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## INTERNATIONAL STANDARDS FOR LIBRARY AUTOMATION AND NETWORKING

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### Abstract:

*The present paper presents the library automation and networking in the 21st century. It also defines standards and standardization internationally required for library automation and networking. Further the comparative statement of international standards adopted universally, which gives us names, purpose, establishment, record elements, following standards internationally, components, structures, tags and their importance in their implementation of library automation and networking. The conclusion is that, ISO is the standards body that establishes standards for the international exchange of goods and services.*

### KEY WORDS:

Library automation, Library networking, Standards, International standards, Standardization.

### INTRODUCTION

Library Automation refers to the phenomenon of mechanization of traditional library activities such as acquisition, organisation and dissemination.

The word 'Automation' was coined by D.S.Harder in 1936 to mean, ' the automatic handling of parts between progressive productions processes in relation to engineering Industries'.

According to Encyclopaedia of Library and Information Science

"Automation is the technology concerned with the design and development of process and system that minimise the necessity of human intervention in operation"

According to G.Devrajan

The automation is defined as, 'a technique of making apparatus (as including), a process(as a manufacturing) or a system (as of book keeping), which operate automatically'.

Automation connotes an automatic system of working'.

In short we can trace out the development like:

Mechanization→Computerization→Automation& Networking.

Thus, Library Automation is the application of automation processes in library operations. There are several reasons for contemplating library automation. Library automation can be a means of saving staff, time and money.

The success of library automation in the library depends on the followings:

>Availability of trained manpower.

>Acceptance and implementation of standards, particularly for machine readable bibliographic records i. e.

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a) MARC 21, b) Authority Files (AACR-II), c) ISO-2709, d) Common Communication Format (CCF), e) Z39.50, f) Retrospective Conversion, and so on

- > Availability of machine readable catalogues for entire collection, books and serial catalogues.
- > Availability of hardware and software.
- > Standards to be adopted for indexing terms.
- > Free flow of funds.

The scientific and technical libraries working under such Research and Development (R & D) institutions as Council of Scientific and Industrial Research (CSIR), Indian Council of Medical Research (ICMR), Indian Council of Agricultural Research (ICAR), and Defence Research and Development Organisation (DRDO) taken the lead in library automation. Notable among public libraries are Bharat Heavy Electricals Limited (BHEL) R&D and Steel Authority of India (SAIL)

Networking is the linkage of working procedures for the exchange of information resources. Presently, the term “computer network” is used in place of “resource sharing” or cooperative systems. Resource sharing or networking is defined as a mode of operation, whereby information resources are shared by a number of participants having the same objectives in mind. Thus the user of one library can have his requirements fulfilled by another library if the local library fails to serve his needs. The ultimate aim of networking is to achieve maximum results with minimum input

### 2. CONSTRAINTS OF NETWORKING:

There are several constraints in the networking of libraries. Generally these are the problems faced by the libraries;

1. Information infrastructure is not up to date and there is a lack of trained manpower;
2. Lack of effective networking and communication technology;
3. Tardy implementation and proposed networks;
4. Lack of uninterrupted power supply;
5. Lack of foreign exchange for importing proper hardware; and
6. Technological backwardness, with a wide gap between India and developed countries

Library automation and networking, which until the 1990's was considered to be adequate, today do not provide all the answers. Library automation and networking is all about connecting to other libraries and information centres, search engines, peer groups, databases and experts. This requires that we focus on standards of many kinds available at global.

### 3. OBJECTIVES:

1. To introduce and trace out the origin of the standards.
2. To describe the record structure of the standards.
3. To give an overview of fields, subfields, indicators of standards.
4. To explain the need for standards.
5. To enumerate the features of standards.

### 4. METHODOLOGY:

Literature search made from various sources of information. The author consulted various Web sites of various standards for library automation and networking. Descriptive, Comparative method of research has been followed.

### 5. STANDARDS:

According to L.M. Harrod (1977) The Librarians' Glossary defines standard as,

1. Objective, observable, as usually quantitative, measures of library service; these are usually drawn up by a body of practising librarians, bibliographers and information scientists, as being with the achievement of the average library or other service, and below which an individual service should not be allowed to fall.
2. In all countries, standards are drawn up for the manufacture of goods and provision of services

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with the object of trying to ensure the provision and maintenance of high qualities. These standards are produced by committees of representatives of professional and trade organizations working under the impetus and supervision of national standards organizations, each of which produces standards concerned with libraries and the materials libraries contain. They are affiliated with the International Standards Organization (ISO).

Standards for bibliographic records have been and been developed at different levels-regional, international, institutional, associational, etc. These have been major developments that took place in the direction of standards for bibliographic description.

Standards can be formal or informal depending on the degree of standardization.

### 6. STANDARDIZATION:

**According to (Standardization Vocabulary: Basic Terms and Definitions, ISO, Geneva,1971) definition;**“Standardization is the process of formulating and applying rules for an orderly approach to a specific activity for the benefit and with the cooperation of all concerned, and in particular for the promotion of optimum overall economy taking due account of functional conditions and safety requirements”

The need for standards for libraries has been there right from the beginning and so development of standards has been in two ways:

One is reviewing the already existing standards after a interval of particular time (for e.g. 5 years interval as accepted by (ISO) and formulating them.

Second is formulating new standards on the basis of new developments and additions to library science field.

The need for standards has been emphasized more with the outcome of so-called ‘information explosion’ and for librarians managing this information needs standardization of various aspects.

