

---

---

## Unique Card Solution for Hi-Tech Libraries

Amita Munshi

### Abstract

*The extension of IT has been transformed into RFID technology is being widely used in various information centers. It has become difficult to understand the smart card its definition, its application areas, special features, technological convergence and its use in libraries. This is an emerging technology which also reduces the counter staff thus increases the efficiency of overall library personnel. The author has the experience at planning stage for introduction of this technology in one of the National Institutes of technology in India.*

**Keywords :** Smart Card Application, RFID Technology, Library Application

### **0. Introduction**

The appearance of electronic text centers within libraries during the last several years has been a significant development for both the libraries and research communities. At the same time, electronic texts have become great challenge to the traditional roles in the libraries, research and publishing communities. Development in electronic textual resources means dealing with documents in new ways and on different levels, often involving work on a document's content through text encoding. This development challenges the libraries assumed position in the research process.

Smart technology for smart libraries offers state-of-the-art collection management and security applications to meet the needs of organizations of all types around the world. From simple plastic security cases to the ultra- sophisticated RFID (Radio Frequency Identification Detection) based intelligent systems, radio frequency and electromagnetic anti theft systems, closed circuit television and access control technologies, this solution help organizations to reduce losses, enhance staff productivity and support increased circulation and greater patron satisfaction.

Together, these systems are already today tracking close to 10 million items .As well as being a low cost solution providing identification and item information with virtually 100% accuracy, the system is also very quick, it can read up to 30 assets per second. It is the way to the future, virtually eliminating misplaced books, inventory control problems and long queues at the check in and check out desk. They also reduce workload and stress for library administrators, as it is always possible to determine quickly whether are individual item is available in the library or if it has been checked out, eliminating after fruitless and time wasting searches.

### **1. What is Smart Card**

"A smart card is a card with a microchip embedded in it. The card is similar in size and shape to a plastic credit card. These cards take the form of either "contact" cards that require a card reader or "contact less" cards which use radio frequency signals to operate. The embedded chip however empowers the card to be useful in a variety of environments.

"The smart card, an intelligent token, is a credit card sized plastic card embedded with an integrated circuit chip. It provides not only memory capacity, but computational capacity as well. The self-containment of smart card makes it resistant to attack, as it does not need to depend upon potentially vulnerable external resources".

## **2. Smart Cards : Its Salient Features**

1. It offers quick, easy and personal way to verify the identity of a user.
2. They are more secure and durable than magnetic stripe cards and more difficult to tamper with than bar code cards.
3. They can store more data and physically separate the data into a multi-partition file system, so that many applications can safely run on a single card.
4. They can control who has access to files on the card as well as in a computer network.
5. They can carry unlimited monetary value. The electronic manipulation of the card can add or subtract value.
6. They can store biometrics for complete security.
7. They can be designed with their own levels of cryptographic algorithms.
8. They can accommodate and upgrade all current technologies in piggy back fashion instead of replacing the standard 39 bar code or the three track, high energy stripe systems.
9. They can carry a photo, text, and magnetic strip, bar code and embedded computer chip all on one standard size card.

## **3. Smart Cards and Technological Convergence**

In the world around us, today we are seeing the convergence of technologies and communications methods like - banking services are available over the mobile phone, internet services are available via a host of different media (such as digital television, mobile phones and public payphones and e-purse developments) are seeing the integration of transport, retail, parking and other public services.

Smart cards have already been accepted as the most portable and secure system with the introduction of biometrics and additional cryptographic capabilities to ensure even higher levels of security, individuals can carry their own personalized digital identity around them.

“The way that commerce has functioned for the last two millennia, via face to face contact, written signatures, handshakes and cash, will be fundamentally changed with electronic transactions. Smart cards are the solution and the next twenty years every person on the planet will use the technology.

## **4. Application Areas**

Smart card does not require insertion into a card reader and can work up to several centimeters away from the reading device. These are ideal for people who are moving in vehicles or on foot. It would be ideal to wave at scanning machines, collecting payment for motorway tolls, on buses or at train stations, for parking admission fees or ferry crossings, libraries etc.

### **4.1 Financial Applications**

- Electronic purse, to replace coins for small purchase in vending machines and over-the-counter transactions for the companies and cooperative societies.
- Credit and or debit accounts, replicating what is currently on the magnetic stripe bankcard, but in more secure environment.
- Securing payment across the Internet as a part of electronic commerce.

