(G) as a basis for their own rules for description. The family of ISBDs (includes standard for cartographic materials, non-book materials, printed music, antiquarian books, monographs, serials and other continuing materials and electronic resources) is utilised for the purpose of bibliographical description but the choice and form of access points are based on the Paris Principles (the statement of principles adopted at the International Conference on Cataloguing Principles held in Paris in 1961) adopted in national cataloguing rules. Bibliographic formats (such as MARC family, CCF, UNIMARC, etc.) have also applied ISBDs as base format. But cataloguing codes and bibliographic formats cannot represent all the characteristics of different digital information resources. As a result various general and domain specific metadata schemas (such as Dublin Core, FGDC, ONIX, GILS, etc.) have been developed for description of electronic resources.

6.3 SCOPE AND OBJECTIVES OF BIBLIOGRAPHIC DESCRIPTION

Bibliographic description is a tool for bibliographic control. The design of such a tool should begin with a statement of objectives. The objectives for library catalogues were first formulated by C.A. Cutter in 1876 and remained unchallenged for more than 75 years. The first suggestion of revision came in 1953 from Symour Lubetzky that calls for collocating various physical manifestations of a work, such as different editions and translations of it. In the last 50 years (since Lubetzky's reformulation of the objectives of catalogue) not only have catalogues been automated, but also an unprecedented amount of cooperative cataloguing has led to the emergence of international standards, global catalogues, and linked systems along with vast array of digital resources available in Internet. Under such circumstances, Elaine Svenonius in her seminal book [2000] established that bibliographic systems are based on five objectives: *finding, collocating, choice, acquisition and navigation*. Actually this set of objectives is an expanded version of *Functional Requirements for Bibliographic Records* (FRBR) objectives. The Joint Steering Committee for Revision of AACR has adopted the propositions of Svenonius as a set of objectives for full-featured bibliographic system. These objectives may better be explained against backdrop of the scopes of bibliographic description in a rapidly changing cataloguing environment.

6.3.1 Scope

Bibliographic description should facilitate the scope of relating the data that are encoded in bibliographic records to the needs of the user of those records. It should ensure a basic level of functionality for records created by bibliographic agencies and libraries. However, the scope of bibliographic description may be discussed in the context of *coverage, user, application and generic tasks* associated with it.

a) Coverage

Bibliographic description should be comprehensive in terms of variety of materials (textual, musical, cartographic, audio-visual, graphic, three dimensional materials, etc.). It should cover the full range of physical media of bibliographic records (paper, film, magnetic, optical storage media, etc.) and all formats (books, sheets, discs, cassettes, cartridge, etc.) along with all modes of recording (analogue, acoustic, digital, etc.).

b) Users

Bibliographic description should ensure the use of bibliographic records by a wide range of users. The user groups to be supported include readers, students, researchers, library staff, publishers, distribution and subscription agents, retailers, information brokers, administrators of intellectual property rights, etc.

c) Applications

Bibliographic description vis-à-vis bibliographic records should support a wide variety of applications both within and outside a library setting in which the data in bibliographic records are used. The applications of bibliographic record should include (but not limited to) the following activities: collections development, acquisitions, cataloguing, production of finding aids and bibliographies, inventory management, preservation, circulation, inter library loan, reference, and information retrieval.

d) Tasks

Bibliographic description should fulfill the functional requirements for bibliographic records. It must allow users to perform all the generic tasks at the time of searching and making use of bibliographic records. These tasks include:

- use of bibliographic data to *find* materials against the user's stated search criteria;

- use of bibliographic data to *identify* an entity;

- use of bibliographic data to *select* an entity that is appropriate to the user's needs; and

- use of bibliographic data to *acquire or obtain* access to the entity described.

6.3.2 Objectives

The objectives of a full-featured bibliographic system may be viewed in the historic perspectives of Cutter's objectives, Lubetzky's objectives (as reflected in the Paris Principles) and the modern groundbreaking works like IFLA's Functional Requirements for Bibliographic Records (FRBR) objectives and objectives propounded by Elaine Svenonious. The principles of bibliographic description should facilitate achievement of following objectives of a full-featured bibliographic system. The objectives are:

to enable a user

a) to locate resources in a file or database as the result of a search using attributes or relationships of the resources:

   i)   to find a singular resource;

   ii) to locate sets of resources representing;

- all resources belonging to the same work;

- all resources belonging to the same expression;

- all resources belonging to the same manifestation;

- all resources by a given creator of intellectual or artistic content;

- all resources on a given subject;

- all resources defined by 'other' criteria (such as language, country of publication, publication date, physical format, etc.);

   iii) to explore bibliographic relationships (e.g., to find resources which are bibliographically related to a given resource);

b) to identify a resource or agent (i.e., to confirm that the entity described in a record corresponds to the entity sought or to distinguish between two or more entities with similar characteristics);

c) to select a manifestation or specific item that is appropriate to the user's needs (i.e., to choose a resource that meets the user's requirements with respect to content, physical format, and so on or to reject a resource as being inappropriate to the user's needs);

d) to acquire or obtain access to an item described (that is to acquire an item through purchase, loan, and so on or to access an item electronically through an online connection to a remote source);

e) to navigate a bibliographic database (that is through the logical arrangement of bibliographic information and presentation of clear ways to move about, including presentation of relationships among attributes).

The above-mentioned objectives are applicable to both description and access of bibliographic entities. Cataloguers perform the following tasks to meet the above user driven objectives and also to maintain the catalogues or bibliographic databases:

l   Transcribe

l   Describe

l   Make identifiable

l   Link

l   Manage

l   Convey rights management information

Modern integrated library systems also enable the online catalogue to be more than a by-product of the online work of cataloguers. It now extends support to integrate library operations to take advantage of global network access to other catalogues and bibliographic resources, to reach other bibliographic databases, to access virtual copies of resources in addition to providing expanded search, retrieval and display capabilities.

Self Check Exercise

1) Explain the multidimensional scope of bibliographic description in online environment.

Note: i)   Write your answer in the space given below.
            ii) Check your answer with the answers given at the end of the Unit.

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   ....
   ....
   ....
   ....

6.4   EVOLUTION OF BIBLIOGRAPHIC DESCRIPTION

Standards for bibliographic description have existed in one form or another for well over a century and have been subjected to change either by the evolution of cataloguing theory or by force of practice throughout the entire period of their

existence. The different cataloguing codes starting from Panizzi's Rules for Descriptive Cataloguing are examples of this. The application of ICT and the increasing popularity of shared cataloguing have influenced the development of standards related to bibliographic description over the last 35 years. The standards, rules and principles of bibliographic description are also applicable to online and web environment for discovery, indexing and identification of digital resources by semantic means. Metadata schemas for describing electronic resources (such as Dublin Core, FGDC, GILS, etc.), like traditional bibliographic standards and formats, are also designed for information storage and transfer. It means that a bibliographic record now performs different functions with respect to various media, various applications, and various user needs. This situation calls for a framework that should identify and clearly define bibliographic entities, attributes, relationships and tasks performed by users of bibliographic records. Some conceptual models (such as IFLA's FRBR model, UKOLN's Analytical Model of Collection Description and XOBIS model of Stanford University) have been developed in recent years to encompass a broad-spectrum application of bibliographic description and use of bibliographic records. The growth and development of bibliographic description standards are discussed below:

6.4.1 Pre-ISBD Development

Four landmarks – Panizzi's code, Cutter's contribution, Ranganathan's scientific principles and Paris principles, characterise this period of evolution which ranges from 1841 to 1969. Anthony Panizzi, then librarian of the British Museum, is regarded as the first person who codified rules for cataloguing by preparing a formal code of rules for cataloguing in 1841. In 1876, Charles Ami Cutter provided a direction in cataloguing through a set of well-defined objectives and Ranganathan first formulated a set of normative principles to provide scientific basis for bibliographic description. Paris Principles (1961) are first international agreement on general rules of cataloguing and therefore should be regarded as a landmark in the development of cataloguing. The most important events in the area of cataloguing and bibliographic description for this period are listed below chronologically:

1841	Panizzi's 91 rules
1852	Charles Coffin Jewett's code
1853	Charles Coffin Jewett's code (2nd ed.)
1867	Rules for cataloguing in congressional library
1876	Charles Ami Cutter's rules for a printed dictionary catalogue
1883	ALA's condensed rules for an author and title catalogue
1889	Cutter's rules for a dictionary catalogue (2nd ed.)
1891	Cutter's rules for a dictionary catalogue (3rd ed.)
1902	ALA's condensed rules for an author and title catalogue (Advanced ed.)
1904	Cutter's rules for a dictionary catalogue (4th ed.)
1905	Library of Congress supplementary rules on cataloguing
1906	Library of Congress special rules on cataloguing
1908	ALA and BLA's catalogue rules: author and title entries
1927	Vatican code
1931	Ranganathan's classified catalogue code
1931	Pierson's guide to the cataloguing of serials publications
1949	Rules for descriptive cataloguing in the Library of Congress
1961	Paris Principles
1967	AACR I (North American and British Text)
1968	MARC
1971	ISBD
1978	AACR II

During this period the much-required agreed-to general format for bibliographic description could not be developed. IFLA first initiated the development of such a general format in the form of ISBD(G) under its UBC programme. But before discussing ISBDs we are going to study normative principles as formulated by

S.R. Ranganathan. These principles still serve as the basis for principles and rules of bibliographic description vis-à-vis cataloguing codes.

