MARC 21 : The Standard Exchange Format for the 21st Century

Dhrubajit Das

Abstract

Standardisation in the exchange formats and structure of a database is essential to facilitate exchange of data in efficient and effective way between the libraries. The adoption of different standard creates incompatibility in exchanging data which act as a major barrier in the use of bibliographic and related information. Format compatibilities are necessary for computerized cataloguing data and these are being standardized by the ISO. The MARC 21 format is one of the popular standard exchange format which adhere to ISO 2709 standard and are using majority of the countries in the world. For exchanging data in machine readable form. This paper discusses the history and development of MARC formats, its structure & salient features which made MARC format a set of standard for identifying, storing and communicating cataloguing information.

Keywords : MARC 21, Information Exchange, Bibliographic Standard

0. Introduction

The Library of Congress (LC) commissioned several studies on the feasibility and potential advantages of recording LC cataloguing data in machine readable, computer-processible form at a series of conferences in 1965-66. The outcome of those conferences was the MARC Pilot Project. MARC is an acronym for Machine Readable Catalogue or Cataloguing. The development of MARC formats influenced the growth of library automaton in the United States and other countries in 1960's. MARC formats employing a particular set of conventions for the identification and arrangement of bibliographic data for handling by computer. MARC forms the basis for storing bibliographic information in a consistent form, sharing the information and manipulating that information by computer. MARC is a set of standard for identifying, storing and communication cataloguing information.

1. MARC Standard : it's necessity

If a library developed its own method of organizing the bibliographic information, it would be isolating its library, limiting its options, and creating much more work for the library. With the advent of new information technology and its application in library and information field, a number of bibliographic databases are being created worldwide and used cross the national and international boundaries through networks. Creation of a standardized bibliographic database for sharing and exchanging of data contained in the files of a database through networks has become a common feature among the libraries and bibliographic agencies world-wide. Standardization of format and structure of a database is, therefore, necessary to facilitate sharing and exchanging data in efficient and effective way. Using the MARC standard prevents duplication of work and allows libraries to better share bibliographic resources. Using MARC formats enables libraries to acquire cataloging data that is predictable and reliable. If a library develop its own system that does not use MARC records, it would not be taking the advantage of using international standard whose primary purpose is to foster communication of information. Using the MARC standard also enables libraries to make use of commercially available library automation systems to manage library operations. Many systems are available for libraries of all sizes and are designed to work with the MARC format. Systems are maintained and improved by the vendor so that libraries can take benefit from the latest advances in computer technology. The MARC standard also allows libraries to replace one system with another with the assurance that their data will still be compatible.

2. Evolution of the MARC Programme

The Library of Congress was the first to experiment on the possibility of producing catalogue data in machine-readable form as early as in 1950s. The King Report of 1963 on "Automation and the Library of Congress" suggested the possibility of automation of the major operations within the LC. The recommendations made in the King's Report was the main impetus for the development of MARC project. The first conference on MARC Project was held at LC on January 11, 1965 attended by representatives of the library community at large. The outcome of the conference was optimistic and work went ahead on the development of a machine-readable format for cataloguing library materials. A team was formed headed by Henriette Auram who has been a driving force for the development of MARC both within the US and internationally. The staff of LC were assigned the task of drafting a preliminary format which was presented to the second conference held at LC in November 1965 and the format was accepted as the basis of the proposed machine record. The Council on Library Resources (CLR) then awarded a grant to LC to start the project in December 1965 and the MARC pilot project was finally begun. "The aim was two fold : to create and distribute machine-readable data and to ascertain what uses might be made of the data by LC and other libraries" (Grendley and Hopkinson : 1990, p.75).

The MARC pilot project which was funded by the Council on Library Resources was established a format known as the MARC I format for recording bibliographic data in machine-readable form. The machine-readable catalogue records in that format were stored on the master tapes. From this tape, copies were made and regular weekly tapes were distributed to 16 participating libraries starting from November 1966. From November 1966 through June 1968, it distributed some 50,000 machine-readable cataloguing records in that format to 16 participating libraries. The records, which were distributed weekly on magnetic tapes were known as MARC tapes, contained descriptive cataloguing data which also appeared in human readable form in LC printed catalogues and cards. Participating libraries used MARC tapes, together with their institutional computers and locally developed software's, to produce catalogue cards, book catalogues and specialized bibliographic listings.

