Comparison and Analysis of Object Oriented Record Management System (OORMS) and Conventional Management System for M-Commerce System

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Abstract—**The recent advancement in object oriented record management system is a good approach over conventional method. Along with the rapid development of 3rd generation mobile communication technologies, the applications of M-Commerce have been greatly expanded. This paper describes the use of The Java 2 Platform, Micro Edition (J2ME) to develop mobile application for better enhancement in M-Commerce System. In this paper we describe several aspects of J2ME components with their application area. We also present a new algorithm for M-Commerce System that is Object Oriented Record Management System. We also provide a comparative case study on OORMS and conventional management system.**

Index Terms—**CLDC, MIDP, M-Commerce, J2ME, OORMS**

I. INTRODUCTION

Mobile Commerce refers to wireless electronic commerce used for conducting commerce or business through a handy device like cellular phone or Personal Digital Assistant (PDAs). It is also said that it is the next generation wireless e-commerce that needs no wire and plug-in devices. Mobile commerce is usually called as 'm-Commerce' in which user can do any sort of transaction including buying and selling of the goods, asking any services, transferring the ownership or rights, transacting and transferring the money by accessing wireless internet service on the mobile handset itself. The spread of network makes enterprises pay more and more attention to the communication with inner employees and outer customers.

With the developing of 3G network and increasing demand of real-time business, enterprise m-commerce appeared [1]. Enterprise m-commerce combines m-commerce with enterprise's daily activities to deal with the inner management and outer businesses through mobile terminals, network and wireless network [2-3]. According to the different access methods, it can be divided into voice access's access, WAP access, PUSH Mail access and so on. Among these methods, SMS access has the largest proportion due to its easily handled and low cost [4-5]. In the light of the

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applications that enterprise m-commerce can provide, it can be divided into information services, trade services and communication services [5-8].

The next generation of commerce would most probably be mobile commerce or m-commerce. Presuming its wide potential reach all major mobile handset manufacturing companies are making WAP enabled smart phones and providing the maximum wireless internet and web facilities covering personal, official and commerce requirement to pave the way of m-commerce that would later be very fruitful for them.

Nowadays, with the widening of network, all operators are deploying their own third-generation (3G) mobile communication strategies and all mobile phone manufacturers are also developing new techniques and realization of services in mobile communication field. Along with the development of Internet access device technology, Internet will be more popular and surfing the net through access devices (handheld device, mobile phone and set-top box, etc) excluding personal computer (PC) will eventually surpass the present traditional mode of surfing the net through PC.

Traditional E-Commerce applications are typically developed over the Web for human-computer interaction. These applications require that users must login the intended Web sites from their PCs through Internet. Also, users often need to visit lots of websites to conduct electronic transactions, which is a time-consuming process.

Traditional E-Commerce restricts more normal behaviors of users. Service, such as E-commerce and E-Learning has tended to be more and more popular in recent years. How to improve flexibility and efficiency, break the constraints of time and space, and provide a kind of personalized service have become very important in the research of Eservice. Mobile E-commerce with wireless telecommunication technology as the transmission media and portable devices as a terminal can construct a flexible and open environment. Therefore, People pay more and more attention to mobile E-commerce day by day.

With the advancement in mobile technology, many business activities can be conducted through wireless a network, which extends the demands of client users for spatial location and realizes these enterprise demands. M-Commerce deals with selling goods, services, and contents that include related functions like advertising and payment transactions over wireless networks.

We provide here an overview of privacy preserving association rule mining. The rest of this paper is arranged as

follows: Section 2 introduces M-Commerce; Section 3 describes about MIDP and CLDC; Section 4 describes the proposed method. Section 5 shows the comparison; Section 6 describes Conclusion and Future work. References are including in section 7.

II. M-COMMERCE

M-Commerce is an emerging discipline involving applications, mobile device, middleware, and wireless networks. While most of existing ecommerce application can be modified to run a wireless environment, M-Commerce also involves many more new applications that become possible only due to the wireless infrastructure.

