AN ADAPTIVE MOBILE TECHNOLOGY APPLICATION FOR TOURIST TRAVEL

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ABSTRACT

In the context of Jordan, the usage of M-Tourist Guide through WAP technology enables the easy and flexible access to information anywhere at anytime. The paper introduces a WAP application providing tourists with the opportunity to access necessary information in the least amount of time and effort. Through this technology, the tourist can obtain information concerning restaurants, map guides and other services through their mobile device minimizing the time and effort they expend.

KEYWORDS: Mobile, WAP, Tourist Guide System, Travel

INTRODUCTION

The current world we live in is characterized by the dynamic development of information technology, an extension of which can be utilized to support tourist's mobility. On-going fast development can also be noticed particularly in the telecommunications area enabling mobile phone users to browse information from various mobile units (e.g. Cellular phones and PDAs). This technology is establishing a new industry that concentrates on IT and mobility [1]. The systems developed within the new technology are combined; WAP technology and Mobile device. Moreover, the wireless communication devices, particularly personal mobile devices have experienced dynamic growth over the last few decades. Consequently, value-added data services, WAP based applications and Web services have widespread popularity [2]. It is the responsibility of technology to guarantee that a maximum number of people enjoy its benefits [3].

Tourism has always been a global process and researchers have described it in light of the impact that tourists have on the host country, or the limitations of the tourists' experiences. Hence, it is advisable to keep track of tourists in particular settings in order to obtain their views. However, most tourists are always on the move and there is no single location that they stay in, and no single site that they confine themselves in – in the other words, no single site that constitutes as their tourism area. In many of the tourist sites, it is impossible to avail internet services but through the mobile services, tourists found recourse. As such, tourists can access the internet services from their mobile devices anywhere at anytime. The issue that tourists face in a strange place is mostly what activities to take part in or to embark on. Contrary to paid employment in which the employees' tasks are determined and directed to the achievement of a goal through other people's plans, tourism is a much open option. Tourism covers a wide range of activities including sightseeing, relaxing, shopping, visiting friends and family. Whatever activities they decide to undertake, most tourists make a habit of planning out their schedule ahead of time. This schedule should take into consideration the time they take to reach different places, and the time they spend in those places.

Without a plan, tourists are unable to pinpoint the places that they are desirous of visiting and hence, they have no clue what questions to ask about them. For this, the present study recommends the flexible and easy use of the mobile device to guide the tourists and satisfy their queries anywhere at anytime.

LITERATURE REVIEW

Today's technology can assist tourists through the provision of a flexible application that warns them of change of weather and other information that they need. One of these applications that can be utilized or integrated is the Wireless Application Protocol (WAP). WAP is defined by the International Engineering Consortium (IEC) as an environment application and a set of communication protocols for wireless devices for communication with external applications [4].

Wireless Application Protocol (WAP)

WAP is described as the application environment and set of communication protocols that enables the communication through wireless devices and with any external application. It was primarily created to allow manufacturers, vendors and technology users on a global scale to independently access the internet and make use of advanced telephony services. The WAP's primary goal is to provide individuals with the service they need anytime they want and anywhere they are.

WAP Architecture

M-Commerce is backed by the emerging technology that stems from Wireless Application Protocol (WAP). It is described as a novel technology that connects wireless devices to the internet. WAP specifies the set of communication protocols in order to provide standardization of the way wireless devices, like cellular phones, can be used to access the internet (e.g. Email, the World Wide Web, newsgroups, and instant messaging, mobile computing etc.) [4]. The WAP network infrastructure is depicted in Figure 1. The function of the gateway is to send requests from the WAP client to the origin server. The gateway translates the WAP requests and sends it to the server. It also translates the response from the server into WAP format for the client to understand it. The response is then send to the WAP client.
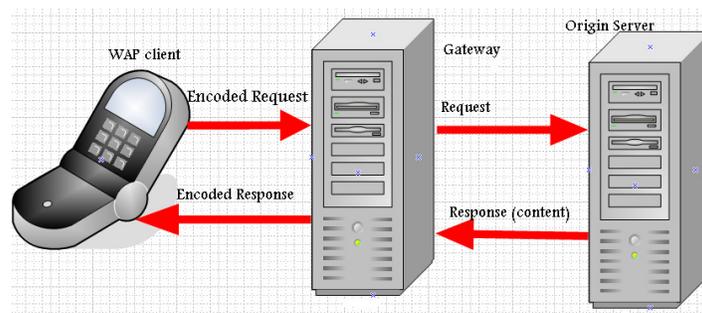
Figure 1 : WAP Network Architecture by [5]

The WAP makes use of the concept of layering as depicted in Figure 1. The WAP layer stack comprises of the following :

- Wireless Application Environment (WAE): The wireless applications environment is the interface of the client device. It encapsulates the tools that the wireless internet content developers make use of. These tools are, the WML, and WML Script – a scripting language utilized along with WML.
- Wireless Session Protocol (WSP): WSP offers two session services namely;
- It works with WTP to facilitate connection oriented service.
- It provides a connectionless service that offers WDP.
- Wireless Transaction Protocol (WTP): This is responsible for organizing traffic and it classifies the requests into three categories namely, the reliable two-way, reliable one-way, and unreliable one-way.

