Smart Identity Card

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ABSTRACT

This paper relates to a smart identity card. In the corporate world, colleges, universities etc, identity cards have become a part of the dress code. The identity has multiple features for the user comfort thus lead to the coining of the term smart identity card. This card disclosed in the present invention provides prepaid wallet system that keeps track of all the payments through mobile application. The system further provides parental control. Additionally, the smart identity card provides access control, authorisation, and location identification.

Keywords: Smart Identity, Internet of Things, Prepaid Wallet System, Location Identification, Access Control, Authorisation, RFID

1. INTRODUCTION

The present invention relates to the field of Internet of things (IOT) in Smart Identity Card.

Recent advancements in smart technologies have led to development of smart card/chip card that comprises embedded chip for several and various purposes. Technologies in this field have developed new ways to use the smart card in every possible day-to-day activity such as credit/debit purchases, visiting libraries, theatres, etc.

Our research team has developed a smart identification card for university/college purpose. The standalone smart identity card enables the user to identify the location of students/staffs within the university, authorization facilities, prepaid wallet system enabling purchases within the university and also parental control on the expenses of the students. The system enables everyone in the university to use their identity card for all their activities within their university premises.

The multi-application smart identity card increases the efficiency of the university management system, safety and security of students/staffs within the university premises.

The invention has the followingadvantages:

1. An active RFID present within the identity card.
2. A prepaid system for various transactions within the university.
3. Biometric attendance
4. A prepaid wallet having the individuals' registration number as the account number used for all the transactions.
5. System to locate the person within the university premises

2. DESCRIPTION

This paper discusses in detail on a smart identity that serves multiple purposes for the students, faculties, teaching, non-teaching staff and others to access all the facilities present inside the college/university.

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The identity card comprises of an RFID tag that contains the user information stored in it, allowing the identification of the user in case of availing any facility inside the university.

Inside all the universities, it is a common scenario that everyone inside, be it students, staff members and the rest wear identity card for identification purpose. This card bears the individual's information such as their name, department, year of study (in case of students), individual registration number, date of birth etc. All this information is stored inside a chip within the identity card.

The present invention adds further intelligence to the existing identity card allowing user to avail many other facilities within the university premises by using the identity card.

The said smart identity card 100 contains an active RFID chip, which provides plethora of functions as shown in fig. 1 such as location identification 105 of any individual within the university, any individual refers to the students, teaching and non-teaching staff, higher officials and the rest, biometric attendance 104 within the university, access library facilities 101, make payments within the university 102, 103, buy groceries, purchase food from canteen and cafeterias, purchase books form stores, all within the university.

The location identification system 105 as mentioned above allows to locate the position of the individual within the university. Many-a-times it happens that the student or other staffs or higher officials will be looking for a certain person within the university for some urgent work such as an important meeting, for some presentation, important consultation, submission etc. As they proceed to their cabin they find to their surprise the person is not present in his cabin where he is supposed to be present. In such a case the workers and other neighbouring staff members will be asked regarding the required members' whereabouts. This may take a lot of time and there is a possibility that the urgent work may be delayed.

