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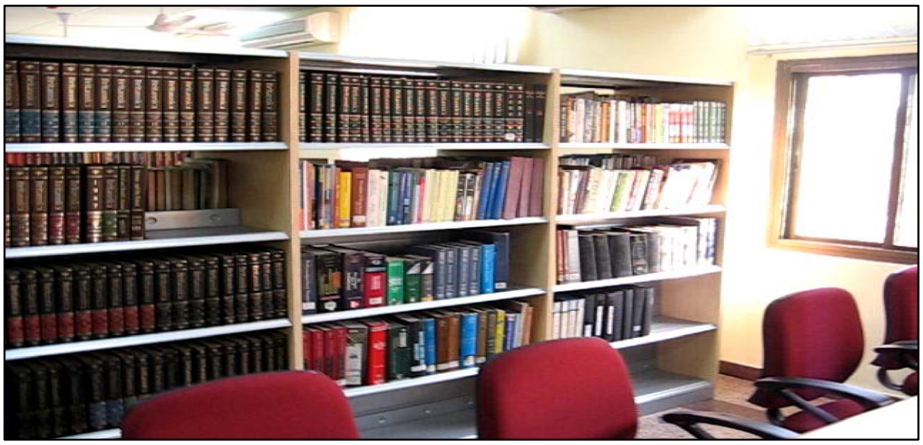

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RADIO FREQUENCY IDENTIFICATION (RFID)

Libraries are the store house of knowledge and no doubt that one can depend upon them for fulfilling their knowledge requirements. In order to cope up with the user's information needs, libraries are into competition to maintain a good and large collection. A good collection means that there is need of security systems in libraries. Although all library security systems reduce losses, there are significant differences among them in terms of types of protection, cost. Barcode is one of the methods used in many libraries now a days, but **RFID is revolutionizing libraries across the world. RFID** stand for **Radio Frequency Identification**. The acronym refers to small electronic device that consists of a small chip and antenna.The chip typically is capable of carrying 2,000 bytes of data or less. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying. RFID first appeared in the early 1980's for the use in industrial and commercial markets for item tracking and access control applications. Only, recently has RFID been an emerging issue for the library community/library sector and libraries across the globe have begun to embrace this technology. Libraries' eagerness to adopt this technology is based not only on its potential for curbing thefts of library materials, but also for efficiency gains in various library operations and management of material flow. This technology is closely watched by **Gandhi Smriti Library of Lal Bahadur Shatri National Academy of Administration (LBSNAA), Mussoorie** to make general library operations more efficient and easier to use along with prevention of thefts.

RFID (radio frequency identification) is a technology that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency (RF) portion of the electromagnetic spectrum to uniquely identify an object, animal or person. RFID is coming into increasing use in industry as an alternative to the bar code. The advantage of RFID is that it does not require direct contact or line-of-sight scanning. An RFID system consists of three components: an ***antenna*** and ***transceiver*** (often combined into one reader) and a ***transponder*** (the tag). The antenna uses radio frequency waves to transmit a signal that activates the transponder. When activated, the tag transmits data back to the antenna. The tag is attached to the item to be identified, i.e., fixed inside the book's front cover or directly on CDs and videos. The tag can store far more information about an item than a barcode, whereas the reader is stationary attached to a computer network or single workstation PC. Tags can be read through a variety

of substances such as fog, ice, paint, crusted grime, and other visually and environmentally challenging conditions, where barcodes or other optically-read technologies would be useless. Readers are used for writing data onto tag; self check-out and check-in of items, in exit sensor of verify library items leaving the library and other functions. Tags are classified as read-only, read/write and WORM. Read-only tags cannot be programmed, as they are pre-programmed with a unique number like a serial number. WORM (Write-once-read only) is pre-programmed by the library of the institutions using them, whereas read/write tags allows the libraries to record, update or change information according to the library's need and usage, thus making them most ideal for library operations.

RFID Tags:

Tags can be active, passive, semi-active and semi-passive (also known as battery assisted). **Active RFID tags** have their own internal power source, which is used to power the integrated circuits and broadcast the signal to the reader. Active tags are typically much more reliable (i.e. fewer errors) than passive tags due to the ability for active tags to conduct a "session" with a reader. **Passive RFID tags** have no internal power supply. The minute electrical current induced in the antenna by the incoming radio frequency signal provides just enough power for the integrated circuit in the tag to power up and transmit a response. Most passive tags signal by backscattering (is the reflection of waves, particles, or signals back to the direction they came from) the carrier wave from the reader. A **Semi-active tag** is an active tag that remains dormant until it receives a signal from the reader to wake up. The tag can then use its battery to communicate with the reader. Like active tags, semi-active tags can communicate over a longer distance than passive tags. Their main advantage relative to active tags is that they have a longer battery life. The waking process, however, sometimes causes an unacceptable time delay when tags pass readers very quickly or when many tags need to be read within a very short period of time. **Semi-passive tags** are similar to active tags in that they have their own power source, but the battery only powers the microchip and does not broadcast a signal. The RF energy is reflected back to the reader like a passive tag.

