BLOCK 2

BIBLIOGRAPHIC DESCRIPTION

UNIT 6 PRINCIPLES AND EVOLUTION OF BIBLIOGRAPHIC DESCRIPTION

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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:

- understand need, purpose and meaning of bibliographic description;

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- identify the scope and areas of application of bibliographic descriptions of documents;
- trace the process of development of standards for bibliographic descriptions over the years;
- know the concepts of entities, attributes and their relationships in bibliographic universe and analyse principles, objectives and rules of bibliographic description; and
- 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.

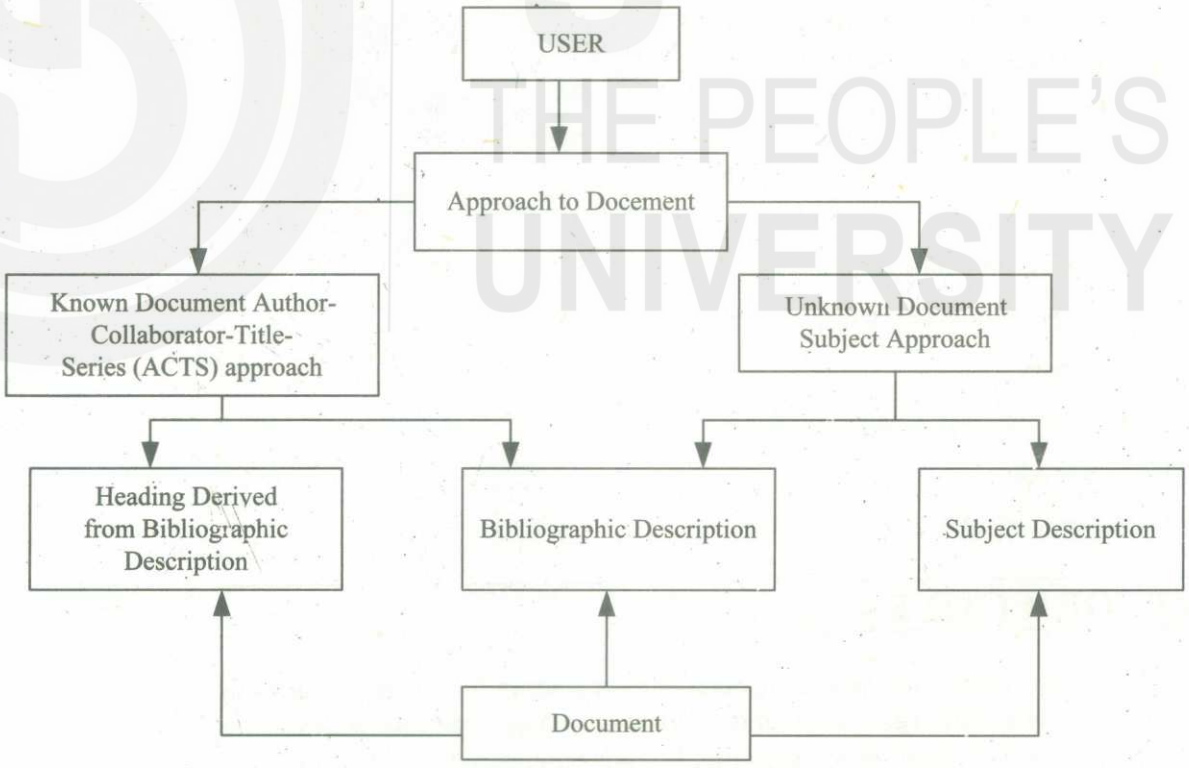


Fig. 6.1: Approach to access of document

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:

- Data that uniquely identify a particular document and distinguish it from others;
- Data, which reveal an association of two or more documents (e.g., common authorship, continuation or reprint); and
- 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:

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

- data indicating intellectual content (e.g., subject heading, abstract);
- data naming persons or bodies connected with the production of an item as a physical object (e.g., publisher, designer);
- data indicating form or nature of item (e.g., bibliography, documentary, novel);
- data indicating mode of expression or communication (e.g., verbal, pictorial);
- 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
- 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:

- authoritative national records and national bibliography;
- bibliographic records for international exchange;
- bibliographic records for cooperative systems;
- records for use in individual libraries;
- records for abstracting and indexing services;
- records for subject bibliographies/ authors' bibliographies;
- records for use in online information retrieval systems (including WWW); and
- 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:

- Descriptive data elements (as defined in the ISBDs);
- Data elements used in headings for persons, corporate bodies, titles and subjects. They function as filing devices or index entries;
- Data elements used to organise a file or file of records (such as classification numbers, abstracts, summaries or annotations); and
- 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:

- Transcribe
- Describe
- Make identifiable
- Link
- Manage
- 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. Bhattàcharya 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]:

- It may be a statement of fact;
- It may be accepted as true or helpful;
- It may form the basis for deriving another proposition with one or more of the attributes of the basis proposition;
- It may provide a basis for reasoning or evaluation; and
- 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.

- **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

- **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.

- **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.

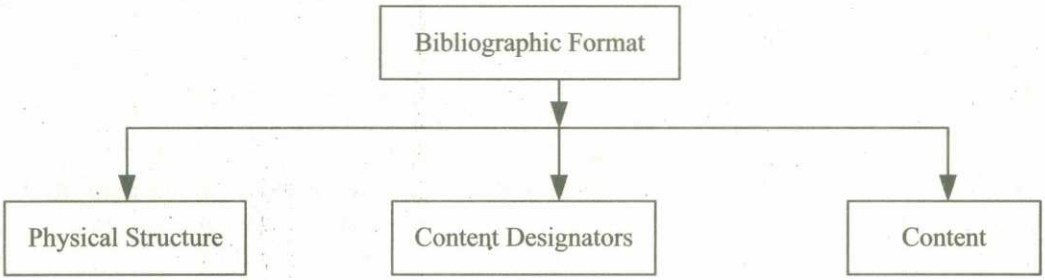


Fig. 6.2: Bibliographic format

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.

Table 6.3: FIELD 856

MARC21	UNIMARC
$a - Host name (R)	$a -Host name (R)
$b - Access numbe (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 Access (NR)
$g - Uniform Resource Name (R)	$f -Electronic name (R)
$h - Processor of request (NR)	$g -Uniform Resource Name (R)
$i - Instruction (R)	$h -Processor of request (NR)
$j - Bits per second (NR)	$i -Instruction (R)
$k - Password (NR)	$j -Bits per second (NR)
$l - Logon (NR)	$k -Password (NR)
$m - Contact for access assistance (R)	$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 sub-field $a (NR)
$p - Port (NR)	$o -Operating system (NR)
$q - Electronic format type (NR)	$p -Port (NR)
$r - Settings (NR)	$q -Electronic Format Type (NR)
$s - File size (R)	$r -Settings (NR)
$t - Terminal emulation (R)	$s -File size (R)
$u - Uniform Resource Locator (NR)	$t -Terminal emulation (R)
$v - Hours access method available (R)	$u -Uniform Resource Locator (R)
$w - Record control number (R)	$v -Hours access method available (R)
$x - Nonpublic note (R)	$w -Record control number (R)
$z - Public note (R)	$x -Nonpublic note (R)
$2 - Access method (NR)	$y -Access method (R)
$3 - Materials specified (NR)	$z -Public note (R)
$6 - Linkage (NR)	
$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.

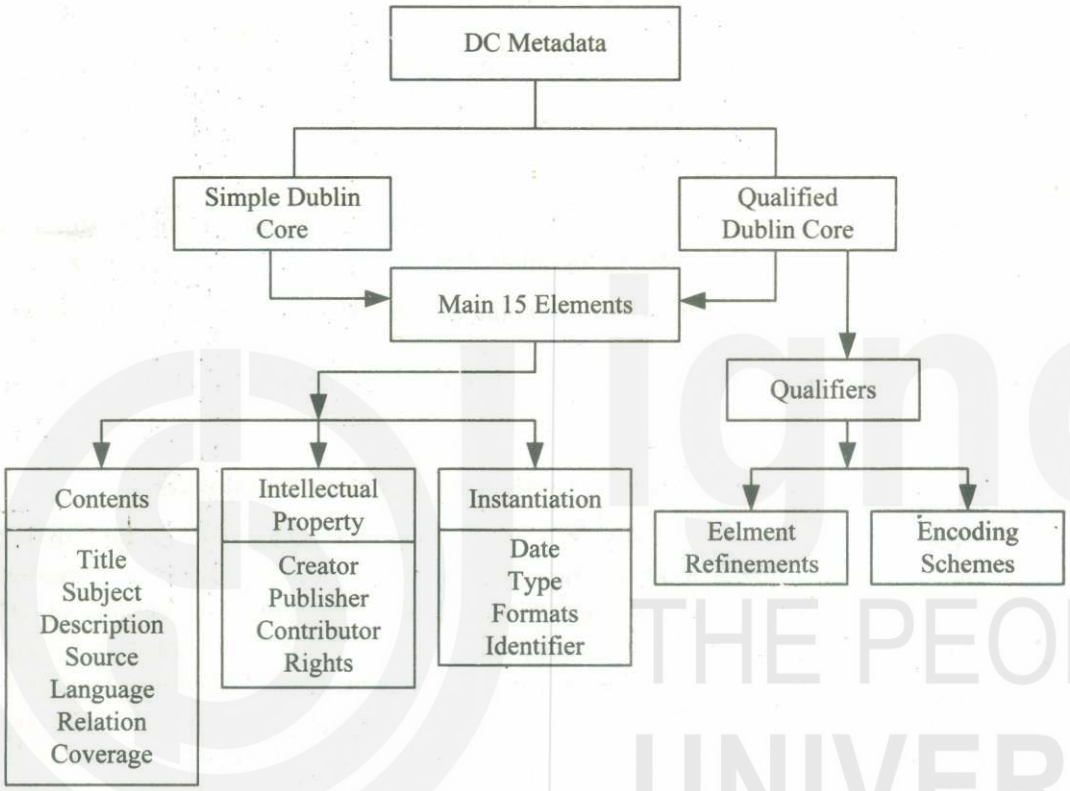


Fig. 6.3: Elements of Dublin Core

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:

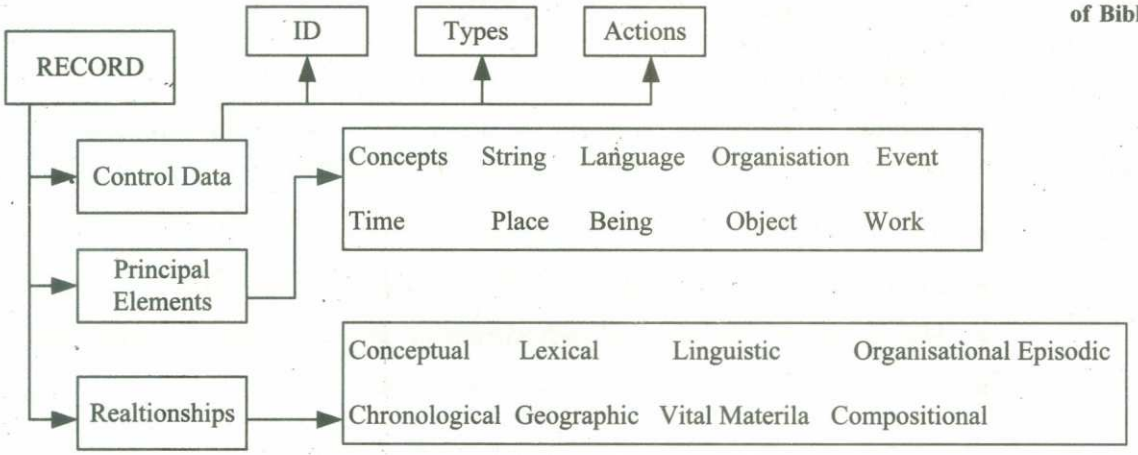


Fig. 6.4: XOBIS framework

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 ĕpoch-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:

- The first group includes the products of intellectual or artistic endeavour;
- The second group comprises those entities responsible for the intellectual or artistic content; and

- 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:

- *Work: A distinct intellectual or artistic creation;*
- *Expression: The intellectual or artistic realisation of a work ;*
- *Manifestation: The physical embodiment of an expression of a work; and*
- *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:

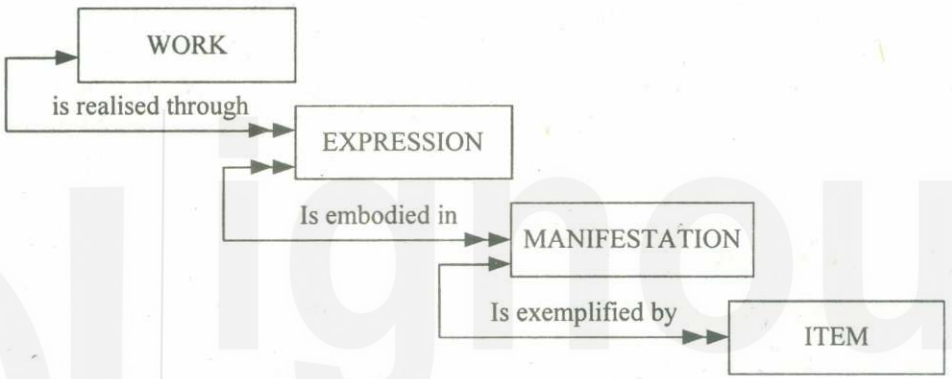


Fig. 6.5: Group I Entities and Primary Relationships
(Reproduced from FRBR document)

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.

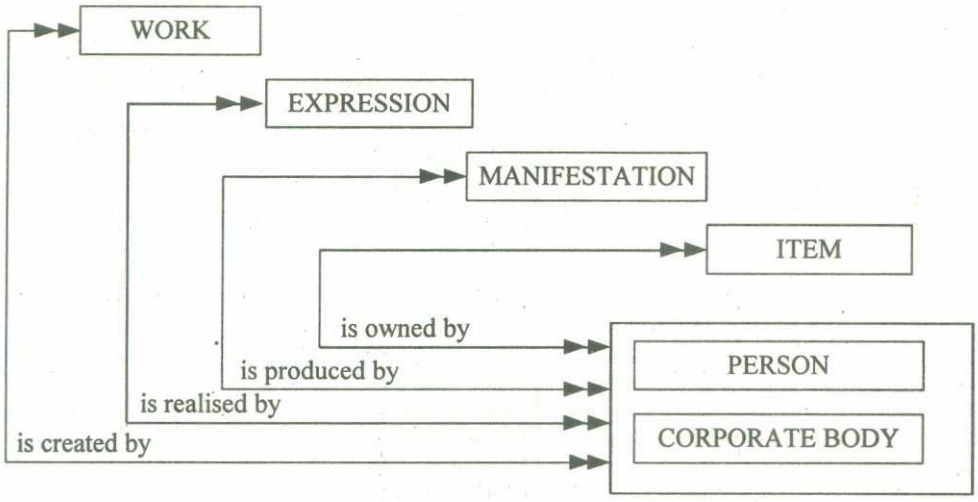


Fig. 6.6: Group 2 Entities and 'Responsibility' Relationships
(Reproduced from FRBR document)

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*.

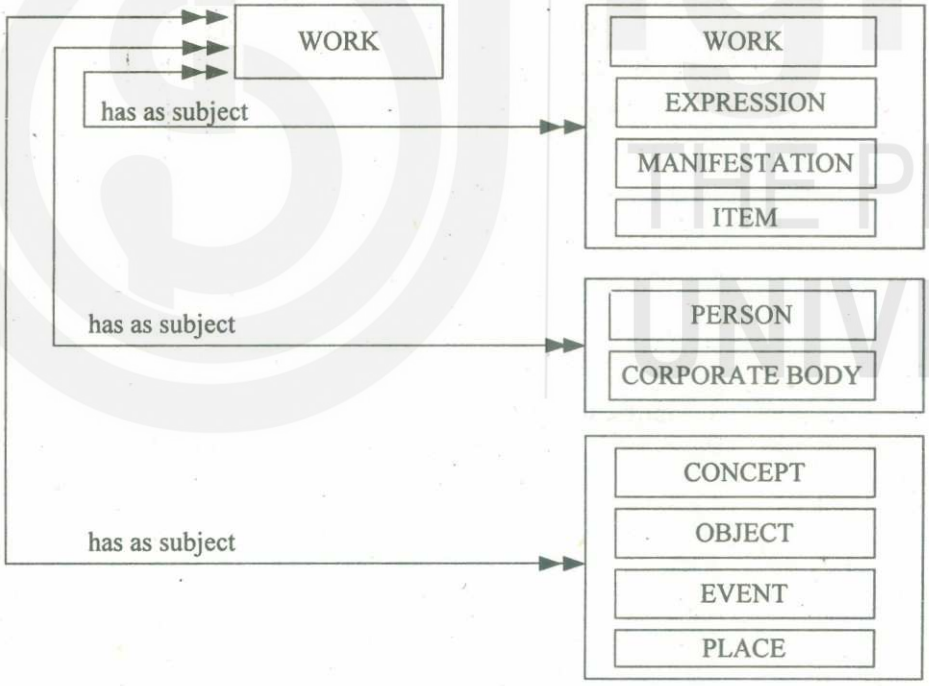


Fig. 6.7: Group 3 Entities and 'Subject' Relationships
(Reproduced from FRBR document)

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:

Entities (Group I)

	Work	Expression	Manifestation	Item
ATTRIBUTES	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 *object*	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:

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

- *Vertical* – the hierarchical relationship of the whole to its parts and the parts to a whole
- *Horizontal* – the relationship between versions of an item in different languages, formats, media, etc.
- *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:

- <*realized_through*> relationship connecting *work* and *expression;*
- <*embodied_in*> relationship connecting *expression* and *manifestation; and*
- <*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]:

- <*created_by*> that links person/corporate body to *work*;
- <*realized_by*> that links person/corporate body to *expression;*
- <*produced_by*> that links person/corporate body to *manifestation; and*
- <*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:

- *Work-to-Work relationships*

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

- *Expression-to-Expression relationships*

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

- *Manifestation-to-Manifestation relationships*

  Reproduction, Alternate and Whole/Part

- *Item-to-Item relationships*

  Reconfiguration, Reproduction and Whole/Part

- *Expression-to-Work relationships*

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

- *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:

- They can guide the development of cataloguing codes;
- They can be applied to bibliographic and authority records and current library catalogues;
- The principles can also be applied to bibliographies and data files created by libraries, archives, museums, and other communities;
- They aim to provide a consistent approach to descriptive and subject cataloguing of bibliographic resources of all kinds; and
- 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
- Expression
- Manifestation
- Item
- Person
- Family
- Corporate Body
- Concept
- Object
- Event
- Place

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:

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

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

- the authorized name or title of the entity; and
- 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:

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

- parallel titles, caption titles, etc.;
- uniform title of the series;
- bibliographic record identifiers;
- language;
- country of publication; and
- physical medium.

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

- names or titles of related entities; and
- 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:

- 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)
- 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)
- 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)
- 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	Moderate	Moderate	Moderate	Moderate
	Alternate	Low	Low	Low	Low
Manifestations	Component	—	Low	Low	—
	Integral part	—	—	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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UNIT 7 RULES FOR BIBLIOGRAPHIC DESCRIPTION

Structure

7.0 Objectives

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7.2.2 Rules for Descriptive Cataloguing in the Library of Congress

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7.0 OBJECTIVES

In the previous Unit we have acquainted you with the history, evolution, and principles of bibliographic description. In this Unit we will be discussing various rules for bibliographic description of different types of documents including electronic documents, which have been developed by various international bodies.

After reading this Unit, you will be able to:

- analyse the need for developing norms for bibliographic description;
- get an idea with regard to national and international level contributions in formulating rules for bibliographic description;
- explain the ISBD and identify the rules for bibliographic description;
- guide professionals in cataloguing of documents especially electronic resources, internet resources; and
- design the code for bibliographic description.

7.1 INTRODUCTION

The generation of new information by research, information analysis and

consolidation and by other analogous activities has paved the way for information explosion. The primary responsibility of an information scientist is to provide right information to the right user at the right time. But the growth of information in a large scale often prevents the easy access to the right information by users due to the barrier of large number and complexities including the phenomenon of small piece information lying buried in a vast mass of information. This may result in unutilisation of information unless they are properly identified, processed and organised. Information has an organised, purposeful structure created by information scientists who use a variety of standards, systems and rules endeavouring to bring order out of chaos. With the explosion of electronic data the obvious need arises to organise it into required access points. Cataloguing and classification which were used to perform this job have recently undergone thorough review and changes. Through a brief examination of the history of cataloguing and the foundational structure underlying information organisation, we will be able to move confidently forward with new skills and know-how. Standardisation of Bibliographic Description Groups have been working ahead of the curve to anticipate various types of needs related to organising, retrieving, archiving and disseminating of all types of information.

We have come across a long way from the concept of book to document and to information. According to S R Ranganathan, a book is a conventional document and document is embodiment of expressed thought. To expedite information service, bibliographical description of library materials and their proper organisation is essential. Bibliographical description is information about the sources of information. The five laws of information science based on S R Ranganathan's thinking also supports bibliographic description to help promotion of the use of information (Law 1), by helping every information-user to find his/her information (Law 2), by finding information-users for every piece of information (Law 3), by providing easy and instant access to save the time of the information-user (Law 4), and by overcoming all the barriers mostly created by the continuous growth of the universe of information (Law 5). Now-a-days library holdings belong to heterogeneous category with both hard copies and soft copies of different documents. These are books, monographs, periodicals, serials (e.g., Annuals, year books, gazettes, trade catalogues, etc.), electronic resources (e.g., digital form of text, graphics, images, maps, animated image, music, sounds, computer programs, internet resources, etc.). Bibliographical description more or less of either type requires authorship description, contents description, and physical description. Gradually it demands more and more specific and descriptive element for effective information services. To keep consistencies among descriptions for already existing and newly added documents, standardisation of rules and guidelines for preparing bibliographic description is essential for obvious reasons.

