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WAP applications of libraries

Iszály György Barna

College of Nyíregyháza, Institute of Mathematics and Informatics
e-mail: gyiszaly@nyf.hu

Mobile communication was the most significant domain of the last decade. That domain improved most of all. The mobile tools became an integral part of our life. These things totally changed our life. We became available everywhere and every part of the day with the help of a small mobile phone.

The mobile phones and mobile services have changed in during the course of time. In the very begining we were able to use these phones only to call somebody up. The size and weight of the phone decreased with time, and the liquid crystal displays appeared. These phones were able to store data and use many extra functions. The Sort Message Service (SMS) was initiated in the nineties which is at present the most popular service of the mobile companies. We are able to send text messages by phones with the SMS.

The evolution of mobile phones continued. The phone displays increased and these were able to display simple graphic pictures. Color displays appeared shortly afterward.

The phones of the 21st century are able to store names and phone numbers, they have a wake up function, they are also programmed to preform reminders, signal deadlines and discussion. The service has developed too. With the Multimedia Message Service[1] (MMS) – which was founded on the General Pocket Radio Service[2] (GPRS) – we are able to send and receive multimedia messages. These messages are able to show text with pictures and movies, and also play music. Along with this service the Wireless Application Protocol (WAP) appeared also. The WAP opened the door to reach Internet via mobile phones.

A new idea appeared in the 21st century, the 3G. This is a new generation of mobile networks, which produces greater transfer rate – approximately 384 Kb/s – like others. This technology opened new prospects like video phoning, online mobile Television, etc.

Multimedia applications are the basic attribute to present mobile phones. We are able to make color photographs, store or send it to somebody else with these

[1]The MMS means an another less known service: Mobile Mapping System.

[2]This is the packet-switched data transmission service of mobile phones. Whit this system the data transmission is the same as the Internet. In this way the user must pay only the real data transmission amount.

phones. We are able to download and listen our favorite music in digital format like MP3 or WMA. WAP opened up new opportunities to browse across the Internet, send or receive e-mails, download or upload files or obtain new information from direct or the world wide environment.

What is the correspondence between the libraries and the WAP? Why should we deal with this subject? The answer is in the change of human behavior. The technologies have developed and these changes influenced humanity. People of the 21st century are always on the run. They do not have enough time to go to the library, so they rather use the Internet. And, now here is a new possibility: the mobile phones with WAP.

Only libraries have provided information to the people for a long long time. That monopoly continued through the second part of the 20th century. If somebody wanted to know something about the world they just had go to library. It was most likely that the answer was in the books.

The first rivals appeared in the 20th century, like radio and television. These devices broke the information source monopoly libraries had. We were able to here news or performances on radio, or watch nature films on television. These mediums gave new dimensions of information and enticed readers to turn away from the libraries. Many people predicted the end of Guttenberg's Universe, but these prophecies were not realized. Books remained the most important information source in our world.

The most significant rival appeared in the last decade of the 20th century. This is Internet. The Internet users search their answers on the Net, and do not visit the library for information. This is comfortable, surely the user sits at home, and does not have to go anywhere. It is also fast if the user knows effective information search methods. The development of computer and web technologies result in the fact that more and more information carriers depend on the web. These are not only texts but pictures, volumes of voice and motion pictures also.

The librarians immediately recognized the advantages of web technologies. The first home pages of libraries appeared very soon. The library databases were accessible on these home pages. These made document finding and status polling possible. The collections of library networks become researchable by a combine catalogue. The full text databases appeared on the Internet over and above. Therefore the contents of rare printed documents were at the reach of the readers.

The mobile communication throws down the gauntlet to libraries by WAP technologies. For this reason we have to examine what the WAP means and what are eventualities offered to the libraries.

What is WAP? WAP is the abbreviation of Wireless Access Protocol. This protocol is an extension of the Internet. It makes the connections between Internet and mobile phones possible. This protocol ensures that the information of World Wide Web gets to the mobile phones and other mobile devices.

We need special hardware tools to make a connection between mobile networks and the Internet. This is the WAP gateway. These tools transform mobile signals into computer data and vice versa. These tools complete the appropriate data

compress too. These gateways are insured by the mobile suppliers. The function of the gateway is to open a way for WAP-browsers of mobile phones to the HTTP servers of Internet. This way the computer network serves are useful for "wireless world" without transformation. (Figure 1.)