- Wireless Transport Layer Security (WTLS): This is an optional layer and is linked to security, data integrity and user authentication. It is important for applications such as WAP-banking.
- Wireless Datagram Protocol (WDP): This protocol is responsible for the management of transmission and it simplifies the adaption of WAP to diverse bearers (network carriers) from the network layer.

How WAP Works

WAP primarily works through data communication. When a phone contact requests WAP regarding information in the form of pages, WML, it is sent through Digital Circuit Switch (DCS). WAP works directly with the DCS entrance proxy and depending on demand, it returns with the information required. The request is mostly from the internet and it then converts the request from HTML to WML format and sends the information back to the DCS Module telephone service to the contact who requested for the information.

Characteristics of Mobile

According to [6], mobile devices are described as small handheld devices like mobile phones, palmtop computers and devices having specific operating systems. Mobile devices also take the form of Personal Digital Assistants (PDAs) either with or without networking capabilities and mobile phones that have or do not have any access to the web. Handheld devices/computers are characterized as mobile and flexible that enables the access to real-time, one-to-one support for students for the purpose of their learning curricula [7]. The unique characteristic of mobile devices is the combination of mobile, handheld devices with wireless communication technologies and is hailed as the newest technological revolution.

Guidebooks

Guidebooks are services that provides tourists who are desirous of utilizing mobile devices for inquiries or for searching information. Guidebooks along with the map are the two most iconic tourist publications by the organization for the Advancement of Structured Information Standards [8]. They are commonly utilized in combination when tourists plan their itinerary in different places and how to get their destinations. In tourism research, Guidebooks have received its fair share of attention but most studies focused on criticizing their use instead of highlighting how they become incorporated into the activity [9]. Guidebooks basically safeguard tourists by minimizing their uncertainty. Practically, the information they provide needs interpretation as guidebooks are not very helpful on their own – they have to be combined with specific information on maps or local advice to be truly useful [10]. This is why tourists often make use of the guidebook in combination with a map. Guidebooks are also known as collaborative artifacts in a sense that tourists point at the guidebook and point at the map or the direction so as to connect the two together in an attempt to establish their position. There is therefore a need to convert the Guidebooks from general prose to activity [11].

PROPOSED SYSTEM DESIGN

The Mobile Tourist Guide using WAP technology gives the opportunity and the easy accessing for tourists whom not inside their countries, which save the effort and the time for those tourists who like to use the mobile technology in their enquiries. The aim of this model can present a special service for those who need to enquire about the places that he or she want to visit. Otherwise this service will give the flexibility to the tourist to check the maps and other places anytime and anywhere by using this technology.

The main functions that illustrated among the proposed system are: Login Operator define the tourist by mobile phone to verifications of viewing tourist services and using the system by matching user name and password with those that are saved in the database. View Services In this function the tourist can view various tourist services such as; view

restaurant, view maps, direct links to important places and important telephone numbers that could help the new tourist to use. Search the tourist can do the search by using mobile phone, tourist can look for other related information that this application cannot provide it. Figure 2 shows the functionality of touring actors.
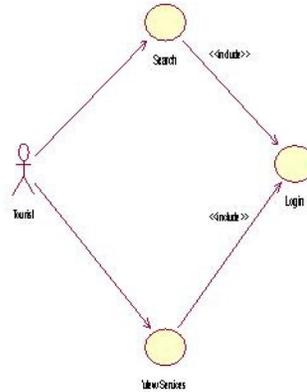
Figure 2 : Main Use Case for M-TG Prototype

The following snapshots explain the prototype design

Figure 3 : Main Page

The main page displays the welcome message.

Figure 4 : Tourist Page

In this page the tourist can view the information that could apply in this service as map and restaurant.
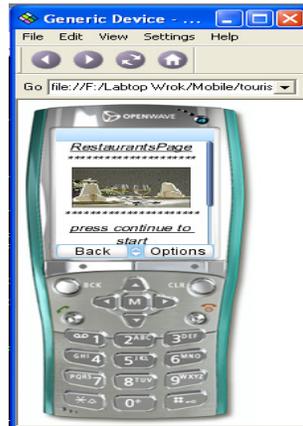

Figure 5 : Restaurant Page

In this page the tourist can view the restaurant information.

Figure 6 : The Map Page

In this selection, the user will have the choice to select the map option that will view the map information in order.