Depending on the application requirements RFID tags are designed to operate at a number of designated frequencies and read range. RFID tags presently used in libraries operate on 13.56 MHz band.

Planning Effective Implementation of RFID:

Established of well-equipped technology for libraries needs adequate analysis and planning. Effective integration of RFID requires various combinations of things. In depth study would need to be done into the available RFID systems with their hardware and technical specifications to find the best combination. It is necessary that the library analyses and studies the

various parameters outlined carefully.

- Capitals cost and materials costs and space requirements of deploying the technology solution including integration with LibSys library management system.
- Evaluating other installations and assessing the results. In this connection visits to the libraries where the system is functioning is being organized.

- A realistic consideration of RFID cost benefit analysis for administrative justification.

- A pragmatic assessment of library security problem to be researches.

- Defining goals for RFID implementations (i.e., time resources and time-frame for making operations, collection tagging requirements, staffing for tagging, planning conversion and managing the actual conversion, etc.).

- Cost of staff training.

- Selecting a vendor and setting goals for RFID implementation, evaluating competitive offerings from vendors, functional specifications of equipment and tags, technical issues and standards, maintenance requirements costs ongoing support costs, AMC, etc. Needs to be identified. As standards change, hardware and software might need updating.

- Other maintenance tasks include setting up a workflow for new items received by the library and performing evaluation of the RFID systems effectiveness.

The Applicability of Privacy Considerations to RFID System:

RFID systems support a large variety of business processes, not all of which involve personal privacy. Examples of RFID systems that likely do not have privacy considerations include those supporting industrial processes, animal tracking, and asset management systems in which the assets are never associated with individuals during their life cycle. Privacy considerations exist when the system uses, collects, stores, or discloses personal information. An RFID system might use or disclose personal information in one of several ways:

- Personal information such as a name or account number may be stored on the tag or in a database in the enterprise subsystem.

- A tag may be associated with a personal item such as a blood sample, a bottle of prescription medicine, or a folder of legal documents that might be outside of the individual’s possession.

- A tag may be associated with an item that often travels with an individual, such as a tagged box or a vehicle part in an automobile or truck the individual often drives.

The RFID system does not have to store personal information to have privacy implications. For example, the tag on a bottle of prescription medicine may identify the drug in the bottle, but not the identity of the person for whom the prescription was written. Nonetheless, the individual taking the medicine may still perceive the possession of the drug as personal information if scanned and read by another, as it might reveal information about a medical condition that the individual considers private.

Several inherent features of RFID tags make enforcement of privacy controls more difficult than traditional information technology systems. Organizations may face challenges enforcing privacy policies when they cannot be coupled with effective security controls. RFID uses wireless communication, which is more vulnerable to eavesdropping and other attacks than the wired systems on which most traditional IT systems reside. In many applications, RFID tags will travel between organizations and often will be found in public areas, which means they cannot benefit from physical security commonly provided to most traditional IT systems. In general, RFID computing resources are limited and are not capable of implementing sophisticated technical controls.

Common Uses of RFID:

RFID systems can be used just about anywhere, from clothing tags to missiles to pet tags to food - anywhere that a unique identification system is needed. The tag can carry information as simple as a pet owners name and address or the cleaning instruction on a sweater to as complex as instructions on how to assemble a car.

How RFID Technology is Being Used in Everyday Places:

- RFID systems are being used in some hospitals to track a patient's location, and to provide real-time tracking of the location of doctors and nurses in the hospital. In addition, the system can be used to track the whereabouts of expensive and critical equipment, and even to control access to drugs, pediatrics, and other areas of the hospital that are considered "restricted access" areas.

- RFID chips for animals are extremely small devices injected via syringe under skin. Under a government initiative to control rabies, all Portuguese dogs must be RFID tagged by 2007. When scanned the tag can provide information relevant to the dog's history and its owner's information.

- RFID in retail stores offer real-time inventory tracking that

allows companies to monitor and control inventory supply at all times.