These applications include mobile financial services, user and location specific mobile advertising, mobile inventory management, wireless business re-engineering, and mobile interactive games. In addition to device and wireless constraints, M-Commerce would also be impacted by the dependability of wireless infrastructure.

M-Commerce existing and futures possible application include:

1) Mobile banking service (check account information, money transfer)
2) Mobile trade service (stock quotes, selling/buying)
3) Credit card information (account balance)
4) Life insurance account information (account information, money transfer)
5) Airline (online reservation, mileage account check)
6) Travel (online reservation, timetables)
7) Concert ticket reservation (online or telephone booking)
8) Sales (online books, CDs)
9) Entertainment (games)
10) News/information (headline, sports, weather, horse racing information, business, technology, regional)
11) Database, application (yellow pages, dictionary, restaurant guide)
12) Location based application (area information and guides)

M-Commerce like E-Commerce can be B2B (business to business), P2P (person to person) or B2C (business to customer) oriented. The scope of this paper is on the B2C model. In the B2C area, M-Commerce is still in its infancy. This is due to the limitations of present, intermediate technologies such as WAP, and to the relative lack of compelling contents and services.

The M-Commerce framework divides into couple sub areas based on user's distribution criterion. Mobile E-Commerce addresses electronic commerce via mobile devices, where the consumer is not in physical or eye contact with the goods that are being purchased. On the contrary in M-Trade the consumer has eye contact with offered products and services. In both cases the payment procedure is executed via the mobile network [9-13]. The above phenomena are shown in fig 1.

The foundation and ideology Java 2 Micro Edition (J2ME) brings itself a reasonable set of potentials of being a part in a MPS. There are several concrete arguments that indicate why J2ME should be considered as an interesting supplement for M-Payments.

Broad user experience: The J2ME™ API provides enhanced possibilities for presenting GUI's like event handling and richer graphics [14-15].

Fig. 1. M-Commerce

M-commerce has several major advantages over its fixed counterparts because of its specific inbuilt characteristics such as ubiquity, personalization, flexibility, and distribution, mobile commerce promises exceptional business market potential, greater efficiency and higher fruitfulness.

Thus it is not surprising that mobile commerce is emerging much faster than its fixed counterpart. M-commerce is more personalized than e-commerce and thus needs a gentle approach to appraise m-commerce applications.

A. Uses of M-Commerce

In the current commerce industry, mobile commerce or M-Commerce has been entered in finance, services, retails, and telecommunication and information technology services. In these sectors, M-Commerce is not only being widely accepted but also it is being more used as a popular way of business/ commerce.

B. Finance Sectors

Mobile Commerce works vastly in finance sector including all big and major financial institutes, banks, stock market and share brokers. Whenever any user needs money or wants any sort of banking and finance related services, he/she can access the services or register services via voice calling or via Short Message Services (SMS) services. WAP based mobile handsets allow the user to access the official website of the institute.

User can transact money or transfer money, or pay the bill from its bank account using mobile commerce facilities. Banks also provide round the clock customer care services, which can be used any time through voice calling. Some customer care services are also provides non-voice services on mobile that is known as insta-alert facility. While in the stock market, the user can access the stock market quotes and get in live touch with current trading status on its mobile in two forms either voice (customer assistance) or non-voice (sms alerts) or both.

The share broker sends market trends and tips of trading on their clients' mobile. Also broker can suggest the appropriate stock for intra-day trading to their users.

C. Telecommunication Sector

Mobile has played a giant role in communication technology through its versatility and superiority. The ubiquity and easy usage has further made it extremely popular across the globe. It has already surpassed the fixed phone in the world. Software platform is essential for operating any mobile and this tool has revolutionized the communication world because of its functioning as a small computer.

The booming popularity has forced the corporate world to develop a new commerce platform that can reach to masses. Mobile commerce has attracted massive traffic because of its unique characteristics. The user can change the service of any financial institute or banks if gets better product and service or user is unsatisfied with the service of the subscribing company.