Figure 7 : Direct Link

The tourist in this page can view the direct web pages, by selecting the link that provides related information for the tourist.

Figure 8 : Emergency Telephone Number

The proposed application provides the tourist with the necessary telephone numbers in order, these numbers will be listed in a table.

Figure 9 : Search Page

This page provides for tourist to search about any inquiry.

RESULTS AND DISCUSSIONS

According to [12] the evaluation uses usability testing based on the standard tests followed by interview in a closed environment with video equipment. Testing with potential users can obtain as efficient feedback as possible in a short time frame and with the available resources. It is also irrelevant to ask people in a focus group to predict whether they would like something they have not tried, so the only way to get valid data is to let users experience the technology before opinions are sought [12].

All variables were measured using 5- points Likert scale (Strongly Disagree, Disagree, Natural, Agree and Strongly Agree). From the study, the descriptive statistics for the highest items in Table 1. The charts below detail of these 3 highest items.

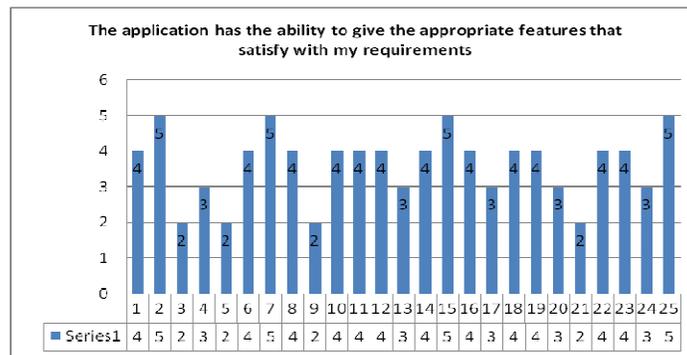**Table 1: Top 3 Highest Items**

ITEMS	MEAN	ST.DEV
Most of the services provided simple and easy to follow.	3.96	0.789
It is easy to find the information which I needed.	3.72	0.89
The application has the ability to give the appropriate features that satisfy with my requirements.	3.64	0.992
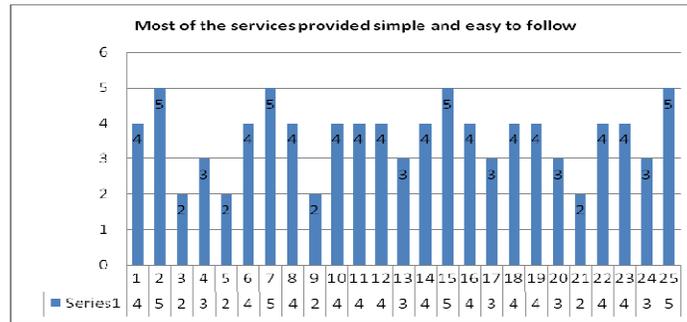
Figure 10 : Item 1 Statistic
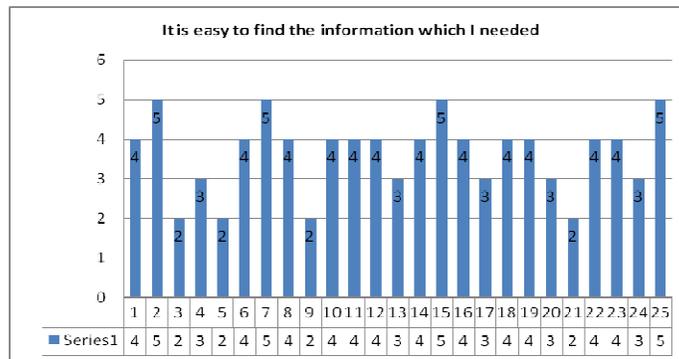
Figure 11 : Item 2 Statistic

Figure 12 : Item 3 Statistic

RECOMMENDATIONS

A prototype of the M-TG was successfully developed using WML language. However, need to provide this system to browse anytime and anywhere. The proposed application was developed for and tested on Mobile open wave 0.7, therefore some of the test and illustration may be inconsistence on other mobile versions, such as open wave 0.6 version, open wave explorer, that need to identify the system requirement. The prototype is just simulating on the local PC. It has not been uploaded to the real server due to high airtime cost for testing and time constraints.

CONCLUSIONS

As was explained though the context of this paper, the objectives of this study are to develop the WAP guide application and do usability testing. As well as producing a requirement model for Electronic Tourist Guide in Jordan by Using WAP Technology. In order to make the requirements more understandable the requirements have been modelled by using some of UML diagrams such as a use case diagram to design the system requirement in order to illustrate the research objectives. However, the other features have been added to provide those tourists with the appropriate enquire about the (Maps, restaurant, telephones, and the other links) via their mobile device. Finally the application has been implemented using WML technology according with Electronic Tourist Guide in Jordan by using WAP technology.

ACKNOWLEDGEMENTS

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