2.1 The MARC II format

The MARC pilot project was schedule to be end in June 1967, but the enthusiasm of the participating libraries persuaded LC to continue the project despite some limitations in the format.

The Council of British National Bibliography had shown active interest on the MARC pilot project of LC and officially launched BNB MARC project in 1967 to develop its own MARC format for production of the printed BNB and other library related purposes. The British interest was timely coinciding with the appraisal made by the LC on its MARC I pilot format. An a result of co-operation between the US and UK a new format was developed in 1968 which is known as MARC II. The MARC II format was hospitable to all kinds of library materials; sufficiently flexible for a variety of applications in addition to catalogue production and usable in a range of different computer system. The MARC II format later divided into two versions as LCMARC II or USMARC and BNBMARC II.

The new format embodies many changes recommended by the participants, other interested libraries, computer technicians, and special committees formed by the USA Standard Institute (USASI) (now the American Nation Standard Institute (ANSI)) and the American Library Association. A major change were made in the MARC II format that facilities an efficient means of communicating bibliographic descriptions of all forms of materials (monographs, serials, maps, music etc.) between libraries using varied computer equipment and software. The MARC II format is the instrumental in defining the concept of MARC as a communication format. The MARC communication is intended to be :-

- Hospitable to all kinds of library materials.
- Sufficiently flexible for a variety of application in addition to catalogue publication.
- Usable in a range of automated system.

Magnetic tapes in the new MARC II format were made available to all participating libraries on a subscription basis beginning in April 1969 and by July of the same year the production was expanded to include all English language monographs.

The record structure, the content designators and data content are the three basic aspects on which the MARC II format was conceived. The content designators refer to the means by which elements in the record can be identified, while the content refers to data recorded in the fields. "Content designation in the USMARC formats are codes and conventions used to explicitly identify data elements in a record. The goal is to characterize the data elements with sufficient precision to support manipulation of the data for various function" (The USMARC formats : Background and principles:1989:P.4). The MARC II format specifies a basic structure for machine readable bibliographic records which consists of three components as given below :

- The Leader
- Record Directory and
- Variable Fields

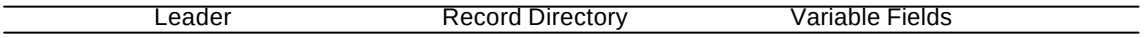

Fig. : MARC II Communication Format Structure

(i) Leader

Each MARC record contains a leader consists of data elements to process the record. The data elements in the leader define parameters for processing the records. A leader composed of fixed field consisting of a total of 24 characters used to indicate length, status, type and bibliographic level of the ensuing records. Length indicates that total number of characters used in the record, status indicates whether it is new, changed or deleted record, type indicates whether it is printed or not while bibliographic level states whether the work is a monograph, part of a series, serial publication, a collection of manuscripts, pamphlets or other items catalogued as a single unit.

(ii) Record Directory

The directory contains the tag, starting location and length of each field within the record. It is an index to the location of various fields, both central and variable length, within the record. The number of fields in the directory will be equal to the number of fields in the record. As the number of variable length fields can vary, the length of record directory can also vary. It is at the same time a series of fixed fields which contain the field tag, length of the field and starting character position of each of the major types of data in the variable fields. A field terminator is used to mark the end. The record directory facilitates the retrieval of selected fields from within a MARC record.

(iii) Variable fields

The variable data fields within each MARC record consists of indicators, sub-field codes, data elements and field terminators. Each variable field is represented by a 'tag' number and that 'tag' is stored in the directory. For example – tag 100 for personal name, tag 110 for corporate name and 130 for uniform title

heading etc. used preparing for main entry in a MARC record. Indicator is a code supplying additional information about the field and it is located at the beginning of the field.

The MARC II is the archetype of all subsequent MARC formats. The record structure of MARC II was later adopted by the American National Standard Institute (ANSI), the British Standards Institute (BSI) and the International Organization for Standardization (ISO). MARC format adhere to the ISO 2709 record structure. The MARC format, both by its structure and the content designators, has brought a revolution in the creation of bibliographic database word-wide. Many national format were later developed on the principles based on the MARC format. The builders of various databases such as INIS, AGRIS and INSPEC have used MARC structure as the basis for the creation of their own communication formats.

2.2 Other National MARC Formats

After the joint work by the Library of Congress and the British National Bibliography on the MARC format, other countries were shown interest on the format and develop their own format. The main purpose of their development was the exchange of bibliographic and other related information in machine readable form for sharing between countries.