6.4.2 Ranganathan's Principles

Ranganathan applied scientific method to cataloguing and result was the formulation of normative principles of cataloguing, called Canons of Cataloguing. Prof. G. Bhattacharya mapped these principles to the unit operations in cataloguing. The general principles for standards for bibliographic description are as follows:

⌐ **Principle of Context:** It determines the situational contexts required for specifying the elements of bibliographic description and their role

⌐ **Principle of Permanence:** It says no element in an entry, the heading in particular, should be subjected to change unless rules themselves are changed in response to the principle of context

⌐ **Principle of Consistency:** It says bibliographic description should be consistent for bibliographic records

⌐ **Principle of Unity of Idea:** It advocates structural design for cataloguing codes and standards for bibliographic description.

The mappings of other principles to the unit operations in cataloguing are:

Table 6.1: Bibliographic description and related principles

Unit Operations in Cataloguing	Related Principles
a) **Selection of Sources of Information** ⌐ selection of primary sources of information ⌐ selection of secondary sources of information ⌐ selection of sources for responding entries ⌐ decision about final authority.	**Principle of Source Selection** ⌐ source item should serve the purpose ⌐ document to be described is the primary source of information ⌐ secondary sources of information may be consulted, if economically viable ⌐ document itself is the final authority in case of any conflict between sources
b) **Choice of Items of Information** ⌐ choice of items of information for the whole entry ⌐ choice of items of information for the individual sections of an entity.	**Principle of Consensus** ⌐ to reach national and international agreement to ensure consistency of practice for mutual exchange **Principle of Choice** ⌐ items of information deemed to be essential for identifying the concerned object should be selected.
c) **Uniformisation/Standardisation** ⌐ variant forms of words ⌐ names and other expression.	**Principle of Uniformization** ⌐ bibligraphic data elements should be standardised to avoid adverse effect of variant usage.
d) **Individualisation**	**Principles and General Rules of Individualisation** ⌐ appropriate individualising elements should be added for unique identification of document
e) **Recording**	**Principles and General Rules of Recording** ⌐ General Rules of Language ⌐ General Rules of Script ⌐ Principle and General Rules of Place and Style
f) **Conflict Resolution**	**Principles and General Rules of Conflict Resolution** ⌐ Principle of Interpretation ⌐ Principle of Impartiality ⌐ Principle of Symmetry ⌐ Principle of Parsimony

6.4.3 Principles of Bibliographic Description

Principles of bibliographic description are guidelines for the design of a set of rules to manage bibliographic data. In ordinary usage, these two concepts (principle and rule) are used many a time interchangeably. In fact, principles guide the creation of rules and thereby distinct from bibliographic objectives and bibliographic rules. The term 'principle' is used to refer to a proposition or other formulation, usually generalised and with one or more of the following attributes [Bhattacharya, 1979]:

ɩ It may be a statement of fact;

ɩ It may be accepted as true or helpful;

ɩ It may form the basis for deriving another proposition with one or more of the attributes of the basis proposition;

ɩ It may provide a basis for reasoning or evaluation; and

ɩ It may guide the formulation of a proposition prescribing a procedure for fulfilling a particular purpose.

6.4.3.1 Principles

The Joint Steering Committee (JSC) for revision of AACR [Huthwaite, 2001] developed two broad groups of principles related to bibliographic description. These principles are profoundly based on the works of S. R. Ranganathan [1955], G.W. Leibniz [1951] and E. Svenonius [2000]. These principles of bibliographic description are designed to support an expanded role of library catalogues and bibliographic databases and therefore should be integrated with a set of principles related to bibliographic relationships. The principles of bibliographic relationships, as proposed by Velluci [1997], provide a logical direction for the treatment of bibliographic relationships in the universe of bibliographic entities and attributes.

ɩ **General Design Principles**

  a) Principle of Sufficient Reason (Based on Leibniz and Ranganathan's Law of Impartiality)

    Each design decision must be defensible and not arbitrary

  b) Principle of Parsimony (Based on Ranganathan, S.R.)

    When there are alternative ways to achieve a design goal, prefer the way that best furthers overall economy

ɩ **Principles of Bibliographic Description and Access**

  c) Principle of User Convenience

    Decisions taken in the making of descriptions and controlled forms of names for access should be made with the user in mind

  d) Principle of Common Usage

    Normalised vocabulary used in descriptions and access should accord with that of the majority of users.

  e) Principle of Representation

    Descriptions and controlled forms of names for access should be based on the way an information entity describes itself.

  f) Principle of Accuracy

    Descriptions and controlled forms of names for access should faithfully portray the entity described.

g) Principle of Sufficiency and Necessity

   Descriptions and controlled forms of names for access should include
   only those elements that are bibliographically significant.

h) Principle of Standardisation

   Descriptions and controlled forms of access should be standardized, to
   the extent and level possible.

i) Principle of Integration

   Descriptions for all types of materials should be based on a
   common set of rules, to the extent possible.

1 **Principles of Bibliographic Relationships**

j) Principle of Relationship Identification

   The bibliographic record should identify all important bibliographic
   relationships that exist between the entity being cataloged and other
   entities. These relationships include both independent & dependent
   relationships. Identification should be bi-directional.

k) Principle of Enabling Linkage

   The data elements of the bibliographic record should enable related
   bibliographic records to be linked, and should permit the bibliographic
   record to be linked to related documents. To this end, the bibliographic
   record should provide enough information to identify the relationship and
   create a linkage. Linkages between bibliographic records should be bi-
   directional.

l) The Principle of Multi-level Description

   The cataloguing code should provide for the independent description of
   an entity at several levels, including the abstract work, the physical item,
   and the specific copy. These hierarchically related descriptions should be
   linked.

m) Principle of Consistency

   The identification and linkage of like bibliographic relationships should be
   treated in a consistent manner, regardless of physical format. This includes
   the consistent application and use of uniform titles.

6.4.4 ISBDs

An international meeting of cataloguing experts was held in Copenhagen
(Denmark) in 1969 to find a standard for description of bibliographic items of
documents. The International Standard Bibliographic Description (ISBD) has
endured for nearly 35 years and has proved to be the most successful effort in
the area of bibliographic description. The first ISBD appeared in 1971 as ISBD
for Monographic Publications [ISBD(M)]. ISBD(M) is followed by the
development of a series of ISBDs for serials, non-book materials, cartographic
materials, rare books, printed music, electronic resources, etc. ISBD(G) (1977)
has provided a framework to which all ISBDs have conformed. Existing ISBDs
underwent major editorial review twice (in 1980s and 1990s) for three major
objectives – to harmonise provisions, achieving increased consistency, to improve
examples and to make the provisions more applicable to cataloguers working
with materials published in non-roman scripts. In the first review project all the
existing ISBDs had been thoroughly considered, and they were re-published as
'revised editions'. The second general revised project has already been initiated
to ensure conformity between the provisions of the ISBDs and FRBR (Functional
Requirements for Bibliographic Record). FRBR is a bibliographic data model of

IFLA. The evolution and development of different ISBDs over the years may be tabulated as shown in Table 6.2.

