

Mobile In-Store Externalized Services

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Abstract — This paper presents the core technology that is developed to meet the needs of the customer and information sharing. The response that is tracked helps in enhancing the views of the customer more precisely. Nowadays we need to search for the product required in vast shopping malls which is time consuming process, but by using this mechanism certainly most of the time could be saved which is the most important factor in today's life

Keywords - externalized service; mobile application; authentication-based access control;

I. INTRODUCTION

A person entering the shopping mall does not know where the item he wanted to purchase is located. He/she has to look for that particular item throughout the shopping mall. They should also enquire the details about concession and offers on the product. This is a time consuming process and the searching process vexes the customer. Transaction is time consuming

To overcome all these problems, we are developing a solution that is, instead of searching the whole shopping mall, we can search for the item using our mobile, through wireless communication which makes shopping easy.. Automatically we can know the concession and offers on that particular product through the mobile. This reduces the burden on the customer. Payment can also be done using our mobile.

Mobile Shopping provides all the required information like product name, product cost, floor number, rack number to a user in the whole shopping mall. Users can search for the desired products in the shopping mall using the mobile. He is also provided with the facility of viewing the ads related to the searched product. Bill payment can also be done using user's credit/debit card thus reducing the time and the burden of the user.

This application allows the users to search for the desired product so that it saves the time of the user instead of checking the whole shopping mall. User can check all the information's like product cost, floor number, rack number and any concession on the products and many more details through their mobiles. And they can pay the bill through their mobile itself by using the credit cards and debit cards. It minimizes the risk taken by the people to pay the bill.

II. SYSTEM ARCHITECTURE

2.1 FRONT END PLATFORM (J2ME)

J2ME is targeted to devices with limited horsepower and is supported by 90% of new devices released to market. J2ME allows devices to browse, download and install Java applications and content similar to browser applications. Since J2ME applications are installed on the device, the applications can run without network coverage unlike browser applications that always need a connection. J2ME offers a way to enter and persistently store data on the device making applications faster and more user-friendly. J2ME has a programming language that is easy to master, a runtime environment that provides a secure and portable platform and a very large developer community.

A java developer can quickly master J2ME coding conventions from smart cards all the way to high powered devices like high end PDA's.

2.2 BACK END PLATFORM (STRUTS)

The Backend platform used for building this application is STRUTS. Struts Framework is the implementation of Model-View-Controller (MVC) design pattern for the JSP. Struts are maintained as a part of Apache Jakarta project and are open source. Struts Framework is suited for the application of any size.

Reasons to use the MVC design pattern

- They are **reusable**: When the problems recur, there is no need to invent a new solution, we just have to follow the pattern and adapt it as necessary.
- They are **expressive**: By using the MVC design pattern our application becomes more expressive.

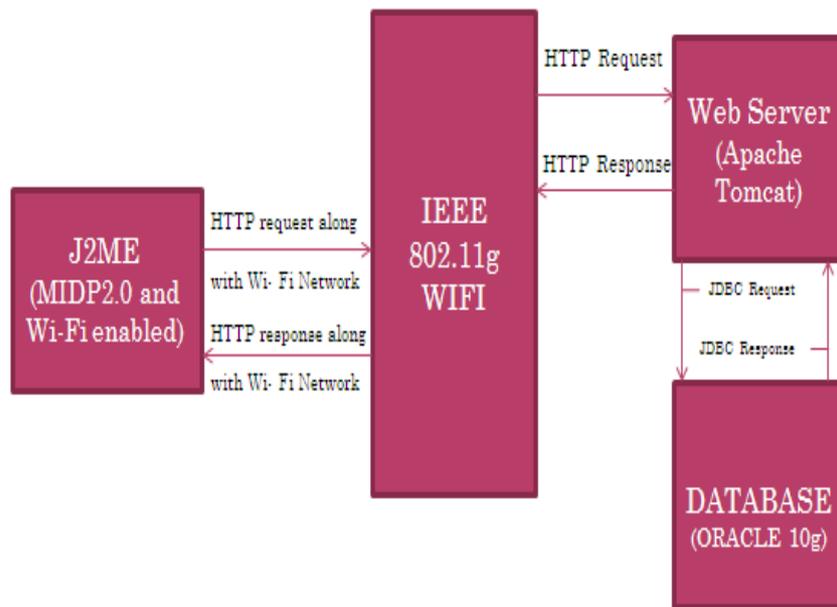


Figure 1. Technical Architecture



Figure 2. Welcome screen of application

2.3 DATABASE (ORACLE10g)

The database used for this application is Oracle10g. Oracle Database 10g Express Edition (Oracle Database XE) is an entry-level, small-footprint database that's free to develop, deploy, and distribute; fast to download; and simple to administer. Educational institutions and students who need a free database for their curriculum

With Oracle Database XE, can develop and deploy applications with a powerful, proven, industry-leading infrastructure, and then upgrade when necessary without costly and complex migrations.

Reason for choosing Oracle10g is Oracle Database XE can be installed on any size host machine with any number of CPUs (one database per machine), but XE will store up to 4GB of user data, use up to 1GB of memory, and use one CPU on the host machine.

2.4 WI-FI TECHNOLOGY

Wireless Fidelity, more commonly known as Wi-Fi, is an international standard from the Institute of Electrical and Electronics Engineers (IEEE) for wireless local area networks (LANs). Also known as 802.11b, Wi-Fi has rapidly become the most popular standard for wireless LANs in the workplace, public places and homes. Wi-Fi equipped corporate office campuses, hospitals and schools as well as homes and public areas such as hotels, airports and coffee shops are now commonly referred to as "hotspots."