In Canada the MARC communication format was published in 1979 under the name CANMARC. The CANMARC format later harmonized with the USMARC format to form a new format known as MARC 21 format. The Canadian Communication formats serves as the common standard for the exchange of machine-readable authority, bibliographic, classification and holding data in Canada.

The Federal Republic of Germany had developed its own MARC format in 1973. The format included particular features for record linking between different bibliographic levels which influence later MARC developments such as UNIMARC.

The National Library of Florence in Italy developed ANNMARC in 1978 and used until 1985 for magnetic tape service.

The National Library of Australia published its MARC format in 1973 with a second edition in 1975 under the name AUSMARC(Australian MARC Specification). The publication of AACR 2 in 1978 motivated the National Library of Australia to publish the 3rd edition of AUSMARC in 1979. The Australian format is very close to the UKMARC format. However, the AUSMARC authority format is closely based on the USMARC authority format.

The other national format based on USMARC and UKMARC are – DANMARC published in Denmark in 1975; SWEMARC appeared in Sweden in 1980 later revised and renamed as LIBRISMARC (Library Information System MARC format); FINMARC – National format developed in Finland; IBERMARC– the national format of Spain published in 1976; HUNMARC – the format developed in Hungary after 1990; MALMARC the format developed in 1977; CATMARC developed in Spain in 1987 for the national bibliography of Catalonia; INDOMARC– the format for Indonesia originally based on SEAMARC (The MARC format for the SEAPRINT-South-East Asian Imprint Project), then based on USMARC which was published in 1989; KORMARC – the national format for Korea was published in 1981; SINGMARC – (Singapore)– based on UKMARC, was developed in 1979/1980; THAIMARC (Thailand) – based on UKMARC was developed in 1976 etc.

2.3 INTERMARC (International MARC Format)

While several national formats were being developed and efforts were already being carried out by IFLA in mid 1970s in order to establish on international MARC format – UNIMARC, a group of representatives of Western

European National Libraries at the same time developed another international format known as INTERMARC which was published in 1975 and mainly based on UKMARC, although it different substantially in the structure and use of indicators. Through INTERMARC appeared as an international format by name but eventually it became the official format for the national libraries of France and Belgium only. INTERMARC never reached its international status and has also a limited national used of it although it is very often referred to by writers on the subject as being a format of comparative importance. This could well be because of its name, which is presumably an abbreviation for 'International MARC'.

2.4 UNIMARC : Development and perspective

The Universal MARC format (UNIMARC) was published in 1977 by the International Federation of Library Association and Institutions (IFLA). The Primary purpose of UNIMARC is to facilitate the international exchange of bibliographic data in machine-readable form between national bibliographic agencies. UNIMARC conforms to the ISO 2709 and ISBD standards may be used as a model for the development of new machine-readable bibliographic database. A second edition of UNIMARC format was published in 1980 and restricted to monographs and serials only. The necessity of expanding UNIMARC to cover all different sorts of documents was envisaged in the mid 1980s and in 1987 a new description of the format was published as a UNIMARC manual. It was also explicitly mentioned in the manual that "UNIMARC's objectives would not only be the carrier, or universal MARC for conversion purposes, but also the model for the development of new machine-readable bibliographic format (Campos : 1995 : p. 449). The latest edition of the UNIMARC Manual (2nd edition) was published in 1994".

The proliferation of national MARC formats, mostly derived from the same parent, has been the major concern for exchange of data between the bibliographic agencies for many years. This led to the formulation of an universal MARC format. Which combines a 'Standard Exchange Format' containing data elements common to all formats. The creation of an international MARC format (UNIMARC) would accept, in principle, record created in any MARC format and act as a common format in terms of conversion. The important feature of UNIMARC was that it should have one set of tags or sub-field identifiers covering all materials. It provides standarisation in content designation for all elements, establishes which data element must be included and for those, specifies the form, the data, are to take for all other elements. Since 1977 several national libraries have undertaken projects to convert from an existing national format to UNIMARC or have adapted UNIMARC for their national format needs. It covers monographs, serials and cartographic materials, music, sound recordings, graphics, projected and video material, with provisional fields for computer files.