7.1.1 Bibliographic Description: Its Origin

You have already studied evolution of bibliographic description in Unit 6 of this course. Most of the library professionals believe that it is Sir Anthony Panizzi who brought the concept of today's bibliographic description into the picture through his 'Rules for Compilation of the Catalogue' comprising of 91 rules approved by the British Museum for its catalogue in 1839 and published in 1841. Panizzi advocated bringing together all manifestations (i.e., intellectual information) of a particular work through a single main-entry point so that users would be able to see all relationships of a particular title. This was in contrast of the museum's normal practice of publishing a catalogue as an alphabetised inventory list ordered by author, which followed ancient practices. While this pivotal event is considered as the ideological foundation of cataloguing, it still continues to be modified. But using Panizzi's rules, the philosophy of bringing together all manifestations of a single work, would have been impossibly time-consuming and costly due to the vastness and ever-growing nature of document production.

In 1852, Charles C. Jewett, one of the followers of Panizzi wrote the first code of cataloguing rules in the United States with the grand idea of developing a large union catalogue with printed cards to be shared by libraries. In 1876, the American Library Association was established; in the same year Charles Ammi Cutter published 'Rules for a Dictionary Catalog', possibly the most comprehensive set of rules produced by any individual for the first time. Cutter's rules set out the first principles of cataloguing, and included a statement of the objectives of the catalogue. The code covered rules for dictionary catalogues including both entry (for authors, titles, subjects, and form headings), and description. In 1883, the American Library Association (ALA) published cataloguing rules for the first time in its history under the title "Condensed Rules for an Author and Title Catalog" in the Library Journal. On the other hand, in UK 'Cataloguing Rules' of the Library Association (LA) were published in 1893. In 1900 ALA appointed a committee led by J.C.M. Hanson of the Library of Congress to revise the condensed rules of it. The main aim was to have an agreement of the ALA rules and the rules of the Library of Congress due to the upcoming introduction of Library of Congress printed cataloguing cards. In 1902 an advance edition of the revised ALA rules was produced by the Library of Congress. In 1902 a Committee was formed in UK to revise the cataloguing rules of LA, and in its work drew heavily on the British Museum rules, and the advance edition of the revised ALA rules. Thus, these two countries – USA and UK made many efforts in developing rules for bibliographic description simultaneously and separately but more interestingly being influenced by each other.

Self Check Exercises

1) Write down the impact of the Five Laws in cataloguing.

2) Who had designed the most comprehensive set of rules for cataloguing?

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

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7.2 DEVELOPMENT OF ANGLO-AMERICAN CODE

In 1904 the fourth edition of Cutter's rules was published. The Library of Congress made efforts to bring uniformity between the revised ALA rules and Cutter's rules. In its 1904 meeting, the Library Association, UK finalised the revision of the LA rules. In the light of the similar work being done on both sides of the Atlantic, Melvil Dewey suggested that there should be co-operation to produce an Anglo-American code. In 1904, the American Library Association and the Library Association formally agreed upon the co-operation and collective work through consultation by correspondences. The first international cataloguing code was published in 1908, sometimes referred to as Joint Code, in an American edition and a British edition. Broadly, both the editions contained Cataloguing Rules, Author & Title entries consisted of 174 rules covering both entry and headings for authors and titles, and description. Areas of disagreement between the two editions centered on authors and publications that changed names or titles. In both editions disagreements were explained either in a note or by printing two versions of the rule. Library of Congress supplementary rules were also included where ever necessary.

7.2.1 ALA Cataloguing Rules

After a long gap, the American Library Association and the Library Association decided to revise the 1908 rules of American and British edition. The two bodies kept on cooperating with each other until 1939. In 1941, the American Library Association published a preliminary second edition of the American edition which contained 324 rules in two parts: Part I: Entry and Heading; Part II: Description of book; as well as various appendices, including one on 'authority cards'. This edition was again criticised for being too detailed and complex, and in 1949 ALA Cataloging Rules for Author and Title Entries was published which had only rules for entry and heading.

7.2.2 Rules for Descriptive Cataloguing in the Library of Congress

The main demerit of the 1949 ALA code was that it did not describe the rules for descriptive cataloguing. So the Library of Congress took responsibility for documenting rules of descriptive cataloguing. Because by that time the Library of Congress catalogue cards service had been started to be widely used by the libraries in USA and there was a growing interest to know the rules used by the Library of Congress to prepare cards. As a result 'Rules for Descriptive Cataloging in the Library of Congress' was published in 1949, which was adopted by the American Library Association. The rules for published monographs, serials, and some non-book materials were included. Also supplementary rules for additional non-book formats were subsequently issued from time-to-time.

7.2.3 Anglo-American Cataloguing Rules (AACR)

Seymour Lubetzky of the Library of Congress had been assigned to analyze the 1949 ALA code in 1951 by the American Library Association. Simultaneously, the Library Association was involved in revision work of the 1949 code. In 1953 Lubetzky in his report 'Cataloging Rules and Principles' advocated for a movement towards a principle-based code rather than a case-based one. In 1956 Lubetzky became the editor of the revised code, and in 1960 the draft of 'Code of Cataloging Rules: Author and Title Entry' was prepared. In 1961, an International Conference on Cataloguing Principles was held in Paris to examine the choice and form of headings in author/title catalogues. The recommendations of the conference were known as the 'Paris Principles' which contained a statement of 12 principles. In 1962 C Sumner Spalding of the Library of Congress became the new editor of the code. The American Library Association and Library Association continued their co-operation in collective work by exchanging minutes, working papers, and attending each other's meetings. In addition, the Library of Congress assisted in revision of the descriptive cataloguing rules, and the Canadian Library Association was involved in reviewing drafts of the rules. In 1967 two versions of the Anglo-American Cataloguing Rules (AACR) were published under the heading, a North American text and a British text.

Both texts of AACR contained three parts:

Part I: Entry and Heading: Based on the Paris Principles

Part II: Description: Consisted of revised rules.

Part III: Non-book materials: Contained rules for both entry and description of non-book materials.

In addition, each text contained an appendix listing rules for entry and heading that differed in the other version. In 1966 there was a 'memorandum of agreement' between ALA and LA for continued revision of AACR. The Library of Congress and the Canadian Library Association were also formally represented in the revision process. Amendments and changes from 1969-1975 were published in

'Anglo-American Cataloguing Rules Amendment Bulletin' by the Library Association for the British text and in 'Cataloguing Service' by the Library of Congress for the North American text.

Self Check Exercises

3) How many principles are accepted as Paris principle ?

4) What are the parts of North American/ British editions AACR ?

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

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7.3 THE INTERNATIONAL STANDARD BIBLIOGRAPHIC DESCRIPTION (ISBD)

Following the differences in British and North American Texts, a need for standardisation of the form and content of bibliographic description was felt world over. At the International Meeting of Cataloguing Experts in Copenhagen in 1969, a program of International Standard Bibliographic Description (ISBD) was developed. The objective was to identify components in a bibliographic description, their preferred order, and the necessary punctuation.

7.3.1 Genesis of ISBDs

A standardisation of the form and content of bibliographic description could be established by the IFLA Committee on Cataloguing following the above meeting at Copenhagen in 1969. The outcome was the publication of a set of its recommendations in 1971 known as the International Standard Bibliographic Description for Monographic [ISBD(M)] publication, the first member of the ISBDs family. Since its publication, the ISBD(M) got so popularity that this text had been adopted by a good number of national bibliographies. Several comments were received from those who had made use of it. The ISBD(M) Revision Meeting was convened to produce a revised text by the IFLA Committee on Cataloguing in August, 1973 at Grenoble immediately before the IFLA General Council Meeting. Following this meeting the 'First standard edition' of the ISBD(M) was published in 1974.

In 1974, AACR was revised in line with ISBD(M) to include rules for bibliographic description for printed monographs and reproductions of printed monographs including microform reproductions. Immediately after that the Joint Steering Committee for Revision of the Anglo-American Cataloguing Rules (AACR) felt for a 'General International Standard Bibliographic Description' suitable for all types of library materials and proposed the same to the IFLA Committee on Cataloguing in 1975. Thus, the ISBD(G) was published in 1977. Other ISBDs viz. ISBD(S) for serials, ISBD(NBM) for non book materials (including audio-visual materials) and ISBD(CM) for cartographic materials were also developed simultaneously, leading to the inclusion of rules for Audio-Visual & Special Instructional Materials and Sound Recordings in the subsequent revisions of AACR. Again the ISBD(M) was revised in the line of ISBD(G), and the first standard revised edition of the ISBD(M) was published in 1978.

The Standing Committee of the IFLA Section on Cataloguing formed an ISBD Review Committee to look into the revision process of ISBDs following the recommendation of the IFLA World Congress, Brussels in August 1977. It was resolved that all ISBDs would be fixed to a life of five years, after which revision would be considered for all the texts, or for particular texts. In the revision process the following major ideas gathered through practical experience were identified as necessary for further improvement: *clarify wording and achieve consistency of definitions and stipulations; make the ISBDs hospitable to non-roman scripts; review the use of the equals sign; include more and better examples*. Subsequently the Review Committee met to review and revise the then existing four ISBDs viz. ISBD(CM), ISBD(NBM), ISBD(S) (now it is called as ISBD(CR) for Continuing Resources) and ISBD(M) including preparation of a new ISBD(CF) for Computer Files (at present it is known as ISBD(ER) for Electronic Resources), ISBD(A) for Annotated texts in August 1981 in London. However, this revision of ISBD(G) was not intended to produce rules for general use of cataloguers, but to identify the framework and essential features of the specialised ISBDs with more detailed stipulations and instructions and to provide a point of reference for compilers of cataloguing codes.

7.3.2 ISBD(G)

ISBD(G) lists all the elements which are required to describe and identify all types of material which are likely to appear in library collections, assigns an order to those elements of description, and specifies a system of punctuation for the description. It is not intended to be used by a cataloguer in a library or national bibliographic agency directly to describe any library material. Rather, it forms the basis of the specialized ISBDs which have been or are being prepared for special categories of materials. Also it forms the basis for future revision of existing ISBD texts. It is anticipated that national or international committees responsible for preparing cataloguing rules (or codes) will use the ISBD(G) as the basis for their rules on description of library materials, either through the use of specialised ISBDs or directly in the case of materials not covered by ISBDs. Thus, the ISBD(G) is concerned with the bibliographic description for records either in computer-readable or printed form of both national bibliographic agencies and/or other cataloguing agencies. *In the case of bibliographic data stored in a computer-readable medium, the ISBDs prescribe display conventions for eye-readable output, such as online displays or printed products, rather than the data structure used within the computer-readable medium itself.*

Purpose and Use

The main objectives of ISBDs are:

i) making records interchangeable – this means records produced in one country can be easily accepted in library catalogues or other bibliographic lists in any other country;

ii) interpretation of records – this means records produced for users of one language can be interpreted by users of other languages so that language barriers can overcome; and

iii) conversion of bibliographic records – this means conversion to machine-readable form to be easier.

Ultimately, these goals are achieved through providing the stipulations for compatible descriptive cataloguing in order to aid the international exchange of bibliographic records among the library and information communities world over. The stipulations comprise of the identification of elements for bibliographic description, their sequence and positions in presentation and the preceded punctuation as their identification mark. Some suggestions are made as guidelines

may be considered by the user of ISBDs – the ISBDs provide stipulations to cover the maximum amount of descriptive information required in a range of different bibliographic activities, and therefore include elements which are essential to one or more of those activities but not necessarily to all. The national bibliographic agencies of different countries should take up the responsibility of creating the bibliographic record for each library material issued in that country, should prepare the bibliographic description containing all the mandatory elements as suggested in the relevant ISBD. Other cataloguing organisations can have a wider choice of selecting ISBD elements for inclusion in their own records, provided that the elements selected are given in the prescribed order and transcribed with the prescribed punctuation according to the relevant ISBD.

The ISBD stipulations do not include the factors which make up a complete bibliographic record, such as headings, subject information, uniform titles, filing devices and tracings. It is recommended that such factors are normally covered by providing rules in cataloguing codes.

Self Check Exercises

5) What are ISBDs for different documents?

6) What are the objectives ISBD(G)?

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

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7.4 IMPACT OF ISBD ON CATALOGUE CODES

Following the development of ISBDs, AACR is revised with inclusion of new chapters leading to the specialised ISBDs.

7.4.1 Anglo-American Cataloguing Rules, Second Edition (AACR2)

To merge the North American and British texts into a single version, the Joint Steering Committee for the Revision of AACR (JSC) was established, with membership from the American Library Association, the British Library, the Canadian Library Association (represented by the Canadian Committee on Cataloguing), the Library Association, and the Library of Congress. The 'Anglo-American Cataloguing Rules, Second edition' (AACR2) was published in one version in 1978 under the editorship of Michael Gorman of the British Library, and Paul W. Winkler of the Library of Congress. AACR2, 1978 is divided in two parts:

Part I Description

- Based on the ISBD(G) framework.
- Included a general chapter (Chapter 1), and chapters for individual formats, including new chapters for machine-readable data files (Chapter 9) and three-dimensional artifacts and regalia (Chapter 10).
- The rules for non-book materials were based on alternative codes that were published in the 1970s.

– Rules were brought more closely into line with the Paris Principles.

Different national bibliographic agencies/libraries like the Library of Congress, the National Library of Canada, the British Library, and the Australian National Library started using AACR2. In 1981 an abridged version, the *Concise AACR2* was published. Subsequent revisions to AACR2 were adopted in 1982, 1983 (published 1984), and 1985 (published 1986). In 1987 revision, the chapter of machine readable data files was renamed as 'Computer Files'. The Australian Committee on Cataloguing (ACOC) became a full JSC member since 1986 though they used to send their representatives since 1981. Thus, the AACR2 1988 revision was published incorporating the 1982, 1983, 1985 and 1987 revisions plus subsequent unpublished revisions in both book and loose-leaf format. After a gap of five years, one set of amendments was published in 1993, but a few revisions were approved in between 1992 and 1996. The AACR2 1998 revision was published in book and CDROM format. Amendments packages were published in 1999 and 2001.

7.4.1.1 AACR2 Revision 2002

The emergence of the Internet and the increasing use and exchange of electronic resources have had a profound impact on the environment where the code operates. So the needs and expectations of users have also significantly changed to cope with the new environment. Realising the situation, the Joint Steering Committee (JSC) for Revision of AACR has embarked on an ambitious program of investigation and reform beginning with the *International Conference on the Principles and Future Development of AACR* held in Toronto in 1997. The JSC met in six meetings within 2001 to consider outstanding contribution of different experts for further improvement of the code. Ultimately the 2002 revision of the second edition of the Anglo American Cataloguing Rules (AACR2R 2002) is published only in loose-leaf format for updating with an expectation that updates to the rules to be released annually as changes to the rules are occurring more frequently than in the past and are often substantial. This 2002 revision incorporates those amendments of 1999 and 2001 including major revision of the computer files chapter under the new name 'Electronic Resources', Serials chapter under the new name 'Continuing Resources' and Cartographic Materials chapter.

Self Check Exercises

7) Who were the editors of AACR2 1978?

8) What are the parts of AACR2 1978?

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

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7.4.1.2 General Rules for Bibliographic Description

In AACR2 2002, many rules are designed for use in the construction of catalogues and other lists in libraries of all sizes. The 2002 revision of the second edition of the Anglo American Cataloguing Rules (AACR2 2002) must be referred for details. These rules cover the description of and the provision of access points for all library materials commonly collected at present time. The integrated

structure of the text makes the general rules usable as a basis of cataloguing uncommonly collected materials of all kinds and library materials yet unknown.

The rules follow the sequence of cataloguers' operations in most present-day libraries and bibliographic agencies firstly with the provision of information describing the item being catalogued and secondly, with the determination and establishment of heading or access points under which the descriptive information is to be presented to the catalogue user and with the making of references to those headings. The bibliographic description according to ISBD(G) is provided in the Appendix I of this Unit.

A few selected rules in brief are discussed here, but for better understanding the AACR2R 2002 should be consulted.

a) **Levels of Bibliographic Description**

The bibliographic description is divided into eight areas viz. (1) Title and statement of responsibility, (2) Edition, (3) Material(or type of publication) specific details, (4) Publication distribution, etc., (5) Physical description, (6) Series, (7) Note, (8) Standard number and terms of availability. Each of theses areas are again consists of a number of elements as set out in the rules. Some these elements are considered as optional. Hence, three levels of description is stated in AACR with an open option to choice any one on the basis of the purpose of the catalogue.

First Level:

Title proper / first statement of responsibility, if different from main entry heading in form of number or if there is no main entry heading. – Edition statement. – Material (or type of publication) specific details. – First publisher, etc., date of publication, etc. – Extent of item. – Note(s) . – Standard number.

Second Level:

Title proper [general material designation] = parallel title : other title information / first statement of responsibility ; each subsequent statement of responsibility. – Edition statement / first statement of responsibility relating to the edition. – Material (or type of publication) specific details. – First place of publication, etc. : first publisher, etc., date of publication, etc. – Extent of item : other physical details ; dimensions. – (Title proper of series / statement of responsibility relating to series, ISSN of series ; numbering within the series. Title of sub series, ISSN of sub series ; numbering within sub series) . – Note(s). – Standard number.

Third Level:

All the elements set out in the rules those are applicable to the item being described.

b) **Rule for Titles**

i) ***Title proper:*** The rule directs to transcribe the title proper from the chief source of information exactly as to wording, order, and spelling, but not necessarily as to punctuation and capitalisation. Separate guidelines for capitalisation as enlisted need to be implemented. For example,

Five laws of library science / S R Ranganathan

An alternative title is part of the title proper. In the entry, the title proper is written first, followed by the word 'or' and then the alternative title will follow. The word 'or' is preceded and succeeded by commas. For example,

Hermes, or, The future of the chemistry

A good number of rules relating to transcribing title proper are stated which are considered very useful in bibliographic description.

ii) ***Parallel title:*** Generally a parallel title is the title proper in another language and/or script recorded in the title and statement of responsibility area. A parallel title collected from the chief source of information is to be transcribed immediately after the title proper and to be preceded by an equal (=) sign as shown in the second level of description.

iii) ***Other title information:*** Other title information implies subtitle or explanatory title. The other title information is to be transcribed after the title proper or the parallel title, if any being preceded by a colon (:). For example,

Intranets and push technology : creating an information-sharing environment

c) **Rules for Statements of Responsibility**

Many rules regarding the statements of responsibility is discussed in detail with different possibilities. The chief source of information is title page, but if it is collected from the source other than the chief source of information then it is to be enclosed within square brackets. The statements of responsibility are to be transcribed in the same form and sequence as they appear immediately after the title proper and/or the parallel title and other title information, if any, preceded by space-forward slash-space (/). For more than three persons or corporate bodies, the first one is taken followed by an omission mark (...) and the term 'et al' within square brackets i.e., ...[et al]. Each subsequent statement of responsibility will be separated by a space-semicolon-space (;). All statement related to the position, degrees or religious titles are to be omitted except the titles of nobility.

Example:

Prolegomena to library classification / by S R Ranganathan ; assisted by M A Gopinath

d) **Rule for Edition Statements**

The edition area consists of edition statement, statement relating to named revision of an edition, statement of responsibility relating to edition and the subsequent edition statement. This area is preceded by a full stop-space-dash-space (. –). An edition statement as found in the chief source of information is transcribed with standard abbreviations and numerals prescribed in the appendices of AACR. The statement relating to named revision of an edition, if any, is preceded by a comma and the statement of responsibility relating to edition is preceded by a space-forward slash-space (/) while each subsequent edition statement is precede by a space-semicolon-space (;).

