

RFID Library Management and Security System



rfLiMS Powered By: Daphne Systems

Presentation Highlights

- **About Company**
- **Overview of Current Library Management Systems**
- **Introduction Of RFID**
- **Why RFID for Libraries?**
- **Components of RFID System (Hardware and Software)**
- **Benefits of RFID for Library Management**
- **Standards**
- **Service & Supports**
- **Conclusions**

About Company

(An ISO 9001:2021 Certified Company)

Daphne Systems Private Limited is an RFID System Integrator, providing application research based turnkey solutions that empower organizations to achieve competitive advantage from radio-frequency identification (RFID) and enhance their business performance. We envision creating and extending knowledge in RFID utilization and its impacts on business processes. We maintain international standards of excellence and implement comprehensive, industry-tested turnkey solutions that will provide value, scalability, and return on investment across an organization.

Current Library Management System

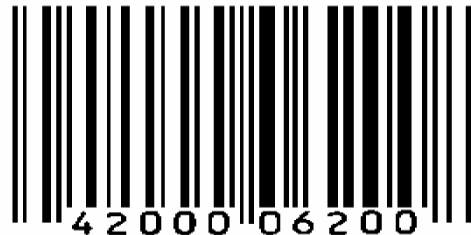
Operated Manually:

- Most Libraries are Staff Intensive
- Large Amount of Routine Procedures
- Difficult for Searching a Specific Book
- Card Based Issue of Books