The permanent UNIMARC Committee (PUC) under the Universal Bibliographic Control and International MARC (UBCIM) Programme of IFLA, aims to maintain and update the format in harmonizing the Principles of VBCIM. Changes will be made only through the Permanent Unimarc Committee. Although the PUC tries to maintain the standard libraries implement the format in different ways. However, an open attitude towards suggestions and proposals from users has been very much encouraged as a good way to promote UNIMARC and to adjust the format to the users needs. From 1991 to 1994, PUC worked on a new edition of the UNIMARC manual with special updating in the areas of microforms, old printed books and component parts. Special guidelines for the use of UNIMARC in those areas were also developed. Interest in UNIMARC and its use has increased as the support given by the European Countries to use it as their national formats.

Central and East European Countries were found to be specially interested in formats that guarantee easy access to international communities and in recent years there has been a growing interest in UNIMARC.

2.5 National MARC formats based on UNIMARC

The UNIMARC which is conforms to the ISO 2709 Standard was developed and published in 1977 to facilitate the international exchange of bibliographic data in machine-readable form between national bibliographic agencies. A second phase in the development of national MARC formats was generally influenced by UNIMARC. Some countries have simply adopted UNIMARC, some developed their own national formats based on it while other revised their existing MARC format on the basis of UNIMARC. The UNIMARC was of particular interest to Japan and Taiwan because the format was more generalized than LC MARC and also they need a mechanism to deal with non-Roman character sets. New national MARC formats based on UNIMARC includes – SAMARC (South Africa) published in 1977; JAPANMARC (Japan) published in 1981, 3rd edition in 1984; CNMARC (Taiwan), published in 1981, 2 nd edition in 1984.

In India, the Bureau of Indian Standards published Indian MARC in 1985, was very close to UKMARC, which was later revised under the auspices of the National Information System for Science and Technology (NISSAT) to develop INDIMARC on a framework prescribed by he Common Communication format (CCF). Countries that adopted UNIMARC as a national standard include Croatia and Slovenia (1981), Greece (1991), Portugal (1987), Italy-Superseding ANNAMARC in 1985, CALOO (Brazil) – first published in 1981 based on USMARC then revised and renamed as IBICT; KORMARC (Korea) published in 1981 and CSMARC (Czech Republic).

3. MARC 21 format

The LC devised USMARC or LCMARC format in 1960s in order to use computers for producing cataloguing data in machine-readable form. The MARC 21 format was evolved from the original LCMARC format and has become the standard used by most libraries. In 1987, the Library of Congress issued the first edition of the document MARC 21 specifications for record structure, characters sets, and exchange media to aid libraries and other organisations that create or acquire MARC 21 records. Subsequent editions were published in 1990, 1994 and 2000.

The MARC 21 format is a new name of harmonization of the CAN/MARC and USMARC formats in a single edition. The Library of Congress and the National Library of Canada serve as the maintenance agency for the MARC 21 formats. The MARC 21 formats are defined for five types of data such as bibliographic, holdings, authority, classification and community information. The format primarily designed to provide specifications for the exchange of bibliographic and related information between systems. The MARC 21 formats are communication formats widely used in a variety of exchange and processing environments. The formats are regularly reviewing and updating and an attempt has been made to make them compatible with other national and international formats e.g. UKMARC and UNIMARC. The MARC 21 formats are standards for the representation and communication of bibliographic and related information in machine readable form. A MARC 21 format is a set of codes and content designators defined for encoding machine readable records.

3.1 Maintenance of MARC 21 Formats

The MARC 21 formats documentation are reviewing and revising by the MARBI (Machine-Readable Bibliographic Information Committee) and the MARC Advisory Committee. The Machine-Readable Bibliographic Information (MARBI) Committee is a committee of the American Library Association (ALA) and is composed of three representatives from each of the three function-oriented divisions of ALA: ALCTS (technical services function); LITA (automation); and RUSA (reference). ALA tries to assure that all types of expertise are presented on MARBI. The MARC Advisory Committee is composed of representatives from the national libraries, the bibliographic utilities, vendor groups and other library and scholarly associations. MARBI meets in conjunction with the MARC Advisory Committee at each ALA conference.

The major activity of the committee is the review of discussion papers and proposals submitted by or through the Library of Congress for changes or additions to existing MARC formats or the development of new MARC format support in emerging areas. The development of the MARC 21 formats is an international effort and all MARC 21 users may communicate their opinions and concerns about the MARC 21 formats via three different methods:

? The MARC forum (Electronic discussion list)
? National Committees, such as the USMARC Advisory Committee or the Canadian Committee on MARC
? National MARC offices, such as the Network Development and MARC standards office at the Library of Congress and the Standard and supports office at the National Library of Canada.