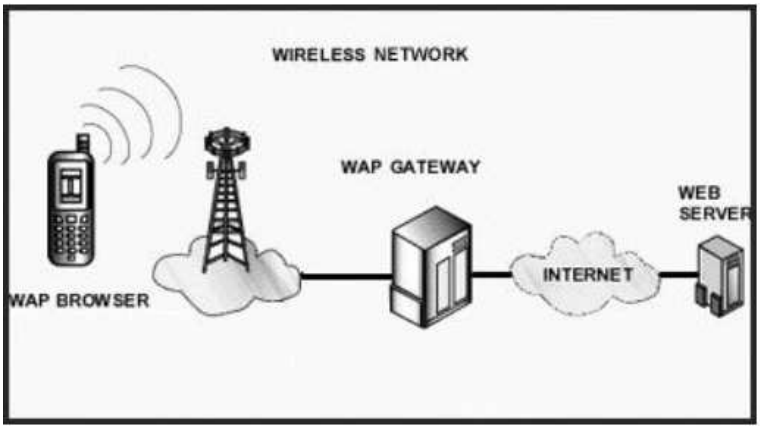

Figure 1: Hardware structure of WAP

The displays of the mobile phones are very small. These are not able to display the original home pages of Internet which are scaled high resolution displays. To be more exact the displays of mobiles are able to display the original home pages, but it is totally unusable in this figure. Another problem is the memory problem. The memory of mobile phones is limited. These two qualities of mobile phones are determined what the provider can represent on it. For this reason the libraries must think through what contents and how the medium is represented.

The mobile phones can not interpret the original home pages which are written in HTML. The mobile phones use WAP-browser programs to browse the WAP. These programs are full value browsers which are able to reach home pages by URL. The WAP browsers are able to handle dynamic contents or CGI-scripts or Java Servlets. However, these programs can only interpret documents which are written by the Wireless Markup Language (WML). This markup language is made for a limited scale display.

The WML is a markup language which was developed from the Extended Markup Language (XML) by the WapForum. The acquiring of WML is easy with the basic knowledge of another markup language like HTML.

The HTML and the WML were created for same purpose but these two languages are optimized for different media. The home pages are written in HTML and the WAP pages are written in WML. These languages use similar tags to build up home pages. The WML – like the HTML – is able to show text and monochrome pictures and create links between two different pages.

The analogy between the WML and HTML is well observed on the next simple examples.

Source code of HTML-page:

```
<html>
    <head>
        <title>Konyvtar</title>
    </head>
    <body>
        <p align="center">
            <b><i> Isten hozta konyvtarunk WAP portaljan!</i></b>
        </p>
        <p align="center">
            Vegye igenybe mobilos szolgaltatasainkat is!
        </p>
    </body>
</html>
```

Source code of WML-page:

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
"http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
    <card title="Konyvtar" id="Konyvtar1">
        <p align="center">
            <br/>
            <b><i>Isten hozta konyvtarunk WAP portaljan!</i></b>
            <br/>
        </p>
        <p align="center">
            Vegye igenybe mobilos szolgaltatasainkat is!
        </p>
    </card>
</wml>
```

The similarity of the "instruction set" of the two different languages is fully visible. The `<p>` paragraph tag, the `<b>` bold or `<i>` italic font style tags are used for the same reason. The architecture of the pages and the order of the tags are the same. The difference is issued from the property of the display items. The pages which are created in WML are determined by these properties. The most significant difference is that the HTML codes define virtual pages and the WML codes define packs. These packs build up cards. The cards point at one virtual screenful content. Another decided difference is that mobile phones have no mouse. For this reason navigation on the pages is possible only by buttons. The WML gives eventualities to program the control knobs by the `<do>` tag. This problem is solved this way.

The above mentioned WML code is displayed on the phone in the following ways (Figure 2).

Figure 2: The visualization of the WML page

The new mobile phones are able to make and show color pictures, record and play back sounds or motion pictures. New technologies brought high resolution true color displays. These mobile phones can reach the World Wide Web with restrictions. However, the new technology required new standards, which are suitable for new technologies. The WapForum consequently worked out the WAP 2.0 standard. This standard uses a new markup language: the Extended Hyper Text Markup Language Mobile Profile (XHTML MP). This language was worked out from XML and HTML by the World Wide Web Consortium.

The XHTML MP is a markup language which is based on the SGML like HTML, WML or XML. That is the reason why learning this language is easy.

The next example is written in XHTML MP. This example shows the same page, which was showed before in WML language.

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//WAPFORUM//DTD XHTML Mobile 1.0//EN"
"http://www.wapforum.org/DTD/xhtml-mobile10.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <title>Konyvtar</title>
    </head>
    <body>
        <p align="center">
            <b><i>Isten hozta konyvtarunk WAP portaljan!</i></b>
        </p>
        <p align="center">
            Vegye igenybe mobilos szolgaltatasainkat is!
        </p>
```

```
    </body>
</html>
```

The next picture shows how it looks like on the mobile phone.

