Smart Posters in Android using NFC

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Abstract: Smart posters are a promising new use case for NFC-enabled mobile devices, however so far there has been a general lack of security mechanisms for NFC/QR-Code good posters. we tend to gift S-SPAN - a secure good poster system consisting of 3 parts: associate degree body net interface for managing posters, a backend server for storing and serving information, likewise as associate degree mechanical man application for end-users. S-SPAN enforces and integrity of good poster information likewise as authentication/authorization of directors and end-users, therefore making certain that solely licensed users will access the content. This project is beneficial for school assignments. it's terribly secure technique to share assignments with students..

*Keywords - **NFC, smart posters, NFC enable smart phone, security.***

I. INTRODUCTION

Smart posters, which allow businesses or other organizations to disseminate information to end-users in a more interactive fashion than standard posters, are an increasingly popular application of NFC tags. Such tags store small amounts of read-only (or less commonly, rewriteable) data. A typical use case for NFC smart posters is to provide users of NFC-enabled smartphones with quick access to a URL related to the poster content. Smart posters are a promising new use case for NFC-enabled mobile devices, but to date there has been a general lack of security mechanisms for NFC/QR-Code smart posters. The confidentiality and integrity of smart poster data as well as authentication/authorization of administrators and end-users is not checked.

NFC tags are vulnerable to spoofing as well as cloning, and the RF channel, like any wireless channel, is susceptible to data modification or man-in the-middle attacks. Furthermore, the NFC protocol as currently defined has some weaknesses, e.g. the standardized NFC Data Exchange Format (NDEF) does not guarantee integrity and authenticity, even in the presence of a digital signature. There are also situations that call for smart posters to contain sensitive information only privy to specific users. For example, a museum may wish to use NFC smart posters in tandem with a custom smartphone application, to provide additional information about exhibits on the condition that the content should only be available to users who have paid for admission on a given day.

II. LITERATURE SURVEY

[1]A novel approach for accessing WEB services based on multi-touch interaction with NFC smart posters. This paper presents a novel approach for fast and easy access to the WEB services through interaction with Near Field Communication (NFC) smart posters. To make this possible, instead of the traditional single-touch-based interaction with the smart poster (touching a NFC tag and waiting for a response from the service) we use multiple tags touching from smart posters to generate one request (multitouch-based interaction). On the server side, each user's request, using semantic analysis is converted to a SQL query. To ensure the security of the communication between the clients and the service it is used multifactor authentication and temporary URIs to resources of the service whose names are obtained in a manner similar to that used to generate one-time passwords. The client-side mobile app, which allows access to the smart poster, does not require pushing any buttons, browsing any menus, or touching any screens.

[2] Mobile Pickpocketing: Exfiltration of Sensitive Data through NFC-enabled Mobile Devices With the increasing popularity of Near field communication (NFC) in consumer-off-the-shelf devices, more and more applications are taking advantage of the technology in innovative ways. Unfortunately, with the rise of NFC applications, there emerges a variety of vulnerabilities that could leave an unwitting user vulnerable to a data breach. One such potentially devastating attack is mobile pickpocketing, in which an attacker uses a standard NFC-enabled device to read, store, and transmit unprotected personally identifiable information from cards carried by unsuspecting bystanders. In this paper, we detail the mobile pickpocketing threat, describe inherent vulnerabilities in today's NFC landscape, and explain how easy it is for a malicious user to exploit them. We define physical and distributed models of the attack. We walk through our experience developing a mobile pickpocketing application, including the capabilities of the application on particular NFC-enabled devices. Finally, we explore short-term and long-term defenses against mobile pickpocketing attacks.

[3] Smart2poster: Bridging information and locality. This paper presents the Smart Poster concept, a solution proposing an interaction modality aimed at bridging the information and the surrounding physical world, by means of familiar objects (a poster, a smartphone and/or a TV screen) and based on the Near Field Communication technology (NFC) that enables a local Peer-to-Peer communication without requiring further connectivity. Moreover, the paper describes the usage scenarios that driven the design and the implementation of the first prototype.

[4] Rich information service delivery to mobile users using smart posters. Near Field Communication (NFC) technology has been used in various applications with the aim to increase convenience in people's everyday life activities. This technology supports the concept of Ambient Intelligence to interact seamlessly with the computer using every day-objects to deliver information to the users. Users will not need to concentrate on how to use the computer, but

they can focus on the main task that they want to do with the help of the invisible computers which is somehow hidden inside the artifacts. NFC embedded artifacts have enabled this concept into reality. This paper discusses its use in smart posters to deliver rich information to the users in a pleasant, convenient, and easy way.