Example:

Colon classification / by S R Ranganathan. – 7th ed. / revised and edited by M A Gopinath

e) **Rule for Material (or type of publication) Specific Details**

The Material (or type of publication) specific details area is preceded by a full stop-space-dash-space (. –). This area is used in the description of cartographic materials (Chapter 3), music (Chapter 5), electronic resources (Chapter 9), continuing resources (Chapter 12) and, in some circumstances, microforms (Chapter 11) as prescribed in the AACR2 2002.The contents of this area are different for different types of items, so the AACR2 2002 must be referred to for the respective contents and internal prescribed punctuation.

f) Rule for Publication Distribution

This area mainly consists of the place of publication, distribution; name of publisher, distributors; date of publication, distribution, etc. and the details of manufacturer (place, name, date). Previously this area used to be known as imprint. Like other areas this area is also preceded by a full stop-space-dash-space (. –). The place of publication is to be transcribed in the form and grammatical case in which it appears in the chief source of information including the name of country, state or province if it is considered necessary for identification, after the name of place separated by a comma. If the work is published from more than one place or if the chief source of information indicates that the work is published by more than one publisher, the first place and the first publisher name are to be transcribed. The publisher name is to be written in the shortest form in which it can be identified internationally, following the place(s) name to which it relates to separated by a space-colon-space (:). After the publisher name, the date of publication, which is generally the year in which the work is published, is recorded in Arabic numerals being preceded by a comma. The copyright mark © is to be preceded for the copyright year. For example,

> Colon classification / by S R Ranganathan. – 7th ed. / revised and edited by M A Gopinath. – Bangalore : Sarada Ranganathan Endowment for Library Science : UBS Publishers' Distributors [distributor], 1987.

g) Rule for Physical Description

Earlier the term collation is used to denote the physical description area. As a general practice, the physical description area is started with a new paragraph from the second indentation of the card. If this area is not started with the new paragraph, then it will be preceded by a full stop-space-dash-space (. –). This area consists of the number of pages of a single volume work, or the number of volumes and pages, information about the illustration, size, accompanying materials if any, and series note in that order. At first the total pagination of the item is recorded including preliminary numbered/unnumbered pages, if any, separated by commas. In case of a work without numbered pages, pages are counted and placed within square brackets. If the work is multi-volume one, the volume number is recorded first. Information about the illustration like charts, forms, genealogical tables, maps, music or portraits are recorded with the abbreviations 'ill.' preceded by a colon (:) and each particular kind of illustration, if any, separated by a semicolon (;). The size (dimension) of the work is recorded in whole centimeter and preceded by a semicolon (;). For example,

> [10], 332p. : ill. ; maps ; 31 cm.

h) Rule for Series

The series statement is recorded within the parentheses '( )' immediately after the physical description, preceded by a full stop-space-dash-space (. –). The series statement consists of title proper of the series, statement of responsibility relating to the series, numbering of the series, sub series and more than one series statement and more than one series number. The statement of responsibility relating to the series is preceded by a space-forward slash-space (/) and its numbering is preceded by semicolon. In case of the work belongs to the more than one series, the series should be recorded in the specific to general sequence within their own set of parentheses. For example,

> – (Ranganathan Series in library science; 20)

i) Rule for Notes

Each note may be preceded by a full stop-space-dash-space (. –) or started with new paragraph separately. Notes are given when it is found needed to

explain or supplement information which cannot be included in the other areas. The sequence of information in the note section will be same as that of different areas of description. For example,

For Graduate students only

Library has

Library lacks, etc.

j) Rule for Standard Numbers

The standard number section must be preceded by a full stop-space-dash-space (. –) or started with new paragraph. After the standard number a brief qualification is to be recorded when the work bears more than one standard number. For example,

ISBN 81-85273-16-2

Few rules related to bibliographic description are discussed and the following are the rules related to the entry and heading.

k) Choice of Access Point

There are rules for determining the choice of access points (headings) under which a bibliographic description is entered. During Panizzi's time, he declared the author entry as main entry. But Cutter formulated the definition of 'Main Entry' for the first time. "Main entry, the full or principal entry; usually is the author entry. In full it consists of the author's name, the title, and the imprint. In a printed catalogue, it is distinguished from the added entries by having the full contents, which may be abridged or omitted in the subject entry, and all the bibliographical notes, most of which are left out in the added entry. In a printed card catalogue the entries are of course all alike. Main entry in that case means the one on which is given, often on the back of the card, but some times by checks on the face, a list of all the other entries of the book (author, title, subject, reference, and analytical)."But in future definitions the concept like 'it is usually the author entry' is dropped considering the fact that the main ness of the entry has always been recognised on the basis of the fullness of the entry. Actually, the need for fullness of an entry flows from the consideration of the majority approach.

With the introduction of computerised system, the concept of equal value access point is now considered to be more useful approach than that of main entry. However, the choice of a main heading remains important in manual systems and in single-entry listings (i.e., bibliography). Of all possible access points, one is considered as main entry heading under which one main entry is prepared for each library material and this is supplemented by added entries with other access points as added entry headings. The use of alternative heading entries (i.e., sets of equal entries for each item described) is not embodied in the rules. However, it is recognised that many libraries do not distinguish between the main entry and other entries. It is suggested in AACR2 2002 that such libraries should use 'Continuing Resources' as guidance in determining the entries required in particular instances. Further it is suggested to all libraries to distinguish the main entry from others when (i) making a single entry listing or (ii) making a single citation for a work (as required for entries for related works and for some subject entries). In addition the concept of main entry is considered to be useful in assigning uniform titles and in prompting the standardisation of bibliographic citation.

In cases of works of personal authorship/corporate body, it is recommended that the work may be entered under the heading for the principal personal author (mostly name appeared first) or under the heading of the appropriate corporate

body. If both of them are either unknown or untraceable or produced under editorial direction, the work may be entered under title proper or uniform title. Various cases, viz., changes in title proper, changes of persons/bodies responsible for a work of monographs, serials, etc. are considered and proper rules are framed for determining the choice of access points under which the bibliographical description of such library materials may be entered in the catalogue.

Self Check Exercise

9) What is the common structure in second level of 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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7.5 BIBLIOGRAPHIC DESCRIPTION FOR NON-PRINT MATERIALS

The non-book materials (NBM) have special features which are different from books. Many non-book materials are machine dependent meaning thereby for consultation of the material or identification of sources of information for the description, equipments are required. The description of such non-book materials requires full description of media, creators and other elements. In contrast, for books many of the information can be had by directly browsing the books on the shelves. The non-book materials are available in varieties of formats and media, such as:

Medium	Format
Films	Filmstrip
Magnetic Tapes	Slides
Electronic Media	Cine films
Microforms	Microcards
Sound Tapes	Microfiches
Videos	Micro opaque
Plastic Materials	Microfilms
Cartographic Materials	Videocassettes
	Videotapes
	Audiocassettes
	Audiotapes
	Paintings
	Charts
	Records

The bibliographic description of NBM are similar to books and other materials. The main structure of an entry comprises of heading and body of the entry (description). The major area which creates problem in identification of different elements of description of NBM are author, title, physical description and subject.

The sources of information for these elements are the material itself, accompanying text and other sources such as informal guides. An example of bibliographic description for a non-book material is given below. Bibliographic description for electronic resources has been discussed in the following Section.

Table 7.1: AACR2: General Rules for the Description of Library Materials, together with a Worked-out Example

1.1	Title and statement of responsibility area	
	B. Title Proper	The librarian
	C. General material designation	(graphic)
	E. Other title information	Personality plus
	F. Statement of responsibility	compile by Jack Lurcher Photograph by Susan Shera
1.2	Edition area	
	B. Edition statement	2nd Ed.
1.3	Material (or type of application) specific area. No general use of this areas is envisaged for NBM. However, if an item is being described whose contents fall within the scope of cartographic materials, serials, publications, music, computer files then see Chapters 3, 5, 9, 11 & 12 and in some circumstances, microfilms.	
1.4	Publication, distribution, etc. area	
	C. Place of publication, distribution	Newcastle Luton
	D. Name of publisher, distributors	Rectory Publications Bishopscotes
	E. Statement of function of publisher, distributor, etc.	[production company] [distributor]
	F. Date of publication, distribution, etc.	1988
	G. Place of manufacture, name of manufacturer, date of manufacture, etc.	
1.5	Physical description area	
	B. Extent of item (including specific material designation)	36 slides
	C. Other physical details	Col
	D. Dimensions	
	E. Accompanying material	+ 1 booklet (18p; 16 cm)
1.6	Series area	
	B. Title proper of series	(Media and the librarian
	G. Numbering within series	5)
1.7	Note area	
	B. Notes	Also available in filmstrip version. Illustrates the vital role of librarian in encouraging use of NBM.
1.8	Standard number and terms of availability area	
	B. Standard number	0-85365-509X
	D. Terms of availability	£35.00

7.6 GUIDELINES FOR BIBLIOGRAPHIC DESCRIPTION OF ELECTRONIC RESOURCES

The first edition of *International Standard Bibliographic Description for Non-Book Materials* (*ISBD(NBM)*) was produced and published in 1977. This ISBD(NBM) contained provisions covering machine-readable data files. The ISBD Review Committee, formed by IFLA in 1981, decided to give special consideration to cope with the rapidly increasing need for a separate ISBD for computer files. As a result, the ISBD(CF) was published. Electronic resources are products of a volatile technology that continues to generate changes at a very rapid pace. Specific among recent advances are the following: emergence of interactive multimedia; development of optical technology; availability of remote electronic resources on the Internet and World Wide Web; and reproductions of electronic resources. In addition, many improvements are realised, including recognition of the need for a new term 'electronic resource' which is judged

more appropriate than the term 'computer file' used previously. Hence, the ISBD(ER) is originated during 1999-2000.

7.6.1 ISBD(ER)

The *International Standard Bibliographic Description for Electronic Resources [ISBD(ER)]* is one of several published ISBDs to specify the requirements for the description and identification of such items, to assign an order to the elements of the description, and to specify further a system of punctuation for the description. Electronic resources consist of materials that are computer-controlled, including materials that require the use of a peripheral (e.g., a CD-ROM/ DVD player) attached to a computer; the items may or may not be used in the interactive mode. Included are two types of resources: data (information in the form of numbers, letters, graphics, images, and sound, or a combination thereof) and programs (instructions or routines for performing certain tasks including the processing of data). In addition, they may be combined to include electronic data and programs (e.g., online services, interactive multimedia). For cataloguing purposes, electronic resources are treated in the ISBD(ER) in two ways depending on whether access is local or remote. Local access is understood to mean that a physical carrier can be described. Such a carrier (e.g., disk/disc, cassette, cartridge, etc.) must be inserted by the user into a computer or into a peripheral attached to a computer - typically a microcomputer. Some other devices, like, Personal Digital Assistant (PDA), VCD/DVD player along with television set, e-Book Reader, etc. can also provide access to electronic information resources. Remote access is understood to mean that no physical carrier can be handled by the user - typically, access can only be provided by use of an input-output device (e.g., a terminal) either connected to a computer system (e.g., a resource in a network) or by use of resources stored in a hard disk or other storage device. However, in cases where electronic resources combine the characteristics described in other ISBDs (e.g., an electronic serial, digitised map, etc.), it is recommended that the bibliographic agency first make full use of the stipulations in the ISBD(ER) and apply provisions of other ISBDs as appropriate, if necessary.

7.6.1.1 Prescribed Sources of Information

The bibliographic description for Electronic Resources is completed in eight areas. Information is collected from chief source of information which are prescribed as below.

Area	Prescribed sources of information
1. Title and statement of responsibility	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
2. Edition	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
3. Type and extent of resource	Any source
4. Publication, distribution, etc.	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
5. Physical description	Any source
6. Series	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
7. Note	Any source
8. Standard number (or alternative) and terms of availability	Any source

Information taken from outside the prescribed source(s) is to be enclosed in square brackets.

7.6.1.2 Outline of the ISBD(ER)

The outline as suggested in ISBD(ER) includes the name of areas, sub areas and their respective punctuation marks.

Note: Each area, other than the first, is preceded by a dot, space, dash, space (. –).

Table 7.2: ISBD (ER) with Worked-out Example

Name of Area and Data Element	Prescribed Element preceding (or enclosing) punctuation for elements	Example of Data Element (In a multi data element example, specific element is marked bold)
1. Title and statement of responsibility area		
1.1 Title proper		**Welcome to CERN** [Electronic resource]
1.2 General material designation (optional)	[ ]	Welcome to CERN **[Electronic resource]**
1.3 Parallel title*	=	History of the French language [Electronic resource] = **Histoire de la langue francaise**
1.4 Other title information*	:	Black holes [Electronic resource] : **Sidney Owen's space games**
1.5 Statements of responsibility		
First statement	/	Amazing universe CD-ROM
Subsequent statement*	;	[Electronic resource] / **produced by Hopkins Technology; developed by ABC News Interactive**
2. Edition area		
2.1 Edition statement*		Cyber Office for administrative personnel [Electronic resource]. – **Windows 95 ed.**
2.2 Parallel edition statement (optional)	=	Students' ed. = **Ed. pour les étudiants**
2.3 Statements of responsibility relating to the edition		Findit [Electronic resource]/ Lester Agerra. - Rev. version 3.3/
First statement	/	**programmer, Kate Maggor**
Subsequent statement*	;	
2.4 Additional edition statement*	,	Student version, **reissued**
2.5 Statements of responsibility following an additional edition statement		Version 2.4, corr./ **with diagrams by Harry Weeks**
First statement	/	
Subsequent statement*	;	
3. Type and extent of resource		
3.1 Designation of resource		**Electronic interactive multimedia**
3.2 Extent of resource (optional)	( )	Electronic text data **(5 files)** and retrieval program **(1 file)**
4. Publication, distribution, etc.		
4.1 Place of publication, production and/or distribtuion, etc.		**Washington (D.C.)** : U.S. Bureau of the Census
First place		
Subsequent place*	;	
4.2 Name of publisher, producer and/or distributor, etc.*	:	London : **BPI Systems**
4.3 Statement of function of distributor (optional)*	[ ]	Arlington (Va.) : Trans Video; New London (CT) : **distributed by Triangle Digital Inc.**
4.4 Date of publication, production and/or distribution, etc.	,	St. Paul (Minn.) : Quanta Press, **1995**
4.5 Place of manufacturer (optional)	(	[S.l. : s.n.], 1996 **(Seattle:** Landmark Data Systems)
4.6 Name of manufacturer (optional)*	:	[S.l. : s.n.], 1996 (Seattle: **Landmark Data Systems)**
4.7 Date of manufacture (optional)	,)	, [generated] **1996**

(Table 7.2 Contd.)

5. Physical description area		
5.1 Specific material designation and extent of item		**3 electronic disks** : sd., col.; 9 cm
5.2 Other physical details	:	1 electronic optical disc (CD-I) : **sd., col.**
5.3 Dimensions	;	1 electronic optical disc; **12 cm**
5.4 Accompanying material statement (optional)*	+	2 electronic disks; 9 cm + **user manual (110 p.; 23 cm)**
6. Series area		
6.1 Title proper of series or sub-series *Note: A series statement is enclosed by parentheses*	( )	**(Super graphics.** Series I; 2)
6.2 Parallel title of series or sub-series* *When there are two or more series statements, each is enclosed by parentheses*	=	(Travaux de recherche en science sociale = **Research monographs in the social sciences)**
6.3 Other title information (optional)*	:	(Introduction to technology : **medieval to modern times)**
6.4 Statements of responsibility relating to the series or sub-series		(Collected software/ **American University, English Language Institute)**
First statement	/	
Subsequent statement	;	
6.5 International Standard Serial Number of series or sub-series	,	(Elsevier's interactive anatomy, **ISSN 0929-2225)**
6.6 Numbering within series or sub-series	;	(Computer simulation games; **module 5)**
7. Notes area		Contents: CD-ROM data (1:29) – The young person's guide to the orchestra (16:27) – Extra audio examples (55:43)
8. Standard number (or alternative) and terms of availability area		
8.1 Standard number (or alternative)		ISBN 0-7216-1213-X
8.2 Key title (associated with ISSN)	=	ISBN 0-7216-1213-X = ISSN 1234-5678
8.3 Terms of availability and/or price		ISBN 0-7216-1213-X; **Rs. 200.00** (optional) **(Rs. 100.00 for colleges and universities)**

Note: Elements proceeded by an asterisk (*) can be repeated when necessary.

We have given examples in the previous Table, related to various discrete data elements of ISBD (ER). In the examples given below, you can get the complete picture of display of electronic resources as per ISBD (ER).

Example 1

Electronic Beowulf [Electronic resource]. – Electronic interactive multimedia – [Great Britain?] : Electronic Beouwulf Project, cop. 1995.
Mode of access: World Wide Web. URL: http//portico.bl.uk/access/electronic-beowulf.html.
Title from title screen.
Digitised images developed by the British Library with Kevin Kiernan and Paul Szarmach.
Summary: Introduction to the Electronic Beowulf Project including images of the manuscript.

Example 2

Callaloo [Electronic resource]. – Electronic journal. – Baltimore (MD) : Johns Hopkins University Press, cop. 1995–
Quarterly.
18.1 (winter 1995)-
Mode of access: Internet via World Wide Web. URL:
http://muse.jhu.edu/journals/calloloo/.
Title from title screen.
Also available in a print ed.

Self Check Exercise

10) What are the prescribed sources of information for electronic resource?

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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7.7 GUIDELINES FOR BIBLIOGRAPHIC DESCRIPTION OF INTERNET RESOURCES

A manual with the guidelines has been developed to assist OCLC users and others who are preparing bibliographic descriptions of resources available through the Internet. This manual is based on the *AACR2, 1988* and the *Amendments 1993*, as well as the *International Standard Bibliographic Description for Electronic Resources* (*ISBD(ER)*). It provides a convenient single source of information by combining a discussion of cataloguing rules, appropriate MARC fields, and illustrative examples. This manual is intended to be used as a cataloguing aid, and it does not supersede any existing authoritative documentation. "For cataloguing purpose, electronic resources may be treated in one of two ways depending on whether access is direct (local) or remote (networked). Direct access is understood to mean that a physical carrier can be described. Such a carrier (e.g., disc/disk, cassette, cartridge, etc.) must be inserted into a computerized device or into a peripheral attached to a computerised device. Remote access is understood to mean that no physical carrier can be handled. Remote access can only be provided by use of an input/ output device either connected to a computer system or by use of resources stored in a hard disk or other storage device". So the special provisions of *AACR2,* 2002 for files available by remote access are applicable to Internet resources. They include the use of Area 3 for file description, the absence of physical description, and a note stating the 'mode of access' to the file.

Self Check Exercise

11) What do you mean by direct and remote access?

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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7.8 RULES FOR DESCRIPTION OF ELECTRONIC RESOURCES IN AACR2 REVISION 2002

AACR2 Revision 2002 suggests collecting information from the chief source of information for bibliographical description. The chief source of information for

electronic resource is the resource itself. Formally presented evidence, title screen, main menus, program statement, home page, labels of physical carrier, any documentation (either online or print out) or otherwise processed information for use may be consulted to fulfill the requirements. Source of information has been prescribed for different areas to ease the process of searching.

Rules for describing the electronic resources are refinements of the general rules as discussed earlier. So many cases like levels of details, punctuations of elements, etc. are treated on the same line.

a) **Rule for Titles**

In addition to the general rules relating to title proper for bibliographic description, it is suggested that not to record a file name or data set name as the title proper unless it is the only name given in the chief source. But the source of title proper, file name or data set name is to be added in the note section. Rules for parallel title and other title information are unchanged i.e., (=) and (:) will be used to add parallel title and subtitle respectively. For example,

Wordstar

SOUL : Software for university libraries.

Vufile : an information retrieval system for use with files, lists, and databases of all kinds.

b) **Rule for Statements of Responsibility**

Rules regarding the statements of responsibility for an electronic resource are also same as the general rules including punctuation and word phrase to clear the relationship between the title and the person or body. For example

SOUL : Software for university libraries [GMD] / developed by Information and Library Network Center

c) **Rule for Edition Statements**

Mostly for electronic resources like programs, software, etc., the terms version, release, update, issue, level is used in place of edition. Word phrase and abbreviations are used accordingly but rule for transcribing the edition statement are same as general rules.

Version 1.1

Level 3.4

3rd update

IDA: a retrospective conversion software / by DRTC and NISSAT. – Version 1.0 / programmed by A. R. D. Prasad

d) **Rule for Type and Extent of Resource Area**

The area is preceded by a full stop-space-dash-space (. –). This area is used in the description of electronic resources as prescribed in the AACR2 2002. Each statement of extent (e.g., number of files) is enclosed within parentheses. The statement of the number of records or size of files, etc. are preceded by a colon if that follows the statement of number of files. For Example,

Electronic data (1 file : 20 records)

Electronic program (2 files : 4300, 1250 bytes)

e) **Rule for Publication Distribution**

This area mainly consists of the place of publication, distribution; name of publisher, distributors; date of publication, distribution, etc. and the details of manufacturer (place, name, date) of the electronic resource. Punctuations for elements and other rules of recording information are same as general rules. For example,

Pygmalllion : a data conversion program / by A R D Prasad. – Version 2, Release 1.0. – Electronic program (1.2 megabytes). – Bangalore : Documentation Research and Training Centre, 1992

f) **Rule for Physical Description**

This area includes the description of the physical carrier of electronic resources. If the resource is available only by remote access, the physical description is to be omitted. The number of physical units of the carrier is to be recorded with other physical details (e.g., *sd* for sound, *col* for color, etc.) preceded by colon. As far as dimension is concerned, diameter for discs, length of the side to be inserted for cartridges, length and height for cassettes and so on is to be recorded. The accompanying materials are to be stated with plus sign. For example,

1 computer disk : sd., col. ; 3½ in

1 computer cartridge ; 3½ in

1 computer disk : sd., col. ; 3½ in + 1 user's guide (52p : ill. ; 20 cm.)

g) **Rule for Series**

The series statement for electronic resource is recorded following the same rule as discussed under general rules. For example,

– (Practicorp no-nonsense software)

h) **Rule for Notes**

Note area is very important for description of an electronic resource. Notes in respect of other areas may be found needed to explain or supplement information. The sequence of information in the note section will be same as different areas of description. Nature and scope, system requirements and mode of access (if available only by remote access) to the resource may be recorded unless it is apparent from the rest of the description.

Game

System requirements: Pentium, CD-ROM writer, Windows 95

Mode of access: INFLIBNET

Relating to language and script, the note may be recorded as

Screen text in English and French

Relating to title proper, variation in title and parallel titles, etc. notes are give as

Title from title screen

Title on manual : Compu-math decimals

Subtitle on container : Life & work of explorer Thor Heyerdahl

If any important information could not be included in the statement of responsibility area, these may be recorded in the note section. For example,

Web site hosted by the Faculty of Library and Information Science, Indira Gandhi National Open University.

Similarly, notes relating to edition, type and extent of resource, publication and distribution, physical description, accompanying material, series, audience and other formats are to be given whenever it is considered necessary and not mentioned in the respective sections in any way. Few examples

Updated version of 1982 program

File size : 520, 300 records

Developed and distributed by the UNESCO

Not copy-protected

Accompanying by a series of 5 programs

Originally issued in series : European Community study series

For use by qualified medical practitioner only

Database also on CD-ROM

i) **Rule for Standard Numbers**

The standard number section, supplementary items, etc. are to be recorded as discussed under general rules. For example,

ISBN 81-85273-16-2

Free to universities, colleges and other non-profit making organisations

Self Check Exercise

12) What is the rule for type and extent of resource area?