Figure 3: The visualization of the XHTML MP page

The analogy between XHTML MP, WML and HTML is seemed very well. The basis of the three languages is the same. There are some syntax rules which are much stricter than the HTML MP syntax rules. The first rule is that every tag must have an end tag. The `<br>` tag is without an end tag in HTML. This tag appeared with `</br>` end tags in XHTML MP. The next rule is that every attribute of tags must be written in lower case. An additional rule is that the values of the attributes must be written in quotation marks. These rules require more attention but have many advantages too. One of them is that WAP Cascade Style Sheet (WCSS) is useful in XHTML MP. The WCSS is a style sheet markup language, like Cascading Style Sheet in HTML. With this WCSS it is possible to simplify the source of the XHTML MP pages.

The next question is what can libraries use WAP for? Public relations (PR) is very important for libraries. The principal purpose of libraries is to "decoy into" users to libraries. For this reason the libraries must catch every possibility to popularize libraries. The WAP is one of the media with which libraries can reach this purpose.

The library can service the most important data from own institutions on the WAP. These are the names, addresses, phone and fax numbers, e-mails, URLs of home pages. Moreover, the library can display the opening hours. It is especially important when opening hours are different from the common.

Different varieties of programs are arranged in libraries. The WAP is a very good tool for the library to inform the users of these. This part of the pages of the library contains the title, scene and date of programs.

The library can display the newest books in library on the WAP. The WAP-page of the newest books contains the photo of the dust-cover and a short text of the content of the book.

The "poem of the day", an extraction of the poem or picture of the day is a very interesting attempt to make the WAP-pages remarkable and popularize

culture. The length of the text on these pages is small, so these are suitable for the demands of the WAP portal. It is important because reading longer texts is very difficult on mobile phone.

The "Reader of the month" is a similar possibility. Librarians can choose and present one reader by statistic data with a picture. It motivates the readers, and gives an impulse to be in the library.

The most important possibility is that the electronic catalogues of library are able to be reached by means of WAP. The Online Public Access Catalogues (OPAC) is really popular in the circle of users. The graphics interface on Internet appeared a little later than the OPAC, and became a very useful service. The search in the OPAC became independent from the building of the library. The users only need a computer with internet connection to reach the OPAC of the library at any time. This service is independent from the opening hours of the library, because the servers always run. For this reason the users can reach the OPAC comfortably in any time from home. But established connection is needed to reach Internet and OPAC.

This problem is smoothed away by mobile technology with WAP. The mobile networks are given, and these are reachable almost everywhere. For this reason the WAP is also reachable almost everywhere.

The WML and XHTML are able to communicate with CGI scripts and Java servlets which runs on the server. This way these are fit to handle dynamic context, therefore the access of electronic catalogues of the library is achievable on WAP. It means that OPAC is reachable by mobile phones too.

Anybody can access these dynamic WAP portals at any time from everywhere. The catalogues of libraries are reachable by mobile phones which are possessed with the WAP service. Almost every mobile phone has this basic function nowadays, so the possibilities are unlimited.

Another possibility is joining OPAC. When the users found the searched document then they are able to make a note of documents. So the librarians can get the documents ready for the readers. When the reader arrives to library the document will be ready for lending.

The system keeps in hiding other functions. When readers enroll in library then they get library card with unique identity number. These qualify the system for accessing unique data of readers. The readers can reach information personally from the OPAC with these. The reader can ask which books are borrowed, and what the expiration date is. If necessary, these expiration dates are extendable by the system.

Another application of mobile technologies is useful to the library like SMS or MMS. These are used like an e-mail. If the readers give the mobile phone number to the library, the librarians can inform the readers by SMS or MMS. The main question is financing. If the library wants to use SMS or MMS it has to find a financial source to do so. The SMS and MMS service are expensive, and the library does not have enough functional aid to finance these at the moment. For this reason the WAP is the best way for library.

Why should libraries be equipped with new ways of mobile technologies? Library is a service provider institute. The main destination of library is to serve the reader as much as possible. This service must be quick, high level and user-friendly. These features are very important to keep the readers. For the library to reach this aim the library must be reachable every day by readers. The library can reach this aim, if the library uses the new technologies of mobile telecommunications and builds up high level services. The libraries need such services, which are reachable by every person. The WAP is a very good possibility to realize this intention.

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