Besides this several bills can be paid using mobile and user can also check the available balance, the status of cheques, and the status of requested processing and customer care support.

D. Service/ Retail Sectors

Service and Retail sectors are also among the leading sectors, which have nurtured most from mobile commerce. M-Commerce has proved a major boon for these sectors. Several business dealings no matter how big or small are being finalized on the mobile phone. Customer would be able to book the order, can hire carrier/courier services and above all could also pay the dues related to it through mobile.

E. Information Sector

After the bursting of dotcom bubble, e-commerce has gone downwards to hell. But the evolution of mobile commerce has again worked as ambrosia for them. A separate sector has been evolved to exercise on this field for the IT experts. The webmasters have skillfully exploited this new area of IT-enabled commerce.

In the IT field, mobile commerce has been used massively to deliver financial news, stock updates, sports figures and traffic updates and many more onto a single handheld device 'mobile'.

F. History of M-Commerce

Despite of huge popularity of mobile commerce, it is yet in the initial stage and can be further expand in to all the fields, which affect the human life. The assumption of mobile commerce is not as young as it mushroomed so early from adopting this technology.

It initially begins with the use of wireless POS (Point Of Sale) swipe terminals and has since then made its way into cellular phones and PDA's (Personal Digital Assistants). The first enabling m-commerce technologies were presented through Wireless Application Protocol (WAP) and i-mode mobile Internet service. WAP builds on digital phone technology and first emerged on 2.5 G phone technology that allowed users to browse the Internet. This technology cemented the way of m-commerce, which has strongly developed on 3G-phone technology. Nokia has first introduced m-commerce application software Nokia toolkit version 4.0.

The future of m-Commerce seems extremely bright because several experiments are going on to introduce the upgraded version of mobile likely to emerged with the evolution of 4G mobile technology.

Fig. 2. Customer hierarchy

III. MIDP AND CLDC

CLDC was created by the Java Community Process, which has standardized this "portable, minimum-footprint Java building block for small, resource-constrained devices," as defined on Sun Microsystems' Web site. The J2ME CLDC Configuration provides for a virtual machine and set of core libraries to be used within an industry-defined profile.

The K virtual machine (KVM), CLDC's reference implementation of a virtual machine, and its KJava profile run on top of CLDC. CLDC outlines the most basic set of libraries and Java virtual machine features required for each implementation of J2ME on highly constrained devices. CLDC targets devices with slow network connections, limited power (often battery operated), 128 KB or more of non-volatile memory, and 32 KB or more of volatile memory. Volatile memory is non-persistent and has no write protection, meaning if the device is turned off, the contents of volatile memory are lost. With non-volatile memory, contents are persistent and write protected. CLDC devices use non-volatile memory to store the run-time libraries and KVM, or another virtual machine created for a particular device. Volatile memory is used for allocating run-time memory.
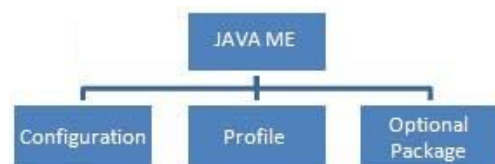

Fig. 3. Configuration and profiles

Connected Device Configuration (CDC) has been defined as a stripped-down version of Java 2 Standard Edition (J2SE) with the CLDC classes added to it. Therefore, CDC was built upon CLDC, and as such, applications developed for CLDC devices also run on CDC devices.

CDC, also developed by the Java Community Process, provides a standardized, portable, full-featured Java 2 virtual machine building block for consumer electronic and embedded devices, such as smart phones, two-way pagers, PDAs, home appliances, point-of-sale terminals, and car navigation systems. These devices run a 32-bit microprocessor and have more than 2 MB of memory, which is needed to store the C virtual machine and libraries.

MIDP is geared toward mobile devices such as cellular phones and pagers. The MIDP, like KJava, is built upon CLDC and provides a standard run-time environment that allows new applications and services to be deployed dynamically on end-user devices. MIDP is a common, industry-standard profile for mobile devices that is not dependent on a specific vendor. It is a complete and supported foundation for mobile application development.