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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7.9 SUMMARY

Sir Anthony Panizzi have brought the concept of today's bibliographic description into the picture through his 'Rules for Compilation of the Catalogue' advocating to bring together all manifestations. But Cutter's rules set out the first principles of cataloguing, and included a statement of the objectives of the catalogue. In 1904 the fourth edition of Cutter's rules was published. The first international cataloguing code was published in 1908 in an American edition and a British edition. Thus, as far as cataloguing rules for the entire bibliographic record are concerned, the chances to arrive at a unified internationally accepted set of rules are seen starting from Panizzi. Different national traditions and requirements do not appear to make such an approach possible. On the other hand, the unifying influence of the Paris principles should be acknowledged, especially in the area of choice and form of headings. Nevertheless, the creation of headings remains subject to much diversity. National and individual system's traditions may prove to be strong barriers to further progress. The positive factors to be indicated here are the rules and guidelines developed or being prepared by IFLA for the choice and form of personal and corporate names as headings.

Following the differentiation in British and North American Texts, a need for standardisation of the form and content of bibliographic description was felt world over. At the International Meeting of Cataloguing Experts in Copenhagen in 1969, a program of International Standard Bibliographic Description (ISBD) was developed. The objective was to identify components in a bibliographic description, their preferred order, and the necessary punctuation. Some suggestions are made as guidelines may be considered by the user of ISBDs – the ISBDs provide stipulations to cover the maximum amount of descriptive information required in a range of different bibliographic activities, and therefore include elements which are essential to one or more of those activities but not necessarily

to all. The national bibliographic agencies of different countries should take up the responsibility of creating the bibliographic record for each library material issued in that country, should prepare the bibliographic description containing all the mandatory elements as suggested in the relevant ISBD.

The area where standardisation has made the biggest progress is that of bibliographic description proper, especially with the introduction of ISBDs seem to be popular with many national and other libraries, they have much less so with other information services, particularly A&I Services.

Electronic resources are also increasingly produced. The ISBD(ER) is developed to meet with the current needs of national bibliographic agencies, libraries and resource centres. But, since the resources described in ISBD(ER) are basically products of volatile technologies, the specific stipulations of this ISBD, particularly in area 3 (Type and extent of resource) and area 5 (Physical description) are amended as appropriate to handle properly the addition(s) of resource characteristics or newly developing forms of material.

In the case of remote access resources (e.g., online services) which are frequently updated, it is recommended that the bibliographic agency omit the edition statement in area 2 and give an appropriate note(s) in area 7.

Recently the web has emerged in library and information system. Many communities such as libraries, employees, publishers, businesses, museums, news agencies and other entities are publishing their content without much thought given toward inventory control, especially by single individuals. Due to the explosion of digital versions of materials, during the last third of the 20th century, 'content' versus 'carrier' problems became significant. However, its solution is also significantly important. "When an item is available in different types and/or sizes of physical carriers, or in a different output medium or display format, either of two methods of description may be followed: (1) Each different physical carrier may be described in the same bibliographic record, with each carrier occupying a separate line or else grouped in a single continuous line in the description; or (2) Each different physical carrier may be described in separate bibliographic records. However, in the case of an interactive multimedia item which is in two or more different physical carriers, each carrier is described following first method in which each carrier occupies a separate line of description in the same bibliographic record.

At fine it is felt that dedicated, technologically-savvy, and highly skilled librarians and information professionals, with the ability to experiment with the existing and new rules are required for the organisation of information in order to cope with new developments and to design a new code in future.

7.10 ANSWERS TO SELF CHECK EXERCISES

1) The five laws of information science justifies cataloguing as it helps in promotion of the use of information (Law 1) by helping every information-user to find his/her information (Law 2) by finding information-users for every piece of information (Law 3) by providing easy and instant access to save the time of the information-user (Law 4) and by overcoming all the barriers mostly created by the continuous growth of the universe of information (Law 5).

2) In 1876, Charles Ammi Cutter published 'Rules for a Dictionary Catalog', possibly the most comprehensive set of rules produced by any individual for the first time. Cutter's rules set out the first principles of cataloguing, and

included a statement of the objectives of the catalogue. The code covered rules for dictionary catalogues including both entry (for authors, titles, subjects, and form headings), and description.

3) The twelve principles are accepted. The subject matters of these principles are: (1) the choice and form of headings; (2) functions of the catalogue; (3) structure of the catalogue; (4) kinds of entry; (5) use of multiple entries; (6) function of different kinds of entry; (7) choice of uniform heading; (8) single personal author; (9) entry under corporate bodies; (10) multiple authorship; (11) works entered under title; (12) entry word for personal names.

4) Both the British and North American texts of AACR contained three parts:

Part I: Entry and Heading – Based on the Paris Principles

Part II: Description – Consisted of revised rules.

Part III: Non-book materials – Contained rules for both entry and description of non-book materials.

5) International Standard Bibliographic Description (ISBD) are:

ISBD(G) – General

ISBD(CM) – Cartographic Materials

ISBD(CR) – Continuing Resources (old name ISBD(S) - Serials)

ISBD(ER) – Electronic Resources (old name ISBD(CF)-Computer files)

ISBD(M) – Monographs

ISBD(NBM) – Non-book Materials.

6) The main objectives of ISBDs are : (i) making records interchangeable - this means records produced in one country can be easily accepted in library catalogues or other bibliographic lists in any other country; (ii) interpretation of records – this means records produced for users of one language can be interpreted by users of other languages so that overcoming is language barriers is overcome; and (iii) conversion of bibliographic records – this means conversion to machine-readable form be easier.

7) The 'Anglo-American Cataloguing Rules, Second edition' (AACR2) was published in one version in 1978 under the editorship of Michael Gorman of the British Library, and Paul W. Winkler of the Library of Congress.

8) AACR2, 1978 was divided into two parts:

Part I Description

- Based on the ISBD(G) framework.
- Included a general chapter (chapter 1), and chapters for individual formats, including new chapters for machine-readable data files (chapter 9) and three-dimensional artifacts (chapter 10).
- The rules for non-book materials were based on alternative codes that were published in the 1970s.

Part II, Entry and Heading

- Rules were brought more closely into line with the Paris Principles.

9) The bibliographic description is divided into eight areas viz. (1) Title and statement of responsibility, (2) Edition, (3) Material (or type of publication) specific details, (4) Publication distribution, etc., (5) Physical description, (6) Series, (7) Note, (8) Standard number and terms of availability. Second Level of description is as:

Title proper [general material designation] = parallel title : other title information / first statement of responsibility ; each subsequent statement of responsibility. – Edition statement / first statement of responsibility relating to the edition. – Material (or type of publication) specific details. – First place of publication, etc. : first publisher, etc., date of publication, etc. – Extent of item : other physical details ; dimensions. – (Title proper of series / statement of responsibility relating to series, ISSN of series ; numbering within the series. Title of sub series, ISSN of sub series ; numbering within sub series) . – Note(s). – Standard number.

10) The prescribed source of information for different areas are as follows:

Area	Prescribed sources of information
1. Title and statement of responsibility	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
2. Edition	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
3. Type and extent of resource	Any source
4. Publication, distribution, etc.	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
5. Physical description	Any source
6. Series	Internal sources; labels on the physical carrier; documentation, containers, or other accompanying material
7. Note	Any source
8. Standard number (or alternative) and terms of availability	Any source

11) For cataloguing purpose, electronic resources may be treated in one of two ways depending on whether access is direct (local) or remote (networked). Direct access is understood to mean that a physical carrier can be described. Such a carrier (e.g., disc/disk, cassette, cartridge, etc.) must be inserted into a computerised device or into a peripheral attached to a computerised device. Remote access (online) is understood to mean that no physical carrier can be handled. Remote access can only be provided by use of an input/ output device either connected to a computer system or by use of resources stored in a hard disk or other storage device that are connected over a network.

12) For Electronic Resources, the area of type and extent of resource is preceded by a full stop-space-dash-space (. –). This area is used in the description of electronic resources as prescribed in the AACR2 2002. Each statement of extent (e.g., number of files) is enclosed within parentheses. The statement of the number of records or size of files, etc. are preceded by a colon if that follows the statement of number of files. For Example,

Electronic data (1 file : 20 records)

Electronic program (2 files : 4300, 1250 bytes)

7.11 KEYWORDS

Access Point : A name, term, code or other indexed characteristic of an authority or bibliographic record that helps make the record searchable and identifiable. For example, titles, names, and subjects are access points.

Antiquarian Book : An old and 'rare' book, preferably 100 years old or more, similar to an antique. With common usage the term has come to mean any book that is out-of-print, old, rare, scarce - virtually any book that is not a new or in-print book.

Author : The person, persons, or corporate body responsible for the artistic or intellectual content of a work. Usually distinguished from an editor, translator, compiler, although these may be regarded as authors for purposes of cataloguing.

Authority Record : A collection of information about one name, uniform title, or topical term heading. An authority record can contain the established form of heading, see from references, see also from references, and notes.

Bibliographic Record : Details about a item that are sufficient to identify it for the purpose of retrieval are placed in a specific format that describes one item in a collection. May include author, title, publisher, publication location, edition, series titles, and notes.

Catalogue Code : A set of rules for guidance of cataloguers in preparing entries for catalogues so as to ensure uniformity in treatment, Such codes may include rules for subject cataloguing and for filing and arranging entries.

Document Type : Term that identifies the format, genre, or medium used to produce or classify a document. Valid values will vary by database. Use the advanced or expert search screens to select a valid document type from the drop-down menu.

International Standard Book Number (ISBN) : A unique identification number assigned to a work by its publisher. Each ISBN has ten characters. The tenth character is a check character that may be a number or the letter X. In printed form, the ISBN has three hyphens. Hyphens are omitted in online records.

International Standard Serial Number (ISSN) : A unique identification number assigned to a serial through the ISSN Network. Each ISSN has eight characters. The eighth character is a check character that may be a number or the letter X. A hyphen follows the fourth character.

Label : Any paper, plastic, etc. permanently affixed to a physical carrier or information printed or embossed directly onto the physical carrier by the publisher, creator, etc. of the resource, as opposed to those on the container or to any label added locally.

Liturgical Works : Fixed form of public worship used in churches.

Main Entry : The entry determined by AACR2 to be the primary access point for the item.

Prussian Instructions : The German cataloguing rules of an English translation was published by the University of Michigan Press in 1938.

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Appendix I
ISBD (G)

Definitions

The 'term' used in this text means a document, group of documents, or part of a document, in any physical form, considered as an entity and forming the basis of a single bibliographic description. The term 'document' is used here in its widest sense.

In the ISBD (G) definitions for other terms used in a special sense, or in one of several senses in general use, are included at the beginning of the annotation for the appropriate area or element. Terms used in the usual bibliographic sense are not defined.

The ISBD (G)

Area		Prescribed preceding (or enclosing) punctuation for elements		Element
Note: Each area other than the first, is preceded by a point, space, dash, space ( )				
1.	Title and statement of responsibility area		1.1	Title proper
		[ ]	1.2	General material designation
		=	1.3	Parallel Title
		:	1.4	Other title information
		/	1.5	Statements of responsibility First statement Subsequent statement
2.	Edition area		2.1	Edition statement
		=	2.2	Parallel edition statement
			2.3	Statements of responsibility relating to the edition
		/		First statement
		;		Subsequent statement
		,	2.4	Additional edition statement
			2.5	Statements of responsibility following an additional edition statement
		/		First statement
		;		Subsequent statement
3.	Material (or type of publication) Specific area			
4.	Publication, distribution, etc. area		4.1	Place of publication,distribution, etc. First place
		;		Subsequent place
		:	4.2	Name of publisher, distributor, etc.
		[]	4.3	Statement of function of publisher, distributor etc.
		,	4.4	Date of publication,distribution, etc.
		(	4.5	Place of manufacture
		:	4.6	Name of manufacturer
		,)	4.7	Date of manufacture
5.	Physical description area		5.1	Specific material designation and extent of item
		:	5.2	Other physical details
		;	5.3	Dimensions of item
		+	5.4	Accompanying material statement
6.	Series area Note: A series statement is enclosed by parentheses. When there are two or more series statements, each is enclosed by parentheses.		6.1	Title proper of series
		=	6.2	Parallel title of series
		:	6.3	Other title information of series
			6.4	Statements of responsibility relating to the series
		/		First statement
		;		Subsequent statement
		,	6.5	International standard series number of series
		;	6.6	Numbering within series
		.	6.7	Enumeration and/or title of sub-series
		=	6.8	Parallel title of sub-series

		6.9	Other title information of sub-series
		6.10	Statements of responsibility relating to the sub-series First statement Subsequent statement
		6.11	International standard serial number of sub-series
		6.12	Numbering within sub-series
7.	Note area		
8.	Standard number (or alternative) and terms of availability area	8.1	Standard number (or alternative)
	=	8.2	Key title
	:	8.3	Terms of availability and/or price
	()	8.4	Qualification (in varying positions)

General notes on the ISBD (G) framework

i) In the above framework, the terms "first statement...." "subsequent statement...." and the like, denote the order in which these statements are given in the description and have no other connotation.

ii) In the above framework no indication is given of which area or elements may be repeated or may be considered optional. The specialized ISBDs give detailed guidance on these matters.

iii) Wherever information ordinarily associated with one area or element is presented in the item as a grammatically integral part of another element, it is transcribed as such.

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UNIT 8 STANDARDS FOR BIBLIOGRAPHIC RECORD FORMATS : ISBD, MARC21, CCF STRUCTURE

Structure

8.0 Objectives

8.1 Introduction

8.2 Standards for Bibliographic Record Format

8.2.1 International Standard Bibliographic Description (ISBD)

8.3 Machine-Readable Record Format

8.3.1 MARC Format

8.3.2 MARC Record Structure

8.4 UNIMARC

8.4.1 UNIMARC Functional Blocks

8.5 Common Communication Format (CCF)

8.5.1 Structure of CCF Record

8.6 Indian Standard

8.7 Summary

8.8 Answers to Self Check Exercises

8.9 Keywords

8.10 References and Further Reading

8.0 OBJECTIVES

In the previous Unit you have learnt about the bibliographic descriptions of various types of information resources. In the context of computerisation, the need for record format arises. In this Unit we will be discussing the important standards for machine readable record format which are available and developed by various agencies.

After reading this Unit, you will be able to:

- understand bibliographic record formats and their developments; and
- learn structure of the record format standards like, MARC, UNIMARC and CCF.

8.1 INTRODUCTION

Computerised bibliographic information system consists of records that stores bibliographic details of an information source. When compared to the traditional situation a record is same as an entry in catalogue, bibliography or documentation list. In automated system, it refers to a single multipurpose record from which added entries can be generated. Fields are equal to sections or areas in the catalogue entry. A field may consist of several sub-fields, for example, the imprint field is made up of place, publishers and date.

As different from the manual systems, fields are differentiated into fixed fields and variable fields in mechanised systems. The length of the fixed field is predetermined and so it cannot accommodate characters more than the number

specified earlier. On the contrary, in variable fields the length of the field can be extended to the required extent to accommodate lengthy data. The beginning of each field in this case is to be indicated by markers or tags. A tag is a label used to identify a variable field. A record may be collection of either fixed fields or variable fields or a combination of both.

Format is concerned with arrangement for presentation of data in the record. In specific terms, it refers to the structure, content and coding of the record. Structure provides the framework for incorporating field of both types in the record. It must be suited to machine processing. It must also be efficient for information transfer. Content refers to the data contained in the record in the different fields and sub-fields. Coding is the digital representation of the characters.

8.2 STANDARDS FOR BIBLIOGRAPHIC RECORD FORMAT

Standardisation of the record format implies the standardisation of the above mentioned three aspects at national, regional and international levels. Design and implementation of a standard record format ensure uniformity which is acceptable to all bibliographic agencies involved in information transfer which is very essential.

Background

Standardisation of the record format in manually prepared bibliographic lists started to be a matter of international concern from 1960s. The International Conference on Cataloguing Principles (ICCP) held in Paris in 1961 set up the standards for the heading of the author and title records in catalogues and bibliographies. The conference was sponsored by IFLA with the intention of evolving a set of basic principles to serve as guidelines in the design of catalogue codes all over the world. Paris principle could make some impact on certain national codes. However, differences in heading continued to exist in various catalogues and bibliographies and they stood in the way of interchange of information. The major effort for standardisation of record formats started from the development of ISBD.

8.2.1 International Standard Bibliographic Description (ISBD)

Starting from the first ISBD on monographs, a number of ISBDs have been developed including ISBD(G). The details of these developments have been discussed in Unit 7 of this course.

In 1973 the ISBD(M) text had been adopted by a number of national bibliographies and, translations of the original English text into several other languages had been done. By then it was realised that the printed word is not the only means of documentary transmission through which the communication needs of individuals and institutions are met. And that there was need for a standardised descriptive structure for documentary materials other than books. Consequently, the ISBD(NBM) International Standard Bibliographic Description for Non-Book Materials was published in 1977.

"This ISBD contained provisions covering machine-readable data files. However, when the ISBD(NBM) was being reviewed, together with the ISBD(CM), ISBD(M), and ISBD(S), by the ISBD Review Committee formed by IFLA in 1981, it was decided that special consideration should be given to the rapidly increasing need for a separate ISBD for computer files [ISBD (ER), 1997]." With the development of programs and data files for smaller computers, the nature of the medium became more complex; in addition, this change resulted in physical items roughly comparable to other library materials to be more widely added to library collections. Hence bibliographic control was needed for them. As a result, the ISBD(CF) Working Group was established in 1986. In 1990, the first edition of ISBD(CF) was formally brought out.

With the emergence of interactive multimedia, development of optical technology,

availability of remote electronic resources on the Internet and World Wide Web, and reproductions of electronic resources, it was felt that ISBD(CF) should address the bibliographic implication of such developments. A Working Group was formed in 1994. In 1995, the Second Edition of the draft was prepared and distributed for worldwide review from individual readers, library associations and national libraries. As a result, many improvements were made, including recognition of the need for a new term to characterise the material under discussion. Thus, the more appropriate term 'electronic resource' was chosen.

The ISBDs for different kinds of items are depicted in Table 8.1.

Table 8.1: ISBDs for Different Types of Items

ISBD	Full Name	Year of First Edition	Year of Revised Edition
ISBD(M)	International Standard Bibliographic Description for Monographic Publications.	1974	1978, 1987, 2002
ISBD(S)	International Standard Bibliographic Description for Serials [now ISBD(CR)].	1974	1977, 1988
ISBD(CM)	International Standard Bibliographic Description for Cartographic Materials.	1977	1987
ISBD(G)	General International Standard Bibliographic Description.	1977	1992, 2004
ISBD(NBM)	International Standard Bibliographic Description for Non-Book Materials.	1977	1987
ISBD(A)	International Standard Bibliographic Description for Older Monographic Publications (Antiquarian).	1980	1991
ISBD(PM)	International Standard Bibliographic Description for Printed Music.	1980	1991
ISBD(CF)	International Standard Bibliographic Description for Computer Files [now ISBD(ER)].	1990	
ISBD(ER)	International Standard Bibliographic Description for Electronic Resources. [erstwhile ISBD(CF)].	1997	
ISBD(CR)	International Standard Bibliographic Description for Serials and Other Continuing Resources. [erstwhile ISBD(S)].	2002	

[Source: http://www.ifla.org/VI/3/nd1/isbdlist.htm]

8.2.1.1 Purpose of ISBD

The primary purpose of the ISBDs is to provide the stipulations for compatible descriptive cataloguing worldwide in order to aid the international exchange of bibliographic records between national bibliographic agencies and throughout the international library and information community. By specifying the elements which comprise a bibliographic description and by prescribing the order in which those elements should be presented and the punctuation by which they should be demarcated, the ISBDs aim to:

- make records from different sources interchangeable, so that records produced in one country can be easily accepted in library catalogues or other bibliographic lists in any other country;
- assist in the interpretation of records across language barriers, so that records produced for users of one language can be interpreted by users of other languages; and
- assist in the conversion of bibliographic records to electronic form.

The details about ISBD have been discussed in Unit 7.

Self Check Exercises

1) Write short note on Record Format.

2) Distinguish between fixed field and variable field in a record.

3) How ISBD helps in the standardisation of bibliographic records?

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

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8.3 MACHINE-READABLE RECORD FORMAT

Library of Congress (LC) was the first to design and experiment on a MAchine-Readable Catalogue (MARC) record format for the purpose of communicating bibliographic information to large number of libraries. When MARC-I commenced as a pilot project in 1966 in LC, there were no established MARC formats available. Library professionals had reached no consensus as to what all access points were required for taking full advantage of an automated catalogue.

The pilot project known as MARC-I began in the year 1965 with the main aim of creation and distribution of machine-readable cataloging data to other libraries with Library of Congress (LC) as the distributing point. MARC-I only dealt with books. The development of MARC-II started in 1968. It was planned to cover all types of materials including books and monographs. During 1970-1973 documentation was issued for other materials, i.e., in 1972 films records were issued, 1973 for serials, maps and French books and by 1975 records for German, Spanish, and Portuguese material [Simmons and Hopkinson, 1988].

In the year 1999, USMARC and CAN/MARC were harmonized and named as MARC21 [McCallum 1989]. The MARC21 bibliographic format, as well as all official MARC21 documentation, is maintained by the Library of Congress and by Canadian National Library [MARBI, 1996]. Recently UKMARC is also being merged with MARC21 and British Library is shifting from UKMARC to MARC21.

The Library of Congress and the National Library of Canada serve as the maintenance agency for the MARC21 formats for bibliographic, authority, holdings, classification, and community information data.

8.3.1 MARC Format

A MARC record involves three elements: the record structure, the content designation, and the data content of the record [MARBI, 1996]:

- **Structure:** MARC records is typical of Information Interchange Format (ANSI Z39.2) and Format for Information Exchange (ISO 2709).
- **Content designators:** By definition "the codes and conventions established to

identify explicitly and characterise further the data elements within a record and to support the manipulation of those data". Anything that establishes the kind of data is a Content Designator, for example, there are three kinds of content designators – tags, indicators, and subfield codes.