In such a scenario the real time location system(RTLS) allows the identification of the person. One such RTLS system using RFID is provided by Borda Technology. Using the RTLS within the RFID chip the
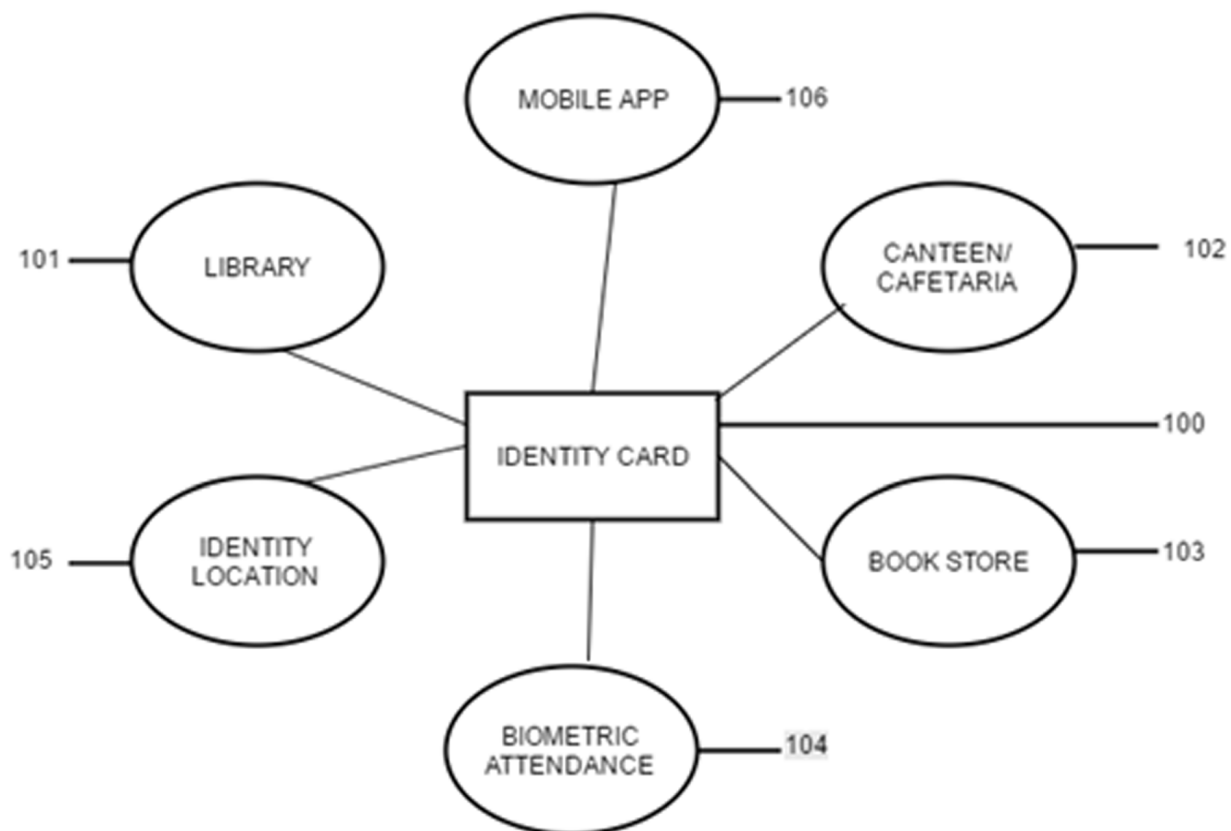

Figure 1. The Smart Identity Card used in Various Scenarios

precise location of the individual or group of individuals can be located. The system specifies the location including the floor number and room number.

Such individual or group of students/staffs location identification is provided to the management authority. The management authority is present in all the departments. Any person who is in need to know the location of the any other individual has to approach this authority, provide the appropriate reason and obtain the required information.

Active RFIDs are used to provide accurate location of the individual or group of individuals. Thus these RFIDs can be used within the university to provide the accurate location. The main advantage of using active RFIDs are their long range communication.

Further, this location information pertaining to individual is logged into university mobile application 106 inside the individuals account and into the university server that can be accessed by the management authority.

In addition to the real time location identification, the RFID consists of the individual details mentioned above along with the registered mobile number and an additional mobile number which belong to their parents/guardian, a prepaid system that can be used for transactions within the university. The figure 1 shows the university scenario using the smart identity card.

The smart identity card 100 as shown can be used in various scenarios such as in library 101, canteen/cafeteria 102, inside book stores 103 to purchase books, biometric attendance 104, and to locate the individual 105.

The location identification of the individual using the smart identity card has been described above. The active RFID present inside the smart identity card provides a prepaid recharging system which is required to be recharged by the individual to make payments within the university.

This prepaid system totally eliminates the use of liquid cash exchanged between the shopkeepers and the buyers inside the university. The individual can recharge their smart identity card with the help of university mobile application. The main advantage of using this prepaid system is the provision of credit system. Every individual has been provided with a credit limit after they finish the amount with which the card has been recharged. This limit is variable for different groups of people such as students, teaching and non-teaching staff and the rest.

This provides the individual with the advantage that in case the recharged amount has been over then the credit amount can be used as a reserve to fulfil the current need. If the individual exceeds the current need, they can use the prepaid system after making the payment.

The prepaid system is shown as a series of blocks in figure 2. The university mobile application 201 is used to recharge the smart identity card 100. Additionally, the smart identity cards can be recharged at the physical stores, not shown in the figure, present inside the university at various locations. After the smart identity card is recharged, the card acts like a debit card where the money is stored in the prepaid wallet 202. As mentioned above, the smart identity card has the individual's' registration number stored, this registration number acts as the transaction account number to make all the transactions within the university.