2.5 WI-FI ARCHITECTURE

IEEE 802.11b (Wi-Fi) is based on a cellular architecture where the system is subdivided into cells as shown in Fig 2.3, each cell is called **Basic Service Set (BSS)** which is identified by the **SSID** (Service Set ID) and each is controlled by Base Station called **Access point (AP)**. The whole interconnected Wireless LAN including the cells and their different AP is called **Extended Service Set (ESS)**.

2.6 APPLICATION SERVER (TOMCAT)

TOMCAT is an open source, cross-platform Java EE-based application server. It is usable on any operating system that supports Java. Tomcat Application Server is the most widely used Java application server. Tomcat Application Server includes support for Enterprise Java Beans (EJB) which is designed to dramatically simplify the enterprise Java programming model.

Tomcat Application Server provides the full range of J2EE 1.4 features as well as extended enterprise services including clustering, caching, and persistence.

III. IMPLEMENTATION

We have implemented a prototype of the MSA as an Java based application. The screenshots are given below which is login form both user of the store and worker of the store. If store keeper wants to insert a new product it can be done through application itself. We maintain a database where we can store details of the store that we want to share with customer.

Wi-Fi allows the deployment of local area networks (LANs) without wires for client devices, typically reducing the costs of network deployment and expansion. Spaces where cables cannot be run, such as outdoor areas and historical buildings, can host wireless LANs.

As of 2010 manufacturers are building wireless network adapters into most laptops. The price of chipsets for Wi-Fi continues to drop, making it an economical networking option included in even more devices. Wi-Fi has become widespread in corporate infrastructures.

Different competitive brands of access points and client network-interfaces can inter-operate at a basic level of service. Products designated as "Wi-Fi Certified" by the Wi-Fi Alliance are backwards compatible. "Wi-Fi" designates a globally operative set of standards: unlike mobile phones, any standard Wi-Fi device will work anywhere in the world.

Wi-Fi operates in more than 220,000 public hotspots and in tens of millions of homes and corporate and university campuses worldwide. The current version of Wi-Fi Protected Access encryption (WPA2) as of 2010 is considered¹ secure, provided users employ a strong passphrase. New protocols for quality-of-service (WMM) make Wi-Fi more suitable for latency-sensitive applications (such as voice and video); and power saving mechanisms (WMM Power Save) improve battery operation.

IV. RELATED WORK

In this section, we contrast our MSA with other service platforms and solutions, which are categorized as location based services, personalized mobile/online services, and event-based services.

4.1 Location-Based Services:

Most m-commerce applications require user location, which is typically obtained by GPS tracking and continuous location monitoring. In contrast, our solution needs only a unique store identifier and does not require intrusive continuous location monitoring. Some applications, such as AURA, provide location-based services with static information (e.g. price comparisons, product information) that is not personalized for each user.

4.2 Personalized Mobile Services

M-commerce has been defined as "e-commerce for users on the move". Most m-commerce applications that

personalize content based on user profiles, expect users to input their preferences.

In contrast, the offers and advisory services in our solution are personalized based on the user's profile generated over time within the "retail ecosystem" including the store and the manufacturers and tracked by the user's registered phone number or customer identifier. With regards to privacy our solution would be comparable to privacy policies of existing stores that run loyalty programs today. We believe that our solution enables a richer contextual personalization for instore mobile shopping and provides a holistic view of user preferences. Finally, applications like Zagme or SMMART require users to navigate through slew of available offers, whereas our solution is based on the specific user intentions captured automatically.

4.3 Personalized Online Services

It is possible to track the user's click-stream activity while the user is shopping online at home (such as the one from Omniture) and using this information to provide real-time offers from the service providers and their affiliated sites (counterpart of manufacturers). We believe our MSA complements these online platforms and services in the physical store environment and with physical objects rather than logical products such as travel packages. In addition, research shows that the store environment is better suited to close the intention-action gap. MSA uses a multitude of features to close such a gap, including real-time product information, personalized offering, and personal advisory.

4.4 Event-Based Services

WS-event notification defines publish/subscribe based service interfaces but addresses little on access control issues to arbitrate information flow. Role-based access control has been recently applied to a publish/subscribe system. In a cross organizational environment, identity-based or role-based access control suffers various identity management related problems, such as granularity of rights granting, ambiguity of rights enforcement, difficulty of right delegations, *etc.* Moreover, our focus is more on service integrity, *i.e.*, to enforce the rights of information access based on what is stated in business contracts, whereas focuses on data integrity.

V. FUTURE SCOPE

Further enhancement is the part, which tells that what changes can be done in the future to meet the challenges. It also tells what are the parts that have to be changed to meet the challenges that may arise in near future.

The project "MOBILE SHOPPING" has been done taking into consideration all the factors of SRS and without any room for redundancy. There are some aspects which can be further updated or modified in future if the changes are required. The enhancements may be like we can add the

route map to the system which guides the customer which way to go for the product that they have searched for. The user has the freedom to change the software according to the needs [12-15].

VI. CONCLUSION

Mobile Shopping is a Wi-Fi based application with mobile as domain is successfully implemented with all the features mentioned in the SRS. The project to a huge extent simplifies the process of obtaining information whenever a Wi-Fi enabled device request information.

The software thus developed has been implemented successfully which has been under observation for the past few days. Various tests have been performed to scrutinize the validation of each data and the errors were stopped out and then finally cleared in a sophisticated manner.

Even though the software has many advantages, some limitations also exists which are meager and negligible. Those limitations need not be considered since it does not affect the system as a whole. An attempt is made to maintain maximum perfection in documenting the software in a simple, precise and in a self-explanatory manner.

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