---

#### 4.2 Communication Applications

- To the secure initiation of calls and identification of caller (for billing purposes) on any global system for mobile communications.

#### 4.3 Government programs

- Electronic benefits transfer using smart cards to carry food, stamp and wet food benefits in lieu of paper coupons and vouchers.
- Agricultural producer smart marketing card to track quotas.

#### 4.4 Information security.

- Employee access card with secured passwords and the potential to employ biometrics to protect access to computer systems.

#### 4.5 Physical Access

- Employees access card with secured identity and the potential to employ biometrics to protect physical access to facilities.

#### 4.6 Transportation

- Driving licenses.
- Mass transit fare collection systems.
- Electronic toll collection systems.

#### 4.7 Retail & loyalty

- Consumer reward/redemption tracking on a smart loyalty card, that is marketed to specific consumer profiles and linked to one of more specific retailers serving that segment.

#### 4.8 Health card

- Consumer health card containing insurance eligibility and emergency medical data.

#### 4.9 Library card

- Reader membership card containing his borrower no, address, class, college issued books, fine etc.

### 5. Library & Smart Card

An all purpose identity card, containing a variety of applications such as electronic purse (for cooperative societies, vending and laundry machines), examination card, fee card, health card, attendance card, library card and meal card. Traditionally on campus the students are required to carry a number of cards most of their cards are required for authorizations and identification purpose owing its roots in the policies of the administration

The smart card ensures that each transaction can be understood as a part of a big system that uses. Smart card for both transferring the data and also enable remote and mobile computing, In addition to the same, it also helps in obliterating the redundancies of workflow increasing both efficiency and effectiveness of the systems.

1. It can replace the library software with its own feature of “all in one technology”.
2. It can be used as library management software.
3. The information of the books is stored on the tags attached to the books from which the complete details of the books can be traced like book accession no ,class no ,bibliographical details, data of purchase vendor, version etc.
4. The information about the book or the data in the book such as the key words or the index can be traced with the help of the search engine, Which is placed on the computer.
5. The issue of the books can be done as per the reservation made by the individual and the return of the book can be done at any time.
6. The fine calculation and collection can be made easily.
7. The requisition of the book can be made by the faculty/student/ member can be sent to the accounts and the details /status of the same can be send to the libraries and the individual.
8. Annual reports can be generated.
9. Completely customizable to classify the books as per librarians wish.
10. Stock verification can be done easily with no time lag.
11. Easy maintenance.
12. All types of database searches are possible.
13. All types of reports like ordering, invoice, list of dead books, statistical reports, missing accession no, member reports, daily transaction reports are possible within no time.
14. Subject wise sorting is possible.

With the implementation of smart card, library becomes smarter, so we can call the library as a “smart library”. The new system delivers increased efficiency by providing a means of regularly updating the library’s inventory and maintaining an accurate control of borrowing records. RFID labels placed in or on books, assets and other items can also be identified on the shelves using a hand –held reader, which can detect labeled items at a distance of up to one meter. These advantages lead to a much more efficient updating scheme and eliminate endless searching for misplaced books – a serious problem in organizations/ university libraries where visitor often incorrectly replace books on the shelves.

## **6. Conclusion**

The 21<sup>st</sup> century will usher in the digital age and smart cards will provide the key to access its benefits. Since the Library is a powerhouse of knowledge, and the intellectual lots interact with library personnel Vis-a –Vis emerging technology, the use of the smart card technology will be a centralized facility of an institution or any organization. This multifarious smart card technology will not only be use in library but also useful in maintaining academic, examination, hostel and others records in the institution.

---

## 7. References

1. [www.semiconductors.philips.com](http://www.semiconductors.philips.com)
2. [www.itbs-india.com](http://www.itbs-india.com)
3. [www.ti.com/tiris](http://www.ti.com/tiris)
4. [www.hitachi.co.jp](http://www.hitachi.co.jp)
5. [www.autoidlabs.org](http://www.autoidlabs.org)

### About Authors



**Mrs. Amita Munshi** is librarian at Raipur Institute of Technology, Raipur, India. She holds B.Sc., M.L.I.Sc., M.A. in linguistics and D.C.A. She worked as a lecturer of L.I.S., in Pt. Ravishankar Shukla University and Nagpur University and Graduate Trainee VNIT, Nagpur. She published few articles in LIS.