The individual can purchase from a number of options available inside the university right from food inside the cafeteria/canteen to books inside the book store. After the individual performs a transaction 203 at any of these shops, the respective money is deducted from their account. The transaction details regarding the amount spend or recharged will be immediately sent to the registered and additional mobile number. As the transaction details are sent to the parents 204, this system provides admin control.
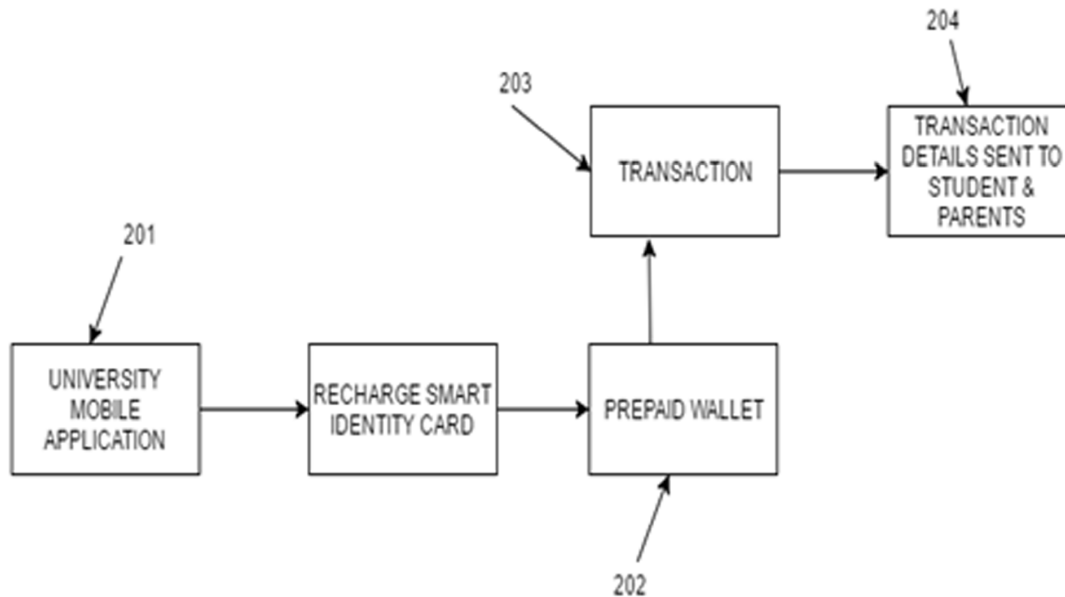
Figure 2: The Smart Identity Card - Prepaid System

As mentioned regarding the prepaid system, the system can be used anywhere inside the university. The various areas where the prepaid system is used has a RFID reader that reads the information stored inside the tag and proceed with the requested transaction.

The smart identity card is further used to put attendance for the individual by using the biometric machine after swiping in the card, thus the present invention provides biometric attendance, thus removes the possibility of proxy attendance.

The entire invention revolves around the utilization of the present system within the university/college, but the scope of the present invention should not be limited to college/university as known by the people skilled in the art.

3. IMPLEMENTATION

The objective of the invention is to devise a smart identity card which can be used inside the colleges, universities. The card has plethora of features like biometric attendance, location identification to name a few.

In an additional aspect, the present disclosure present an identity card to be worn by the student present inside the college or university all the time to verify their presence, make payments, using other college assets.

The present invention completely eliminates the exchange of liquid money exchanged between the buyer and shopkeeper. Further, the present invention allows the management committee to locate the position of the individual. Thus, this smart identity card serves as a one sole device to be used inside the university/ college for all purposes.

The aforementioned aspects along with the objectives and the advantages can be achieved as described herein. The present invention showcases a new smart identity card that has plethora of features for the users.

The smart identity card has an RFID chip present inside which allows the person owning it to make small transactions within the premises, biometric attendance facility, library access and most importantly identify the location of the person in case of emergency.

As mentioned the users can make small payments within the college/ university premises, the users can buy food from canteen, pay at cafeterias, make payments at the bookstores, purchase groceries, all these facilities within the college/university premises.

The system further allows the management to locate any individual wearing the smart identity cards. This locating system facilitates in finding a faculty or other important people in case of emergency, all within the college/university.

The location details of the individual are logged into the university mobile application into the individuals account and the university server that can be monitored by the management authority.

4.   APPLICATION

The invention as described in the drawing finds application in the following area:

1. University
2. Colleges
3. School
4. Corporate, Government offices

5.   CONCLUSION

Major advantages of the present disclosure is that it provides smart identity card that has multiple features that enables access control, authorisation, and location identification. The card has prepaid wallet system that is in conjunction with a mobile application that keeps track of all the payments.

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