ISO is a specialized international agency founded in 1946 to promote the development of international standards.

In today’s context there is a need to lay emphasis and standards for automation and networking environment and multimedia.

The International exchange formats such as; CCF, MARC-21, ISO-2709, Z39.50 is facilitate the exchange of bibliographic information through Network

However UNICODE, W3C have been formulated at international level and with the on-going development in Information Technology field, more standards will be given consideration.

The one element in all library automation and networking today that has been assumed highest priority is the use of (wherever possible) international standards for the following reasons;

>Metadata standards which includes standards for data elements as well as identification, description and representation standards. Metadata standards comprise the following types;

- i) Standards for data elements needed to describe different types of information objects-some well-known, new and newer forms of existing objects.
- ii) Library cataloguing standards such as the AACR-II and ISBD comprising rules on how to describe the data elements consisting information objects and rules for the determination and establishment of headings.
- iii) Standards (or languages) on how to represent the metadata in computers.
- iv) Standards to represent subject content.

e.g. of metadata standards are; 1. MARC-21 Bibliographic Metadata Format and 2. Dublin Core Metadata Element Scheme (DCMES).

> Information exchange standards.

> Communication standards.

> Content representation standards.

> Interoperability standards.

The above categorization is only used for convenience and it must be emphasized that there is considerable overlap in the purpose and function of these standards.

A comparative statement of international standards for library automation and networking make a clear picture given in the

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**Table No.1**  
**Comparative Statement of International Standards in Library Automation & Networking**

International Standards	Purpose	Est.	Record Elements	Follows Inter. Standards	Components	Structure	Tags	Importance
<b>MARC-21</b>	It is for exchange of bibliographic information in machine readable form	Oct.1966 by library & LC & Archives Canada as the maintenance agency	-The Record Structure. -The content designation. -The content of the record.	-ANSI Z39.50 - ISO2709	-The Leader(24 characters). -The Directory(12 characters). -Fixed Fields(40 characters).			As a format for exchange of Bibliographic information to exploit the Internet & Web technologies.
<b>ISO-2709</b>	It is for exchange of bibliographic information between databases i.e. exchange of data	1946 to promote the development of international standards (ISO)	>Header/Leader/Label>Directory>Data Section	Is a specialized agent to promote the development of international standards.	The Header/Leader is of 24 characters.			It is the most authoritative & proven standard for exchange of bibliographies data of our documents beyond nation.
<b>CCF</b>	It is exchange format to facilitate the exchange of bibliographic data between organizations	UNESCO in April 1984, 88 & 92 UNESCO & ICSU-AB(International Council of Scientific Unions Abstracting Board		ISO-2709		i)Record Label(24 character). ii)Directory(14 character). iii)Data Fields. iv)Record Separator.	A .Repeatable(R0 or Non Repeatable (NR) b. Mandatory (M) or Optional(O)	It provides a flexible exchange format.
<b>Z39.50</b>	It is an information retrieval protocol	NISO in 1995						
<b>AACR-II</b>	It is designed for use in the construction of catalogues & other lists in general libraries of all sizes.	Co-published by ALA, CLA & Chartered Institute of Library & Information Professionals (UK)						
<b>UNICODE</b>	It promises to cover all the world's scripts.it can represent 65,536 characters.	It is developed by UNICODE consortium.The first version came in 1991.		Compatible to ISO/IEC 10646 set of standards developed by ISO		16-bit and 32-bit. It is a character encoding .		UNICODE has defined different language zones for their corresponding scripts.

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<b>DUBLIN Core</b>	definitions for defining the properties of objects for Web-based resource discovery systems		<b>a)Content:</b> -Coverage. -Description. -Type. -Relation. -Source. -Subject. -Title. <b>b)Intellectual Property:</b> -Contributor. -Creator. -Publisher. -Rights. <b>c)Instantiation:</b> -Date. -Format. -Identifier. -Language					
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From the Table No.1 the following interpretation comes out;

Global trends suggest the growing popularity of MARC 21 as a format for exchange of bibliographic information. It provides ability to download and device bibliographic records from a wider range. However, it is expensive and time consuming.

The libraries, which operate, on different platforms using different types of application software packages, need a standard for communication. This communication should enable the libraries to connect and talk to each other's servers. Further, this will enable the libraries to go towards the Virtual Library concept. With information resource sharing becoming a major current feature, the Z39.50 protocol can definitely not ignored.

Almost all the international formats of bibliographies exchange adhere to the structure of ISO 2709 , UNIMARC, CCF, MARC 21, UICMAR and so on facilitating the export and import of data among those format. For machine readable bibliographies format ISO 2709 continues to e the most authoritative and proven standards for exchange of bibliographies data.

Besides these standards Authority Files; the system allows global changes to authority file entries, with all changes being reflected immediately across the database and all the modules. This can be done at the time of initial database creation or on an on-going basis. More efforts are needed about the productivity gains libraries would make by sharing authority data. Standardization of cataloguing codes and formats remains a prerequisite to further integration.

Retrospective Conversion; it is the process of turning a library's existing paper catalogue record into machine-readable form. The only way for a library to switch over to automation is through retro conversion.

**7. CONCLUSION:**

National Information Standards Organization (NISO) is an ANSI-accredited organization that develops standards specifically for the library, information services, and publishing sectors.

American National Standards Institute (ANSI) is the organization that facilitates development of American National Standards (ANSI0 by establishing consensus among qualified groups.

International Organization for Standardization (ISO) is the standards body that establishes standards for the international exchange of goods and services.

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