- **Content:** This is the actual data that is stored in the data fields. Often most of the data elements are defined by standards outside the formats. For example, Anglo-American Cataloguing Rules, Library of Congress Subject Headings, National Library of Medicine Classification.

In MARC21, formats are defined for five types of data: bibliographic, holdings, authority, classification, and community information.

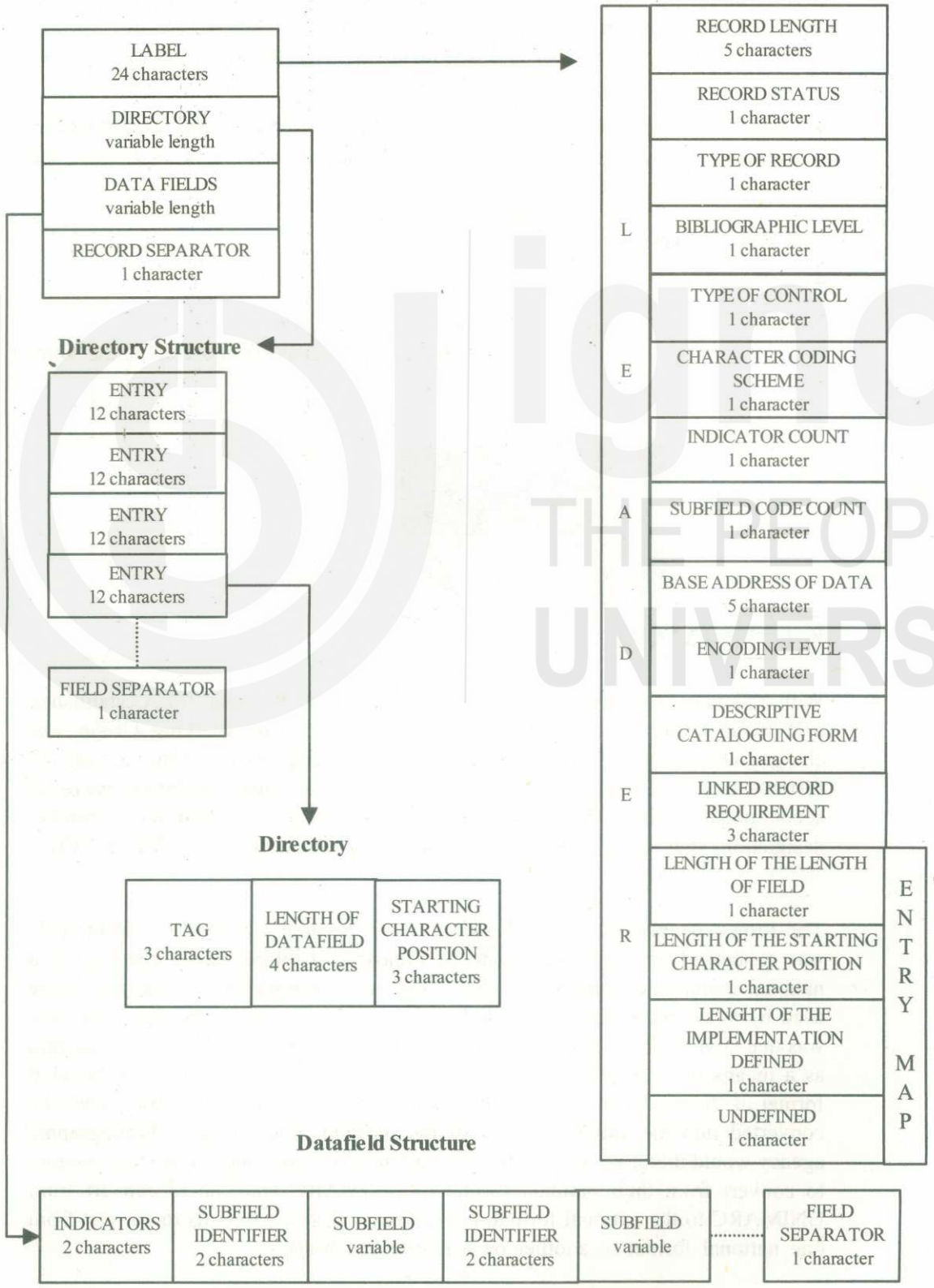


Fig. 8.1: Diagrammatic representation of MARC record

8.3.2 MARC Record Structure

A typical MARC record consists of three main sections: the leader, the directory, and the variable fields (Fig. 8.1) [MARBI, 1996].

- The *leader* consists of data elements that contain coded values and are identified by relative character position. It is also called as Record label in CCF and UNIMARC. Data elements in this section define parameters for processing the record. It is fixed in length (24 characters) and occurs at the beginning of each MARC record.
- The *directory* contains the tag, starting location, and length of each field within the record. The length of the directory entry is defined in the entry map elements in Leader/20-23. In the MARC21 formats, the length of a directory entry is 12 characters, while in CCF it is 14 characters where character 13th and 14th are Segment Identifier and Occurrence Identifier. The directory ends with a *field terminator* character.
- The data content of a record is divided into *variable fields*. The MARC21 format distinguishes two types of variable fields: *variable control fields* and *variable data fields*.

Self Check Exercise

4) What are the sections of a MARC record?

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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8.4 UNIMARC

With a view to facilitate international exchange of MARC data, IFLA established a Working Group on Content Designators in 1972. The Working Group was charged with analysing the differences in content designation among the national formats that had been developed to that point in time, exploring ways of accommodating those differences, and recommending a uniform set of content designators that would serve as a standard for international exchange [IFLA, 1977].

The format developed by the Working Group became UNIMARC. UNIMARC was conceived not as a standard to be imposed on bibliographic agencies as a national communications format, but rather as a 'translation' mechanism to be used by those agencies when exchanging data across national borders. The idea was that UNIMARC would serve as the common 'vocabulary' that would function as a means of conveying data that had originally been encoded in the national format of the sender in a commonly recognised form that could subsequently be converted into the national format of the receiver. Each national bibliographic agency would therefore have to develop and maintain only one conversion program to convert from their national format to UNIMARC and one to convert from UNIMARC to the national format, rather than multiple programs to convert from one national format to another on a one-to-one basis.

The purpose of UNIMARC is to facilitate the description, retrieval and control of bibliographic items for data exchange and also for local bibliographic format. There are a number of factors that shaped UNIMARC into the flexible data package [Morataza, 1996].

Block Structure: One key objective of the format is to be able to accept easily the data from a number of different national formats. That is the basic requirement behind the block structure of UNIMARC. Since data may be carried in a number of different positions in various national formats, the emphasis in designing UNIMARC was to identify functionally the different types of data and establish clearly designated areas for them. On receipt of UNIMARC records, national systems may rearrange data in any way that is practical at the local level. The UNIMARC areas are called Blocks, and the block number forms the first digit of the tags for data fields in the block.

Record Structure: It required supporting International Standard Exchange Format, hence it adheres to ISO 2709 for record structure.

ISBD: Another important point for UNIMARC was appropriate support of the international description guidelines that were developed by IFLA and incorporated into cataloguing codes worldwide. The ISBD data is especially accommodated in UNIMARC Block 2, the descriptive paragraph.

Textual and Non-textual Material: Fourth requirement of UNIMARC is that it should be able to accommodate description of wide variety of materials. Hence, it covers books, periodicals, maps, globes, music scores, sound recordings, motion pictures, video recordings, pictures, drawings, sculpture, artifacts, computer files and other related items.

Multiple levels: Another basic requirement for UNIMARC is that it should accommodate various bibliographic levels, not just monographic (single part) material. Serially issued items (multiple part items) and analytic (part of larger item) need to be included, and these levels can occur for any of the above types of materials. Again the flexibility of the coded data field is important. Serial related fields are not confined to use in records for journals or the traditional forms of serially issued items, but can be included in records for serially issued maps, films, etc.

Parts of Items/Linking Technique: The provision of describing parts of items (e.g., journal articles, chapters) in UNIMARC follows the common practice in the library to provide a citation to the host (book or serial that contains the part) but provide a separate record to fully describe the host bibliographically. UNIMARC thus focuses on an analytical record on the part being catalogued – the monograph in series, journal article, books part, etc. Only linking entry field gives information about the host item, such as series (for a monograph in a series), the serial (for a journal article). The UNIMARC structure is provided below:

Table 8.2: UNIMARC Structure

Type of Data	Block	Fields
Identifiers (item and record)	Block 0	0nn fields
Coded information	Block 1	1nn fields
Descriptive paragraph	Block 2	2nn fields
Notes	Block 3	3nn fields
Links to other works	Block 4	4nn fields
Variant titles	Block 5	5nn fields
Subject analysis	Block 6	6nn fields
Intellectual responsibility	Block 7	7nn fields

('n' substitutes for number)

8.4.1 UNIMARC Functional Blocks

The fields of the bibliographic record are divided into functional blocks, the first digit of the tag indicates the block of the field [McCallum, 1989].

0 — ***Identification block,*** contains those numbers that identify the record of the work (e.g., ISBN, ISSN).

1 — ***Coded Information block***, contains fixed length coded data elements describing various aspects of the work.

2 — ***Descriptive block***, contains the areas covered by the ISBD (i.e. title, edition, imprint, collation, series) with the exception of standard number and notes.

3 — ***Notes block,*** contains free text statements describing various aspects of the work.

4 — ***Linking Entry block***, contains standard links in numeric and textual form to other records.

5 — ***Related Title block,*** contains titles to be used as access points.

6 — ***Subject Analysis block***, contains subject identification (e.g., UDC, Library of Congress Subject Headings, etc.).Personal and corporate names used as subjects will appear in this block.

7 — ***Intellectual Responsibility block,*** contains names of persons and corporate bodies responsible for the creation of the work described in access point form.

8 — ***International Use block,*** contains internationally agreed field that do not fit in the preceding blocks, 0– to 7–. This block includes fields on originating agency, ISSN Center, general cataloguer's note and electronic location and access.

9 — ***National Use block,*** reserved for national use by agencies where UNIMARC is the basis of the domestic format.

8.5 COMMON COMMUNICATION FORMAT (CCF)

UNESCO was concerned in the late 1970s about the lack of developments in the field of scientific information, especially in systems for the sharing of information on journal articles. Especially in the light that secondary services such as abstracting and information services were being automated. UNESCO sponsored an international symposium in 1978 to look at the problems caused by this sector having many different formats and recommended developing a switching format taking into account the need to be compatible with MARC via UNIMARC, and the secondary services. Those experts who had developed ISO 2709 also attended the meeting since the format required more sophisticated linking features in order to be able to link records of articles and the journals and issues containing them. The symposium set up the UNESCO Ad-hoc Group on a Common Communication Format and the CCF was developed. This was mainly used by the secondary services in the science and technological sectors by UN agencies and more generally in India [Hopkinson,1989].

8.5.1 Structure of CCF Record

Record label	Directory	Data Field	Record Separator

It is a specific implementation of the ISO 2709. The record label consists of 24 characters and directory of 14 characters. Data field consist of indicators, subfields and data field separator. A CCF record may contain descriptions of more than

one item, but the description of each item occupies a single record segment. The major item occupies the primary segment and the others the secondary segments. Segment links are used in vertical relationships (e.g., a monograph and a chapter in it) and horizontal relationships (e.g., versions of a work in different languages) are also used. For details about the CCF record structure and data elements *see* Appendices 2 and 4.

Self Check Exercise

5) Explain the significance of Common Communication Format (CCF).

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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8.6 INDIAN STANDARD

Standardisation of record format has not received due attention in Indian libraries. At national level Indian Standards Institution [renamed as Bureau of Indian Standards (BIS)] had evolved a standard for bibliographic references in 1963 for use in non-computerised systems. However, it could not keep track of the developments in the media and forms of documents. In the following years a revision of the standard appeared in 1979 wherein ISBD was suggested as a substitute format to be adopted by agencies willing to do so.

The sixteenth Indian Standards Convention of ISI held in Bhopal in October 1975 discussed the issue of standardisation of bibliographic information in the context of machine-readable records. Continued efforts in this area by ISI resulted in the design and publication of a standard (IS:11370-1985) titled, 'Guide for data elements and record format for computer based bibliographic description of different kind of documents' in July 1986. Considerable assistance in the preparation of this standard has been taken from international standards relevant to machine-readable record format. Structure of this format conforms to ISO 2709: 1981.

Structure of IS:11370-1985

Leader	Directory	Data Field	Record Separator

(For details, see Appendix 3 of this Unit for detailed structure).

Among the data elements, descriptive block is based on ISBD. Subject analysis block includes POPSI, PRECIS, keyword and synopsis or abstract. There is a local use block which is intended to communicate the variations made in the existing data and for the inclusion of new data needed for local use.

The standard specifies the requirements for machine-readable record format for books, periodicals, conference proceedings, articles in a periodical, research reports of ongoing research projects, patents and standards.

However, the latest decision of National Library of India is to follow MARC21 standard and retro-conversion work is already in progress.

8.7 SUMMARY

Libraries are no longer individual systems that can operate in isolation. There is a trend towards universal access to library data. Hence it is very important to maintain international standards for library operations especially for bibliographic standards. This Unit has covered in detail the different standards for bibliographic record format. International standards laid down by IFLA and other agencies, ISBD description has been described. In machine-readable record (MARC) format, MARC21 that is fast becoming the de-facto standard, has been dealt in detail. Common Communication Format for the exchange of bibliographic records and structure of CCF record is explained.

Indian libraries and documentation centers had been passive towards standardization of bibliographic record format in the past. Lack of communication facilities, non-availability of bibliographies in machine-readable form, diversity of languages and slow pace of computerisation might be the possible reason for this. Moreover, lack of awareness of the significance of the standardisation is pointed out by ISO as the major obstacle in this path. Of late the major libraries including National Library of India are adopting MARC21 standard for bibliographic records thus following international trends.

8.8 ANSWERS TO SELF CHECK EXERCISES

1) Record format is the arrangement of data in the record. It refers to the structure, content and coding of the record. Structure provides the framework for fields, suitability for machine processing keeping in view the information transfer. Content refers to the data contained in the record in various (both fixed as well as variable) fields. Coding is the digital representation of the characters.

2) In the record the fixed field refers to the length of the field. It refers to the number of characters, which a field occupies. The length of a fixed field is predefined and it cannot accommodate data more than the length specified earlier. Whereas in the case of a variable field, the length of the field can be varied depending upon the size of the data.

3) ISBD helps in the standardisation of bibliographic records, as it:

   i) Facilitates records from various sources interchangeable.

   ii) Assists in the interpretation of records across language barriers.

   iii) Assists in the conversion of bibliographic records to machine-readable form.

4) A typical MARC record consists of three main sections: the leader, the directory, and the variable fields.

   - The *leader* consists of data elements that contain coded values and are identified by relative character position. It is also called as Record label in CCF and UNIMARC. Data elements in this section define parameters for processing the record. It is fixed in length (24 characters) and occurs at the beginning of each MARC record.

   - The *directory* contains the tag, starting location, and length of each field within the record. The length of the directory entry is defined in the entry map elements in Leader/20-23. In the MARC21 formats, the length of a directory entry is 12 characters, while in CCF it is 14 characters where character 13th and 14th are Segment Identifier and Occurrence Identifier. The directory ends with a *field terminator* character.

- The data content of a record is divided into *variable fields*. The MARC21 format distinguishes two types of variable fields: *variable control fields* and *variable data fields*.

5) The importance of CCF is that it provides a method for recording a number of mandatory and optional data elements. CCF helps in exchange of records between two or more computerized systems. CCF also converts the data in its processing format into the common format.

8.9 KEYWORDS

Coding : The digital representation of the characters.

Content : It refers to tags, indicators, sub-field codes, occurrence identifiers, etc.

Designator which describe or identify some attribute of a data element or group of data element.

Fixed Field : A field which has predetermined length and it cannot accommodate more characters than the specified earlier.

Format : Arrangement or presentation of data in the record

MARC : A machine-readable catalogue for the purpose of communicating bibliographic information to large number of libraries.

Variable Field : A field which can be extended to accommodate longer data as per requirement.

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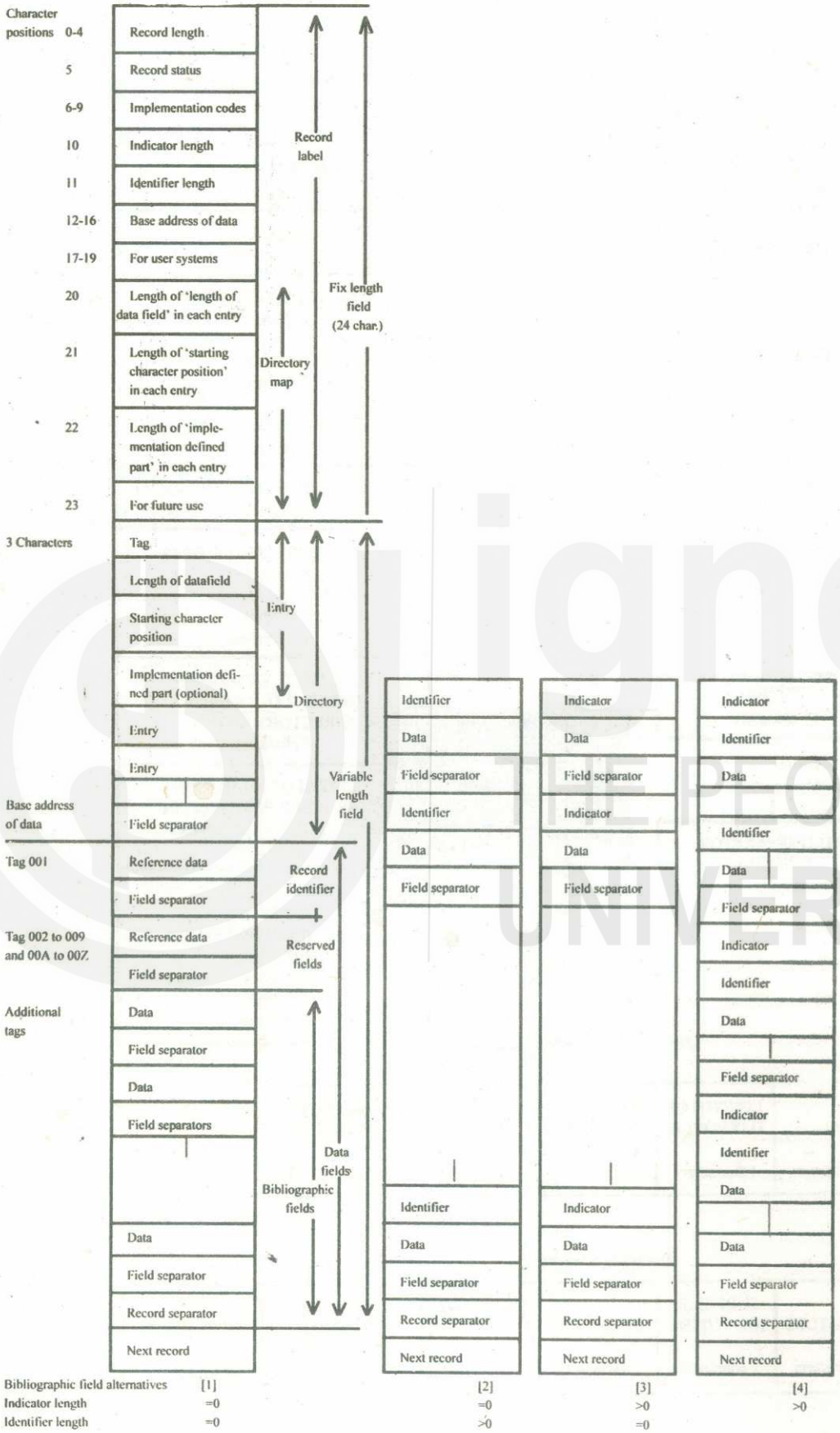
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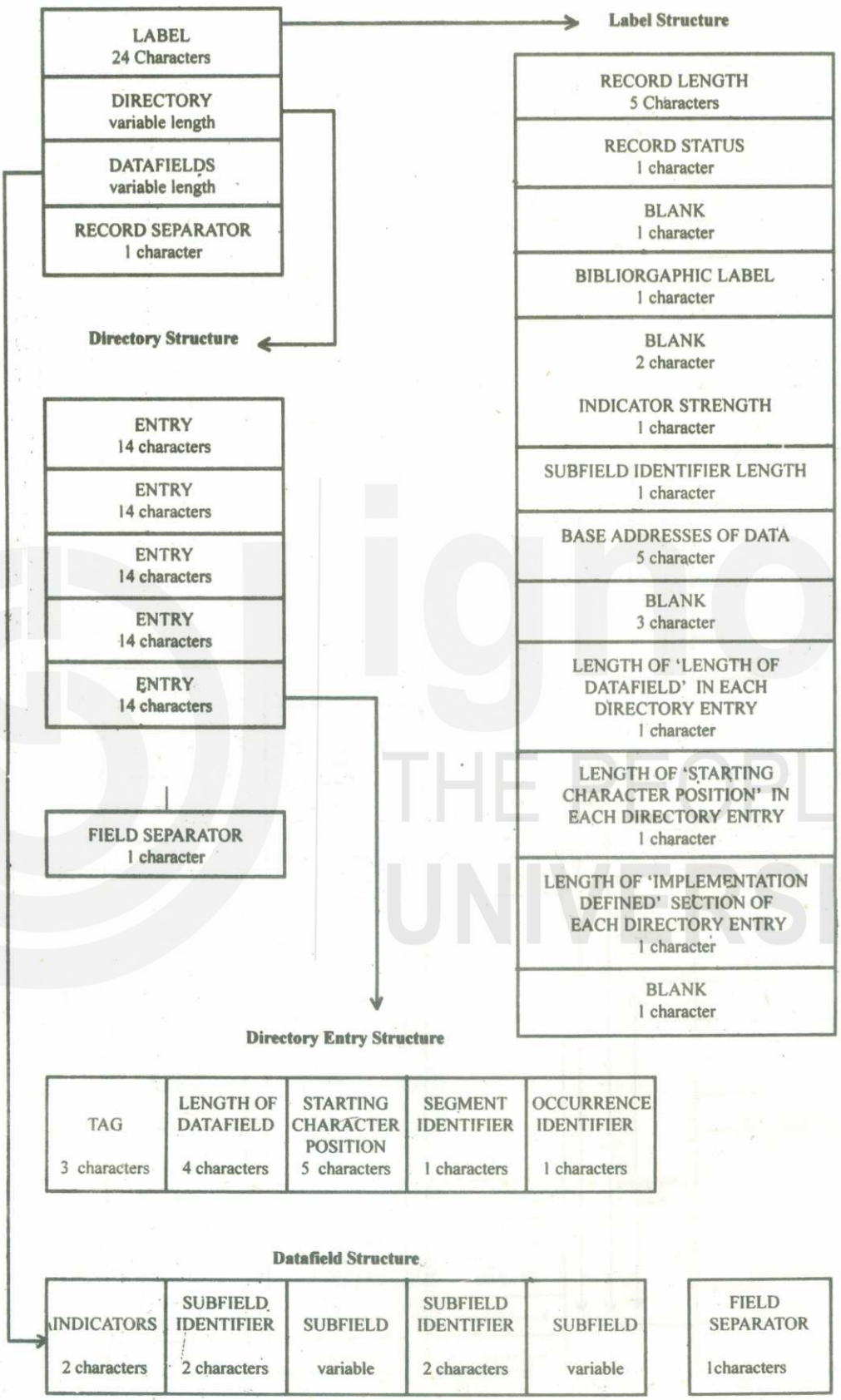
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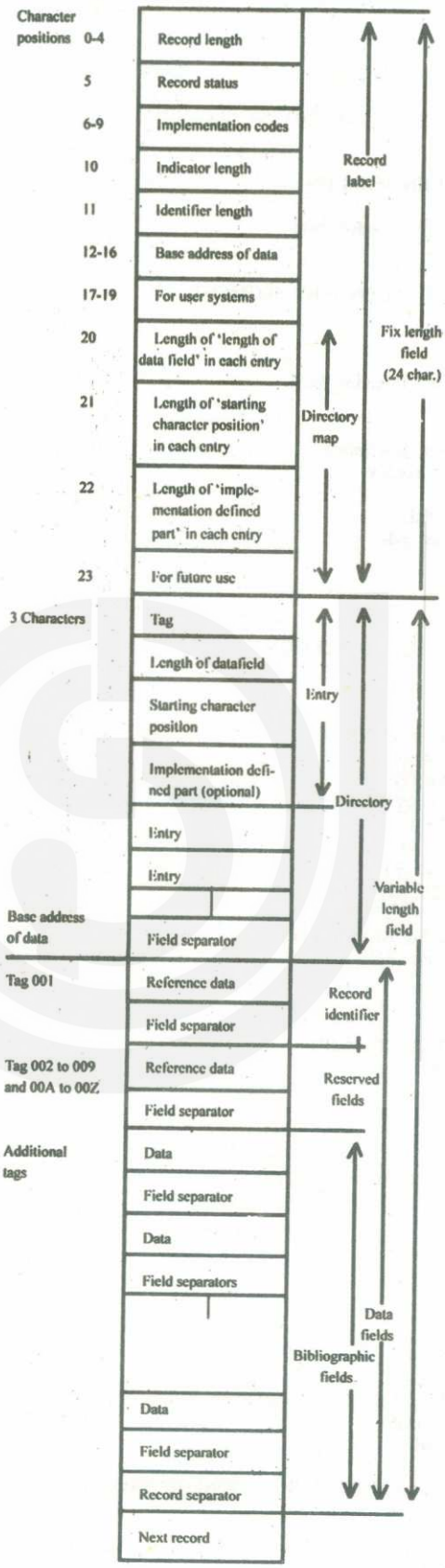
Appendix 1
Detailed MARC Record Structure



