1 | USE OF RFID TECHNOLOGY FOR LIBRARY SECURITY

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Abstract

Now a day's 'Technology' is the boon for everyone in every field. Particular in LIS field, Library services have improved due to the technological improvement. Among the application in libraries, RFID and Smart card is attractive and found very useful by LIS professional reference to information security in libraries. This technology that is RFID technology is a wireless technology for the libraries. A new RFID project, place privacy and security high on the list of non-functional requirements and track negative public perception as a risk to project. This technology is same as bar-coding system but it is very much refined and improved then bar-coding system. In this paper we present about various components of RFID, operations, advantages and essential requirements.

Keywords : RFID, Security system, RFID tags, RFID Technology

Introduction

Radio Frequency Identification Technology is the latest technology, used for library Information inventory functions and theft detection system. It uses radio waves to identify individual items automatically and can be used anywhere that needed a unique identification, RFID is a generic term that is used to describe a system that transmits the identify at an object or person wirelessly, using radio waves RFID is a next generation of Auto Identification and Data Collection (AIDC) technology which helps you automate business process. RFID is a means of identifying a person or object using a radio frequency transmission.

RFID: An Overview

The Origin of RFID technology has been understood since 1930's emerged out from the concept of "mirror–sunlight–reflection". For centuries we have known how to communicate message with just a mirror by flashing the suns reflection in the direction of recipient, so that message can be sent through air, simply by reflecting radiated sunlight. The basic theory behind RFID is same, but different is here,

it reflects "radio wave".

The first application of RFID had shown during 2nd world war (use with Radar). However its commercial application begun to be realized from 1980's onwards. The most common application are tracking person and objects identifying goods in supply chain, reusable container, high value tools and other assets, is also used for security including controlling access to building and networks and payments system. So now it has become a part of everyday life.

Why Libraries require RFID?

Tremendous growth and acquisitions in publications like books, Journals, etc. to the library and It is difficult job for library peoples to organize, maintain. So there is need for efficient collections organization, description and dissemination of knowledge was established. Library staff size remains constant but Reading materials ever growing. Librarians are now in the business of moving books around rather than practicing librarianship, reference and patron service. So, the RFID is provides best solutions to automate much of this handling and return staff to the business of customer service.

Components of an RFID System

RFID is a generic tern for technologies that use radio waves to automatically identify on objects.

1. An Antenna - It is conduit between RFID tags and the reader. RFID antennas emit radio waves that activate RFID tags as they pass through the activation field. After a tag is activated, it can send information or receive information from the PC through the reader.

2. Tags - The heart of the system is the RFID tag, which can be fixed inside a book's back cover or directly onto CDs and videos. This tag is equipped with a programmable chip and an antenna.

3. Reader or Transceiver - When the tag passes through the field, the information stored on the chip in the tag is interpreted by the reader and sent to the server. These are radio frequency devices designed to detect and read tags to obtain the information stored thereon. The reader powers an antenna to generate Radio frequency field. When a tag passes through the field the information stored on the chip in the tag is decoded by the reader and sent to the server, after checking the circulation database, turns on an alarm if the

material is not properly checked out.

4. Server or Docking station -It is the communications gateway among the various components. It receives the information from one or more of the readers and exchanges information with the circulation database. Its software includes the APIs (Application Programming interface) necessary to interface it with the automated library system.

Optional Components

Optional RFID system includes the following three components-

- RFID Label Printer;
- Handheld Reader;
- External Book Return.

An RFID printer is used to print the labels with an individual barcode, library logo, etc. When the print is applied, it simultaneously programs the data in to the chip. After this process, the RFID label is taken from the printer and applied to the book.

RFID Technology for Libraries

RFID can be simplified to that of an electronic barcode and can be used to identify, track, sort or detect library holdings at the circulation desk and in the daily stock maintenance. RFID can be used in the library circulation operations in theft detection systems. RFID based systems move beyond security to become tracking systems that combine security with more efficient tracking of materials throughout the library, including easier and faster charge and discharge, inventorying, and materials handling. RFID consist of smart RFID labels, hardware and software provides libraries with more effective way of managing their collections while providing greater customer service to their patrons. RFID technology helps librarians reduce valuable staff time spent scanning barcodes while charging and discharging items. RFID is a combination of radio-frequency-based technology and microchip technology. The information croc hips in the tags affixed to library materials is read using radio frequency technology, regardless of item orientation or alignment. The RFID gates at the library exits can be as wide as four feet because the tags can be read at a distance of up to two feet by each of two parallel exit gate sensors.

Advantages of RFID

- RFID tag replace both the bar code and traditional security systems and creating a smart library .
- More than one item can be checked out or checked in at the same time.
- Items can be placed on reader without careful placement that it is required for line of sight system (barcode scanner).
- Increases the difficulty in intentional or accidental removal of items from the library without checkout.
- Faster inventory process.
- Ability to locate specific items.
- Miss-shelved reports.
- Automated check-in chutes can provide 24-hour check-in.
- Automated 24-hour holds pickup and checkout units.
- Books get sorted and back on the floor quicker for enhanced circulation capabilities.
- Tags are for the life of the item.
- Once only operation for item lifecycle.
- Protects staff from many materials handling-related injuries. (e.g. RSI)
- Staff can exploit their profession skills as opposed to clerical skills.
- Ability to manage the expenses over a number of years.
- Improve customer service.

Benefits of RFID Technology in Library

- Reliable borrower self-checkout.
- Immediate and consistent borrowers self-check in.
- Circulation staff free for other library tasks.
- Reliable knowledge of stock locations (i.e. checked in or checked out).
- Financial- reduces costs of replacing stock.
- Labour savings on inventory processes, filling holds lists, shelf reading and correction processes, etc.
- Satisfaction with correct and reliable shelving order.
- Lower labour costs on Check in processes, re-shelving, holds pickup
- Higher staff job satisfaction

- Financial Cost of qualified staff exploited with increase in added value work.

Disadvantages of RFID

- High cost;
- Accessibility to compromise;
- Chances of Removal of exposed tags;
- Exit gate sensor (Reader) problems;
- User Privacy Concerns;
- Reader collision;
- Tag collision;
- Lack of Standard.

Conclusion

RFID has proved popular with library users. RFID is seen as excellent opportunity by contributing, to save time, manpower creating cost efficient and total quality services. This technology will improve the efficiency by helping staff track materials better, prevent theft and allow patrons to check-out book faster. It converts a traditional library to "Book Smart Library" by reducing queue time at circulation desk, quick inventory control without handling books, trouble free identification of misplaced books, automatic book sorting and theft prevention and provide more time for library staff to assist the patrons. To conclude with the necessity to upgrade our present traditional system with the latest technologies available to reduce the workload and provide the faster and better services to the library users.

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