Security Enhancement in Wireless Menu Card with Network Attached Storage

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Abstract

The presence of cellular technology and the development of portable devices provide a transparent yet potential framework for business purpose applications. M-commerce is considered as the new phase of e-commerce. This research work intends to propose a wireless menu card (WMC) for food chains. It refers that order will be placed using personal digital assistants (PDAs) such as Tablets or smart phones. This system will be using Wi-Fi storage device or say Network attached storage (NAS) which is virtually implemented on cloud through which you can store large data. So, through the use of PDAs and Wi-Fi storage device the system can provide increased capability, security, saving time, reduced human errors and hence will be able to provide better quality of service.

Keywords: smart phones, Wi-Fi storage device, mobile application, wireless technology, business application, personal cloud, network attached storage.

I. Introduction

In today's ambitious world, people desire everything to take place at their door steps. The knowledge or material which is saved in the system can be perceived over the mobile by the person anywhere in the world. This encourages more to move towards wireless technology as the peoples are able to obtain information anytime anywhere [1].

Now a day there is an increase in users every day due to the fast growth in Wi-Fi telecommunication and cyberspace [4]. Since mobile devices are becoming smaller, economical, better and more linked, they are modifying the way people using and work with data. The ease and dynamic functionality provided by mobile devices, has lead to the inspiration for many industries to interrogate the benefits of using them. Connectionless and handheld devices are gaining attention as vendors are using the common points of over tone computing, instant delivery and information can be accessed anytime, anywhere [3].

As the wireless menu card system focusing on the food chain, so without any technology, when customer places order the attendant needs to pen down orders. Then this order is taken to the kitchen, receipt is generated, and place the requested menu. Such procedure view simple and easy, but this system leads to human mistakes in communicating order when there is increase in customer's number in course of peak hours and also increases the work load on attendants [6]. Thus to avoid all this problem the wireless menu card system uses tablets and Wi-Fi storage device.

In today's time, smart phones are proficient of giving connectivity where ever they are located along with supporting ranges of services and applications. They are furnished with any wireless interfaces which can be jointly oppressed to develop advanced enhancement techniques that can increase throughput, improve quality, capability [2]. The combination of mobile and Wi-Fi technologies can promote pervasive platform for developing business purpose applications [6] .

Use of Wi-Fi storage device is just for creating your own personal cloud with network attached storage. When we accumulate anything "in the cloud", such as storing music files, movies, documents and data on

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gigantic internet servers around the world. That way you can approach to your files wherever you are, whenever you want, on your laptop or smart phone or even a different computer. This is the basic idea of cloud storage.

A personal cloud is necessarily your very own cloud storage [8]. Instead of using public clouds, a personal cloud helps you to manage all your information in one secure place on your network so that you can share data, multimedia files, and access your content pervasively.

You can build your own personal cloud by either using a Network Attached Storage (NAS) or by granting to an online cloud storage service. There are several benefits of using a NAS as your personal cloud. For example, there is no need of monthly fees or due to growth in data there are no increase costs. Also, you had an exact idea about your data that where it is and how or who can access it.

Use of mobile telecommunication may tend to two kinds of effects on business purpose operations:

- It eases the connection among employee, customer and owner. As a result better communication can increases the capability and profitability.

- Due to changing data access patterns it renovates business processes [5].

II. Related Work

To improve the traditional food ordering system many previous work had been made by using wireless technology, such as iMenu[7], FIWOS [3], ,and WOS [4]. Many lounges and restaurants had implemented and developed many PDA-based mobile applications for commercial use. Easy- Order is an initial e-commerce approaches developed on pervasive technology designed to combine with mainframe computers. iMenu is an initial wireless web-based approach for ordering system which builds pervasive computing systems using connectionless multi-tiered internet framework [7].

Color by the Bay (CBTB) is another PDA- based connectionless food ordering system which is used at Singapore. In this system the users at CBTB can give order with the help of PDA provided by the restaurant.

When the customer is over with his/ her ordering process. These details are sent to the server from the device. Now the PDA used by a user is to be taken by the waiter to be utilized by the other user. Thus CBTB, iMenu, WOS and FIWOS are good solution for the problems of traditional food ordering system. But these systems have some limitations, so to overcome this other system was developed called CWOS-RTF [6]. In this system the problem of the waiter and the administrator is reduced as they had introduced the smart phones. Smart phone converges two portable technologies i.e. Cell phones and PDAs to produce products. CWOS-RTF consists of four modules.

- The application for user's to make order in smart phones.

- The web application for keeping track by the owner.

- The database for owner to maintain the order details, and to update the menu.

- The connectionless framework to support network communications.

Now waiter need not to roam about to take order the customer will themselves place an order using their own smart phones. Thus in this now the customer must possess the smart phones, this leads to its limitation.

Smart phone technologies are implemented to support telemedicine services for different health problems like urinary incontinence, diabetes and blood coagulation. There are powerful smart phone applications refined for healthcare purposes to detect the heart failure, to monitor medicine intake, and to confront the obesity challenges etc [9]. There is a system called Wedjat [10]. This system is developed to issue reminders to patients, record time of medicine in-take informs medicine intake directions, and informs medicine intake directions. Moreover, machine vision can also be combined with smart phones to perceive traffic signage for safety at road [11]. Disaster Alert System is one of the smart phone applications that can provide effective measures in detecting disaster situations [12]. The smart phones also fulfill the graphical demands of the customers.

Concentrating on the discussed limitations, we proposed our work. We had also used smart phones as

tablet. In this the customer's not having smart phones can also place order as all the tables will have their own tablets provided by the food outlet itself.