IV. PROPOSED METHOD

We proposed an algorithm which is Object Oriented Record Management System (OORMS) for M-Commerce System. It consist of five phases
1) Authentication
2) Reading Phase
3) Frequency Check Protocol
4) Query Phase
5) Evaluation Phase

A. Authentication Phase

```
Step 1: [Check for Authentication]
        1 Enter the Userid and Password
        if(Iseridr==undb&& password==pdb)
        {
        Welcome in the database
        MCommerce(DB)
        }
        else
        {
        Not an authorized user
        }
```

B. Reading Phase

```
        While (object. read ()! =-1)
         {
         [Start Reading]
         [Generate ID]
         ID1,ID2….IDn
[ID is generated according to the alphabet entered]

        If(,)
        {
        ID1,ID2…IDn
        }
        Else
        {
        [Enter the character]
```

```
        String a=Object.nextLine();
        ID1,ID2…IDn
        }
        }
```

C. Frequency Check Protocol

```
        [compute the Frequency]
        For i=1 to n iterations do
        {
        Itemset[i]=count;
        Count++;
        }
```

D. Query Phase

In query phase we apply queries according to the condition which is mainly based on users choice frequency.

```
        [Enter the User Choice Frequency]
        Check for authentication again
        Enter the Choice Frequency
        If(CFR==CFDB)
        {
        ChoiceCAL (db, key)
        }
        Else
        {
        [Enter the Password again]
        }
```

E. Evaluation Phase

By this above algorithm we analyze the market scenario of the data set.

V. COMPARISION

Over the past 10 years mobile phones have changed the way that we live and work. What is the nature of this change? On the one hand, it's a change in personal freedom. The mobile phone seems to give us more power as individuals to do what we want and be who we want to be. Many people consider mobile phones as extensions of themselves. This is shown by the wide variety of mobile phones available and the myriad ways of transforming each phone into a truly personal device.

Throughout the 1990s the introduction of the internet and ecommerce reshaped the way that businesses do business and the way that consumers interact with businesses. Businesses took the opportunity to automate many processes that before would have been handled manually, from ordering to customer service. One clear example is the way that spending on advertising has begun to shift from traditional off-line media to online and digital media as advertisers have seen an opportunity to better connect with their target audience. IBM forecasts 22% growth in mobile, digital and interactive advertising formats between 2006 and 2010 against 4% growth in traditional advertising formats.

The other difference between traditional and new m-commerce is the opportunity to connect information with objects in a more direct way than has been possible until now. This is the world predicted by the Internet of Things, a report published by the International Telecommunications Union (ITU) in 2005, where objects have a life and history of their

own that we can use to our advantage. The mobile phone can be the tool that connects the physical and virtual world. At the base of this vision is the ability to identify objects uniquely.

GS1, with over 30 years experience developing identification standards for the supply chain that have been adopted globally, clearly has a role to play here. In this context, mobile phones are enablers of an Internet of Things. What is special about mobile phones is the fact that they have massive adoption globally.

Many more people have access to a mobile phone that to a computers and this means that m-commerce has the opportunity to connect not just big businesses but also small business and consumers on a massive scale. In this sense, mobile phones have the potential to bridge the digital divide and allow organizations and individuals to reach out to one another more easily than ever before.

VI. CONCLUSION AND FUTURE WORK

This paper describes the use of The Java 2 Platform, Micro Edition (J2ME) to develop mobile application for 3G networks. We also describe the structure of our J2ME computer vision library and describe the implementation of algorithms in our library. A type of J2ME-based mobile e-commerce system design program is presented; the program has the advantages such as simple realization, strong maneuverability. The J2ME Wireless Toolkit provides a compiling and testing environment for developing applications for CLDC/MIDP compliant mobile phones. We also develop an algorithm based on object oriented for better usage of M-Commerce system in mobile environment.

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