The LC maintains the MARC forum, an electronic discussion list for the formats that provides a conduct for broad, open discussion of proposed changes and other issues for all interested users around the world. Along with individual MARC user input, the Library of Congress and the National Library of Canada hold open meetings for discussion of changes to the MARC 21 formats.

3.2 Elements of a MARC Record

A MARC record is composed of three elements viz. the Record Structure, the Content Designation and the Data Content of the record.

Record structure refers to the way various elements in a record are identified. For example, different types of information are recorded in fields which are identified by three numeric characters called tags. Record structure is an implementation of the international standard *Format for Information Exchange* (ISO 2709) and its American counterpart, Bibliographic Information Interchange (ANSI/NISO Z39.2) and is described by the various MARC formats.

Structural components: A MARC record consists of three main components: the Leader , the Directory, and the Variable Fields .

Content designation refers to the codes and conventions established explicitly to identify and further characterize the data elements within a record and to support the manipulation of that data.

Content of the data elements that comprise a MARC record is usually defined by standards outside the formats, such as the *International Standard Bibliographic Description* (ISBD), *Anglo-American Cataloguing Rules*, *Library of Congress Subject Headings* (LCSH), or other cataloging rules, subject thesauri, and classification schedules used by the organization that creates a record. The content of certain coded data elements is defined in each of the MARC formats, e.g., the Leader, field 008.

3.3 Structure of a MARC Record

A MARC record consists of three main sections : the Leader, the Directory and the variable fields. The leader is the first 24 characters of the records designed to provide basic information about the size of the whole MARC records. The leader consist of data elements that contain coded values & the data elements in the leader define the parameters for processing the records.

The directory contains the tag, starting location and length of each field within the record. The directory tells what tags are in the record and where they are placed. Directory entries for variable control field appear in ascending tag order and entries for variable data fields arranged in ascending order according to the first character of the tag. In MARC21 formats, the length of a directory entry is 12 character.

The data content of MARC 21 record is divided in to two types of variable fields :- Variable Control Fields and Variable Data Fields. The variable control & data fields are distinguished only by structure.

3.4 Content Designators

Content designators is an inclusive term used to refer to tags, indicators & sub-field codes. The three types of content designators- tags, indicators and sub-field codes are the keys to the MARC 21 notational system.

a Tags

The tags are followed by the names of the fields they represent. In MARC 21 formats for bibliographic data , if a tag appear more than once in a bibliographic record, it is labeled as repeatable (R) field and if it appears once it is labeled as Non-Repeatable (NR).

In MARC 21 tags, the notation XX is often used to refer to a group of related tags. For example : 1XX refers to all the tags in the 100s; 100, 110, 130 & so on. The basic division of tags for MARC 21 bibliographic records are :-

0XX Control information, numbers, codes
1XX Main entry
2XX Titles, edition, imprint
3XX Physical description etc.
4XX Series statements
5XX Notes
6XX Subject added entries
7XX Added entries other than subjects
8XX Series added entries

The 9XX have been left for locally defined uses such as local barcode numbers. Local libraries, vendors, or systems can define and use them for attaching other types of information to records.

b Indicators

Indicators contain values conveying information that interprets or supplements the data found in the field. The MARC 21 formats specify two indicator positions at the beginning of each variable data field. Each indicator value is a number from 0 to 9. though two indicators together may look like a 2-digit number but actually they are two single digit number. It becomes clear if we examine the following example :

245 14 $a The emperor's new clothes/ $c adapted from Hans Christain Anderson and illustrated by J.Stevans.

Here, the first three digits are the tag (i.e. 245 as title field) and the next two digit i.e 1 & 4 are indicator values. The 1 is the first and 4 is the 2nd indicator. The first indicator value 1 in the title field indicates that there should be a separate in the catalogue. If the first indicator value become 0 it would mean that the record have a title main entry and the card would be printed with traditional hanging indension with no tracing for the title.
The 2nd indicator 4 in the title field is the most interesting indicator value. It displays the number of characters at the beginning of the field, including spaces, to be disregarded by the computer in the sorting and filing process. For the title ' The emperors new clothes' the 2 nd indicator is set to '4' so that the first four characters i.e. 'The' T,H,E & the space will be skipped and the title will be filed under "Emperors".

c Sub Field Codes

Sub field codes identify data elements within a field that require separate manipulation. Sub field codes in the MARC 21 formats consists of two characters – a delimiters followed by a data element identifier. A data element identifier may be any lowercase alphabetic or numeric character. Numeric identifiers are defined for parametric data used to process the field. Alphabetic identifiers are defined for the separate elements that constitutes the data content of the field. Sub field codes are defined independently for each field for the purpose of identification, not arrangement.