Technology Used

- Barcode Technology for Identification - Very Cost Effective

Barcode



simply points at the database

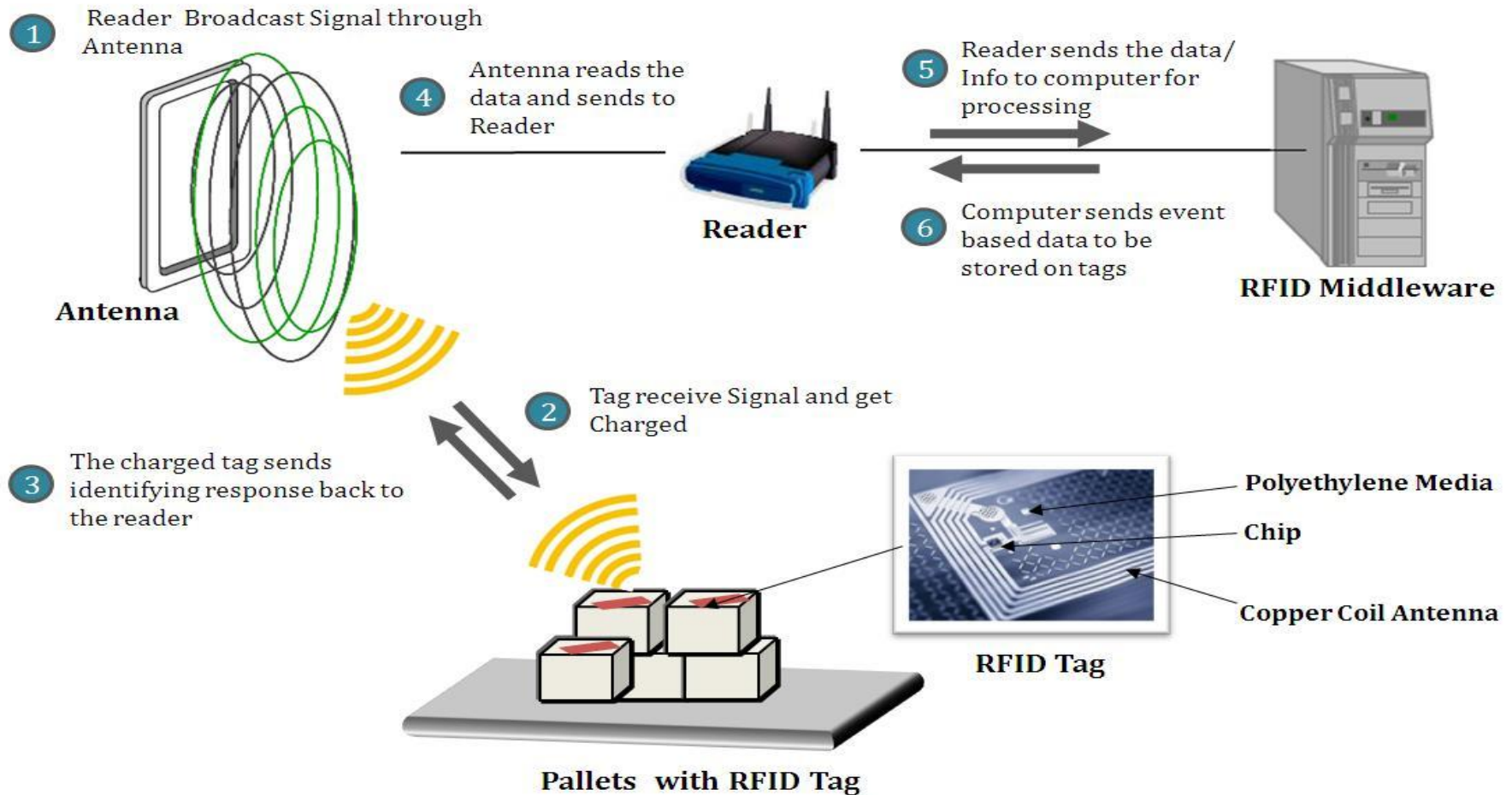
Current Library Management System

Drawbacks of Barcode Technology

- **Barcode readers require a direct line of sight, using laser technology**
- **Scan and read one tag at a time and also time consuming**
- **Human intervention is required to scan a barcode**
- **It should be visible on the product for scanning**
- **Does not have read/write memory**
- **The readability of the barcode can be impaired by dirt, moisture, abrasion and packaging etc.**
- **Less read range & holds fixed and limited data.**
- **Technology is old and outdated**
- **Cannot read a bar code if there is any obstacle between the reader and the bar code**

Introduction of RFID

How RFID Works?



RFID Key Attributes & Why RFID for Library

- Tags for libraries last for the lifetime of the books or other material to which it is attached
- Electronic information can be over-written repeatedly
- Unlike barcodes, RFID tags can be read:
 1. Through desktops and book covers (no line of sight is required)
 2. In any orientation to the reader/antenna
 3. While moving
 4. Bulk detection
 5. Several at a time
 6. From distances of several feet to the antenna
- RFID improves library workflow, staff productivity and customer service with these attributes
- Ability to conduct inventory counts without removing books from the shelves, is what really separates RFID from preceding technologies such as barcodes
- Faster Return on Investment (ROI)

Components Of RFID Systems

(Hardware and Software)



SYSTEM COMPONENTS

RFID Tags:

- Paper thin label
- Placed inconspicuously on the inside cover of each book in a library collection
- Consists of an antenna and a tiny chip which stores vital item information including a unique ID number
- Provides identification and security in a single tag
- Password protected anti-theft security bit



Tag-Specification:

Chip- Philips I-Code SLI-L
13.56 MHz Frequency
ISO 15693, 18000-3
256-2048 bits Read /
Write Memory
Read Range : 1 meter
Anti-collision (Multi-read)

Anti-Theft Sticker:

It is used for protection of RFID Book Label. It has pre-printed institute logo and information. It is available in different size.

- Adhesive Paper Sticker
- Pre Printed Institute Logo
- Vinyl Printing
- Dust & Water Proof



System Components



RFID Patron Card:

- 13.56 MHz, ISO standard size: 85,7 x 54 mm Laminated PVC (flexi/hard)
- Unique ID eliminates risk of duplicate cards
- Personalized with relevant information about the Library member like membership No. etc
- Compatible with other auto-id systems – access control,
- e-Payment, e-Attendance etc



Patron Card Printer:

- Color dye sublimation and monochrome thermal transfer
- Print speed of 150 cards/hour in color and 1,000 cards/hour in monochrome
- Print head resolution: 300 dpi
- E-Media Card Designer Software Standard Edition for designing and editing badges

System Components

Multipurpose Staff Station :

- Versatile unit that operate as a circulation desk or tag encoding station
- Multiple simultaneous check-outs, check-in and renewals
- Arm / Disarm Library items
- Identify the borrower using RFID Patron Cards
- Tagging of new library items
- Programming RFID Patron Cards



Tagging Station :

- The Tag Programming Station simplifies the move to Daphne rLiMS.
- Convert existing material to RFID quickly and easily more than 3 items per minute
- Program RFID patron cards and update the information in the ILS System database
- Processes bar code & RFID Tags



System Components

Self Check Station:

- Kiosk with PC- stand alone multi-protocol Self Check-in/Check-out kiosk primarily for self issue and return of books in Library.
- Enables library patrons to manage their own transactions easily and efficiently
- Double return bin option provides item separation at return
- SIP2 circulation protocol
- Integrated touch screen and receipt printer



System Components

Self Check-In Drop Box:

The Book Drop Station can be placed at any convenient location to enable patrons to return their items anytime, even after the library is closed. The loans are instantaneously cancelled, patrons may immediately borrow again.