Table 6.2: ISBDs

ISBD Publication	First	First General Review		Second General Review
		First Revision	Second Revision	
ISBD(M) – Monographic Publications	1971 (First standard edition in 1974)	1978 (Revision of first standard edition)	1987 (Revised edition)	2002 (Published on IFLANET as PDF file)
ISBD(G) – General	1977 (First edition)	1992 (Revised edition with annotated text)	—	—
ISBD(S) – Serials	1974	1977 (First standard edition)	1988 (Revised edition)	2002 (Revised as ISBD (CR))
ISBD(NBM) – Non-Book Materials	1977	1987 (Revised edition)	—	—
ISBD(CM) – Cartographic Materials	1977	1987 (Revised edition)	—	—
ISBD(CF) – Computer Files	1990 (First edition)	1997 (Revised as ISBD(ER))	—	—
ISBD(A) – Antiquarian (Older monographic publications)	1980	—	—	—
ISBD(PM) – Printed Music	1980	—	—	1991(Second revised edition)
Guidelines for the application of the ISBDs to the description of component parts	1988	—	—	2003 (Reproduction with corrections)
ISBD(CR) – Serials and other Continuing Resources	2002	—	—	2002 (First published after Revision of ISBD(S)
ISBD(ER) – Electronic Resources	1997	—	—	1997 (First published after the Revision of ISBD(CF)

6.4.5 Bibliographic Formats

Bibliographic formats have been created for two purposes – to facilitate search and retrieval of bibliographic records, locally and in network environment and to exchange bibliographic information among library and information centers. A bibliographic format that acts as a means of exchanging data has three basic components:

Physical structure: It may be considered as a container or carrier of bibliographic data on a computer storage medium. ISO 2709 – an international standard of bibliographic record structure is accepted by the information community for the exchange of bibliographic data on magnetic tape and other storage media.

Content designators: These are codes to identify different data elements in the record and represented in bibliographic formats by tags, indicators and sub-field codes. There are many standard content designator schemes, which can be used

to create and exchange bibliographic records such as MARC family (USMARC, CANMARC, UKMARC, UNIMARC, INDIMARC, MARC21 – a combination of USMARC and CANMARC, etc.), CCF (Common Communication Format), MIBIS (Microcomputer-based Bibliographic Information System) and others.

Content: The form and content of data elements should be based on some rules and codes. Here, library community is benefited by catalogue codes and ISBDs and community of abstracting and indexing services is benefited by UNISIST Reference manual.
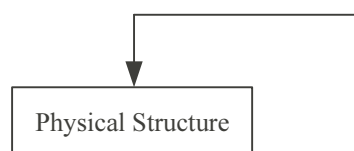
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│ Physical Structure │
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Fig. 6.2: Bibliographic format

Bibliographic description in machine-readable form requires a standard format to manage different types of bibliographic items, to cover variety of library and information services over a wide range of institutions and to support different computer configuration and programming languages.

6.4.6 Electronic Resource Description

Electronic resources in general and Internet resources in particular have some specific characteristics that call for some special provisions in their description. ISBD(ER) provides a long list of data elements for describing electronic resources and AARC2 guides the cataloguing of such resources (Chapter 9). In 1999, OCLC produced a manual for cataloguing Internet resources on the basis of AARC2 and ISBD(ER). Some bibliographic formats like UNIMARC and MARC21 developed a special field (Field 856) for managing electronic resources. The sub-fields structure of field 856 in MARC21 and UNIMARC is listed in Table 6.3. The elements of Field 856 of MARC21 are discussed in Unit 9 of this Course in detail.

It has already been mentioned that bibliographic formats and catalogue codes are not adequate enough for representing all the unique characteristics of digital resources. As a result, various metadata standards have been developed as resource description schemas for digital information bearing objects over the past few years. Metadata is structured information that describes, explains, locates or otherwise makes it easier to retrieve, use or manage digital information resources. Metadata schemas are sets of metadata elements designed for a particular purpose, for example to describe a particular type of information resource. In addition to resource discovery, metadata schemas can help to organise electronic resource, facilitate interoperability & resource integration, support digital identification and ensure archiving and preservation. Many different metadata schemas are being used in library environment. A few of the most common ones are mentioned here.

MARC21	UNIMARC
$a - Host name (R)	$a -Host name (R)
$b - Access number (R)	$b -Access number (R)
$c - Compression information (R)	$c -Compression information (R)
$d - Path (R)	$d -Path (R)
$f - Electronic name (R)	$e -Date and hour of Consultation and
$g - Uniform Resource Name (R)	Access (NR)
$h - Processor of request (NR)	$f -Electronic name (R)
$i - Instruction (R)	$g -Uniform Resource Name (R)
$j - Bits per second (NR)	$h -Processor of request (NR)
$k - Password (NR)	$i -Instruction (R)
$l - Logon (NR)	$j -Bits per second (NR)
$m - Contact for access assistance (R)	$k -Password (NR)
	$l -Login/login (NR)
$n - Name of location of host in sub-field $a (NR)	$m -Contact for access assistance (R)
$o - Operating system (NR)	$n -Name of location of host in
$p - Port (NR)	sub-field $a (NR)
$q - Electronic format type (NR)	$o -Operating system (NR)
$r - Settings (NR)	$p -Port (NR)
$s - File size (R)	$q -Electronic Format Type (NR)
$t - Terminal emulation (R)	$r -Settings (NR)
$u - Uniform Resource Locator (NR)	$s -File size (R)
$v - Hours access method available (R)	$t -Terminal emulation (R)
$w - Record control number (R)	$u -Uniform Resource Locator (R)
$x - Nonpublic note (R)	$v -Hours access method available (R)
$z - Public note (R)	$w -Record control number (R)
$2 - Access method (NR)	$x -Nonpublic note (R)
$3 - Materials specified (NR)	$y -Access method (R)
$6 - Linkage (NR)	$z -Public note (R)
$8 - Field link and sequence number (R)	

R= Repeatable Field; NR= Non-repeatable Field

a) **Dublin Core Metadata Schema (DCMS)** [http://dublincore.org]

It was developed in 1995 to be simple and concise scheme, and to describe web based documents. The original objective of the Dublin Core was to define a set of elements that could be used by authors to describe their own resources. Dublin Core is a set of 15 main elements that fall into three groups – Contents, Intellectual Property and Instantiation (Fig. 6.3). Simple DCMS applies only main 15 elements without any qualifier. Qualified Dublin core uses additional qualifiers to increase specificity or precision of the metadata. The elements of Dublin Core Metadata are discussed in Unit 9 of this Course in detail.

b) **Global Information Locator Service (GILS)** [http://www.usgs.gov/gils/index.html]

GILS grew out of U.S. government requirement for public access to government information, – both digital and non-digital. The National Archives and Records Administration, U.S. has defined the core elements of GILS. GILS specifies a profile of the Z39.50 protocol for search and retrieval. GILS records are intended to describe aggregates such as catalogues, publishing services and databases.

c) **Text Encoding Initiative (TEI)** [http://www.tei-c.org]

It is a scheme for marking up electronic text. It also specifies a header portion to accommodate metadata about the object to be described. TEI headers can be used to record bibliographic information of both electronic and non-electronic

sources. The TEI header can be mapped to and from MARC. The components
of TEI are discussed in Unit 9 of this Course.

d)   **Online Information Exchange International (ONIX)**   [http://www/
editeur.org/onix.html]

ONIX is an XML-based metadata schema developed for publishing industry to
response enormous growth in online books sales. It records basic bibliographic
data along with trade data and promotional information. ONIX may play a major
role in the creation of provisional /order-level bibliographic records for library
processing works just like CIP data. Mapping between ONIX and both USMARC
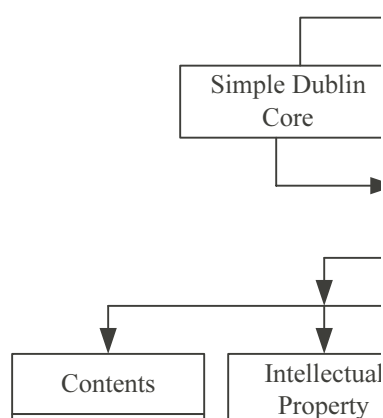and UNIMARC exist.

Fig. 6.3: Elements of Dublin Core

6.4.7   Models of Bibliographic Description

It should be clear from the above discussion that the Paris Principles and ISBDs
have served as the foundation for almost all the national and international
cataloguing codes. But during the last 20 years or so, the environment within
which cataloguing principles and standards operate has changed because of the
emergence of computerised processing of bibliographic data, growth of large-
scale databases, increasing use of shared cataloguing programmes and proliferation
of digital resources in Internet. Such a situation requires some general framework
to assist in the understanding and further development of conventions for
bibliographic description. Models for bibliographic description provide a logical
base for the correlation of cataloguing rules with the data encoding structure. A
model for bibliographic description endeavours to address complex bibliographic
problems and provides a strong foundation to support future, integrated, advanced
information retrieval, presentation and transfer systems. Some of the
groundbreaking works towards this end are discussed below:

Functional Requirements for Bibliographic Records (FRBR)

FRBR is an entity-relationship model framed by IFLA in 1998. The model
represents a generalised view of the bibliographic universe. The FRBR model:

- identifies the bibliographic entities and defines their nature and scope;

- analyses the attributes associated with each of the entities;

- provides a comprehensive listing of individual data elements associated with each attribute;

- delineates the nature of relationships that operate at a generalized level and between specific instances of entities;

- maps the attributes and relationships associated with each entity to four generic user tasks (find, identify, select, obtain); and

- recommends basic data requirements for national bibliographic records.