[5] A Brief Comparison of NFC Smart Posters and Quick Response Codes. An exhaustive comparison of QR Codes and NFC tags is beyond the scope of this paper, so we will restrict our considerations to the case of a poster that is meant to direct the user to a particular website for data and service access. To make a comparison we need some relevant criteria. Much of the business interest around smart posters relates to spontaneity. If a user is interested by the poster and can take a simple and immediate action to access and/or purchase the related offer then he is more likely to do so than if he has to take some later and more complex action. Therefore spontaneity/ease-of-use is an important criterium, but so to is accessibility. If you offer a commercial service then you are likely to want as many people as possible to be able to access it and not just those with proprietary or niche mobile devices. Last but not least,

you may need security if you are to protect your customers and your business from fake and malicious tags and/or QR codes.

III. PROPOSED SYSTEM

First the NFC Smart Poster is designed by admin. NFC tag contains information; the tag can be embedded into the object. For example, the poster is created for BE student and it contains information about assignment. The object can be placed to notice board. When the BE student touch his android mobile phone to tag, it will connect to server. After that authentication server will check the details of student and also check whether the student is BE student. If yes, then it will share that assignment information with student.

1. Backend Server:

The backend for the smart poster application consists of two major components, namely a web interface for administrators as well as an API for the mobile application. Only specific authorized users are allowed to access the administrative web interface. Once logged in, an administrator can add two types of smart posters: link posters or poll posters. A link poster contains a brief description and a URL to the web version of the poster or a related webpage. A poll poster contains a question as well as up to ten choices, from which the user can choose. These responses are sent to a URL that the administrator specifies. When adding a poster, the administrator also has the option to set an expiration date; the poster will be automatically disabled after that date. In addition, for auditing and accountability reasons, all actions performed on the administrative web interface are logged. After an administrator adds a poster, the server generates a pseudorandom 39-byte (312-bit) tag identifier for that poster. The administrator should write the tag ID into an NFC tag and affix it onto the poster so that users of the smart poster app can see the additional content.

2. Mobile Application:

Our API provides the mobile app with read-only access to the database of tag IDs. For security reasons, all API requests must be made via HTTPS, and all input is validated before being acted on. The main API request, get poster, takes a tag ID for a particular poster and returns an XML file containing the poster content. If the tag ID is not in the database or the poster has already been disabled, then the XML file instead contains an error code. The mobile app can appropriately parse the XML file to retrieve the poster contents and display them to the user.

3. Authentication Server:

All pages and scripts on our backend server are protected, so the Smart Poster app must check the user's authentication status on each request to the server. To perform this check, the app takes advantage of the fact that will automatically redirect requests with invalid credentials to a login page; if the check fails, then the app asks the user to once again provide credentials.
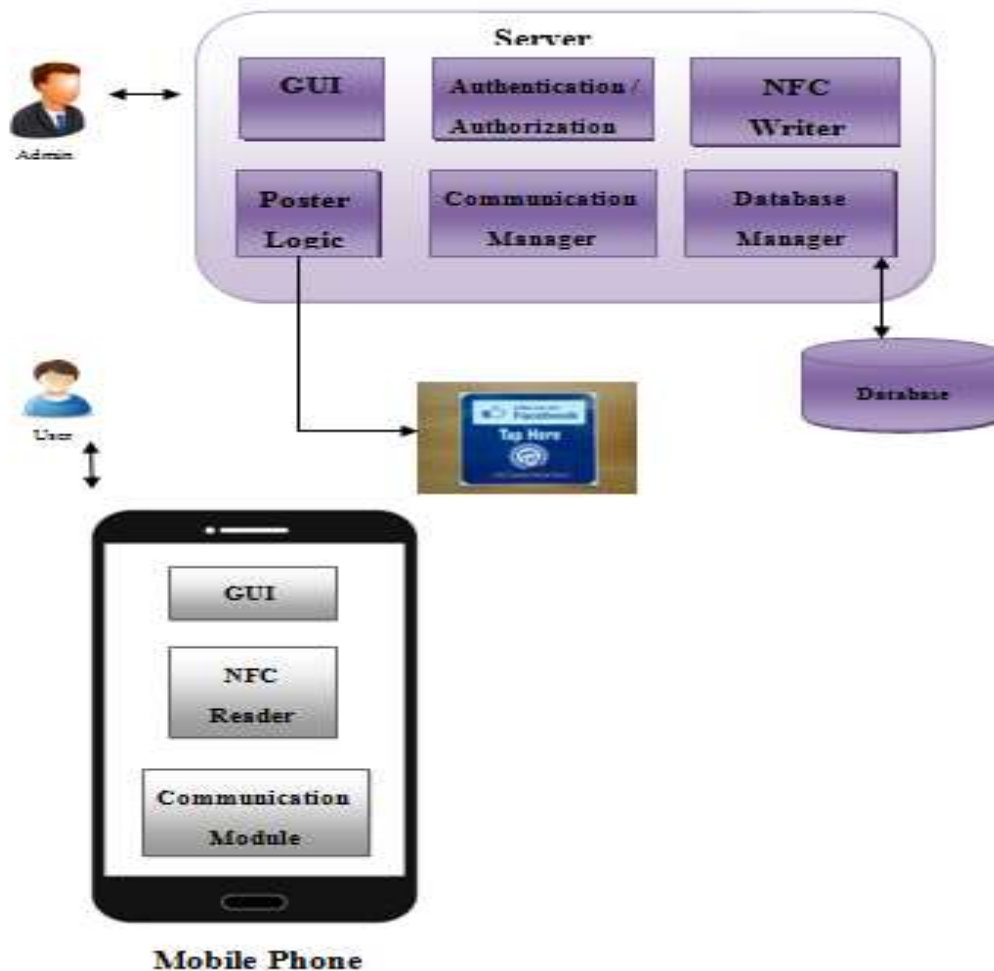
Fig 1. Proposed System

