Application Development with J2ME for Mobile Phone

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ABSTRACT

Even as e-commerce becomes popular, m-commerce is taking its place: handling business on the move is the new mantra. Anybody with anything to sell or any business proposal wants to make it available via mobile devices. The introduction of m-commerce hasn't changed the basic rules of business. But the mobility changes the playing field - it offers the possibility to pay for goods and services anywhere and any time.

In this paper, a mobile application is presented, based on Java 2 Platform Micro Edition (J2ME) platform that enable users to purchase flowers without a trip to the market or elsewhere. This is certainly appropriate, considering mobile phones remain the most common small devices and are growing at the fastest rate. This application is called as MFlowers, which is built using Mobile Information Device Profile (MIDP) of the Java 2 Platform Micro Edition (J2ME) platform. It enables the user to place an order by using a mobile phone. A customer or user may place an order merely after viewing a list of available items (flowers), which is what he can do on a mobile phone. The application is useful if it makes the user aware of the products offered and, as a result, the user decides to order while on the move. This application presents the opportunity to place such an order.

Keywords – Application, M-commerce, J2ME, MIDP

I. INTRODUCTION

With the dramatic increase and sophistication of mobile communications devices such as mobile phones, came demand for applications that can run on those devices. Consumers and corporations want to expand mobile communications devices from voice communications to applications traditionally found on laptops and PCs.

M-commerce takes place from e-commerce which is a fusion of internet technology and wireless applications. Applications based on mobile telecommunication infrastructure provide a new channel for marketing and sales, which in the supply side involves new actors and new technologies.

Mobile commerce has been subject to a lot of hype, among others because of the high market penetration of mobile devices. But no successful mobile ordering system has yet lived up the different requirements from the market - and thereby not been a success.

Consumers of mobile devices have high performance expectations for these devices. They demand quick response time, compatibility with companion services and full-featured applications in a mobile device.

One of the attempts that tried to meet this expectation, is a project called MFlowers. This application is very useful for most of the users especially for those who are busy, for example a sales representative who wants to purchase flowers, while sitting in a taxi in traffic or during a trip.

Many sophisticated applications designed for mobile devices require the device to process information beyond the capabilities of the WAP specifications. J2ME provides the standard to fill this gap. So, the application is created based on J2ME platform whereas it enables the application to be custom-fitted to resources available on mobile devices. A key benefit of using J2ME is that J2ME is compatible with all Java-enabled devices such as Motorola, Nokia Ericsson and Panasonic.

Many things that required a trip to the market or elsewhere, can now being done on the mobile. The J2ME and more specifically MFlowers, has made it possible to do many things remotely and is now a fact of life. It

enables the users to place an order while sitting anywhere in the world.

II. METHODOLOGY

A Forte for Java release 4.0 Mobile Edition was chosen to do the compilation for two reasons: First, the software includes a set of tools for the developments of applications targeting the Java 2 Platform Micro Edition (J2ME) for Java-enabled mobile devices. So, there is no need to add Mobile Edition libraries to the software. Secondly, the using of J2ME Wireless Toolkit in the Forte for Java is indeed a much easier way to do compilation without having to bother with giving classpaths. Besides, the toolkit is meant for MIDP only and not for other profiles.

In the development of the application, the required equipments and software are as follows:

- A laptop computer.
- A software to do compilation and in this project, Forte for Java Mobile Edition is used.
- J2ME Wireless Toolkit Beta 2.5 to support the compilation process in Forte for Java Mobile Edition.

Within the laptop, a Forte for Java Mobile Edition was running allowing for source code writing, building, compilation and execution. An Adobe Photoshop was also installed in the laptop computer to allow for image conversion. Since Java language only read images of “png” extension, other images must be converted first before adding them to the application. That was not an essential requirement of the application but helped the overall development process, as it is difficult to find the desired images in “png” extension. It also allowed me to create my own logo and a welcome image according to my needs and wants.

The writing of the program or source codes is started by identifying all the user interfaces that displays the information on the screen. The codes is then written for every user interfaces. The listing of the user interfaces (UI) gives guidelines to implement a successful mobile ordering system.

After the codes have been analyzed, the codes are then sorted out accordingly so that a proper flow of the application can be produced. The accuracy in arranging the flow or route is very important as it can affect the whole application. The program is then compiled and executed.

Several application parts were tested, from a dull-looking screen to an impressive output with colorful images and scrolling text.

Various scenarios were run mostly in relation with including the images, gauge and alert. Also, different types of choice group which is radio button and check boxes were tested that included flower details, price information and other details.

As there had to be some kind of good and big screen for viewing on the mobile side, a default color phone of Wireless Toolkit Beta 2.5 is chosen as a default emulator.

III. RESULTS

Regardless of some specific problems, the overall system performance has met the expectations of the users and showed that the system can be effectively deployed.

During the deployment of this application, a number of consumers/users and software engineer were involved:

- Three users were asked to test the functionality of the application.
- One software engineer was asked to evaluate the overall program code and the final results of the application.