The FRBR model could serve:

- as a framework for re-assessing data recording conventions and standards;

- a role in normalising bibliographic data;

- to frame more economic means of data capture;

- as a conceptual framework for re-examination of the structures used to store, display, and communicate bibliographic data; and

- as a tool for restructuring bibliographic record formats to reflect relationships.

The components of FRBR model are discussed in sections 6.5 and 6.7 of this Unit.

UKOLN's Analytical Model of Collections and their Catalogues

This model has been developed in 2000 by United Kingdom Office for Library and Information Networking (UKOLN) under the Research Support Libraries Programme (RSLP). It is applicable to physical and digital collections of all kinds, including library, art and museum materials. This model identifies 3 main entities and associated attributes — *Objects* (Content, Item, Collection, Location, Content-Component, Item-Component); *Agents* (Creator, Producer, Collector, Owner, Administrator); *Indirect-Agents* (Creator's Assignee, Producer's Assignee). It also prescribes two types of relationships — *internal relationships* (relationships among the entities in Collection Description) and *external relationships* (relationships among Collection Descriptions themselves). The model tries to clarify the points at which rights and conditions of access and use become operable and attempts to act as a bridge linking collections and their users.

XML Organic Bibliographic Information Schema (XOBIS)

XOBIS attempts to restructure bibliographic and authority data in a consistent and unified manner using Extensible Markup Language (XML). It has been developed at Lane Medical Library, Stanford University under the Medlane Project. The preliminary version (alpha version) of XOBIS appeared in September 2002. XOBIS prescribes a tripartite record element based structure in which each record consists of three required components. These are Control Data (contains metadata about record), Principal Elements (10 categories of data that provide bibliographic access and authority control to a wide variety of resources) and Relationships (element that accommodates links between any pair of principal elements). The basic structure of XOBIS may be illustrated as:
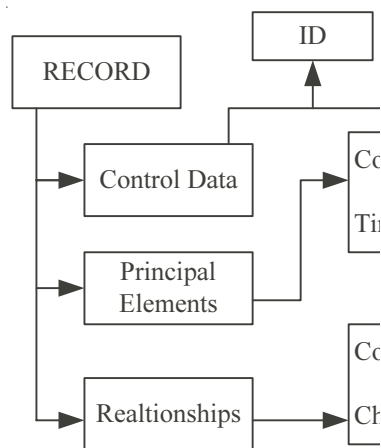
Fig. 6.4: XOBIS framework

The emergence of 'digital libraries' has brought metadata into contention with cataloguing data; the distinction between the two easily blurs. XML's concurrent success has thrusted these developments a new light. Against this backdrop, XOBIS may be utilized as an experimental model for encoding cataloguing data in XML schema. The aim of XOBIS is to help libraries to provide leadership in information management.

Self Check Exercise

2) Discuss the role of ISBDs as base format for bibliographic description.

Note: i) Write your answer in the space given below.
   ii) Check your answer with the answers given at the end of the Unit.

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6.5 BIBLIOGRAPHIC DESCRIPTION: ENTITIES, ATTRIBUTES AND RELATIONSHIPS

Already you have got an idea about IFLA's epoch-making model called FRBR in section 6.4. This conceptual model is based on entity analysis technique to isolate key objects that are of interest to users of bibliographic records. The entity relationship structure derived from the analysis of bibliographic entities, attributes and relationships has been used in FRBR as the framework for assessing the relevance of each attribute and relationship to the tasks performed by users of bibliographic data.

Entities

In FRBR model, the entities of bibliographic universe have been divided into three groups:

ı The first group includes the products of intellectual or artistic endeavour;

ı The second group comprises those entities responsible for the intellectual or artistic content; and

ı The third group identifies entities that serve as the subjects of intellectual or artistic endeavour.

a) Group I Entities

The entities of this group represent the different aspects of user interests in the products of intellectual or artistic endeavour. These are:

ı *Work: A distinct intellectual or artistic creation;*

ı *Expression: The intellectual or artistic realisation of a work ;*

ı *Manifestation: The physical embodiment of an expression of a work; and*

ı *Item: A single exemplar of a manifestation.*

The first two entities reflect intellectual or artistic content and last two entities reflect physical forms. The following diagram represents the relationships among entities of the first group as given in FRBR:
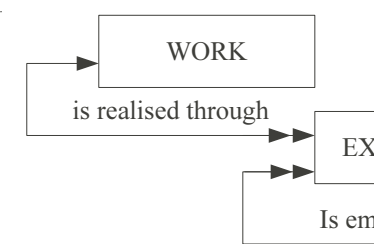

Fig. 6.5: Group I Entities and Primary Relationships
(Reproduced from FRBR document)

The Figure 6.5 shows that a *work* may be realised through one or more than one *expression* (thus the double arrow on the line that links *work* to *expression*). On the other hand, an *expression* is the realisation of one and only one *work* (hence the single arrow on the reverse direction of that line linking *expression* to *work*). An *expression* may be embodied in one or more than one *manifestation.* Similarly, a *manifestation* may embody one or more than one *expression*. A *manifestation*, in turn, may be exemplified by one or more than one *item*; but an *item* may exemplify one and only one *manifestation.* The following example will make it clear to you:

Work 1	Ronald Hayman's *Playback*
Expression 1	the author's text edited for publication
Manifestation 1	the book published in 1973 by Davis-Poynter
Item 1	copy autographed by the author

b) Group II Entities

The entities in the second group represent those responsible for the intellectual or artistic content, the physical production and dissemination, or the custodianship of the entities in the first group. The entities in this group include *person* (an individual) and *corporate body* (an organisation or group of individuals and/or organisations). The type of 'responsibility' relationships that exist between entities in the second group and the entities in the first group may be represented as in Fig. 6.6.
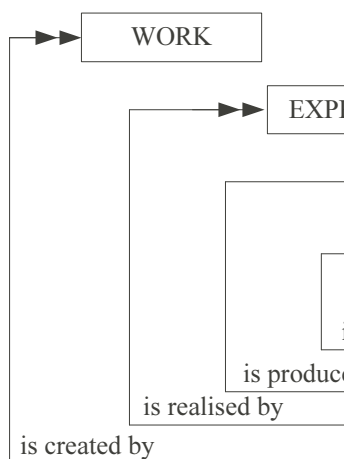
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┌──────────┐
│   WORK   │
└──────────┘
         ┌──────────┐
         │   EXPI   │
         └──────────┘


                    is produc
           is realised by
 is created by
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Fig. 6.6: Group 2 Entities and 'Responsibility' Relationships
(Reproduced from FRBR document)

c) Group III Entities

The entities of this group represent an additional set of entities that serve as the subjects of *works*. It includes *concept* (an abstract notion or idea), *object* (a material thing), *event* (an action or occurrence), and *place* (a location). Figure 6.7 shows the 'subject' relationships between entities in the third group and the *work* entity in the first group and also relationships between *work* and the entities in the first and second groups. The diagram indicates that a work may have as its subject one or more than one *work*, *expression*, *manifestation*, *item*, *person*, and/or *corporate body*.
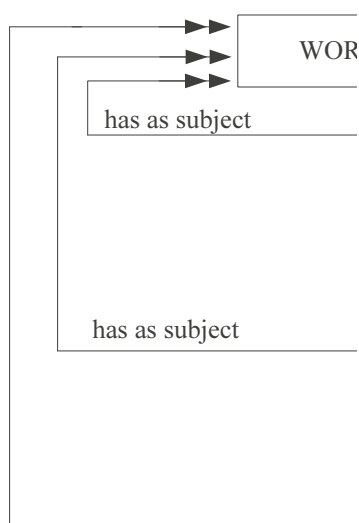


```
         ┌──────────┐
         │   WOR    │
         └──────────┘

        has as subject




        has as subject
```

Fig. 6.7: Group 3 Entities and 'Subject' Relationships
(Reproduced from FRBR document)

