

Smart e-business Card with Inclusion of NFC

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ABSTRACT

Near Field Communication (NFC) is wireless short-range communication technology that is based on traditional standards of the Radio Frequency Identification (RFID) infrastructure. In blend with NFC-enable android smartphones it enables instinctive application scenarios for contactless transactions, in particular services for various application services using e-business card and NFC's in mobile environment. Now a days printed business card system is in use with limited information and with low security issue. If printed cards are lost, then no backup is provided so to overcome this and to give a better solution our system is proposed. The intention of this project is to describe basic characteristics and benefits of the underlying technology, to classify modes of operation. Both existing NFC applications and possible future scenarios will be analyzed in this context. NFC card is taped on phone which contain tag and data from tag is transferred to cell phone. To enhance the security level OTP will be generated every time when the NFC card is taped on phone. And in addition to this, all the personal documents needed for any official work will also be linked in to the NFC card.

Keyword: - NFC, wireless, RFID, OTP, e-business, short-range communication, NFC tag, smart phone.

1. INTRODUCTION

Now-a-days the business man needs to carry the printed business card and personal document in the whole market to launch his new business and to give the detailed information about it. Still there is no guarantee of the end user to get the sufficient information regarding the business. It also wastes lots of time and efforts of the end user. The society requires quick response as well as smart actions. Due to lack of time and busy schedule, people requires smart system to reduce human efforts, cost & time so we are going one step ahead towards smart city. We are developing an android mobile application using which end-user can search for the business information just a dial away. NFC is used in large scale in day today life. We will not be need to carry cards, different electronic such as Adhar card /Pan card and other personal documents and identity will be the cards are already in the cell phone, and will use them anywhere we want. Even more, we can buy and store e-tickets on the cell phone and there is also a set of criteria to determine the work of smart phones and similar devices is to tap the devices on each other for a wireless communication with the distance of few cm. There is also the current and predicted applications include data exchange, and simplified setup of more complex communication such as Wi-Fi. Communication is also possible between the device and the NFC card.

It is important that user do not face difficulties in the hardware configuration for the organization of a network, leading to near field communications, will be the NFC is a blend between uniqueness and connectivity through technologies that contactless proximity between data and become easy communication between small electronic

devices are to be created with a strong desire the magnetic induction when they are tapped the devices and come closer to each other with a few centimeters to enable communication between them. Also been established and peer-to-peer network for data exchange. Once you create a communications network to other wireless technologies can be used such as Bluetooth and Wi-Fi to exchange a large amount of data and increasing the range of communications including. Let's take an example if you have a laptop and cell phone equipped with NFC, then you can easily download data from Internet into your cell phone by simply touching your NFC enabled smart phone with laptop. Like that you may take pictures from your cell phone and if you want to show those pictures to your friends on big screen (TV) then you may just touch your phone with Television and view them. Or if you want to print those images then by tapping the NFC enabled smart phone with NFC enabled printer will give you the prints of those images. This law works with any kind of devices enabled with NFC to interact with each other. No pairing and searching technique is required. You need to manually set up the communication link between laptops. But if you are using NFC integrated laptops, then you may transfer the file by just tapping both laptops. In another environment you may setup the link using NFC and once communication link is setup Bluetooth or Wi-Fi can be used to share data. Advantage of using this method is to transfer larger data or continuing the communication session if devices go away after touching each other. NFC has two-way interaction between smart devices. And has the ability to write to the RFID (Radio Frequency Identification) chip. Therefore, bidirectional communication between NFC-enabled smart phone and NFC reader can be achieved. That makes the chance to develop circuitous applications like e-payment, secure sharing of data and Id authentication. NFC appliances tapping paradigm. This makes NFC technology easy to adapt and handle. This tapping prototype was initially used in RFID (Radio Frequency Identification) technology. In RFID technology items with tags contain transponders which receive data in the form of signals. RFID readers were used to read those data. NFC is now equipped with this RFID technology. The tags to be read by NFC reader which should have 4 to 10-byte exclusive ID. This exclusive ID is used for the authentication of the tag. There are number of manufacturers in the industry, so ID's length may vary in size. From the technical point of view, NFC is blend of wireless smart card technology and smart phone. RFID is mainly used for tracking and identification through radio waves. For example, exchanging business cards.

2. FUNCTIONAL DESCRIPTION

The functions of the various working components are given below:

2.1 NFC chip

Near Field Communication (NFC) is a small-range high-frequency wireless communication system, which allows the exchange of information or data within devices such as smartphones and tablets, up to 10 cm distance. The technology involved is deceptively simple. Evolved from radio frequency identification system, an NFC chip functions as a way of the wireless link. After activating this by another chip, amounts of information within two devices are accessible.

NFC follows the inductive coupling principle, where electrons move through conductors generating a magnetic field, while change occurs in a magnetic field, it can generate an electric field, this process is called inductive coupling.

RFID chip works on the mechanism of inductive coupling, RFID is an electronic chip, which includes some specific information related to it. While we take RFID tags near to magnetic field, it induces electricity with tag. The changing in the field then identified by the reader and decoded to interpret the information secured in the RFID tag.

If we are using RFID tag that needs to put nearby to activate, this is passive RFID. And if the RFID tag also contains Power source, it is active RFID tag.

Active RFID has more storage capability and range, however, RFID is only a single way communication, the same principles uses by NFC but it also provides two-way communication.