Appendix 2
Diagramatic Representation of the CCF Record Format



Appendix 3
Layout of the IS : 11370–1985 Record Format



Appendix 4
CCF List of Data Elements

Tag	*Name*
001	RECORD IDENTIFIER
010	RECORD IDENTIFIER USED IN A SECONDARY SEGMENT
010A	Identifier
011	ALTERNATIVE RECORD IDENTIFIER (R)
011A	Alternative identifier
011B	Identification of agency in coded form
011C	Name of agency
015	BIBLIOGRAPHIC LEVEL OF SECONDARY SEGMENT
015A	Bibliographic level
020	SOURCE OF RECORD
020A	Identification of agency in coded form
020B	Name of agency
020C	Name of code set
020D	Rules for bibliographic description
020L	Language of name of agency
021	COMPLETENESS OF RECORD
021A	Level of completeness code
022	DATE ENTERED ON FILE
022A	Date
023	DATE AND NUMBER OF RECORD VERSION
023A	Version date
023B	Version number
030	CHARACTER SETS USED IN RECORD
030A	Alternative Control Set (C1)
030B	Default Graphic Set (G0)
030C	Second Graphic Set (G1)
030D	Third Graphic Set (G2)
030E	Fourth Graphic Set (G3)
030F	Additional Control Set (R)
030G	Additional Graphic Set (R)
031	LANGUAGE AND SCRIPT OF RECORD (R)
031A	Language of the record (R)
031B	Script of the record (R)
040	LANGUAGE AND SCRIPT OF ITEM (R)
040A	Language of item (R)
040B	Script of item

(R) = Repeatable

041	LANGUAGE AND SCRIPT OF SUMMARY (R)
041A	Language of summary (R)
041B	Script of summary
050	PHYSICAL MEDIUM
051A	Physical medium code (R)
060	TYPE OF MATERIAL
060A	Type of material code (R)
080	SEGMENT LINKING FIELD: GENERAL VERTICAL RELATIONSHIP (R)
080A	Segment relationship code
080B	Segment indicator code
081	SEGMENT LINKING FIELD: VERTICAL RELATIONSHIP FROM MONOGRAPH
081A	Segment relationship code
081B	Segment indicator code

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082 SEGMENT LINKING FIELD: VERTICAL RELATIONSHIP FROM MULTI-VOLUME MONOGRAPH
082A Segment relationship code
082B Segment indicator code

083 SEGMENT LINKING FIELD: VERTICAL RELATIONSHIP FROM SERIAL
083A Segment relationship code
083B Segment indicator code

085 SEGMENT LINKING FIELD: HORIZONTAL RELATIONSHIP (R)
085A Segment relationship code
085B Segment indicator code

086 FIELD TO FIELD LINKING (R)
086A Field linked from
086B Field relationship code
086C Field linked to

100 INTERNATIONAL STANDARD BOOK NUMBER (R)
100A ISBN
100B Invalid ISBN (R)
100C Qualification (R)

101 INTERNATIONAL STANDARD SERIAL NUMBER (ISSN)
101A ISSN
101B Invalid ISSN (R)
101C Cancelled ISSN (R)

102 CODEN
102A Coden

110 NATIONAL BIBLIOGRAPHY NUMBER (R)
110A National bibliography number
110B National bibliogrphic agency code

111 LEGAL DEPOSIT NUMBER (R)
111A Legal deposit number
111B Legal deposit agency

120 DOCUMENT IDENTIFICATION NUMBER (R)
120A Document identification number
120B Type of number

200 TITLE AND ASSOCIATED STATEMENT(S) OF RESPONSIBILITY (R)
200A Title (R)
200B Statement of responsibility associated with title (R)
200L Language of title
200S Script of title

201 KEY TITLE
201A Key title
201B Abbreviated key title
201L Language of key title
201S Script of key title

210 PARALLEL TITLE AND ASSOCIATED STATEMENT(S) OF RESPONSIBILITY (R)
210A Parallel title
210B Statement of responsibility associated with parallel title (R)
210L Language of parallel title
210S Script of parallel title

220 SPINE TITLE (R)
220A Spine title
220L Language of spine title

221 COVER TITLE (R)
221A Cover title
221L Language of cover title

222 ADDED TITLE PAGE TITLE (R)
222A Added title page title
222L Language of added title page title

223 RUNNING TITLE (R)
223A Running title
223L Language of running title

230	OTHER TITLE (R)
230A	Other variant title
230L	Language of title
240	UNIFORM TITLE (R)
240A	Uniform title
240B	Number of part(s) (R)
240C	Name of part(s) (R)
240D	Form subheading (R)
240E	Language of item (as part of uniform title (R)
240F	Version
240G	Date of version
240L	Language of uniform title
240Z	Authority number
260	EDITION STATEMENT AND ASSOCIATED STATEMENT(S) OF RESPONSIBILITY (R)
260A	Edition statement
260B	Statement of responsibility association with edition (R)
260L	Language of edition statement
300	NAME OF PERSON (R)
300A	Entry element
300B	Other name elements
300C	Additional elements to name
300D	Date(s)
300E	Role (coded) (R)
300F	Role (non-coded) (R)
300Z	Authority number
310	NAME OF CORPORATE BODY (R)
310A	Entry element
310B	Other parts of name (R)
310C	Qualifier (R)
310D	Address of corporate body
310E	Country of corporate body
310F	Role (coded) (R)
310G	Role (non-coded) (R)
310L	Language of entry element
310S	Script of entry element
310Z	Authority number
320	NAME OF MEETING (R)
320A	Entry element
320B	Other parts of name (R)
320C	Qualifier (R)
320E	Country
320G	Location of meeting
320H	Date of meeting (in ISO Format)
320I	Date of meeting (in free Format)
320J	Number of meeting
320L	Language of entry element
320S	Script of entry element
320Z	Authority number
330	AFFILIATION (R)
330A	Entry element
330B	Other parts of the name (R)
330C	Qualifier (R)
330D	Address (R)
330E	Country of affiliation
330L	Language of entry element
400	PLACE OF PUBLICATION AND PUBLISHER (R)
400A	Place of publication (R)
400B	Name of publisher
400C	Full address of publisher (R)
400D	Country of publisher (R)
410	PLACE OF MANUFACTURE AND NAME OF MANUFACTURER (R)
410A	Place of manufacture (R)
410B	Name of manufacturer
410C	Full address of manufacturer (R)
410D	Country of manufacturer (R)

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420	PLACE AND NAME OF DISTRIBUTOR (R)
420A	Place of distributor (R)
420B	Name of distributor
420C	Full address of distributor (R)
420D	Country of distributor (R)
440	DATE OF PUBLICATION (R)
440A	Date of formalized form
440B	Date of non-formalized form
441	DATE OF LEGAL DEPOSIT
441A	Date of legal deposit
450	SERIAL NUMBERING
450A	Serial numbering and date
460	PHYSICAL DESCRIPTION
460A	Number of pieces and designation
460B	Other descriptive details
460C	Dimensions
460D	Accompanying material (R)
465	PRICE AND BINDING (R)
465A	Price (R)
465B	Binding (R)
465C	Date of price (R)
480	SERIES STATEMENT AND ASSOCIATED STATEMENT(S) OF RESPONSIBILITY (R)
480A	Series statement
480B	Statement of responsibility associated with series statement (R)
480C	Part statement
480D	ISSN
480L	Language of title
480S	Script of title
490	PART STATEMENT (R)
490A	Volume/part numeration and designation (R)
490B	Pagination defining a part
490C	Other identifying data defining a part
500	NOTE (R)
500A	Note
510	NOTE ON BIBLIOGRAPHICAL RELATIONSHIP (R)
510A	Note
520	SERIAL FREQUENCY NOTE (R)
520A	Frequency
520B	Dates of frequency
530	CONTENTS NOTE (R)
530A	Note
600	ABSTRACT (R)
600A	Abstract
600L	Language of abstract
610	CLASSIFICATION SCHEME NOTATION (R)
610A	Notation (R)
610B	Identification of classification scheme
620	SUBJECT DESCRIPTOR (R)
620A	Subject descriptor (R)
620B	Identification of subject system.

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UNIT 9 METADATA : MARC21-856 FIELD, DUBLIN CORE, TEI

Structure

9.0 Objectives

9.1 Introduction

9.2 MARC21 – 856 Field

- 9.2.1 MARC21
- 9.2.2 Field 856 in MARC21
- 9.2.3 Procedure of Electronic Resource Description

9.3 Dublin Core Metadata Initiative (DCMI)

- 9.3.1 Dublin Core and HTML
- 9.3.2 Dublin Core Elements
- 9.3.3 Search Engines Supporting the Dublin Core

9.4 Text Encoding Initiative (TEI)

- 9.4.1 Basics of TEI Markup Language

9.5 Summary

9.6 Answers to Self Check Exercises

9.7 Keywords

9.8 References and Further Reading

9.0 OBJECTIVES

In the previous Unit you have learnt about the record formats for print documents. Presently a substantial portion of information is available in electronic form. In this Unit we will be discussing some major international standards available for record formats of such documents.

After reading this Unit, you will be able to:

- understand the concept of Metadata with special reference to electronic information resources;
- understand MARC21 Field 856 structure and elements;
- identify Dublin Core metadata elements and their applications; and
- know Text Encoding Initiative and its elements.

9.1 INTRODUCTION

The information available in the Internet is so vast and easily accessible that library patrons today expect information services based on it. The library and information profession is traditionally equipped for handling huge information sources so long available in documents of non-electronic form. The absence of professional librarians' skills is well reflected in the indexing approach taken by the general search engines like Alta Vista, Google, Yahoo! etc. which are at the most successful in recall but definitely not in precision. In addition, the output of these search engines definitely lacks uniformity.

In keeping with the changes in form and format of sources of information, the AACR2, Revised edition 1988 uses a highly neutralised terminology in cataloguing.

For example, it uses 'item' instead of document. This trend is also reflected in many Machine Readable Catalogues (MARCs). The CCF uses 'Name of Person' for field 300. The idea is to catalogue any kind of information source, termed as item. The evolution of ISBDs definitely mirrors the changes in electronic information. The introduction of ISBD(NBM – Non-book-material), ISBD(CF – Computer Files), ISBD(ER – Electronic resources) was quite obvious. When Internet became widely popular, hosting a variety of information resources, soon it was realised that the neutralised terminology did not readily accommodate the requirements of describing Internet documents. In fact it implied that more tags are needed for the bibliographic descriptive elements in addition to the already existing huge number of tags.

In essence, there is an absolute need for describing the Internet or web based documents, so that search and retrieval are effective and efficient. The recent trends in providing bibliographic description (metadata) of web documents can be grouped into two. One approach is, embedding the bibliographic description in the HTML documents (or XML) and build search engines that look for the specific tags for indexing purpose. The second approach is to prepare the bibliographic records of web documents in a database management system, as is the case with MARCs. Though first one is the basic approach of Dublin Core, Dublin Core can be applied in the second approach.

The simplest definition of metadata is 'structured data about data'. Metadata is descriptive information about an object or resource – be it physical or electronic. While metadata itself is relatively new, the underlying concepts behind metadata have been in use for as long as collections of information have been organised. Library card catalogs represent a well-established type of metadata that has served as collection management and resource discovery tool for decades. Metadata can be generated either 'by hand' or derived automatically using software. The Unit discusses some standards such as MARC21, Dublin Core and TEI for description of online and electronic resources.

9.2 MARC21 – 856 FIELD

9.2.1 MARC21

The MARC21 format is a standard for the representation and communication of bibliographic and related information in machine-readable form.

A MARC record involves three elements: the record **structure**, the **content designation**, and the data **content** of the record [www.loc.gov/marc/856guide.html].

a) The **structure** of MARC records is an implementation of national and international standards, e.g., *Information Interchange Format* (ANSI Z39.2) and *Format for Information Exchange* (ISO 2709).

b) **Content designation**, the codes and conventions established to identify explicitly and characterise further the data elements within a record and to support the manipulation of those data, as defined in the MARC21 formats.

c) The **content** or data of most data elements is defined by standards outside the formats, e.g., *Anglo-American Cataloguing Rules*, *Library of Congress Subject Headings, etc.*

MARC21 has made provision for electronic resources. In the case of online resources the field 856 is assigned. Field 856 was defined in the USMARC bibliographic and holdings formats to contain information that identifies the electronic location of an item, including enough information to retrieve the item. When it was defined in early 1993, the Uniform Resource Locator (URL) was not an accepted standard and the World Wide Web was in the early stages of development. As institutions began to use the new electronic location field, they

began to discover various applications of it. The specifications for the field 856 as given by the latest MARC21 manual [www.loc.gov/marc/856guide.html] are discussed below:

9.2.2 Field 856 in MARC21

Field 856 in the MARC21 Information formats is used for electronic location and access information to an electronic resource and contains information related to the resource. The field may be used in a bibliographic or holdings record for a resource when that resource or a subset of it is available electronically. In addition, it may be used to locate and access an electronic version of a non-electronic resource described in the bibliographic record, part of the resource, or a related electronic resource. In an authority record it contains the electronic location information about the entity authorized by the record.

9.2.2.1 Content of Field 856

The data in field 856 may be a Uniform Resource Locator (URL), which is recorded in subfield $u, or it may parse the necessary locator information into separately defined subfields. An access method, or protocol used, is given as a value in the first indicator position (if access method is email, ftp, telnet, dial-up, or HTTP) or in subfield $2 (if access method is anything else). The access method is also the first element of the URL.

Repeatability

There are many reasons to include multiple 856 fields in records. Following are the most common examples:

- Different access methods (e.g., a document available through HTTP and from an FTP server);
- Different parts of the item are electronic, using $3 to indicate the part (e.g., table of contents accessible in one file and an abstract in another);
- Mirror sites (the same resource is made available at two different locations, often to facilitate access, perhaps internationally);
- Different formats/resolutions (e.g., the ASCII version of an electronic journal vs. the Web page for that journal; postscript and pdf formats, etc.); and
- Related items, using subfield $3 and second indicator value to specify.

Field 856 contains the following elements:

Indicators

First Indicator (Access Method). The first indicator contains information about access method to the resource and has values defined for Email, FTP, Telnet, Dial-up, and HTTP. Access methods without defined values may contain a first indicator value 7 with the method indicated in $2.

Second Indicator (Relationship). A second indicator is provided to show the relationship between the information in field 856 and the resource described in the record. This may be used for generation of a display constant.

First	Access Method	Second	Relationship
#	No information provided	#	No information provided
0	Email	0	Resource
1	FTP	1	Version of resource
2	Remote login (Telnet)	2	Related resource
3	Dial Up	8	No display content generated
4	HTTP		
7	Method specified in subfield $2		

- *First - Access Method*

  It is a value that defines the access method to the electronic resource. If the resource is available by more than one access method, the field is repeated. When recording a URL in subfield $u, the value corresponds to the access method (URL scheme), which is also the first element in the string.

  - # - No information provided

    Indicates that no information about access method is provided. This value is used when subfield $u contains a URN and there is no URL recorded. When subfield $u contains a URL and the subfield is repeated with a URN, the indicator value for the appropriate access method of the URL is given.

  - 0 - Email

    Indicates that access is through the Mail Transfer Protocol (MAILTP).

  - 1 - FTP

    Indicates that access is through the File Transfer Protocol (FTP).

  - 2 - Remote login (Telnet)

    Indicates that access is through remote login using an application such as Telnet.

  - 3 - Dial-up

    Indicates that access to the electronic resource is through a conventional telephone line (*dial-up*).

  - 4 - HTTP

    Indicates that access to the electronic resource is through the Hypertext Transfer Protocol.

  - 7 - Method specified in subfield $2

- *Second-Relationship*

  A value that identifies the relationship between the electronic resource at the location identified in field 856 and the item described in the record as a whole. Subfield $3 is used to provide further information about the relationship if it is not a one-to-one relationship.

  - # - No information provided
  - 0 - Resource indicates that the electronic location in field 856 is for the same resource described by the record as a whole. In this case, the item represented by the bibliographic record is an electronic resource. If the data in field 856 relates to a constituent unit of the resource represented by the record, subfield $3 is used to specify the portion(s) to which the field applies.
  - 1 - Version of resource
    Indicates that the location in field 856 is for an electronic version of the resource described by the record. In this case, the item represented by the bibliographic record is not electronic but an electronic version is available. If the data in field 856 relates to a constituent unit of the resource represented by the record, subfield $3 is used to specify the portion(s) to which the field applies.
  - 2 - Related resource
    Indicates that the location in field 856 is for an electronic resource that is related to the item described by the record. In this case, the item represented by the bibliographic record is not the electronic resource itself. Subfield $3 can be used to further characterize the relationship between the electronic item identified in field 856 and the item represented by the bibliographic record as a whole.
  - 8 - No display content generated

Subfield Codes:

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

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The most commonly used subfields are as follows:

Subfield $u = [HTTP URL]

Subfield $2 = Access method when first indicator is 7

Subfield $3 = data specifying what URL refers to, if applicable

Subfield $z = Public note.