Attributes

Each of the entities, as proposed by FRBR model is associated with a set of characteristics. These are called attributes of an entity and serve as the means to satisfy users queries at the time of seeking information about a particular entity. The attributes of bibliographical entities may be derived by logical analysis of bibliographic data elements reflected in bibliographic records. FRBR model identified attributes by analyzing existing standards of bibliographical description (ISBDs, GARE, GSARE) and content designator schemes (UNIMARC). Attributes of entities in different groups may be listed as:

	5Work	Expression	Manifestation	Item
A T T R I B U T E S	Title of the *work* Form of *work* Date of the *work* Other distinguishing characteristic Intended termination Intended audience Context for the *work* Medium of performance (musical work) Numeric designation (musical work) Key (musical work) Coordinates (cartographic work) Equinox (cartographic work)	Title of the *expression* Form of *expression* Date of *expression* Language of *expression* Other distinguishing characteristic Extensibility of *expression* Revisability of *expression* Extent of the *expression* Summarisation of content Context for the *expression* Critical response to the *expression* Use restrictions on the *expression* Sequencing pattern (serial) Expected regularity of issue (serial) Expected frequency of issue (serial) Type of score (musical notation) Medium of performance (musical notation or recorded sound) Scale (cartographic image/object) Projection (cartographic image/object) Presentation technique (cartographic image/object) Representation of relief (cartographic image/object) Geodetic, grid, and vertical measurement (cartographic image/object) Recording technique (remote sensing image) Special characteristic (remote sensing image) Technique (graphic or projected image) Special characteristic (remote sensing image) Technique (graphic or projected image)	Title of the *manifestation* Statement of responsibility Edition/issue designation Place of publication/distribution Publisher/distributor Date of publication/distribution Fabricator/manufacturer Series statement Form of carrier Extent of the carrier Physical medium Capture mode Dimensions of the carrier *Manifestation* identifier Source for acquisition/access authorization Terms of availability Access restrictions on the *manifestation* Typeface (printed book) Type size (printed book) Foliation (hand-printed book) Collation (hand-printed book) Publication status (serial) Numbering (serial) Playing speed (sound recording) Groove width (sound recording) Kind of cutting (sound recording) Tape configuration (sound recording) Kind of sound (sound recording) Special reproduction characteristic (sound recording) Colour (image) Reduction ratio (microform) Polarity (microform or visual projection) Generation (microform or visual projection) Presentation format (visual projection) System requirements (electronic resource) File characteristics (electronic resource) Mode of access (remote access electronic resource) Access address (remote access electronic resource)	*Item* identifier Fingerprint Provenance of the *item* Marks/inscriptions Exhibition history Condition of the *item* Treatment history Scheduled treatment Access restrictions on the *item*

Entities (Group II)

	Person	Corporate Body
ATTRIBUTES	Name of *person* Dates of *person* Title of *person* Other designation associated with the *person*	Name of the *corporate body* Number associated with the *corporate body* Place associated with the *corporate body* Date associated with the *corporate body* Other designation associated with the *corporate body*

	Entities (Group III)			
	Concept	**Object**	**Event**	**Place**
ATTRIBUTES	Term for the *concept*	Term for the o*bject*	Term for the *event*	Term for the *place*

Relationships

Bibliographic relationship exists when bibliographic entities are associated with each other in some way. A catalogue or bibliographic database serves dual purposes:

ɩ   Identification and location of specific items (identifying and finding function); and

ɩ   Identification and location of related items (collocating function).

Bibliographic relationships perform the collocating function of a catalogue or bibliographic database. UNIMARC identified three categories of relationships:

ɩ   *Vertical* – the hierarchical relationship of the whole to its parts and the parts to a whole

ɩ   *Horizontal* – the relationship between versions of an item in different languages, formats, media, etc.

ɩ   *Chronological* – the relationship in time between issues of an item

The current research of bibliographic relationships in traditional and online environment [Tillet, 2001; Velluci, 1997] identifies following types of bibliographic relationships:

Equivalence relationships, which link between exact copies of the same manifestation of a work, or between an original item and reproduction of it, as long as the intellectual content and authorship are preserved. Included here are copies, issues, facsimiles, photocopies, microforms, and other similar reproductions.

Derivative relationships (called horizontal relationships in UNIMARC), which link between a bibliographic item and a modification based on that same item, including variations, versions, editions, revisions, translations, adaptations, paraphrases, etc.

Descriptive relationships, which link between a bibliographic item or work and a description, criticism, evaluation, or review of that work, including annotated editions, casebooks, commentaries, critiques, etc.

Whole-Part relationships (called vertical relationships in UNIMARC or hierarchical relationships by Goossens), which link between a component part of a bibliographic item or work and its whole, including a selection from an anthology, collection, or series.

Accompanying relationships, which link between a bibliographic item and the bibliographic item it accompanies, such that the two items augment each other equally or one item augments the other principle or predominant item, including supplements, concordances, indexes, catalogues, etc.

Sequential relationships (called chronological relationships in UNIMARC), which link between bibliographic items that continue or precede one another, include

successive titles in a serial, sequels of a monograph, parts of a series, etc.

Shared characteristic relationships, which link between a bibliographic item and other bibliographic items that are not otherwise related but coincidentally has a common author, title, subject or other characteristic used as an access point.

The FRBR model identified three primary relationships among group I entities [Figure 6.5]. These are:

ı   *<realized_through>* relationship connecting *work* and *expression;*

ı   *<embodied_in>* relationship connecting *expression* and *manifestation; and*

ı   *<examplified_by>* relationship connecting *manifestation* and *item.*

The group II entities of the FRBR model are connected to the group I entities by four relationships types [Figure 6.6]:

ı   *<created_by>* that links person/corporate body to *work;*

ı   *<realized_by>* that links person/corporate body to *expression;*

ı   *<produced_by>* that links person/corporate body to *manifestation; and*

ı   *<owned_by>* that links person/corporate body to *item.*

The entities of all the three groups are connected to the *work* entity by a subject relationship [Figure 6.7]. The <has_as_subject> relationship serves as the basis for identifying the subject of an individual work and ensures that all relevant works to a given subject are linked to that subject. Apart from these primary relationships among entities, the FRBR model proposed a group of other relationships:

ı   *Work-to-Work relationships*

   Successor, Supplement, Complement, Summarisation, Adaptation, Transformation, Imitation and Whole/Part

ı   *Expression-to-Expression relationships*

   Abridgement, Revision, Translation, Arrangement, Successor, Supplement, Complement, Summarisation, Adaptation, Transformation, Imitation and Whole/Part

ı   *Manifestation-to-Manifestation relationships*

   Reproduction, Alternate and Whole/Part

ı   *Item-to-Item relationships*

   Reconfiguration, Reproduction and Whole/Part

ı   *Expression-to-Work relationships*

   Successor, Supplement, Complement, Summarisation, Adaptation, Transformation, Imitation and Whole/Part

o   *Manifestation-to-Item relationships*

   Reproduction

Self Check Exercise

3) Enumerate different types of bibliographic relationships and their role in retrieval.

Note: i) Write your answer in the space given below.
ii) Check your answer with the answers given at the end of the Unit.

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6.6 APPLICATION OF PRINCIPLES OF BIBLIOGRAPHIC DESCRIPTIONS

We have discussed set of principles related to bibliographic description and access in Section 6.4.3.1. These new principles replace and broaden the Paris Principles from just textual works to all types of materials and from just the choice and form of entry to all aspects of the bibliographic and authority records used in library catalogues. The aims of these principles are to increase the international sharing of bibliographic and authority data and guide cataloguing rule makers in their efforts to develop an international cataloguing code. The scope of these principles includes following groups of actions:

ı They can guide the development of cataloguing codes;

ı They can be applied to bibliographic and authority records and current library catalogues;

ı The principles can also be applied to bibliographies and data files created by libraries, archives, museums, and other communities;

ı They aim to provide a consistent approach to descriptive and subject cataloguing of bibliographic resources of all kinds; and

ı The highest principle for the construction of cataloguing codes should be the convenience of the users of the catalogue.

General rules of procedures related to the application of new principles have been formulated and published by IFLA (on IFLANET) in December 2003 after its approval in "IFLA Meeting of Experts on an International Cataloguing Code (1st, Frankfurt, Germany, 2003)". These rules of procedures are based on the great cataloguing traditions of the world, and also on the conceptual models of the IFLA documents – *Functional Requirements for Bibliographic Records* **(FRBR)** and *Functional Requirements and Numbering for Authority Records* **(FRANAR)**, which extend the Paris Principles to the realm of subject cataloguing. The essence of these principles may be discussed under six different groups:

a) Entities, Attributes, and Relationships;

b) Bibliographic Description;

c) Access Points;

d) Authority Records;

e) Foundations for Search Capabilities; and

f) Display.

