Component Based Development for Mobile Enterprise Application

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Abstract. Mobile enterprise is general term to describe a corporation or large organization that supports critical business functions and use of business applications via wireless mobile devices. Mobile enterprise applications are very helpful in gathering data for making business reports and assist employees in their daily transactions. Nowadays, many software components are available for free or by purchasing. In developing an enterprise mobile application, most of the time, the primary components that are being used are almost the same for every application they only vary on the uses and the design. It depends on the business requirements, but basically, the components are the same. In this paper the Component based Development (CBD) for mobile enterprise application development is proposed.

Keywords: Mobile Enterprise Application Development, CBD, Mobile Enterprise Management

1 Introduction

A mobile enterprise is referred as enterprise which uses mobile devices to make their work easier. Mobile enterprise applications are develop to assist the employees in their inventory or in their everyday transaction, like point of sale (POS), management information system (MIS), Enterprise Resource Planning (ERP) and other business related processes. A mobile enterprise is generally accepted to confer benefits in the areas of higher workforce productivity and employee satisfaction. Faster decision-making is another often cited benefit that results from employees having access to real-time data at the point of action, for example, during a meeting. However, the strategic adoption of mobile devices in enterprises often also requires a change management process. Use of mobile applications in the workplace can increase worker productivity. While Component-based Development (CBD) is a software engineering development technique that emphasizes the separation of concerns in respect of the wide-ranging functionality available throughout a given software system. It is a reuse-based approach to defining, implementing and composing loosely coupled independent components into systems. This practice aims to bring about an equally wide-ranging degree of benefits in both the short-term and the long-term for the software itself and for organizations that sponsor such software. In this paper we designed a mobile application intended for enterprise used, run in mobile devices with the CBD software engineering technique.
2 CBD for Mobile Enterprise Application

Component Based Development (CBD) is popular methodology to develop a mobile component through component re-used. One of the interesting researches is the enterprise mobile application development with CBD. If the components are available in repository, then it is easier to develop an application. Like for example, when we want to develop an inventory system. The inventory system has an user interface which accept data inputs. The data are then stored in the database for calculations or analysis. The main use of inventory system is to produce a report at the end of processing. In Fig.1, as you can see, Interface for data inputs (GUI) component is in the first layer. GUI plays the important role in enterprise mobile computing, it is where the data is being inputted, and hence it must be user friendly and easy to understand. Next to that is the Database components, database also is very important as it will store the data that has been input by the user. Report Generator templates are also needed. This template is also a component. There are many available report template components which are ready to be connected to the applications to generate reports. Also, the printing option is very important.

![Fig.1. Mobile enterprise first layer component overview](image1)

![Fig.2. Mobile Enterprise Application](image2)

Fig. 2 shows the composition of the mobile enterprise application. These are the Enterprise connectors, Communication platform, mobile devices and storage or databases. Enterprise connectors are software, middleware and also components which are used to develop the applications. Communication platform, are the communication technology that support the mobility of the devices. Mobile devices are of course the devices; this can be smartphones, PDAs, tablets and etc. Also the most one of the most important is the databases. Data warehouse are essential and must be secure as it stores all the data from day-to-day business transactions.
3 Mobile Enterprise Inventory System

One of the most basic but important Enterprise System is the inventory system. Figure 3 shows the context diagram of the inventory system. It illustrates the first level of activities of each entity (Administrator, supply office and the client). Figure 4 is the functional decomposition diagram. In functional decomposition diagram, all the processes are shown. In inventory system, the enterprise components that can be used are Visual Studio 6, MySql Server, Active Reports and other related components. It should be consider also the that the components are flexible in mobile and PC application as possible. This is because when outside, for example is stock warehouse, the mobile device is being used to perform the inventory, however, when returning to the office, for final checking and other related processes, PC are being used. Fig. 5. shows the scenario how to manage a stock-in record. Stock-in record means the listing of the stock arrived. Fig. 6. shows the scenario for printing stock-in records. As what we have discussed in previous section, the application should be able to generate a report and print it as final output for document filing.

Fig. 3. Inventory System Context Diagram
4 Conclusion

Mobile Enterprise computing is necessary to day-to-day transactions of enterprise or company. It makes the transactions faster and easier because it supports mobility. In this paper we tried to integrate the concept of CBD to develop a mobile enterprise application. We believed that enterprise application uses software components that are being re-used repeatedly; hence, component re-used for mass application
developments is necessary. We design a mobile inventory system as our sample application.

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