IV. METHODOLOGIES

QrCode

QR code (Quick Response code), a 2D bar-code, uses four standardized encoding modes (numeric, alphanumeric, byte / binary, and kanji) to efficiently store data; extensions may also be used. It was initially used to track parts in vehicle manufacturing, which are now used over a much wider range of applications. The Quick Response code helps customers to find valuable information fast. QR codes are used in transport ticketing, entertainment, commercial tracking, and product labeling/marketing, just to name a few. This is becoming very popular in mobile apps also, where you scan the QR code using a QR Code scanner app and it will show you the text or redirect you to the web page if it's URL.

NFC

One of the advantages of NFC over other wireless technologies is simplicity. Transactions are initialized automatically after touching a reader, another NFC device or an NFC compliant transponder. NFC is short range wireless technology with range of 10 cm theoretically ,practically being 4cm. NFC standard supports different data transmission rates such as 106kbps, 212 kbps, and 424 kbps. NFC requires no discovery and pairing. Another advantage of installing NFC software in your cell phone is that it consumes less power than Bluetooth. Smart phone users are greatly attracted to NFC technology as they can get another latest application in their NFC Phones that can bring more convenience in the way they operate things.

Reasons to choose NFC

1) It helps bridging Physical and Virtual worlds together:

With NFC you can bring two devices together and it will trigger a virtual reaction. So for a Physical action we have a virtual reaction. This is kind of new and is not included in any other wireless technology. Unlike Wi-Fi and Bluetooth the user does not have to pair or perform other set-up procedures.

2) NFC is somewhat similar to QR codes but the degree of interactivity and speed is high. It doesn't matter to where you are or what application you are running in your phone, when you tap your phone to the tag it will take you the appropriate application required to run the data stored in the tag. This is what makes NFC better than QR codes.

Tag

The tag is just a thin device containing antenna and small amount of memory. It is a passive device. Depending on the tag type the memory can be read only, re-writable, and writable once. The NFC tags can be used within applications such as posters, where small amounts of data can be stored and can be sent to NFC devices. The data stored on the NFC tag may contain any form of data such as URL, phone number and text. In fact, any mime data type can be stored in NFC Tags.

Tag Shapes

There is variety of shapes of NFC Tags available. They can be rectangular, circle or custom made. Some of the tags are washable also so that they can be attached to clothes. Some of them are in form on cards. Some tags can be used as stickers.

Reader

The reader is an active device, which generates radio signals to communicate with the tags. The reader powers the passive device in case of passive mode of communication. The reader/writer can be a dedicated NFC reader/writer or NFC enabled phones.

Communication modes

NFC devices support two communication modes.

1) Active

In this mode, the target and the initiator devices have power supplies and can communicate with one another by signal transmission.

2) Passive

In this mode, the initiator device generates radio signals and the target device gets powered by this electromagnetic field.

V. CONCLUSION

This paper demonstrates the idea of "Smart poster" will help user to changes the way of communication. This will be a very good example of "HCI" domain.

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