- The Orlando/Orange County Expressway Authority (OOCEA) is using an RFID based traffic-monitoring system, which uses roadside RFID readers to collect signals from transponders that are installed in about 1 million E-Pass and SunPass customer vehicles.

Conclusion:

Librarians everywhere are closely watching radio frequency identification (RFID) technology. An advance over using barcodes on library materials, RFID tags is being touted as a way radically to redesign how library materials are handled. From self-checkout to self-checking to collection management, they reduce the need for staff intervention. With circulation up, budgets flat, and the pressure on to both maximize staff and improve customer service, RFID is seductive. But it is expensive. The tags are vulnerable to wear and tear. The technology is not fully developed. It's unclear what sort of return on investment (ROI) it provides. And there are serious questions about privacy, with critics claiming that security flaws enable the surveillance of individuals and threaten the freedom to read.

Clearly, with such a complex technology, librarians need to do their homework and carefully weigh the pros and cons of RFID before deciding whether it makes sense for their library.

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ACCESS TO DIGITAL RESOURCES: EMERGING TRENDS

A Research Library is not simply a network full of databases or a building full of books it is a collection of information electronic or printed organized for long term. Many libraries of all kinds around the now provide an increasing volume of scholarly information to their clients in the form of current information needs. Hence libraries now rely increasingly on digital resources, many of which do not have a print equivalent e.g. electronic journals, web based information gateways or electronic courseware etc. In past few years, significant progress has been made to define the terms and outline a research agenda for preserving digital information that was originally digital or transformed to digital from traditional sources. So to save the valuable information and fulfill the user's requirements for posterity, digital document and resources should be managed and preserved at a tremendous rate.

Digital preservation is a "process by which digital data is preserved in digital form in order to ensure usability, durability & intellectual integrity of the information contain therein." The goal of digital preservation is to maintain the ability to display, retrieve, and use digital collections in the face of rapidly changing technological and organizational infrastructures and elements. This process involves following tasks:

- Preserving the digital medium that holds the digital information.
- Copying the digital information onto newer, fresher media before the old media deteriorates.
- Preserving the integrity of the digital information during the copying process.
- Digital preservation includes many materials for which there is no print equivalent these materials have been referred to as "born digital". Digitized images may require routine "refreshing".

The strategies for digital preservation are as follows:

Technology Preservation:

Preservation of the technical environment by conserving copies of the software and specific hardware is referred to as "technology preservation". This strategy involves the following criteria:

- Converting the information through machine language as a stable medium.
- Digital medium should be preserved by technology.

- Information can be refreshed and copied as a new media according to the requirement.

- Application programs needs to create or access the digital documents.

- Preserving the integrity of the digital information during the copying process.

- Hardware or system software should support the application software.

- Preserving the computer hardware platform that the operating system software was designed to run on.

Technology Emulation:

It is another option which focus on preserving the environment for a digital object. Emulation strategy is used as a sort to medium term strategy to maintain the original digital resource. It involves the following criteria:

- A stable digital medium information should be stored in system.

- Digital medium will be preserved when the document converted as a machine language.

- Data to be represent as a new media format through reconverting or reformatting.

- Integrity of digital information will increase through copying process.

- Original application programme should preserve and use to create or access the digital resource.

Technology emulation should be used where digital resources cannot be converted into software independent formats and migrated forward. This would usually be due to the complexity of the digital resources and the fact that it was created on a proprietary and obsolete application programme.

Digital Information Migration:

The third digital preservation strategy is digital information migration. For this strategy software availability always should be there to decode the current format. It is the last strategy in which many libraries and archives are already involved and many believe that this is the most practical approach, at least for the short and medium term. Digital information migration facilitates.

- **"**Backward compatibility" for application software.

- Application programs interoperability with new product.

- Standard formats for converting digital resource independent of both hardware and software.

Brief description of these facilities is as follows:

- **Backward Compatibility:**

  Backward Compatibility relies on making sure popular application software being "backward compatible". The latest versions of most popular word processing packages will be capable of decoding files created on earlier versions of the same package – particularly the previous two or three versions. If the leading application packages are "backward compatible" then migration simply involves testing the process and then loading files created on previous versions. While this strategy may work over the short term for simple digital resources created on some of the leading application packages it cannot be relied upon over the medium to long term or for more complex digital resources.

- **Interoperability:**

  The third migration strategy relies on "interoperability" between application programs. Digital resources created on one application program can be exported in a common interchange format and then imported into another application program. When digital information migrates some problems would involved in interchange process and some valuable data can be lost in this process. Compared to all the data that is lost when digital resources are printed out to paper or microfilm, the data lost during such an "interchange" may be minor.

