FCSIT WAP BASED STUDENT'S INFORMATION SYSTEM

Norazlina Khamis and Ang Gim Wah
Faculty of Computer Science & Information Technology
Universiti Malaya, Lembah Pantai, 50603 Kuala Lumpur

Abstract: Nowadays, wireless technology has developed into one of the popular topics. Wireless Application Protocol (WAP) is a set of communication protocols, designed to enable wireless devices to access the wealth of information on the Internet. This paper will discuss the objectives, the background study and also explained the proposed system of the WAP based student's information system (WAP SIS) for Faculty of Computer Science and Information Technology (FCSIT). The primary objective of the project is to develop a system to facilitate students to navigate or browse the information regardless to geographical location and time by using a WAP enabled handheld device. FCSIT students are capable of retrieving information such as personal file, examination result, course information and announcement and even perform courses registration at their convenience. The system also integrated with management capabilities through administrative features provided in the system. This WAP SIS is hoped to give an easy access for students and also as an alternative to view the FCSIT student's information system at anywhere and anytime.

Keywords: Wireless Application Protocol (WAP), mobile and wireless application, information system.

INTRODUCTION

Wireless technology has developed into one of today's hottest topics of its ability to bring the power of communications and the Internet into hands of users' worldwide. As the popularity of wireless services grows, manufacturers are enabling wireless devices with an increasing array of features and capabilities. However, a new buzzword is increasingly being mentioned in the market place: Wireless Application Protocol (WAP). WAP is a completely a new concept. It provides data oriented services to the mass market and is capable of being beneficial, anyplace and anytime, to far more end users than the personal computer. For example, many personal digital assistants (PDAs) now operate as cell phone and vice versa. Briefly, WAP is envisioned to be web in the pocket.

Project motivations: As we know, efficient students' information system will provide efficient usage of physical storage space. Any request for information or records can be done very quickly since the information have been stored in a systematic way. With the help of information technology, we can manage the information more efficiently and ensure accuracy in the information processing. According to analysis from the traditional and conventional system, without the aid of information system, a lot of weaknesses or problems are found. The most common problems faced are as below:

- Wastage of space storage
  Information and courses registration in documents form need a lot of space to store. It's wastage of space compare with information technology system that are all computerized and only needs hard drive to store all the associate information.

- Time consuming and inefficient
  Without computerize environment, record of students registration have to be done manually. This involves a lot of paper works and cause of staff's workload. Therefore it is time consuming when come to decision making where all the relevant document have to be dig up.

- Redundancy
  Redundant works happen when updating data in one file may require updating in another file as well. Besides, processing error due to the lower level of human intervention may happen also.

- Lack of flexibility
  Every issuing information retrieving must be taking place at service counter in FCSIT general office. It is not an ideal case in real life. This will bring a lot of inconvenience and difficulty to both the students and FCSIT management level staffs.

- Security issue
  The information in paper-based is exposed to danger like fire, flood or even theft. It will definitely create havoc to the management/administrator level in keeping track all the related information.

Project objectives: This system is a WAP based application that used to keep track of students information. The information can be categorized as student's profile, academic information and non academic information. The main benefit of the system is to provide an alternative to the current system. It is also provide a greater convenience and accessibility to the students. Besides, the system is also to serve the purpose to make student's processes timelier or closer in time.

The main objectives of the project are as follows:

- Provide an easier way and also as an alternative to access information.
- To enable easy, fast delivery of students information and services to students without any attached wire in a very short time. Student no longer need to use a computer to retrieve their information.
- Provide a WAP based information retrieval system.
- To build an information system that could be available to the students regardless of location. This will enable multiple levels students from a wide range of background to retrieve information anyplace even though they are trapped in traffic congestion.
- Better manageability.
- The evolution from document-based information repositories to paperless and efficient data storage in Web database has saved a lot of energy, time and cost in managing records.
- Provide easy key access and menu-driven interface.
- To design system via a simple, user friendly system, that will be carefully implemented I order to draw all level of users to easily use the WAP site, even for the first time to post and search.
- Accessibility to Internet based devices.
- In order for it to be accessed by, and available to, as many as possible it needed to be Internet-based such as mobile phone, pagers, two-way radios, smart phones and communicator from low-end to high-end.

Background Study

WAP bridges the gap between the mobile world and the Internet as well as corporate intranets and offers the ability to deliver an unlimited range of mobile value-added services to subscribers – independent of their network, bearer and terminal. Mobile subscribers can access the same wealth of information from a pocket-sized device as they can from the desktop [1].

WAP is a global standard and is not controlled by any single company. Ericsson, Motorola, Nokia and Phone.com were the initial partners that teamed up in mid 1997 to develop and deploy the Wireless Application Protocol (WAP). WAP is attempting to define the standard for how content from the Internet is filtered for mobile communications. Content is now readily available on the Internet and WAP is designed as the way of making it easily available on mobile terminals [1].