Commonly used Subfields

- **$u:** Uniform Resource Identifier (URI) provides standard syntax for locating an object using existing Internet protocols. Field 856 is structured to allow for the creation of a URL from the concatenation of other separate 856 subfields. Subfield $u may be used instead of those separate subfields or in addition to them. Subfield $u may be repeated only if one location of the digital object has multiple identifiers (URIs). The field is repeated if the digital object has multiple locations.
- **$3 (Materials Specified)**: Subfield $3 is used to specify to what portion or aspect of the resource the electronic location and access information applies. $3 is used to indicate a portion of the resource is electronic. For example: $3table of contents; $3abstract OR to indicate a related electronic resource which is linked to the record. Example: $3scanned image of photograph

- **$z (Public Note)**: Subfield $z may be used for any additional notes about the electronic resource at the specified location. Examples include subscription information or access restrictions. Example for a mail to URL: $zaccess only through password no guest logins OR $zspecify the desired file format for attachments

Examples

Example 1: Information resource by *remote login to DRTC server* is represented using field 856 as shown below:

8562#$utelnet://drtc.isibang.ac.in$nIndian Statistical Institute, India

Here the descriptive elements are given for a remote login resource where the IP address of the DRTC server is 'drtc.isibang.ac.in' and the actual address is 'Indian Statistical Institute, India'.

Analysis of the description given above:

Field Tag:	856		
Indicators:	2	Access method	telnet
	Blank (#)	Relation	not specified
Subfields:	u	URL	
	n	name of location of the host	

Subfields delimiters: $

Example 2: If the resource is a *downloadable archive* on DRTC server it may be represented as below:

8561#$uftp://drtc.isibang.ac.in/software/downloads/ida.zip$cdecompress with winzip$madmin@ drtc.isibang.ac.in$nIndian Statistical Institute, Bangalore, India$oWindows$s1:52MB

Example 3: The resource *DRTC website* may be described as shown here:

8564#$uhttp://drtc.isibang.ac.in$madmin@drtc.isibang.ac.in$Indian Statistical Institute, Bangalore, India

Example 4: Mirror Sites are sites where information from one is 'copied' or mirrored in the other for ease of access and downloading. Mirror site is one instance where field 856 is a repeated field. An example is shown below:

8561#$uftp://drtc.isibang.ac.in/software/downloads/ida.zip$uftp://isical.ac.in/drtc/pub/ida.zip$madmin@drtc.isibang.ac.in$Indian Statistical Institute, Bangalore, India$oWindows$s1.52MB

8561#$uftp://isibang.ac.in/drtc/pub/ida.zip$madmin@drtc.isibang.ac.in$Indian Statistical Institute, Bangalore, India$oWindows$s1.52MB

Example 5: Link to a subset of the bibliographic item: HTTP URL

8564#$3Table of contents $uhttp://drtc.isibang.ac.in/Seminar/digilib/toc.html

9.2.3 Procedure of Electronic Resource Description

You already have an idea about ISBD (ER). ISBD (ER) forms the basis of electronic resource description for many standard cataloguing codes and content designator schemas. Let us examine encoding of web resources by using MARC

21 content designator standard and on the basis of corresponding AACR 2 rules. We will concentrate only on major areas of description. Note that discussion headings are arranged in the style MARC21 Tag, Description of Tag (Corresponding Rule Number of AACR2).

Fixed Fields

Use the fixed fields for monographs (type a) or serials (type s), depending on the nature of the resource. For most Web sites, use date type "m" (multiple), with an open date to reflect the fact that the resource is subject to updating. Add an 006 secondary fixed field to reflect the "electronic resource" nature of the title and an 007 for the physical characteristics such as sound, color, etc.

Example of fixed field encoding

006 Type m = Electronic resource; Audn = Intended audience (blank = not specified) File = File type (d=document; j=online system or service; m=combination); Gpub = Government publication (f for federal, s for state, etc.)

007 Physical description fixed field
$a category = c, computer file
$b specific material designation= r, remote resource
$d color (most Web pages will be m, multicolor)
$e dimensions (for Web pages use n, N/A)
$f sound (blank=no sound, a=sound)
$g image bit depth (u=unknown)
$h file format (a=one format, m=multiples, u=unknown)
$i quality assurance targets (u=unknown)
$j antecedent/source (u=unknown)
$k level of compression (a=uncompressed, u=unknown)
$l reformatting quality (a=access, n=N/A, p=preservation, r=replacement, u=unknown)

Variable Fields

Before discussing different major variable fields, we should pay attention to sources of information for describing electronic resources. Usually the main source of information will be the title screen; however, according to the 2002 revision of AACR2 Chapter 9, the entire resource serves as the chief source of information for an electronic resource. This means it will not be necessary to bracket information that appears in locations other than the title screen. In addition to the home page screen, look carefully at other pages and at the document's HTML source page to see if there is additional information you need to add to the record. Relevant information can appear anywhere on a Web site. (AACR 9.0B1-2).

1xx Author field. (AACR 21.4B1, 21.1A1)

Many Web sites will not have a known author. If the resource is the official site for a corporate body or government agency, consider it to be the author (21.4B1). Personal creators of Web sites should not be given as authors in a 100 field unless the site being cataloged is that person's own site (21.1A1-variation).

Example

Web site being cataloged: Mississippi Dept. of Vital Statistics home page; Author of site content listed in document source: Sheryl Smith

Main entry: 110 1 Mississippi. $b Dept. of Vital Statistics.

245 10 Mississippi Department of Vital Statistics $h [electronic resource] / $c [Sheryl Smith].

Added entry: 700 1 Smith, Sheryl.

245 Title proper. (AACR 9.1C1)

Usually the title will be taken from the home page screen. Add the general material designation (GMD) "electronic resource" in 245 $h, immediately after the title proper. Transcribe statements of responsibility as indicated in 1.1F. Rule 9.1F2 instructs catalogers to add a word or short phrase to the statement of responsibility if the relationship between the title and the name in the statement of responsibility is not clear.

Example

245 00 Mississippi statistical summaries $h [electronic resource] / $c [maintained by] David Reynolds.

246 Variant title. (AACR 9.7B4)

Examine the document source to see if there is an alternative title that needs to be entered in a 246 field. You may also add a 246 for a title that does not actually appear on the site but which patrons may likely to look under, such as a phrase containing a widely used corporate acronym.

Example: 245 10 Mississippi Department of Transportation $h [electronicresource].
246 3 MDOT home page

256 Type of resource. (AACR 9.3B1)

AACR2 allows three descriptions: Electronic data, Electronic programs, and Electronic data and programs. Web sites consisting primarily of text should be designated Electronic data. Sites that have an interactive component such as a search engine are designated Electronic data and programs. Give extent of resource in parentheses if available (number of files, records, bytes, etc.)

Example: 256 Electronic data (1 file: 13 megabytes)

260 Publication information. (AACR 9.4B2)

Rule 9.4B2 says to consider all remote access electronic resources to be published. The publication information is usually taken from the contact information at the bottom of the home page, where the corporate body gives its physical address. Web pages authored by individuals may not have publication information. If a date is given (e.g. "c2001"), give as an open date in 260 $c (i.e., c2001-) (variation on 9.4F1). In case of multiple copyright dates which apply to various aspects of the resource, use only the latest copyright date (9.4F4).

Example: 260 $a Washington, DC : $b Worldnews Online, $c [1995-

270 Contact address.

Most corporate Web sites include a contact address at the bottom of the home page. Give this address in a 270 field in the following form:

Example: 270 $i Contact address: $a email@host.domain

300 Physical descriptions. (AACR 9.5)

Do not use for Web pages; electronic resources are considered non-physical objects. (9.5, footnote). Some libraries' local practice require giving information such as "1 Web site" or "1 Web resource" in the 300 field.

ignou THE PEOPLE'S UNIVERSITY

516 Nature and scope of the resource. (AACR 9.7B1a)

For Web pages, use the phrase "World Wide Web resource." Information currently entered in the 256 field may eventually be included in the 516.

538 System requirements. (AACR 9.7B1b)

The type of hardware and software needed to access the resource. Include mention of any programs needed to access specific files on the site.

Example: 538 System requirements: World Wide Web browser with Internet connectivity; Adobe Acrobat Reader required for abstracts and full text.

538 Mode of access. (AACR 9.7B1c)

Add another 538 field to indicate mode of access.

Example: 538 Mode of access: World Wide Web.

500 General note: source of title proper. (AACR 9.7B3)

Always give the source of the title proper. For Web pages, also give the date the resource was viewed (9.7B22). These can be combined into a single note.

Example: 500 Title from home page screen, viewed Feb. 19, 2005.

500 General note: title variations. (AACR 9.7B4)

Many title variations can be expressed through the 246 field; give others in a 500 note, e.g.

246 1 $i Title from document source: $a MLA home page
246 1 $i Parallel title in HTML header: $a Ressources minérales du Canada

But for a title that does not apply to the resource you are cataloguing:

500 Companion site: Butterflies of the United States.

500 General note: physical description. (AACR 9.7B10)

Give information about physical details that may affect use of the item.

Example: 500 Includes sound clips for selected text.

521 Audience. (AACR 9.7B14)

Make a note of the intended audience if the information is stated in the resource.

Example: 521 For use by qualified medical practitioners only.

530 Other formats. (AACR 9.7B16)

Use if the content has been issued in another format (e.g., print or microform).

520 Summary. (AACR 9.7B17)

Give a brief summary that indicates the nature of the site and its contents.

Example: 520 Features the Mississippi Dept. of Mental Health. Site includes statement of philosophy, list of state mental health facilities, and links to other mental health resources.

505 Contents. (AACR 9.7B18)

List the parts of a resource. Optional for Web pages, since section headers can change frequently.

Example: 505 0 K-12 requirements – Reading readiness – Remedial courses.

506 Restrictions on access. (AACR 9.7B20)

Use to indicate any restrictions on accessing the site.

Example: 506 Registration and password required to access search engine.

6xx Subject headings.

Include topical headings; corporate or personal headings if the site is about a corporate entity or a person; and, if desired, a genre heading (655) for Computer network resources.

7xx•Corporate/personal author added entries.

Give as needed. Remember to check source document for personal or corporate contributors to the site.

856 URL.

For Web sites, the first indicator will be "4," indicating an http address, and the second will be "0," indicating that you are cataloging the resource itself (not a related resource or a reproduction).

Example: 856 40 $u http://www.lib.usm.edu

Full Examples of Online Information Resource with World Wide Web Access according to AACR2 and MARC21 are given below as illustrations:

AACR 2 Examples

Electronic Beowulf [Electronic resource]. - Electronic interactive multimedia. - [Great Britain?] : Electronic Beowulf Project, cop. 1995.
Mode of access: World Wide Web. URL: http://portico.bl.uk/access/electronic-beowulf.html.
Title from title screen.
Digitised images developed by the British Library with Kevin Kiernan and PaulSzarmach.
Summary: Introduction to the Electronic Beowulf Project including images of the manuscript.

Callaloo [Electronic resource]. - Electronic journal. - Baltimore (MD) : Johns Hopkins University Press, cop. 1995-
Quarterly.
18.1 (winter 1995)-
Mode of access: Internet via World Wide Web. URL: http://muse.jhu.edu/journals/callaloo.
Title from title screen.
Also available in a print ed.

MARC21 Example

Sl No.	MARC Tag	Description of Resource (along with MARC subfields)
1	040	UOK $c UOK
2	007	$a c $b r $d u $e n $f u
5	245	$a Worldnews online $h [computer file].
6	246	$a World news online
7	256	$a Computer online service.
8	260	$a Washington, DC : $b Worldnews Online, $c [1995-
9	538	$a Mode of access: Internet.
10	500	$a Title from title frame.
11	520	$a "WorldNews OnLine is a service that brings newspapers and news services from around the world to a global community of multi-lingual people who need news from far away places ... our on-line publications have full text of each day's edition on the same day it appears in its local market. The papers may be accessed via any World Wide Web client that supports user authentication."
12	650	$a Newspapers $x Databases.
13	856	$u http://worldnews.net $2 http

Self Check Exercises

1) Explain the elements of a MARC record?

2) What are the contents of the MARC-856 field?

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

.....

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9.3 DUBLIN CORE METADATA INITIATIVE (DCMI)

The Dublin Core Metadata Initiative (DCMI) is an organization dedicated to fostering the widespread adoption of interoperable metadata standards and promoting the development of specialized metadata vocabularies for describing resources to enable more intelligent resource discovery systems [DCMI].

The Dublin Core Metadata Element Set (DCMES) was the first metadata standard deliverable out of the DCMI. DCMES provides a semantic vocabulary for describing the 'core' information properties, such as 'Description' and 'Creator' and 'Date'.

Dublin Core metadata is used to supplement existing methods for searching and indexing Web-based metadata, regardless of whether the corresponding resource is an electronic document or a 'real' physical object.

Web pages are one of the most common types of resources to utilise the Dublin Core's descriptions, usually within HTML's meta tags. However increasingly there are many digital archives of physical objects that are starting to make use of the Dublin Core. Dublin Core metadata is often stored as name-value pairs within META tags, which are placed within the HEAD elements of an HTML document. However, it can also be located in an external document or loaded into a database enabling it to be indexed and manipulated from within a proprietary application.

9.3.1 Dublin Core and HTML

The Dublin Core [DC1] is a small set of metadata elements for describing information resources. The following sections explain how these elements are expressed using the META and LINK tags of HTML [HTML4.0].

HTML is not case-sensitive, so it does not matter if you enter the DC elements in either CAPS or small letters. But, it is advisable to be consistent in this matter, in case the metadata needs to be transported to an XML file, since XML is case-sensitive. For example, in XML *'author'* is different from *'Author'*. Though HTML is currently in wide use, once standardized, eXtensible Markup Language [XML] in conjunction with the Resource Description Framework [RDF] promises to become a significantly more expressive means of encoding metadata.

9.3.1.1 META Tag

The META tag of HTML is designed to encode a named metadata element. Each element describes a given aspect of a document or other information resource. For example, this tagged metadata element,

```
<meta name  = "DC.Creator"
      content = "Simpson, Homer">
```

says that Homer Simpson is the Creator, where the element named Creator is defined in the DC element set. In the more general form,

```
<meta name  = "PREFIX.ELEMENT_NAME"
      content = "ELEMENT_VALUE">
```

The capitalised words are meant to be replaced in actual descriptions; thus in the example,

```
ELEMENT_NAME  is: Creator
ELEMENT_VALUE is: Simpson, Homer
PREFIX        is: DC
```

Within a META tag the first letter of a Dublin Core element name is capitalized. DC places no restriction on alphabetic case in an element value and any number of META tagged elements may appear together, in any order. More than one DC element with the same name may appear, and each DC element is optional. The next example is a book description with two authors, two titles, and no other metadata.

```
<meta name  = "DC.Title"
      content = "The Communist Manifesto">
```

```
<meta name   = "DC.Creator"
      content = "Marx, K.">
<meta name   = "DC.Creator"
      content = "Engels, F.">
<meta name   = "DC.Title"
      content = "Capital">
```

The prefix 'DC' precedes each Dublin Core element encoded with META, and it is separated by a period (.) from the element name following it. Each non-DC element should be encoded with a prefix that can be used to trace its origin and definition; the linkage between prefix and element definition is made with the LINK tag, as explained in the next section. Non-DC elements, such as Email from the A-Core [AC], may appear together with DC elements, as in

```
<meta name   = "DC.Creator"
      content = "Da Costa, Jos&eacute;">
<meta name   = "AC.Email"
      content = "dacostaj@peoplesmail.org">
<meta name   = "DC.Title"
      content = "Jesse &#34;The Body&#34; Ventura-A Biography">
```

This example also shows how some special characters may be encoded. The author name in the first element contains a diacritic encoded as an HTML character entity reference – in this case an accented letter E. Similarly, the last line contains two double-quote characters encoded so as to avoid being interpreted as element content delimiters.

9.3.1.2 LINK Tag

The LINK tag of HTML may be used to associate an element name prefix with the reference definition of the element set that it identifies. A sequence of META tags describing a resource is incomplete without one such LINK tag for each different prefix appearing in the sequence. The previous example could be considered complete with the addition of these two LINK tags:

```
<link rel   = "schema.DC"
      href  = "http://purl.org/DC/elements/1.0/">
<link rel   = "schema.AC"
      href  = "http://metadata.net/ac/2.0/">
```

In general, the association takes the form

```
<link rel   = "schema.PREFIX"
      href  = "LOCATION_OF_DEFINITION">
```

where, in actual descriptions, PREFIX is to be replaced by the prefix and LOCATION_ OF_DEFINITION by the URL or URN of the defining document. When embedded in the HEAD part of an HTML file, a sequence of LINK and META tags describes the information in the surrounding HTML file itself. Here is a complete HTML file with its own embedded description.

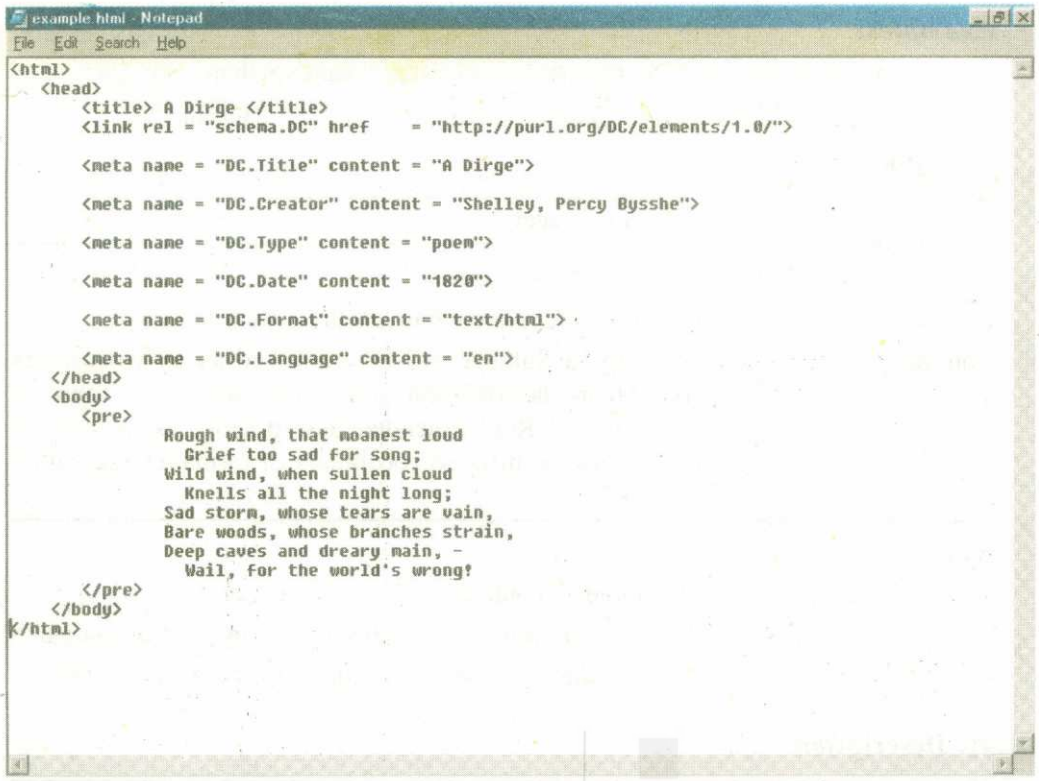


Fig. 9.1: Dublic Core Meta Tags

9.3.2 Dublin Core Elements

The 15 core elements of Dublin core are – Title, Creator, Subject, Description, Publisher, Contributor, Date, Type, Format, Identifier, Source, Language, Relation, Coverage, Rights. The latest additions are the Audience and rightsHolder elements [DCMI]. These 17 elements are described below:

1) **Title**

	Title
Label:	Title
Definition:	A name given to the resource.
Comment:	Typically, a Title will be a name by which the resource is formally known.

Examples:

<meta name = "DC.Title" content = "Introduction to Philosophy">

<meta name = "DC.Title" content = "Prolegomena to Library Classification">

2) **Creator**

	Creator
Label:	Creator
Definition:	An entity primarily responsible for making the content of the resource.
Comment:	Examples of a Creator include a person, an organisation, or a service. Typically, the name of a Creator should be used to indicate the entity.

Examples:

<meta name = "DC.Creator" content = "Ranganathan, S.R.">

<meta name = "DC.Creator" content = "Russel, Betrand">

3) **Subject**

Subject	
Label:	Subject and Keywords
Definition:	The topic of the content of the resource.
Comment:	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme.

Examples:

<meta name = "DC.Subject" content = "Bamian Buddha">

<meta name = "DC.Subject" scheme = "MESH" content = "Carcenoma">

<meta name = "DC.Subject" scheme = "ddc" content = "201.23">

4) **Description**

Description	
Label:	Description
Definition:	An account of the content of the resource.
Comment:	Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content.

Examples:

<meta name="DC.Description" lang="en" content = "The author presents a tutorial introduction to Perl programming examples with extensive examples on regular expressions. He also deals with scripting in Perl">

5) **Publisher**

Publisher	
Label:	Publisher
Definition:	An entity responsible for making the resource available
Comment:	Examples of a Publisher include a person, an organisation, or a service. Typically, the name of a Publisher should be used to indicate the entity.

Examples:

<meta name = "DC.Publisher" content = "Wrox">

<meta name = "DC.Publisher" content = "Dell Computers">

<meta name = "DC.Publisher" content = "MIT Press">

6) **Contributor**

Contributor	
Label:	Contributor
Definition:	An entity responsible for making contributions to the content of the resource.
Comment:	Examples of a Contributor include a person, an organisation, or a service. Typically, the name of a Contributor should be used to indicate the entity.

Examples:

<meta name = "DC.Contributor" content = "Laxman, R.K.">

<meta name = "DC.Contributor" content = "Knuth, Donald">

7) **Date**

	Date
Label:	Date
Definition:	A date associated with an event in the life cycle of the resource.
Comment:	Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and follows the YYYY-MM-DD format.