6.6.1 Entities, Attributes and Relationships

Entities in Bibliographic Records:

a) For the creation of bibliographic records the following entities, covering products of intellectual or artistic endeavour, are to be considered:

- Work
- Expression
- Manifestation
- Item

b) Bibliographic records should typically reflect manifestations of a collection of works, an individual work, or a component part of a work. Manifestations may appear in one or more physical units. In general, a separate bibliographic record should be created for each physical format (manifestation).

Entities in Authority Records

Authority records should document controlled forms of names at least for persons, families, corporate bodies, and subjects. Entities that serve as the subjects of works include:

Work	Person	Object
Expression	Family	Event
Manifestation	Corporate Body	Place
Item	Concept	

Attributes

The attributes that identify each entity should be used as data elements in bibliographic and authority records.

Relationships

Bibliographically significant relationships among the entities should be identified through the catalogue and bibliographic databases.

6.6.2 Bibliographic Description

a) The descriptive portion of the bibliographic record should be based on an internationally agreed standard.

b) Descriptions may be at several **levels of completeness**, based on the purpose of the catalogue or bibliographic file.

6.6.3 Access Points

General

Access points for retrieving bibliographic and authority records must be formulated following the general principles. They may be controlled or uncontrolled. Uncontrolled access points may include such things as the title proper as found on a manifestation or keywords added to or found anywhere in a bibliographic record. Controlled access points provide the consistency needed for locating sets of resources and must be normalized following a standard. These normalised forms (also called 'authorised headings') should be recorded in authority records along with variant forms used as references.

Choice of access points

a) Access points to a **bibliographic record** should include the titles of works

and expressions (controlled) and titles of manifestations (usually uncontrolled) and the controlled forms of names of the creators of works. In the case of corporate bodies as creators, this is limited to works that are by their nature necessarily the expression of the collective thought or activity of the corporate body. Additionally, access points to bibliographic records for the controlled forms of names of other persons, families, corporate bodies, and subjects deemed to be important for finding, identifying, and selecting the bibliographic resource being described should be provided.

b) Access points to an **authority record** should include the authorised form of name for the entity, as well as the variant forms of name. Additional access may be made through related names.

Authorised Headings

The authorised heading for an entity should be the name that identifies the entity in a consistent manner, either as predominantly found on manifestations or a well-accepted name suited to the users of the catalogue (e.g. 'conventional name'). Further identifying characteristics should be added, if necessary, to distinguish the entity from others of the same name.

Language

When names have been expressed in several languages, preference should be given to a heading based on information found on manifestations of the expression in the original language and script; but if the original language and script is one, not normally used in the catalogue, the heading may be based on forms found on manifestations or in references in one of the languages and scripts best suited to the users of the catalogue. Access should be provided in the original language and script whenever possible, through either the authorised heading or a reference. If transliterations are desirable, an international standard for script conversion should be followed.

Forms of Names for Persons

a) When the name of a person consists of several words, the choice of entry word should be determined by conventions of the person's country of citizenship, or

b) When that country of citizenship is not determinable, by agreed usage in the country in which the person generally resides, or

c) If it is not possible to determine where the person generally resides, choice of entry word should follow agreed usage in the language that the person generally uses, as found in manifestations or general reference sources.

Forms of Names for Families

a) When the name of a family consists of several words, the choice of entry word should be determined by conventions of the country most associated with that family, or

b) If it is not possible to determine the country most associated with that family, choice of entry word should follow agreed usage in the language that family generally uses, as found in manifestations or general reference sources.

Forms of Names for Corporate Bodies

a) For jurisdictions, the authorised heading should include the currently used form of the name of the territory concerned in the language and script best suited to the needs of the users of the catalogue.

b) If the corporate body has used in successive periods different names that cannot be regarded as minor variations of one name, each significant name change should be considered a new entity and the corresponding authority records for each entity should be linked by see-also (earlier/later) references.

Forms of Uniform Titles

The uniform title should be the original title or the title most frequently found in manifestations of the work. Under certain defined circumstances, a commonly used title in the language and script of the catalogue may be preferred to the original title as the basis for the authorized heading.

6.6.4 Authority Records

a) Authority records should be constructed to control the authorised forms of names and references used as access points for such entities as persons, families, corporate bodies, works, expressions, manifestations, items, concepts, objects, events, and places.

b) If a person, family, or a corporate body uses variant names or variant forms of names, one name or one form of name should be chosen as the authorised heading for each distinct persona. If there are variant titles for one work, one title should be chosen as uniform title.

6.6.5 Foundations for Search Capabilities

Search and Retrieval

Access points are the elements of bibliographic records that provide

a) Reliable retrieval of bibliographic and authority records and their associated bibliographic resources and b) Limit search results.

Searching Devices

Names, titles, and subjects should be searchable and retrievable by means of any device available in the given library catalogue or bibliographic file, for example by full forms of names, by keywords, by phrases, by truncation, etc.

Indispensable Access Points

These are based on the main attributes and relationships of each entity in the bibliographic or authority record. Indispensable access points for **bibliographic records** include:

ꞁ   the name of the creator or first named creator when more than one is named;
ꞁ   the title proper or supplied title for the manifestation;
ꞁ   the year (s) of publication or issuance;
ꞁ   the uniform title for the work/expression;
ꞁ   subject headings, subject terms;
ꞁ   classification numbers; and
ꞁ   standard numbers, identifiers, and 'key titles' for the described entity.

Indispensable access points for **authority records** include:

ꞁ   the authorized name or title of the entity; and
ꞁ   variant forms of name or title for the entity.

Additional Access Points

Attributes from other areas of the bibliographic description or the authority record may serve as optional access points or as filtering or limiting devices when large numbers of records are retrieved. Such attributes in bibliographic records include, but are not limited to:

ꞁ   names of additional creators beyond the first;
ꞁ   names of performers or persons, families, or corporate bodies in other roles than creator;

ı   parallel titles, caption titles, etc.;

ı   uniform title of the series;

ı   bibliographic record identifiers;

ı   language;

ı   country of publication; and

ı   physical medium.

Such attributes in authority records include, but are not limited to:

ı   names or titles of related entities; and

ı   authority record identifiers.

6.6.6   Display

IFLA Task force on Guidelines for OPAC Display formulated a set of guiding rules for display of OPAC, Web-OPAC, Z39.50 web interface and other bibliographic databases and presented during 65th IFLA conference in 1999 [Yee, M.M., 1999]. The principles are:

1. consider objects of the catalogue;
2. study the headings principle;
3. assume large retrievals;
4. display what was searched;
5. emphasise author, work or subject sought in resultant display;
6. treat display, sorting, and indexing as separate and independent functions;
7. integrate cross references in displays;
8. respect sorting elements;
9. display sub fields in order set by cataloguer;
10. respect filing indicators and symbols;
11. provide compact summary displays;
12. provide logical compression;
13. provide logical sorting;
14. maintain an attachment between a heading and the bibliographic records that contain it;
15. do not truncate headings;
16. display works about an author or work, or related to a particular work;
17. display works about a particular genre or form;
18. display of serial works that have changed title;
19. display the hierarchical relationship between headings and their subject subdivisions;
20. display the hierarchical relationship between a corporate body and its corporate subdivisions;
21. display the hierarchical relationship between work and its parts;
22. display the hierarchical relationship between a classification number and the entire classification;
23. avoid repetition;
24. highlight terms matched;
25. ISBD is an international display standard
26. make the default single record display the full display;
27. design the 'look and feel' of the OPAC for its primary audience;
28. allow display of the marc record;
29. do not duplicate records for display purposes;
30. support international standards for the display of diacritics, special characters, non-roman scripts, and bi-directional scripts.

Self Check Exercise

4) What do you mean by Principle? Evaluate the Principles of bibliographic description as formulated by JSC.

Note: i)   Write your answer in the space given below.
        ii) Check your answer with the answers given at the end of the Unit.

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6.7 MAPPING OF BIBLIOGRAPHIC DATA ELEMENTS TO USER TASKS

User convenience is the highest principle of bibliographic description. Users of bibliographic records perform four generic tasks at the time of searching and making use of library catalogues, national bibliographies and bibliographic databases. These are:

1   using the data to **find** materials that correspond to the user's stated search criteria (e.g., in the context of a search for all documents on a given subject, or a search for a recording issued under a particular title)

1   using the data retrieved to **identify** an entity (e.g., to confirm that the document described in a record corresponds to the document sought by the user, or to distinguish between two texts or recordings that have the same title)

1   using the data to **select** an entity that is appropriate to the user's needs (e.g., to select a text in a language the user understands, or to choose a version of a computer program that is compatible with the hardware and operating system available to the user)

1   using the data in order to acquire or **obtain** access to the entity described (e.g., to place a purchase order for a publication, to submit a request for the loan of a copy of a book in a library's collection, or to access online an electronic document stored on a remote computer).