WAP definitions: Wireless Application Protocol (WAP) could very roughly be describes as a set of protocols that has inherited its characteristics and functionality from Internet standards and from standards developed for wireless services by some of the world's leading companies in the business of wireless telecommunications [2].

The WAP is the de-facto world standard for the presentation and delivery of wireless information and telephony services on mobile phones and other wireless terminals. It is an open, global specification that empowers mobile users with wireless devices to easily access and interact with information and services instantly over the Internet.

WAP stands for Wireless Application Protocol. Peer the dictionary definition for each of these words, we have:

- Wireless – Lacking or not requiring a wire or wires: pertaining to radio transmission
- Application – A computer program or piece of computer software that is designed to do specific task
- Protocol – A set of technical rules about how information should be transmitted and received using computers

WAP is a method of global open wireless Internet standards for real-time communication of wireless mobile devices such as Web cellular phones, personal digital assistant (PDAs) and the Internet. WAP is not only a language but also a platform for development and interconnectivity [2].

Evolution of WAP technology: There is a definite place for WAP technology in the world, and the applications being developed all over the world by some very smart people are going to make a real difference in the way people communicate, do business and spend the leisure time. Table 1 lists the key features and technical capabilities of the major carrier-dependent technologies [3].

Table 1: Generation Gaps

Gen	Freq.	~Kbps	Tech.	Emphasis
1	800 MHz range	9.6	AMPS	Circuit-switched wireless analog voice. No data
2	800 900 1900 MHz range	9.6 to 14.4	TDMA CDMA GSM	Circuit-switched wireless digital voice and data Better security and higher capacity
2.5	1900 MHZ	56 to 144	GPRS CDMA 2000-1X EDGE	Circuit-switched wireless digital voice + new packet-switched data services. GPRS is an 'always on' air interface to the Internet
3G	2 GHz	144 vehicle, 384 outside, 2Mbps indoors	WCDMA CDMA2000 -MX UMTS	Packet-switched wireless voice and data services, encryption, high speed multimedia

FCSIT WAP SIS

Faculty of Computer Science and Information Technology (FCSIT) WAP SIS is a WAP application that allows students to request for academic information by using wireless devices. By using this application, FCSIT students can check their examination result status, view their profile, check announcement and register course remotely from anywhere.

The considerations of design for the system user interface are very important since the small screen is the probably the most obvious limitation of a WAP phone. Menu-driven interface and easy key access will be applied in the system to minimize text entry by keypad. The selection menus are well categorized. This is in order to assist the students and navigation in using the application

Data privacy is one of the most important considerations in the proposed system. The login module had been designed to comply with privacy issue to protect student privacy. User ID and password are required to access certain services like viewing personal information, checking result and so on.

The system will also integrate with management capabilities through administrative features provided in the system. Administrators can perform their daily operation in an efficient way. They can track and monitor the students' information efficiently with no sweat.

Project Scope

This project will be divided into two main modules namely the administrator module and student module, which will cover the functions needed under students' information system such the following:

- Account activation
- Access authentication
- Files uploading
- Courses registration control
- Courses Information Management
- Students result management
- Students Personal Record Information
- Announcement board
- Information lookup (reports)

The main boundaries for this proposed WAP SIS are as below:

- The system will be used for FCSIT students only with no integration or link with other faculties. It just allows internal courses registration and internal announcement checking. However, students in FCSIT are still available to register subject offered outside FCSIT by accessing the Internet.

- It is only designed for wireless devices users who have subscribed to WAP enabled service. This means those students who do not have wireless devices with WAP will not be able to use the services in the application.

- Lecturer is not the target group of the system. Lecturer of FCSIT can only use the system indirectly through administrator. For example, if the lecturer wants to make an announcement to the FCSIT students, they need administrator's help to upload their announcement in the system announcement board.

MATERIALS AND METHODS

A methodology us a systematic way of accomplishing certain tasks and may be defined as a collection of procedures, techniques, tools and documentation aids to help the software developer speed up and simplify the software development process. [4]

This project involves the development of a system and requires a lot of research to make sure that the users of the system are identified, their requirements identified and well defined development approach is carried out to make sure the objectives are met. Therefore, this project will use Unified Process Methodology. The Unified Process is an object oriented and iterative software engineering process. Unified Process adopts an iterative approach within four main phases:

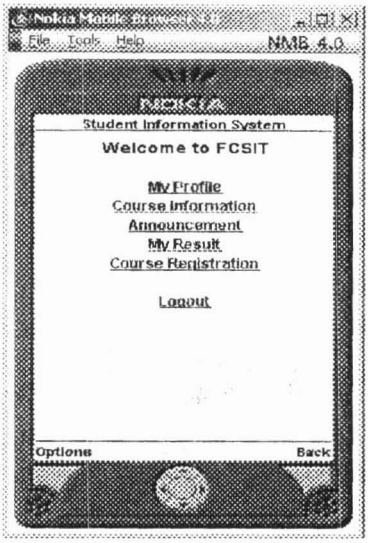
- Inception, concerned with determining the scope and purpose of the projects
- Elaboration focuses requirements capture and determining the structure of the system
- Construction, the main aim is to build the software system
- Transition, deals with product installation and rollout.

