

## An Object Oriented Record Management System (OORMS) for M-Commerce System Based on J2ME Wireless Tool Kit

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### Abstract

*The recent advancement in 3G technology to analyze M-Commerce an important role in several areas of Business processing. 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 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.*

### Keywords

CLDC, MIDP, M-Commerce, J2ME, OORMS

### 1. Introduction

Mobile Commerce, also known as M-Commerce is the ability to conduct commerce using a mobile device, such as a mobile phone, a Personal Digital Assistant (PDA), a smart phone, or other emerging mobile equipment. According to Rajnish Tiwari Mobile Commerce is any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer-mediated networks with the help of an electronic device.

Along with the rapid development and popularization of wireless communication technology, mobile devices, such as mobile phone, PDA and palm computer, etc, have gradually stepped into people's life and become an indispensable helper in people's business activity and daily life. At present, most of people around us have a mobile phone and the possession quantity of mobile phone has already exceeded that of PC. 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 J2ME and M-Commerce; Section 3 describes about MIDP and CLDC; Section 4 shows the evolution and recent scenario; Section 5 describes the proposed method.

Section 6 describes Conclusion and Future work. References are including in section 7.

## 2. J2ME and 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:

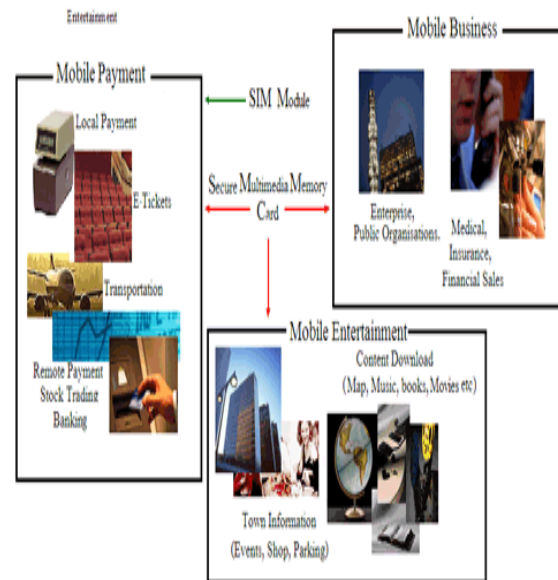
1. Mobile banking service (check account information, money transfer)
2. Mobile trade service (stock quotes, selling/buying)
3. Credit card information (account balance)
4. Life insurance account information (account information, money transfer)
5. Airline (online reservation, mileage account check)
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 [1][2][3][4][5]. The above phenomena are shown in fig 1.



**Fig 1. M-Commerce**

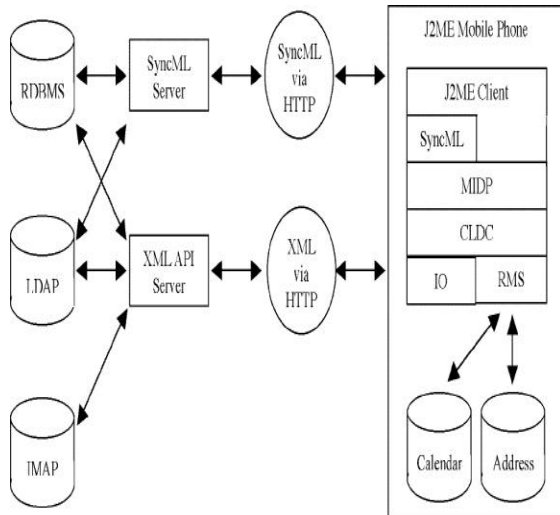
The foundation and ideology Java 2 Micro Edition (J2ME) brings itself a reasonable set of potentials of being a part in a MPS. There are several concrete arguments that indicate why J2ME should be considered as an interesting supplement for M-Payments.

Broad user experience: The J2ME™ API provides enhanced possibilities for presenting GUI's like event handling and richer graphics [6] [7].

We want to club the above concept of M-Commerce with J2ME components. The J2ME architecture is based on families and categories of devices. A category defines a particular kind of device; cellular telephones, simple pagers, and organizers are separate categories. A family of devices is made up a of a group of categories that have similar requirements for memory and processing power. Together, cellular phones, simple pagers, and simple personal organizers make up a single family of small-footprint devices.

In order to support the kind of flexibility and customizable deployment demanded by the family of resource-constrained devices, the J2ME architecture is designed to be modular and scalable. This

modularity and scalability is defined by J2ME technology in a complete application runtime model, with four layers of software built upon the host operating system of the device.

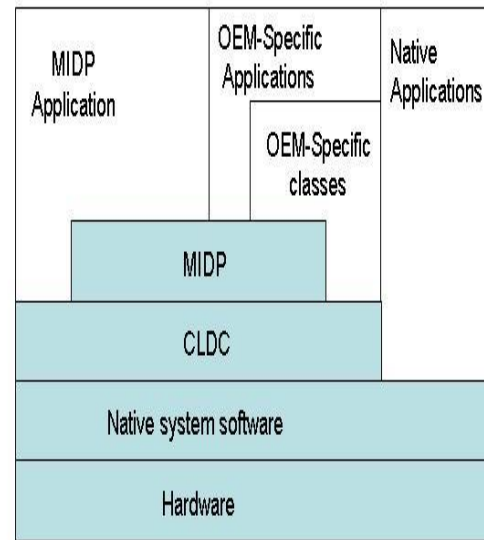


**Fig 2. J2ME Architecture**

### 3. 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. MID and CLDC**

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.

### 4. Evolution and Recent Scenario

In 2009, Xinhua Zhang [8] proposed based on the research and analysis of the J2ME architecture and combining with the J2ME technical characteristics, a type of J2ME-based mobile e-commerce system design program is presented, and then the realization

of the key technologies in this program is illustrated. The program has the advantages such as simple realization, strong maneuverability.

In 2010, Hua Ye [9] proposed a secure architecture for M-Commerce systems under the 3G networks. They proposed solution which is the combination of J2EE and J2ME capabilities based on the three-tier architecture, as well as security consideration. This solution can be implemented with the available limited resources of a Java MIDP device, without any modification to the underlying protocols or wireless network infrastructure.

In 2009, Wu Yueliang [10] states that J2ME is an advanced technological solution for developing and executing services of wireless data. Web service is called as the 3rd IT revolution, and brings the new generation of e-commerce. On the basis of the theories of J2ME and Web service, they proposed that the application of the two technologies combination for mobile business. An order query system on mobile equipments is achieved for online sale. Web Service is used to deal with the interaction between the server end and the customer end and supports the issue of backstage service end program.

## 5. 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

### 1) 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
}
```

### 2) 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
```

```
}
```

```
}
```

### 3) Frequency Check Protocol

```
[compute the Frequency]
```

```
For i=1 to n iterations do
```

```
{
```

```
Itemset[i]=count;
```

```
Count++;
```

```
}
```

### 4) 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]
```

```
}
```

### 5) Evaluation Phase

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

## 6. 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[11][12]. We also develop an algorithm based on object oriented for better usage of M-Commerce system in mobile environment.

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