- **Conversion to Standard Formats:**

  The converted digital information should be having standard format that can encode the complexity of structure and form of the original. Digitized information can be accepted as textual documents in several commonly available commercial word processing formats or require that documents conform to standards like SGML (ISO 8879). Databases should follow the standard format so that a file can be stored as a standard file format for example, for bibliographic data MARC 21 may be used as a standard.

While creating a digital resource the libraries requirements can simply be categorized in the following heading:

1. **Selection:**

   Identify publications / publishers,sign agreements, enforce deposit, maintain a list of classes for deposit, an update list of exclusions.

2. **Accessioning:**

   Log receipt, assign accession number, check documentation, count copies, check permissions,

check media, forward copies to deposit libraries, pass on.

3. **First Handling:**

   Check media, send out, virus check, read documentation, load data, run tests, repeat for copies, check keys to usage restrictions, download data, technical notes, pass on.

4. **Record Creation:**

   Link accession record, publication, documentation, notes views and inspects, create bibliographic record and profile record storage location of data and documentation.

5. **Initial Preservation:**

   Label publication, store data online and back-up, or download and store data off-line & record location.

6. **Access/ Reader Services:**

   Provide users with access to publication, manually at standalone workstation, online at local work stations or at deposit library work station via a WAN.

Structure of Digital Resources

The structures that may have been used to store and interchange data for different types of material are enlisted:

S.N.	Category of Digital Resource	Data Type/s	Proprietary processable Forms	Standard Processable Forms	Standard Formatted Forms
1	Data set	Alphanumeric Data		ASCCI; CSV; Delimited	PDF; Postscript
2	Structured Text	Alphanumeric data; mark-up data; tags to graphics;	WP Formats; DTP Formats;	SGML; HTML;	PostScrip; PDF; TeX; DSSSL
3	Office Document	Alphanumeric data; raster & vector graphics; Moving graphics	WP; Images; Spreadsheets; Presentation Graphics;	ASCII; RTF; HTML; SGML; TIFF; CGM;	PostScript; PDF; DSSSL
4	Design Data	Vector / raster graphics; alphanumeric data	CAD formats ; WP formats;	DXF/DWG; IGES; CGM; TIFF; ASCII/RTF	HPGL; PostScript; EPS

5	Presentation Graphic	Vector/ raster graphics; alphanumeric data; Moving graphics	Graphics formats; PowerPoint etc;		PostScript; PDF
6	Visual Image	Raster graphics	BMP; PCX;	TIFF; GIF; JPEG;	PostScript; PDF
7	Speech & Sound Recording	Audio Data	SunAU (UNIX); MS Wave	MPEG-1; Audio; Layers 1/2/3; MIDI	
8	Video Recording	Video Data	MS AVI; Apple QuickTime	MPEG-1; MPEG-2; MPEG – 4	
9	Geographic/Mapping Data	Vector graphics; raster graphics; Alphanumeric data	Arc/Info; Arc/View; MapInfo; AutoCAD Map	TIFF; ASCII; CGM	PostScript; EPS; HPGL
10	Interactive Multimedia Publication	Audio/ video; data moving graphics; Raster/ vector graphics; alphanumeric data	Macro-media; Apple QuickTime;	MPEG-1; MPEG-2	

Conclusion

Preservation and access to information are the oldest and most fundamental functions of libraries & archives, as keepers and providers of information, the age-old responsibilities of libraries is reemerging in the information society. The digital age create new delivery and access alternatives for libraries, as well as new preservation challenges. In turn the expectations of library users are also changing. So the digital age librarians will be aware of their responsibility for the preservations and long-term access to their collections.

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News

1. **ALA organizes its Annual Conference from June 26 to July 2, 2008, at Anaheim, CA, USA**.

   Committee and business meetings take place from June 28 to July 1, 2008, and Council Meetings run to July 2; Education programs take place primariliy from June 28-30, 2008. The exhibits will be held on June 28-July 1, 2008, at the Anaheim Convention Center, located at 800 West Katella Avenue in Anaheim. Programs and Meetings will take place in the Convention Center and hotels nearby.

2. **SLA organizes its Annual Conference from 15 to 18 June 2008 at Seattle, USA**.

   The conference will create an environment for networking, communication, learning and other developmental opportunities for information professionals.

3. **A Conference on "Translating and the Computer 30" organizes by ASLIB from 27-28 November 2008 at the Holiday Inn Camden Lock, London.**

   This conference focuses on the user's perspective of how computers/software is used in translation. The conference series attracts a wide audience which includes translation services managers, translators, business managers, researchers and language experts.

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