All the users tested, gave acceptable comments on the application. The overall quality of the outputs (based on the comments given) was good.

Fig. 1 Application Main Screen

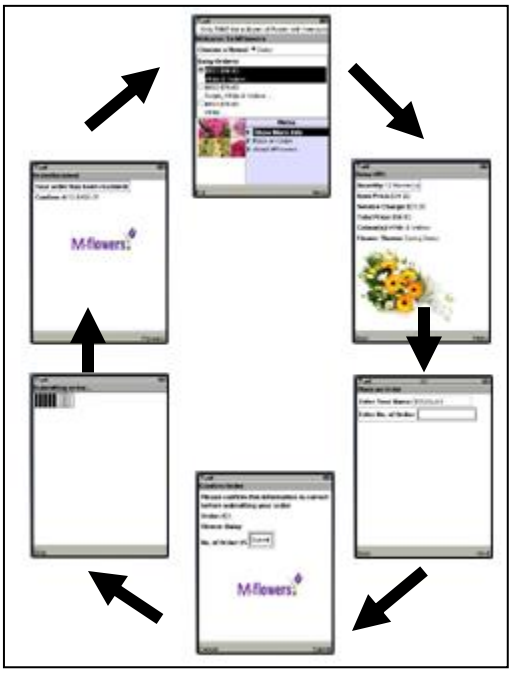

Fig.2 Overall Process of MFlowers

On starting the application, the user sees a Welcome screen followed by Main Screen displaying the list of items (flowers), their colors and their prices [Fig. 1].

An item can be selected by moving the mobile up and down cursors. More details information on the items can be showed by selecting the "Show More Info" option at the Menu on the bottom right of the screen.

To proceed with the order, the user choose "Place an Order" at the menu option. The order form is displayed on the screen, and the user enters information into the order form. The device collects the order information and then processes the order. The confirmation notice is then displayed on the screen. The overall flow of the application is showed in Fig. 2.

IV. DISCUSSION

MFlowers is a system with a strong interdependence of existing internet or online ordering systems. MFlowers application is an extra option to existing shopping or buying methods and the mobile phone can be considered as another tool for carrying out the service.

Currently mobile commerce is only a marginally business in Austria and Europe. Mobile communication providers are not sure which applications can bring added value to their customers for which they will be willing to pay for. On the other hand there is technology lacking to make some of the mobile applications possible, for example the limited user interfaces, the slow transmission speed or the lacking standardization of mobile software interfaces. But all this limitations can be overcome using new technologies like J2ME.

This MFlowers, is one of the J2ME applications where improvements to an existing application could result in companies finding major extra income. This application system includes:

- Ordering flowers and dedicate to someone
- It allows the user to select flowers with an interactive image
- You don't need to enter personal login information every time you use MFlowers.

A lot of requirements need to be fulfilled if the new MFlowers application shall be able to compete with the existing mobile ordering application. This project has focused on the basic requirements for ordering system application in the mobile phone. And if it is to be used in real world, there are a lot of other things that must be added to the current application.

At this point, it is important to mention that this system can be modified to work in such a way that attract and satisfy the users. It is clear that users do not have to go to the market to purchase the flowers and they can place an order as much as possible whenever they like.

V. CONCLUSION

The general opinion formed by the users was that this application produced solid results that could be used for purchasing flowers and hence improving the existing mobile applications. More specifically, the users satisfied with the final results of the orders made through using the application even though further development has to be made to justify the application.

The general idea is that using this application, large groups of users can place an order at a same time regardless of the area and time because this application serves a wide area within a world, or an entire world itself.

Overall, it is clear that a good quality, low cost application like this can effectively assist on saving the time a user need to purchase flowers and effectively save cost. Mobile Ordering System might become a very interesting service

on mobile devices. The instant transaction capabilities as well as the location independence are the main advantages compared to the fixed line internet.

But mobile ordering system is still in its infancy. Therefore they often approach less significant markets — even though the mobile marketplace is global. The result is market fragmentation and is probably one of the reasons why mobile ordering system still has been slow.

VI. FUTURE DEVELOPMENT

One of the requirements among other things is the database. When using the mobile phone as an ordering tool, the phone can act as a terminal. In these situations the data handling and transmitting meets a lot of challenges. Many different initiatives and forums have been established to cope with these challenges, with the main focus of developing standards for the application, to be a successful mobile ordering system.

The supplier may already have a J2SE or J2EE application for receiving orders from customers sitting in front of their PCs. This means there is already an application running for receiving requests and sending response. In the mobile case, this is done using Java Server Pages. The items and their quantities available are stored in a database on a server. There are two JSP scripts – one reads the database and displays the list of items and their quantities, and the other saves the values of quantities ordered by customers to the database.

The complete source code or program can be installed and run on any mobile devices that support Java extension, for example mobile phones, two-way pagers, PDAs, or handheld devices, screen phones, smart phones and so on.

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