III. Proposed Work

As we have already discussed the conventional food ordering system i.e. taking note of customer's order using paper and pen. These systems are usually prone to manual mistakes. Oder can be mislaid or even wrongly noted at the time of rush. Receipts are generated in written form which leads to difficulty in maintaining record for future use. The objective of this proposed system is to overcome such hassle and the limitation of related work. In our Wireless Menu Card (WMC) system we had different modules:

- Use of Wi-Fi storage device as a network attached storage.

- An Application for tablets which can read the content from NAS for customer's to make order.

- A Desktop Application for owner to make updating in storage device and to see details.

As we have mentioned that we are using Wi-Fi storage device. This device helps us to create our own personal cloud with network attached storage. That way we can approach to our files wherever we are, whenever we want. Instead of using public clouds, a personal cloud helps you to manage all your information in one secure place on your network so that you can share data, multimedia files, and access your content pervasively An Application for tablets which can read the content from NAS for customer's to make order. Thus we will develop an application which can easily read the data from Wi-Fi Storage device. The Application will do the following activities:

- Must display the name of the storage device in range

- Upon selecting the particular storage device the content from the Wi-Fi device will be displayed on the screen on welcome screen.
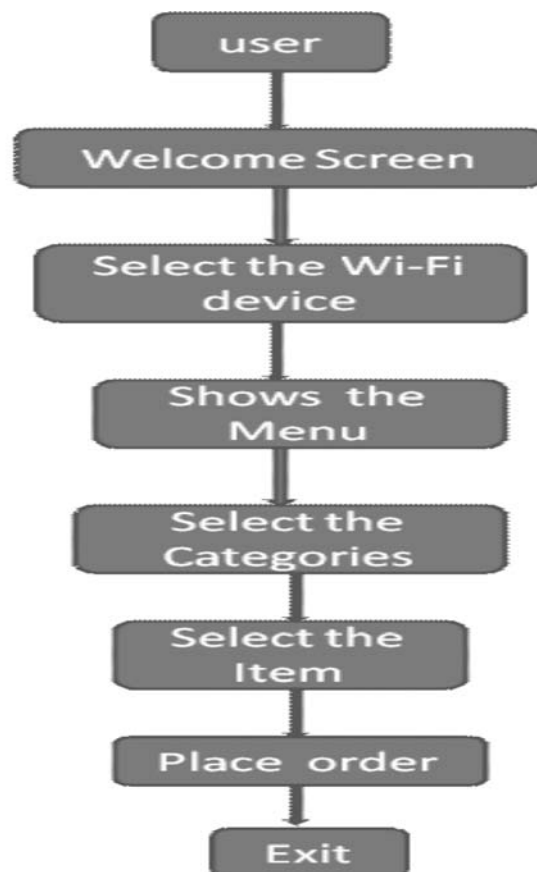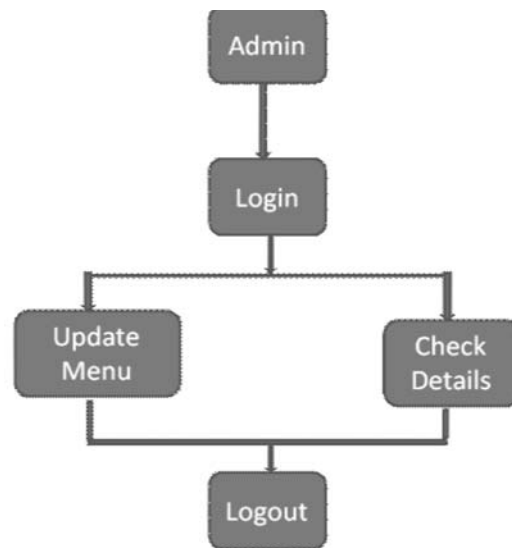

Fig. 1: Flow of process at user side

Fig. 2: Flow of process at admin side

- Once user taps the welcome screen it should show the list of categories in a drop down list with related food items ex: Starters, Drinks and Main Course etc.

- Once the user selects a category (Ex Starter from above example), it should show the list of items from that category – this screen must have a back/home button.

- Once user selects an item, the product details should be displayed (ex: an image of the product, more description, etc.) – this screen must have back/home navigation button.

Now the user can place the order through the tablet. The order will be received at the kitchen end. The Desktop Application will be a simple, easy to use application installed in each food outlet so they can easily update the menu on-demand on their own. This application will be cloud enabled and it will update the content in Wi-Fi storage device. However, this application should adhere to the following high level standard requirements:

- Authentication (so that only manager's can update the menu).

- Once the restaurant owner makes the changes in the desktop application, there should be a button which allows the manager to publish the content to the device.

- This content must be encrypted in a bundle and the file format should be readable by the mobile app and desktop application only.

- Owner should have ability to add any number of categories, items, columns, etc. And the App should be intelligent enough to accommodate these changes.

As this wireless menu card system is basically focusing on the food outlets. Thus, when a customer will come to food outlets there will be a tablet on their table which will show the outlets name. Then the customer will select the respective outlet in which he/she interested to order and will place the order. The device will show all the respective menu details with the resent offers. If there is any changes in the menu any day the respective content will be updated with the help of desktop application.

IV. Conclusion

In this paper, we have proposed a wireless menu card system with network attached storage. We have focused on use of smart phones i.e. tablet in place of using PDAs to provide efficient interface for customers to order and view menu. With Wi-Fi storage device we have introduced network attached storage to store data on private cloud. This system also overcomes the limitation that every customer must carry its own smart phone instead in this it will be provided by the food outlet itself. Thus through this system we had tried to improve the service efficiency.

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