4. User of MARC 21 in India

Developing Library Network (DELNET) began using Common Communication Format (CCF) in 1998. The CCF incorporates only necessary and sufficient fields and can't be used internationally as a detailed bibliographic format. As a result for compatibility with international and national bibliographic database DELNET started using MARC 21 in 1999. As on December 31, 2003, DELNET has created 44,132 records for its Union Catalogue of books based on MARC 21 formats.

The INFLIBNET has decided to adopt MARC 21 formats instead of CCF because the MARC 21 formats are comprehensive, constantly updates and revised and used majority of the countries in the world for exchanging data with other countries.

The National Library, India has decided to move from the UNIMARC format to the MARC 21 bibliographic formats to catalogue records in 2003. The National Library is using a US based Integrated Library Software 'VIRTUA' which is fully supported the MARC 21 formats. The National Library has prepared conversion tables of UNIMARC records created for the Indian National Bibliography to MARC 21 formats in order to support the consistent and accurate mapping of UNIMARC data to MARC 21.

5. Conclusion

The MARC has been the most popular communication format which aims to provide universally accepted bibliographic records in machine readable form. The MARC formats adhere to ISO 2709 standard through which bibliographic records can easily be transferred from one system to another. The MARC 21 formats are an implementation of the Information Interchange Formats ANSI Z39.2. The formats also incorporates other relevant ANSI standards. The information retrieval protocol ANSI/NISO Z39.50 supports the MARC records which enables search and retrieval of bibliographic information over the internet. The protocol can be used for searching MARC records from a Z39.50 client to a Z39.50 server. The MARC 21 formats also fully support the record transfer on Floppy Diskette which standardized the process of exchanging MARC records on diskettes rather than on magnetic tapes which is incompatible in the present generation micro computers

The MARC standard enables libraries to make use of commercially available library automation systems to manage different library operations. The MARC 21 formats are comprehensive, constantly reviewing and revising by the MARBI and the MARC Advisory Committee. Because of its constant updating and comprehensiveness, majority of the countries in the world are using MARC 21 for exchanging information with other countries.

6. References

1. Aswal, R.S (2004). MARC 21 : Cataloguing format for 21st Century. New Delhi : Ess Ess Publications.
2. Campos, Fernanda M…et al. (1995). MARC format and their use : an overview. Program, Vol 29.No.4,October. Pp.445-459.
3. Gredley, Ellen Hopkinson, Alan (1990). Exchanging bibliographic data **:** MARC & other international format. London, Library Association, 1990.
4. IFLA Universal Bibliographic Control and International MARC Core Programme (UBCIM) http://www.ifla.org/VI/3/P1996-1/uni2.htm (13/06/2004)
5. Kashyap, Madan Mohan (1993). Database system : Design and development, New Delhi, Sterling publishers.
6. Kaul, HK. (1999). Library Resource sharing and networks. New Delhi, Virgo Publications.
7. King, G.W et..al (1963). Automation and the Library of Congress :a survey sponsored by the Council on library resources. Washington DC, LC.
8. MARC 21 : Harmonized USMARC and CAN/MARC. Network development and MARC standard office, Library of Congress. http://www.loc.gov/marc/annmarc21.html (13/06/2004)
9. The USMARC formats(1989): Background and Principles. Washington D.C : Network Development and MARC Standards Office . pp4.

About Author

Dhrubajit Das is working as Librarian in S.B.Deorah College, Guwahati since 1998. Before joining the College as Librarian, he had worked as Library and Information Assistant at All India Radio, Guwahati. He has also been working as Part-time Lecturer in the Department of Library and Information Science, Gauhati University since 2000. He has professional experience of over 8 years. He is an Assistant General Secretary of Assam Library Association, a member of Guwahati Library Association & Assam College Librarians' Association, a life member of ILA & IASLIC. He has attended a number of national & regional conferences, seminars & workshop.