Bibliographic entity is the object of users' interest and attributes and relationships of entities help users to reach to the entity. Hence, attributes and relationships of bibliographic entities can be mapped directly to the users tasks. But the relative values for each attribute and relationships varied to some degree on the basis of nature and purpose of user task. FRBR model assesses the relevance of each attribute and relationship to the tasks performed by users of bibliographic data and ranked them as High, Moderate and Low. The generic user tasks and associated high, moderate and low value attributes and relationships as given in the FRBR are listed below:

Find (Work, Expression, Manifestation, Item)

High Value Attributes and Relationships

a)   The attribute by definition serves to identify the entity (e.g., *manifestation* identifier, *item* identifier);

b)   The attribute or relationship is typically used as a primary search term for locating the entity (e.g., the title of a *manifestation*, the relationship between a *work* and the *person* or *corporate body* principally responsible for the *work*).

Moderate Value Attributes and Relationships

a)   The attribute or relationship serves to provide a useful means of subdivision within a predictably lengthy file of entities that match the user's primary search term (e.g., the medium of performance for musical works with non-distinctive titles);

b)   The attribute or relationship is typically used as a secondary search term to qualify a search under a primary term that yields a large results set (e.g., language of expression);

c)   The attribute or relationship is one that will serve to direct the user from an

entity found to another entity that is closely related (e.g., the relationship between a supplement and the *work* it supplements).

Low Value Attributes and Relationships

These are attributes and relationships that under more limited circumstances might be used to subdivide further a file or to qualify a search.

Identify (Work, Expression, Manifestation, Item)

High Value Attributes and Relationships

a) The attribute by definition serves to identify the entity (e.g., *manifestation* identifier, *item* identifier);

b) The attribute or relationship forms part of the minimal set of attributes and relationships that for the majority of cases will serve, in the absence of a unique identifier, to differentiate entities that have a number of common characteristics.

Moderate Value Attributes and Relationships

a) The attribute or relationship which under specified circumstances will often serve to differentiate entities for which the minimal set of attributes and relationships that normally serves to identify an entity is insufficient (e.g., the extent or physical medium of the carrier in certain circumstances may serve to signal differences between two *manifestations* that have the same title, statement of responsibility, edition/issue designation, etc.);

b) The attribute specifically associated with a sub-type of an entity (e.g., handprinted books, sound recordings, etc.), and for that sub-category the attribute will often serve to differentiate between otherwise identical entities (e.g., polarity for microforms, presentation format for visual projections, etc.).

Low Value Attributes and Relationships

These are attributes and relationships that in more limited cases might be used to differentiate between entities with otherwise identical characteristics.

Select (Work, Expression, Manifestation, Item)

High Value Attributes and Relationships

a) The attribute or relationship serves in most cases as a significant indicator of intellectual or artistic content (e.g., the subject of a *work*, language of *expression*, etc.);

b) The attribute is one that normally signals a specific technical requirement for viewing, playback, operating, etc. (e.g., systems requirements for electronic resources, etc.), or other conditions restricting access or use.

Moderate Value Attributes and Relationships

a) the attribute or relationship is a significant indicator of intellectual or artistic content only in limited cases (e.g., intended audience for a *work*);

b) the attribute or relationship is one that under specified circumstances may signal a specific technical requirement for viewing, playback, operating, etc., (e.g., dimensions of the carrier).

Low Value Attributes and Relationships

The attributes and relationships that are only marginally significant indicators of intellectual or artistic content or signals of special technical requirements.

High Value Attributes and Relationships

a) The attribute by definition serves to identify the entity (e.g., *manifestation* identifier, *item* identifier);

b) The attribute or relationship forms part of the minimal set of attributes and relationships that for the majority of cases will serve, in the absence of a unique identifier, to differentiate entities that have a number of common characteristics;

c) The attribute or relationship is in the majority of cases significant for locating the source from which the entity may be obtained (e.g., place of publication/ distribution, access address for a remote access electronic resource, etc.);

d) The attribute or relationship is significant as an indicator of restrictions on access to the entity (e.g., access restrictions on the *manifestation*, access restrictions on the *item*).

Moderate Value Attributes and Relationships

a) The attribute or relationship is one which under specified circumstances will often serve to differentiate entities for which the minimal set of attributes and relationships that normally serves to identify an entity is insufficient (e.g., the extent or physical medium of the carrier in certain circumstances may serve to signal differences between two *manifestations* that have the same title, statement of responsibility, edition/issue designation, etc.);

b) The attribute is specifically associated with a sub-type of an entity (e.g., hand-printed books, sound recordings, etc.), and for that sub-category the attribute will often serve to differentiate between otherwise identical entities (e.g., polarity for microforms, presentation format for visual projections, etc.).

Low Value Attributes and Relationships

The attributes and relationships that in more limited cases might be used to differentiate between entities with otherwise identical characteristics.

In view of the above list we may relate attributes and relationships of any entity with the four generic user tasks in terms of degree of relevance (high, moderate and low). As you know, bibliographic records reflect manifestations; the attributes and relationships of manifestation (See section 6.5) can be mapped to generic user tasks. This will give us an idea of relative values of various bibliographic data elements against specific user tasks.

Task 1: Find manifestation

Value	Attributes
High	Title of the *manifestation; Manifestation* identifier.
Moderate	Series statement; Form of carrier; Numbering (serial).
Low	Statement of responsibility; Date of publication/distribution; Fabricator/manufacturer.

Task 2: Identify manifestation

Value	Attributes
High	Title of the *manifestation;* Statement of responsibility; Edition/issue designation; Date of publication/distribution; Series statement; Form of carrier; *Manifestation* identifier; Foliation (hand-printed book); Collation (hand-printed book); Numbering (serial).
Moderate	Extent of the carrier; Physical medium.
Low	Place of publication/distribution; Fabricator/manufacturer; Capture mode; Dimensions of the carrier; Typeface (printed book); Type size (printed book); Colour (image); Reduction ratio (microform); Polarity (microform or visual projection); Presentation format (visual projection); System requirements (electronic resource); File characteristics (electronic resource).

Task 3: Select manifestation

Value	Attributes
High	Statement of responsibility; Edition/issue designation; Date of publication/distribution; Form of carrier; Reduction ratio (microform); Presentation format (visual projection); System requirements (electronic resource).
Moderate	Publisher/distributor; Series statement; Capture mode; *Manifestation* identifier; Access restrictions on the *manifestation;* Polarity (microform or visual projection); Generation (microform or visual projection); Mode of access (remote access electronic resource) Access address (remote access electronic resource).
Low	Title of the *manifestation*; Place of publication/distribution; Fabricator/manufacturer; Physical medium; Source for acquisition/access authorization; Terms of availability; Typeface (printed book); Type size (printed book); Playing speed (sound recording); Groove width (sound recording); Kind of cutting (sound recording); Tape configuration (sound recording); Kind of sound (sound recording).

Task 4: Obtain manifestation

Value	Attributes
High	Title of the *manifestation*; Statement of responsibility; Edition/issue designation; Place of publication/distribution; Publisher/distributor; Date of publication/distribution; Series statement; Form of carrier; *Manifestation* identifier; Foliation (hand-printed book); Collation (hand-printed book); Numbering (serial); Mode of access (remote access electronic resource); Access address (remote access electronic resource).
Moderate	Dimensions of the carrier; Access restrictions on the *manifestation;*
Low	Source for acquisition/access authorization; Terms of availability; Reduction ratio (microform); Polarity (microform or visual projection); Generation (microform or visual projection); Presentation format (visual projection); System requirements (electronic resource); File characteristics (electronic resource).

Similarly the bibliographic relationships related to *manifestation* may be mapped as:

Bibliographic Relationships		USER TASKS			
Relationships between:	*Relationship types*	*FIND*	*IDENTIFY*	*SELECTION*	*OBTAIN*
Manifestation and other	Reproduction Alternate	Moderate Low	Moderate Low	Moderate Low	Moderate Low
Manifestations	Component Integral part	— —	Low —	Low Low	— —
Manifestation and Items	Reproduction	Moderate	Moderate	Low	—
Manifestation and Persons/ Corporate bodies	Production/ Dissemination	Moderate	—	—	—

Self Check Exercise

5) Explain the importance of mapping bibliographic data elements to the user tasks.