Examples:

<meta name = "DC.Date" content = "1990">

<meta name = "DC.Date" content = "1990-05-14">

<meta name = "DC.Date.Created" content = "1990-05-14">

<meta name = "DC.Date.Available" content = "1998-05-21">

<meta name = "DC.Date.Valid" content = "1998-05-28">

<meta name = "DC.Date.Accepted" content = "1998-12-02T16:59">

<meta name = "DC.Date.Issued" scheme = "W3CDTF" content = "1998-05">

8) **Type**

	Type
Label:	Resource Type
Definition:	The nature or genre of the content of the resource.
Comment:	Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, the DCMI Type Vocabulary [DCMITYPE]). To describe the physical or digital manifestation of the resource, use the Format element.

Examples:

<meta name = "DC.Type" content = "drama">

<meta name = "DC.Type" content = "software">

<meta name = "DC.Type" content = "software program source code">

<meta name = "DC.Type" content = "interactive video game">

<meta name = "DC.Type" scheme = "DCMI Type" content = "dataset">

<meta name = "DC.Type" content = "web home page">

<meta name = "DC.Type" content = "web bibliography">

<meta name = "DC.Type" content = "painting">

9) **Format**

format	
Label:	Format
Definition:	The physical or digital manifestation of the resource.
Comment:	Typically, Format may include the media-type or dimensions of the resource. Format may be used to determine the software, hardware or other equipment needed to display or operate the resource. Examples of dimensions include size and duration. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [MIME] defining computer media formats).

Examples:

<meta name = "DC.Format" content = "text/xml">

<meta name = "DC.Format" scheme = "IMT" content = "text/xml">

<meta name = "DC.Format" scheme = "IMT" content = "image/jpeg">

<meta name = "DC.Format" content = "video/mpeg">

<meta name = "DC.Format" content = "unix tar archive, gzip compressed">

10) **Identifier**

Identifier	
Label:	Resource Identifier
Definition:	An unambiguous reference to the resource within a given context.
Comment:	Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Example formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN).

Examples:

<meta name = "DC.Identifier" scheme= "URI"
content = "http://www.google.com/">

<meta name = "DC.Identifier"scheme = "ISBN" content = "1-56592-149-6">

11) **Source**

Source	
Label:	Source
Definition:	A reference to a resource from which the present resource is derived.
Comment:	The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

Examples:

<meta name = "DC.Source" content = "Bernard Shaw's Saint Joan">

<meta name = "DC.Source" content = "http://abc.org/xyz/">

12) **Language**

	Language
Label:	Language
Definition:	A language of the intellectual content of the resource.
Comment:	Recommended best practice is to use RFC 3066 [RFC3066], which, in conjunction with ISO 639 [ISO639], defines two- and three-letter primary language tags with optional subtags. Examples include "en" or "eng" for English, "akk" for Akkadian, and "en-GB" for English used in the United Kingdom.

Examples:

<meta name = "DC.Language" content = "en">

<meta name = "DC.Language" scheme = "rfc3066" content = "en-US">

<meta name = "DC.Language" content = "es">

13) **Relation**

	Relation
Label:	Relation
Definition:	A reference to a related resource.
Comment:	Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

Examples:

<meta name = "DC.Relation.IsPartOf" content = http://foo.bar.org/abc/proceedings/1998/">

<meta name = "DC.Relation.IsFormatOf"
content = "http://foo.bar.org/cd145.sgml">

<meta name = "DC.Relation.IsVersionOf"
content = "http://foo.bar.org/draft9.4.4.2">

<meta name = "DC.Relation.References"
content = "urn:isbn:1-56592-149-6">

<meta name = "DC.Relation.IsBasedOn"
content = "Shakespeare's Romeo and Juliet">

14) **Coverage**

	Coverage
Label:	Coverage
Definition:	The extent or scope of the content of the resource.
Comment:	Coverage will typically include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of coordinates or date ranges.

Examples:

```
<meta name    = "DC.Coverage"
      content = "US civil war era; 1861-1865">
<meta name    = "DC.Coverage"
      content = "Columbus, Ohio, USA; Lat: 39 57 N Long: 082 59 W">
<meta name    = "DC.Coverage.Jurisdiction"
      content = "Commonwealth of Australia">
```

15) **Rights**

Rights	
Label:	Rights Management
Definition:	Information about rights held in and over the resource.
Comment:	Typically, a Rights element will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights. If the Rights element is absent, no assumptions can be made about the status of these and other rights with respect to the resource.

Examples:

```
<meta name    = "DC.Rights"
      lang    = "en"
      content = "Copyright Acme 1999 - All rights reserved.">
<meta name    = "DC.Rights"
      content = "http://foo.bar.org/cgi-bin/terms">
```

16) **Audience**

Audience	
Label:	Audience
Definition:	A class of entity for whom the resource is intended or useful.
Comment:	A class of entity may be determined by the creator or the publisher or by a third party.

Examples:

```
<meta name = "DC.Audience"
      content = "software developers">
<meta name = "DC.Audience"
      content = "post graduate students">
```

17) **Rights Holder**

	rightsHolder
Label:	Rights Holder
Definition:	A person or organization owning or managing rights over the resource.
Comment:	Recommended best practice is to use the URI or name of the Rights Holder to indicate the entity.

Examples:

```
<meta name    = "DC.rightsHolder"
      content = "Disney Productions">
<meta name = "DC.rightsHolder"
      content = "Warner Brothers Limited">
```

9.3.3 Search Engines Supporting the Dublin Core

Several commercial and non-commercial search engines index Dublin Core META elements with just a little configuration. A recent inquiry on the dc-general mailing list produced this list:

- Ultraseek
- Swish-E
- Microsoft's Index Server
- Blue Angel Technologies MetaStar
- Verity Search 97 Information Server

To get a good overview of what software is available see 'Search Tools' <http://www.searchtools.com/> and 'Search Engine Watch' <http://searchenginewatch.com/>. The well-known 'All the Web' search engines including AltaVista, Yahoo!, HotBot, etc. tend to avoid using the information found in meta elements in their indexing. This is because, unless the pages are from guaranteed 'trusted' servers, the meta information is commonly used by unscrupulous content-providers for spamming, to mislead the indexes into giving web-pages a misleading rating.

Self Check Exercise

3) What is DCMI? How is Dublin Core Metadata different from other cataloguing schemas?

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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9.4 TEXT ENCODING INITIATIVE (TEI)

The Text Encoding Initiative (TEI) was founded in 1987 to develop guidelines for encoding machine-readable texts of interest to the humanities and social sciences. The TEI is an international and interdisciplinary standard that helps libraries, museums, publishers, and individual scholars represent all kinds of literary and linguistic texts for online research and teaching, using an encoding scheme that is maximally expressive and minimally obsolescent [Martin Mueller].

The TEI markup language is a form of SGML or Standard Generalized Markup Language that was developed in the seventies by Charles Goldfarb at IBM, and it has become an international standard (ISO 8879). It became popular when HTML, a subset of it was developed by Tim Berners-Lee at the CERN labs in Geneva and within a few years became the language of the Internet.

Initially, TEI was as a cooperative research effort by three scholarly societies (the Association for Computers and the Humanities, the Association for Computational Linguistics, and the Association for Literary and Linguistic Computing), and funded solely by substantial research grants from the US National Endowment for the Humanities, the European Union, the Canadian Social Science Research Council, the Mellon Foundation, and others. In December 2000, after a year's negotiation, a new non-profit corporation called the TEI Consortium was set up to maintain and develop the TEI standard.

9.4.1 Basics of TEI Markup Language

There are two different versions of the TEI markup language. The full version of the TEI markup language includes about 450 different elements to satisfy all manner of scholarly needs in the humanities. Teixlite (the XML version of TEI) contains about 150 elements. It is largely based on the experience of marking up the wide variety of electronic texts held in the Oxford Text Archive (OTA) [www.tei-c.org].

All TEI-conformant texts contain (a) a TEI header (marked up as a <teiHeader> element) and (b) the transcription of the text proper (marked up as a <text> element). The TEI header has four parts: a bibliographic description of the machine-readable text, a description of the way it has been encoded, a non-bibliographic description of the text (a text profile), and a revision history.

The text may have an optional *front* or *back*. In between is the *body* of the text, the overall structure looks like this:

```
<TEI.2>
 <teiHeader> [ TEI Header information ] </teiHeader>
 <text>
  <front> [ front matter ... ] </front>
  <body> [ body of text ... ] </body>
  <back> [ back matter ... ] </back>
 </text>
</TEI.2>
```

Example:

```
<TEI.2>
    <teiHeader>[header content]</teiHeader>
    <text>
```

```
<front>[front content]</front>
<body>
 <head>My novel</head>
 <div type="chapter" n="1">
  <head>Chapter One</head>
  <p>It was a dark and stormy night</p>
 </div>
</body>
<back>[back content]</back>
</text>
</TEI.2>
```

In the above example,

1) The <head> element contains headlines or section titles
2) The element contains sections of a document beyond the paragraph level. elements can nest within each other.

The <p> element contains paragraphs as the basic discursive unit. Paragraphs cannot nest within each other.

9.4.1.1 Grouping Elements

In HTML parlance, there is a distinction between block elements and inline elements. Block elements are the kinds of things that begin a new line, whereas inline elements occur within a line. The practical value of this distinction shows how deeply formatting habits shape our thinking. The full version of the TEI has a formal and quite complex system of classifying element groups, but for the purpose of easy understanding some of the elements are grouped as follows:

a) Major structuring elements: TEI.2, teiHeader, text, body, front, back, div, head
b) Paragraph level or 'block' elements: p, cit, q, l, lg, sp.speaker, nd related elements that mark side text (note stage) or special forms of text segmentation (s seg)
c) Lists, tables, and figures: list, item, table, row, cell, figure, figDesc
d) Phrase level or 'inline' elements: date, emph, foreign, name, num, soCalled, term, title
e) Milestone elements: milestone, pb, lb
f) Referring and linking elements: ref, rs, ptr, xref, xptr
g) Bibliographical elements: bibl, author, editor, publisher, respStmt, resp pubPlace
h) The immediate child elements of the header: fileDesc, profileDesc, revisionDesc
i) The child elements of fileDesc: titleStmt, publicationStmt, sourceDesc
j) Other header elements: langUsage, language.

The nesting rules for these elements are also fairly complex, but the following steps can be followed [Mueller]:

1) The body of a document is segmented by elements
2) The elements are segmented by the elements <p>, <q>, <l>, <lg>, and <sp>

3) <p> and similar elements usually contain plain text, parts of which are marked up with phrase or inline elements.

9.4.1.2 Elements at the Paragraph Level

In paragraphs (the <p> element), the units of a poem are identified as lines or stanzas (<l> and <lg>), a passage is identified as a quotation (<q>), or a speech (<sp>), and so forth. The <note> and <stage> elements identify text units that stand in an oblique relationship to the main text. The sentences in a work are identified by the <s> tag or arbitrary segments by <seg>. These last two elements are not really at the paragraph level, but are usefully mentioned in that context.

The pivotal tag here is the <p> tag, and important constraints of the TEI markup language turn on what can contain or be contained by a paragraph:

a) A paragraph element cannot contain paragraph, line, speech, or div elements

b) A paragraph can contain elements such as <q> or <text> that can contain those elements.

This pivotal position of the <p> tag is recognized by the formal classification of element groups in the full TEI, which distinguishes between

a) **chunk** elements, which can occur between paragraphs but not within them.

b) **phrase** elements, which can occur within paragraphs but not between them

c) **inter** elements, which can occur within and between paragraphs, notably the elements <q> (quotation) and <bibl> (bibliography).

9.4.1.3 Attributes

Attributes are used to add specifications to elements. An attribute always exists as a 'key-value pair' in which the name of the attribute is followed by an equal sign, which is followed by the value of the attribute in quotation marks. The attributes values are declared in the start tag of an element with no punctuation but a blank space between different attributes, as in the following:

 . . . .

You must not repeat the attribute values in the closing tag.

You cannot just use attributes as you please but must declare them in the DTD in an ATTLIST declaration, which specifies:

a) the name of the attribute

b) the type of data that may appear in the values for the attribute

c) whether it is required, optional, or has a fixed value

In the TEI DTD, every element shares the same four attributes that are known as 'global attributes'. They are id, n, lang, and rend, and they are declared as follows:

```
<!ATTLIST element
id ID #IMPLIED
n CDATA #IMPLIED
lang IDREF #IMPLIED
rend CDATA #IMPLIED
>
```

The *id* attribute is self-explanatory, but its value must be a unique ID value in the document, and the value must begin with a letter of the alphabet. The *n*

attribute may take any alphanumerical value, but it is most commonly used to count lines, stanzas, paragraphs or whatever else you want to number.

The *lang* attribute refers to the language used in an element. Thus, <q lang="FR"> refers to a quotation in French. The value of the *lang* attribute must be an IDREF or reference to an ID that exists in the document. IDREFs are a generic feature of SGML and are used to enforce consistent references. For example, the <sp> element for tagging dialog has a <who> attribute with IDREF values. The parser will return an error message if the value of the attribute is not matched by a speaker ID.

The *<rend>* attribute is used to include information about how a particular element is typographically represented, as in the following example:

<q lang="FR" rend="italics">

9.4.1.4 Lists, Tables and Figures

A list consists of a list element and one or more items as in the following example:

<list>
<item>bread</item>
<item> milk</item>
<item>bananas</item>
</list>

A TEI table is in some ways like an HTML table, although it uses different element names. The table element contains row elements, which contain cell elements. The coresponding element names in HTML are <table>, <tr> (table row), and <td> (table detail). On the other hand, the content model for a TEI cell element is very similar to that for a paragraph, which means that it cannot contain paragraphs. Unlike an HTML table, a TEI table cannot be repurposed as a layout tool.

The <figure> and <figDesc> elements are used in TEI to refer to and include visual materials in the text.

Example:

```
<TEI.2 lang="en-gb">
<teiHeader>
 <fileDesc>
  <titleStmt>
   <title>Alice's Adventures in Wonderland</title>
    <respStmt><resp>Illustrated by</resp> <name>John Tenniel</name></
respStmt>
   <author><name reg="Carroll, Lewis">Lewis Carroll</name></author>
  <editor role="illustrator"><name reg="Tenniel, John">John Tenniel</name></
editor>
  </titleStmt>
 <editionStmt>  <edition n="30">Edition 30</edition>
  </editionStmt>
  <publicationStmt>
   <publisher>Project Gutenberg</publisher>
    <date value="1991-01">January, 1991</date>
   <idno type="etext-no">11</idno>
   <availability>
    <p>This eBook is for the use of anyone anywhere at no cost and
```

```
    with almost no restrictions whatsoever. You may copy it, give it
    away or re-use it under the terms of the Project Gutenberg
    License online at www.gutenberg.org/license</p>
   </availability>
  </publicationStmt>
   <seriesStmt>
    <title level="s">#1 in our series by Lewis Carroll</title>
   <idno type="vol">1</idno>
   </seriesStmt>
    <langUsage>
   <language id="en-gb">British</language>
    </langUsage>
</teiHeader>
<text>
 <front>
  <divGen type="titlepage" />
  <divGen type="pgheader" rend="newpage" />
  <div rend="newdoublepage center">
   <p rend="font-size(150%)">THE MILLENNIUM FULCRUM EDITION 3.0</
p>
  </div> <divGen type="toc" rend="newdoublepage" />
 </front>
 <body rend="newdoublepage">
 <p> Alice was beginning to get very tired of sitting by her
 sister on the bank, and of having nothing to do: once or twice
 she had peeped into the book her sister was reading, but it had
 no pictures or conversations in it, <q>and what is the use of a
 book,</q> thought Alice <q>without pictures or conversation?</q>
 </p>
</body>
</TEI.2>
```

(**Source:** http://www.tei-c.org/Vault/AI/ai1t03.te1)

9.5 SUMMARY

The electronic information resources, available online, can be effectively described by the Metadata for efficient retrieval. There are a number of metadata schemes that are used to describe the information on the electronic resources. The metadata standards and schemes are developed and/ or recommended by the international agencies to accelerate information exchange and resource sharing over the Internet. Here metadata plays a crucial role in aspects all over the information dissemination process, like, information generation, information storage, information transfer and information retrieval. The Dublin Core Metadata Initiative, the Text Encoding Initiative, and MARC21 – Field 856 – these are the metadata schemes available for describing electronic information resources in general and electronic documents in particular. These three schemes are briefly described in this Unit.

9.6 ANSWERS TO SELF CHECK EXERCISES

1) The MARC21 format is a standard for the representation and communication of bibliographic and related information in machine-readable form.

   A MARC record involves three elements: the record structure, the content designation, and the data content of the record.

- The structure of MARC records is an implementation of national and international standards, e.g., *Information Interchange Format* (ANSI Z39.2) and *Format for Information Exchange* (ISO 2709).
- Content designation, the codes and conventions established to identify explicitly and characterize further the data elements within a record and to support the manipulation of those data, is defined in the MARC21 formats.
- The content or data, of most data elements is defined by standards outside the formats, e.g., *Anglo-American Cataloguing Rules*, *Library of Congress Subject Headings, etc.*

2) Field 856 contains the following elements:

I) Indicators

- First Indicator (Access Method). The first indicator contains information about access method to the resource and has values defined for Email, FTP, Telnet, Dial-up, and HTTP. Access methods without defined values may contain a first indicator value 7 with the method indicated in $2.
- Second indicator (Relationship). A second indicator is provided to show the relationship between the information in field 856 and the resource described in the record. This may be used for generation of a display constant.

II) Subfield codes

The most commonly used subfields are as follows:

- Subfield $u = HTTP URL
- Subfield $2 = Access method when first indicator is 7
- Subfield $3 = Data specifying what URL refers to, if applicable
- Subfield $z = Public note

3) The DCMI, i.e., Dublin Core Metadata Initiative is an organization dedicated to design and development of interoperable and specialized metadata standards for describing resources to enable intelligent resource discovery.

The Dublin Core Metadata Element Set (DCMES) provides a semantic vocabulary for describing the 'core' information properties, such as 'Creator', 'Title', 'Date', etc.

Dublin Core metadata is different from other cataloguing schemas like MARC, etc and it is not meant to replace the existing standards for describing resources. It is used to supplement existing methods for searching and indexing Web-based metadata to increase the interoperability among databases belonging different databases. And also, inspite of the fact that the DCMES is used often to describe Internet resources, it can be used to describe any resource, regardless of whether the corresponding resource is an electronic document or a 'real' physical object.

9.7 KEYWORDS

ANSI : American National Standards Institute is an organisation of American industry groups works with the standards committees of other nations to develop standards to facilitate international trade and telecommunications.

Attribute : Used to describe information which is in some sense descriptive of a specific element occurring but not regarded as part of its content.

Example: <name type="person"> here type is the attribute of the element name.

Attribute Value : The value assigned to a given attribute.

Example: <name type="person"> here type is the attribute of the element name and person is the attribute value

Cataloging record : A bibliographic record (essentially the information on a catalog card), created from following the guidelines in the Anglo-American Cataloging Rules.

DTD : Document Type Definition – The DTD defines the structural rules of a type of document. These rules include a complete list of allowable elements and attributes, special character entities, rules for external files (such as images), as well as the hierarchical structure of all elements. Examples of documents type definitions include TEI, EAD, etc.

Dublin Core Metadata Initiative (DCMI) : Dublin Core Metadata Initiative the body responsible for the ongoing maintenance of Dublin Core. DCMI is currently hosted by the OCLC Online Computer Library Center, Inc., a not-for-profit international library consortium. The work of DCMI is done by contributors from many institutions in many countries. DCMI is a consensus-driven organization organized into working groups to address particular problems and tasks. DCMI working groups are open to all interested parties. Instructions for joining can be found at the DCMI web site under Working Groups (http://dublincore.org)

Element (Dublin Core) : A discrete unit of data or metadata. Example, Title, Creator, Publisher, Date, etc.

Elements (XML) : The technical term used in XML for a textual unit, viewed as a structural component. For example, title, chapter, section, poem, stanza, etc.

Encoding : A process of transferring text and/or data to a searchable electronic medium and organizing it into specific structural and conceptual elements.

HTML : Hypertext Markup Language is the standard text-formatting language for documents on the World Wide Web. HTML text files contain content that is rendered on a computer screen and markup, or tags, that can be used to tell the computer how to format that content. HTML tags can also be used to encode metadata and to tell the computer how to respond to certain user actions, such as a mouse click. For more information, see http://www.w3.org/MarkUp/.

ISO : International Organisation for Standardisation was established in 1947 as a worldwide federation of national standards bodies from some 130 countries.

MARC Cataloguing : The process of recording bibliographic information about an item and then coding that information for the machine. The process of coding cataloged information for machines is called MARC tagging. MARC tagging involves coding the fixed and variable fields, subfield, indicators and tags pertinent to a specific format such as books or maps or serials or computer fields.

Metadata : Information about a publication as opposed to the content of the publication; includes not only bibliographic description but also other relevant information such as its subject, price, conditions of use, etc.

OPAC : Acronym for any Online Public Access Catalog (computer catalog). Often, the O is dropped from OPAC, and computer catalogs are referred to as PACs.

PURL : Persistent Uniform Resource Locator is an approach to the URL permanence problem proposed by OCLC. A PURL is a public alias for a document. A PURL remains stable, while the document's background URL will change as it is managed (e.g., moved) over time. A PURL is created by a Web administrator who is registered as a PURL 'owner' and who maintains a mapping of the PURL to a current and functioning URL.

Retrospective Conversion : The process libraries use to convert their catalogs from card form to machine-readable form, so that bibliographic records can be stored and retrieved in OPACs.

Tag : A Markup Language encoding feature that describes a discrete component of a document, such as a <meta> tag in HTML and <author> tag in XML signifying the author of a document.

XML : eXtensible Markup Language is a subset of Standard Generalized Markup Language (SGML), a widely used international text processing standard. XML is being designed to bring the power and flexibility of generic SGML to the Web, while maintaining interoperability with full SGML and HTML. For more information, see http://www.w3.org/XML/

9.8 REFERENCES AND FURTHER READING

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