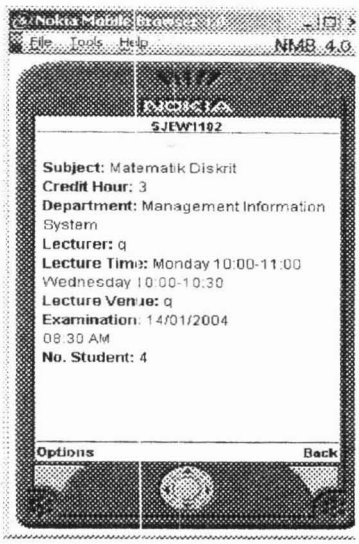
The number of iteration in each phase is determined on a project basis. At the end of iteration, an increment is delivered. An increment is not necessarily additive in the Unified Process. It may be a reworked version of a previous increment. Unified Process provides guidelines, templates and tools mentors for effective implementation of key best practices delivered through a web-enabled searchable knowledge management system.

Proposed User Interface: The human-computer interface has become an important consideration in designing and using computer. The interface is in some sense a mediator between the human and the machine. It is a transmitter of commands, feedback and instructions between two very similar entities.

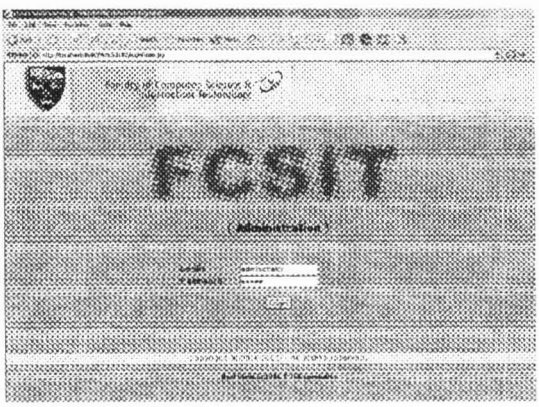
The main idea of the interface design is whenever the user clicks on a link; the system will load the requested page by the user. The similarity of the interface appearance is to serve as a standard and common interface structure and appearance for all the modules. This will prevent user from getting confused and distracted if they are being given a changed interface every time they want to link to a new module. Below are a few examples of the system interface draft which can be divided into two modules.

i) Student Module (WAP based application)





ii) Administrator module (web based application)



EXPECTED OUTCOME

This project is aiming to develop and produce an appropriate, smart, robust, flexible, scalable and efficient information system for students. This project is also expected to posses a few strengths that enable to improve or overcome the current problems. Its expected outcomes are as follow:

- System can perform the accuracy in the process of courses registration
- An ease to use system will established for students
- System can perform some basic functions by having some important criteria such as consistency, stability and user friendly
- Fulfill the needs of different levels of students ranging from the novice to the experienced
- Provide desirable front end for system administrator to maintain the database

- System able to facilitate the access authentication and ensure only authorized users to access the system in certain services
- The final implementation should allow for future enhancement as well as additional modules to extend the system functionalities.

CONCLUSION

WAP has become the trend in most of modern countries, for instance Japan and some western countries. This is because the users realize that WAP technology gives them a lot of convenience and benefits where they do not need to depend solely on the computer or notebook. It enables easy and fast delivery of relevant information and services to mobile user at anytime and anyplace.

This students information system is a WAP based application that used to keep track of student information. This information can be categorized as student personal information, student academic or non-academic information. The main benefit of the system is to provide greater conveniences and greater accessibility to the students.

This WAP SIS is hoped to give an easy access for students an also as an alternative to view the FCSIT student's information system at anywhere and anytime

REFERENCES

1. Heijden, M. & Taylor, M. 2000. Understanding WAP Wireless Applications, Devices and Services. London: Artech House.

2. Bulbrook, D. 2001. WAP A Beginner's Guide, New York: Osborne/McGraw-Hill.

3. Vujosevic, S. & Laberge, R. 2001. WAP Integration Professional Developer's Guide, New York: John Wiley,

4. Micheals, Bay E. 1999. Software Release Methodology. New Jersey: Prentice Hall