Note: i) Write your answer in the space given below.
ii) Check your answer with the answers given at the end of the Unit.

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6.8 INTEROPERABILITY AND CROSSWALK

Interoperability is the ability of multiple systems, with different hardware and software platforms, data structures, and interfaces, to exchange data with minimal loss of content functionality. There are two approaches to interoperability–cross-system search and metadata harvesting. The Z39.50 protocol is commonly used for cross-collection search. The Z39.50 client (called origin) maps search syntaxes to a common set of search attributes for extracting information from Z39.50 server (called target). Open Archives Initiative (http://www.openarchives.org) is a protocol for metadata harvesting, which allows all partners to translate their native metadata to a common core set of elements and expose those for harvesting. A search service then gathers the metadata sets into a central index to allow cross-repository searching regardless of the metadata formats used by participating repositories.

Metadata crosswalks facilitate the interoperability and exchange of metadata. A crosswalk is a mapping of the elements, semantics and syntax from one metadata schema to those of another. It allows metadata created by one community to be used by another group that employs a different metadata standard. The Library of Congress' Network Development and MARC Standards Office is developing a framework for working with MARC data in a XML environment. This framework is intended to be flexible and extensible to allow users to work with MARC data in ways specific to their needs. The framework will contain many components such as schemas, style sheets, and software tools developed and maintained by the Library of Congress. MARC-XML could potentially be used for representing a complete MARC record in XML, as an extension schema to METS (Metadata Encoding and Transmission Standard), to represent metadata for OAI harvesting, for original resource description in XML syntax and for metadata in XML that may be packaged with an electronic resource. A crosswalk mapping of Dublin Core, MARC21 and Z39.50 attributes is illustrated here to make it clear to you.

Sl. No.	Name	Z39.50 USE Attributes Value	Dublin Core Elements	MARC21 Fields
1	DC-Title	1097	Title	245 $a
2	DC-Contributor	1098	Creator	100, 110, 111, 700, 710, 711 and 720
3	DC-Subject	1099	Subject	600, 610, 611, 630, 650, 653
4	DC-Description	1100	Description	500 –599 excluding 506, 530, 540, 546
5	DC-Publisher	1101	Publisher	260 $a and 260 $b
6	DC-OtherContributor	1106	Contributor	—
7	DC-Date	1102	Date.Issued	260 $c
8	DC-ResourceType	1103	Type	655
9	DC-Format	1107	Format	856 $q
10	DC-Resource Identifier	1104	Identifier	856 $u
11	DC-Source Identifier	1108	Source	786 $o $t
12	DC-Language	1105	Language	008/35-37, 041, 546
13	DC-Relation	1109	Relation	530, 760-787 $o $t
14	DC-Coverage	1110	Coverage	651, 752
15	DC-Rights Management	1111	Rights	506, 540

6.9 SUMMARY

Bibliographic description is an assemblage of bibliographic details, sufficient to identify and describe an item, normally placed beneath, or following, a heading in a catalogue or bibliography. Cataloguing traditions and practices have exerted a powerful influence on our view of bibliographic description although the creation of catalogue is only one of the many applications of bibliographic description. Bibliographic data are generated by various professional groups like bibliographers, cataloguers, abstractors & indexers, publishers & booksellers and appear in a wide range of products. From the mid-seventies, the use of ICT started in the processing and communication of bibliographic data. The result of such applications includes the emergence of large-scale databases, shared cataloguing programmes and proliferation of born-digital resources in Internet. ISBDs performed a great role in providing internationally accepted standards of bibliographic description for variety of bibliographic items. Bibliographic formats helped in the creation of library OPACs and other bibliographic databases, But ISBDs, cataloguing codes and bibliographic formats are not adequate enough for description of electronic resources. As a result, metadata schemas have been developed for describing digital resources in the past few years. This situation calls for a new set of principles of bibliographic description, which can deal with traditional bibliographic entities as well as online resources. IFLA's epoch-making model of bibliographic description, known as FRBR, has influenced greatly the formulation of new set of principles by Joint Steering Committee for Revision of AACR. User convenience is the highest principle of bibliographic description. It means that bibliographic description should support all the generic users tasks namely find, identify, select and obtain. Another important feature of bibliographic records management is cross-system searching and cross-format exchange of bibliographic data. Z39.50 and OAI/PMH have been developed to achieve interoperability and crosswalk amongst bibliographic systems.

6.10 ANSWERS TO SELF CHECK EXERCISES

1) Online environment offers tremendous possibilities of linking activities of various groups and organisations engaged in the areas of bibliographic data management such as libraries, archives, museums, publishers, booksellers and students, researchers and academicians. Therefore, the scope of bibliographic description should be extended to cover variety of materials; full range of physical media, all possible forms and formats, wide variety of applications and all the generic users tasks.

2) The formulation and design of ISBDs by IFLA is considered as the landmark in the development of international standards for bibliographic description. IFLA produced a vast array of standards to cover different types of bibliographic items such as monographs, serials, cartographic materials, electronic resources and others. ISBD(G) provides a general framework for application and use of specific ISBDs. Since 1971, ISBDs are acting as base format for national and international cataloguing codes and machine-readable bibliographic formats. ISBDs also influenced the development of domain specific metadata schemas for bibliographic data management.

3) Bibliographic relationships are different types of associations among bibliographic entities. Such relationships help to identify and locate related items from a catalogue or bibliographic database against search for bibliographical entities. In short, they support collocating functions. Modern research identified following types of bibliographic relationships: equivalence relationships (between original and copies or reproduction); derivative (between original and modified versions of it); descriptive (between original and evaluated

versions of it); whole-part (between an item and its part or whole); accompanying (between bibliographic item and accompanies of it); sequential (between items that continue or precede one another); and shared characteristics (common authorship, title, etc.)

4) A principle is a proposition that acts as the basis for deriving rules of procedure by the application of reasoning. The JSC for Revision of AACR, a body operating under Canadian Library Association, proposed a set of principles for bibliographic description on the basis of works of various stalwarts likes Ranganathan, Leibniz and Svenonius. These principles are grouped into two categories – general design principles and bibliographic description and access. The principles in the first group advocate that the general design of bibliographic format or catalogue code should be based on strong reasoning and should prefer the most economic alternative. The principles in the second group direct to include standard, normalised and bibliographically significant elements of description and access. They also prescribe to follow a common set of rules to achieve user convenience.

5) Users of bibliographic data exercise four generic tasks to reach to their object of interest. The highest principle of bibliographic description is user convenience. This core principle suggests covering those bibliographically significant data elements, which will satisfy all the generic user tasks, namely find, identify, select and obtain. Therefore, mapping of bibliographic data elements to the user tasks by indicating the degree of relevance or relative values of data elements will certainly measure the usefulness of any bibliographic standard, cataloguing code or bibliographic format.

6.11 KEYWORDS

Cataloguing Codes	:	A set of rules for preparing bibliographic records for use in catalogues and bibliographies. Generally, such codes concentrate on bibliographic description and choice and form of access points.
Descriptive Metadata	:	Metadata that describes a work for purposes of discovery and identification, such as creator, title, and subject.
FRBR	:	Functional Requirements for Bibliographic Records.
GARE	:	It stands for Guidelines for Authority and Reference Entries. It is a standard developed by IFLA to manage encoding of authority data and reference entries.
GILS	:	Global Information Locator Service.
GSARE	:	It is a standard to set Guidelines for Subject Authority and Reference Entries.
Metadata Harvesting	:	A technique for extracting metadata from individual repositories and collecting it in a central catalogue to facilitate search inter-operability.
Metadata Schema	:	A metadata element set and rules for using it.
ONIX	:	Online Information Exchange International.
UKOLN	:	United Kingdom Office for Library and Information Networking.
UBC	:	Universal Bibliographic Control Programme of IFLA.

UBCIM	:	Universal Bibliographic Control and International MARC Programme of IFLA.
UKOLN	:	United Kingdom Office for Library and Information Networking.
XML	:	Extensible Mark-up Language, a subset of SGML gaining currency in Web applications.
XOBIS	:	An Experimental Schema for Unifying Bibliographic and Authority Records.
Z39.50	:	A NISO and ISO standard protocol for cross-system search and retrieval. Officially, International Standard, ISO 23950: "Information Retrieval (Z39.50): Application Service Definition and Protocol Specification" and ANSI/NISO Z39.50-1995.

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