- SIP2 circulation protocol
- Reactivates security bit
- Provides return receipts
- Depressible Receiving Cart



System Components

Wireless Inventory Management System:

Handheld RFID reader and mobile computer (PDA) combines convenience with versatility and provides advanced capabilities:

- Fast, efficient inventory
- Locates misplaced volumes
- Arm / disarm item (optional)
- Unique feature of marking items for bindery during inventory
- Individual and Multiple item search with audio visual signal

Specifications:

- Android 4.0 and above
- FCC regulations Compliant
- IP 65 Environmental Sealing
- 5000mAh
- HF



System Components

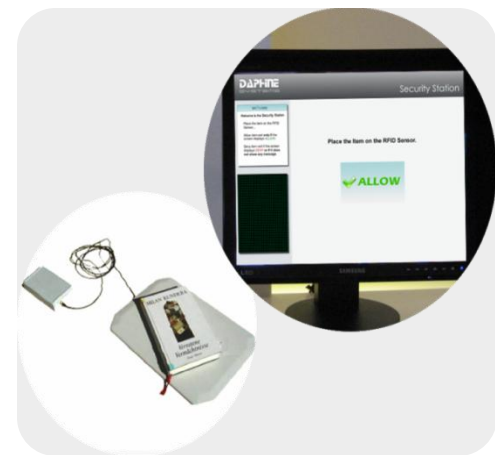


Security Gates:

- Most modern detection algorithm that constantly detects any unauthorized item removal.
- Covers approximately 1 meter wide pathway with no orientation limits
- Variable gate width of up to 1.80 m (2 x 90 cm)
- Visual and audible alarms at unauthorized item being taken out
- Anti-collision feature

Security Station:

- Placed at the exit gates, provides an alternate solution for security using RFID tags.
- Manned Station at the library exit gates
- Quick and easy detection of item circulation status
- Provides fool-proof security



System Components



Sorting Station :

- Improve service for patrons and simplify work for library staff by automating material handling tasks.
- Automated round the clock check-in
- Automated Materials Sorting by shelving locations
- Expandable due to modular structure
- Reduces turnaround time of item shelving

RFID Server:

- Central Control Unit for all the RFID stations in the local network.
- Primary database server
- Acts as a backup server in case of LMS connection failure
- Web based Admin Console
- Monitor and configure RFID workstations, view inventory reports etc.
- Define Access Control Levels to the users of Multipurpose Staff Station etc.



Software

rfLiMS SERVER (Web-based Software):

rfLiMS is the Middleware Software to communicate with RFID hardware and Library Management Software.

The rfLiMS server is the central control unit for all the RFID station in the local network.



rfLiMS provides identification, tracking, security and automated handling to library items. The system enables accurate and fast multi item check-in and check-out, rapid shelf inventory and fast user friendly book return process. Advances over using barcodes on library material, our rfLiMS radically redesigns, how library material are handled and processed.

rfLiMS is designed to be modular and different modules can be used to build a system to meet your requirements, may it be security, automated handling, inventory management or complete RFID automation of the library processes.

- Primary RFID database server.
- Acts as a backup server in case of ILS connection failure.
- Provides web based admin console.
- Monitor and configure RFID workstations.

Benefits For Library Staff And Library

- Reduced time and labor for checking-in and checking-out materials
- Significant reduction in time spent doing inventory and stock verification
- Stock verification without closing the library
- Reduced time and labor spent searching for misplaced / lost items
- Increased circulation through self-check, leaving staff for more meaningful value added services
- Lesser staff at the circulation desk during a busy period
- Less number and value of lost items for a specified time period
- Less maintenance cost due to lifetime guarantee of RFID tags
- Stock management
- Improved patron services
- Flexibility and modularity

Benefits For Library Patrons

- **Faster, easier and convenient to use**
- **Shorter waiting time at circulation desk**
- **Higher availability of library items due to faster book turnover**
- **24-hours return facility of library items**
- **Faster and accurate re-shelving; patrons can find items where they should be, hence quicker and more satisfying service**
- **Better library experience**
- **More frequent visits**
- **Patrons spend less time waiting in check-out lines by using Self Check-in/Check-out systems**
- **Patrons find what they are looking for quickly & easily**
- **Reminders for due dates allows patrons to submit borrowed materials in time**
- **Uses of book drops & return chutes for returning library material, allows for flexible timings**
- **RFID enabled patron card allows for easy patron identification**

Standards Pertaining To Library RFID

SIP2 (Standard Interchange Protocol V2) / NCIP

SIP2/ NCIP manages the communication between the RFID system and the Library Management Software.

ISO 15693 and 18000-3

ISO 15693 defines the physical characteristics, air interface, and communication protocol which will be employed with the 13.56 MHz RFID tags & readers used In libraries

Services & Support

Daphne brings the key elements of the whole solution together to provide end-to-end solution for your libraries

- **Project Management / Co-ordination**
- **Integration to LMS**
- **System Installation**
- **Testing & Commissioning**
- **12 months warranty & support**
- **Books and components interaction**
- **Patron Cards Printer, on demand printer rolls**



RFID Technology is Taking off in Libraries at an Increasingly Rapid Pace. It is Easy to Envision that, The RFID Tag Contents will Increase in Power, Price are Expected to Decline and Tag will Dramatically Improve it's EFFICIENCY, SECURITY and ACCURACY.



MANY THANKS!

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