Fig -1: NFC Chip

2.2 Android IDE

AIDE (Android integrated development environment), An Android App that allows Android Apps development directly using the device. It compiles and installs the created app in the device. Android software development is the process by which new applications are created for the Android operating system. Applications are usually developed in Java programming language using the Android software development kit (SDK), but other development environments are also available. The Android software development kit (SDK) includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows 7 or later. As of March 2015, the SDK is not available on Android itself, but software development is possible by using specialized Android applications. Enhancements to Android's SDK go hand in hand with the overall Android platform development. The SDK also supports older versions of the Android platform in case developers wish to target their applications at older devices. Development tools are downloadable components, so after one has downloaded the latest version and platform, older platforms and tools can also be downloaded for compatibility testing. Android applications are packaged in .apk format and stored under /data/app folder on the Android OS (the folder is accessible only to the root user for security reasons). APK package contains .dex files (compiled byte code files called Dalvik executables), resource files, etc. The current default programming mode is java mode.

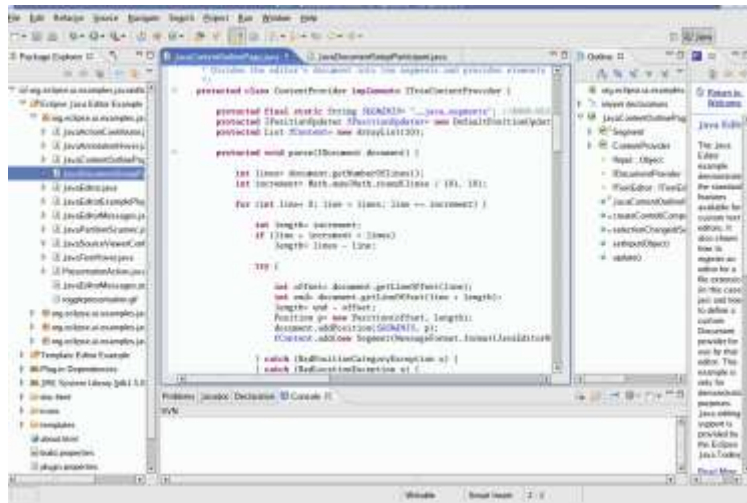


Fig -2: Android IDE User interface.

2.3 Phone to Tag working

Tag contains data. Normally tags are embedded on posters for marketing purpose. Cell phone is touched with tag and data from tag is transferred to cell phone. For example; there is a tag on bus terminal which by touching cell phones transfers bus timings and other details.



Fig -3: Phone to Tag

3. IMPLEMENTATION DETAILS

This is the work flow of e-business mobile application using NFC Technology System. The user first has to tap the NFC

card on the NFC enabled mobile phone. At the time of retrieving the information from the business card the OTP will be generated for security purpose on the card holder's mobile phone then after, when successfully authentication is done then three options or more options are displayed i.e.

- i) e-business card information
- ii) Adhar card information or other personal documents.

After selecting the option, he will get a selective information regarding the chosen field. This information will be saved on server of the application system or on the end-user's cell phone. The job of this server is to search for the saved information in contact list or on server whenever requested by the end-user. In case of data lost the recovery will be done from the server of the user or application system. In case the NFC card is lost then it can be blocked remotely through the application which enhances its security and no one will thereafter be allowed to access the information stored on the NFC card.

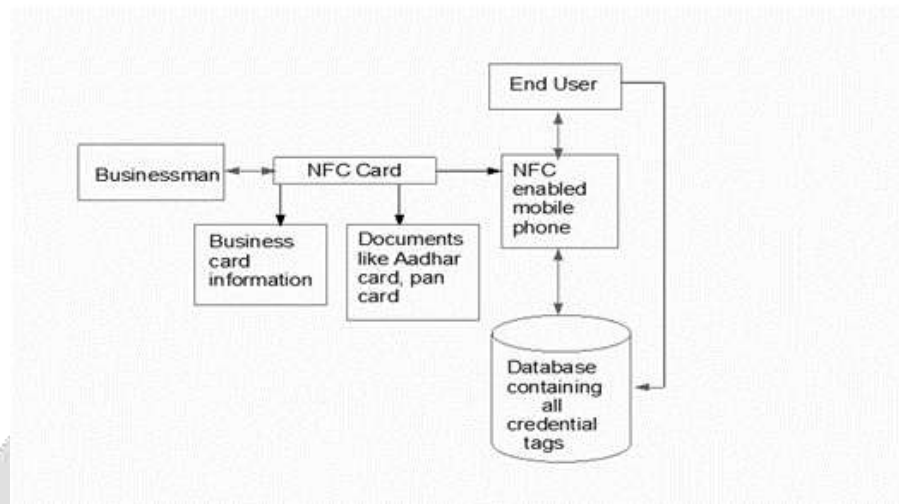


Fig -4: Implementation details.

4. ALGORITHM

1. Start
2. Tap smart phone on NFC card
3. Select the options
 - e-business card information
 - Adhar card
 - Pan card
 - Id card etc.
4. Generate OTP on card holders smart phone
5. Share this OTP with user for secure authentication
6. Retrieve information from NFC card
7. Store the information on smart phone as a contact or on server
8. If data loss occurs then retrieve it from database
9. Stop

5. CONCLUSION AND FUTURE WORK

In the coming day, especially smart phone, will be a trending device not only supporting computing but being closely related to personal privacy. In this article, we design some ideas for various application services by using e-Business card and NFC on mobile environment. Especially, we introduce about the simple data structure and the

outline of application service using e-Business card. And, we propose access control model for supporting the security function of e-Business card and NFC.

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