

NAPIER UNIVERSITY
SCHOOL OF COMPUTING
UNDERGRADUATE PROJECT REVIEW REPORT

1. Student details

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2. Project details

Title: WAP Based Voting System

Scope and aims of the study (Max. 150 words)

The main aim of this project is to produce a WAP-based voting system which will allow attendees at an activity such as a conference, sports match or even at a lecture, to vote on certain options from their hand-held PC, or mobile phone.

The aims are large and cover several aspects of networking and distributed systems. The first aspect is the client/server architecture used by a server side processing of page generation. In fact, it involves the framework of networking through HTTP communications. That is why my first task would be to study the different technologies involved by a WAP service. The phone requires a GSM connection request, which is converted into a regular HTTP request to the content server by an adaptive gateway. My second part would be to build a relevant and versatile database with all information. This source of information will be very important, as it would establish the core or the foundation of the whole system. At this stage, it is important that distributing, adaptation and interpretation of the information have to be taken into account. Thus, I will create the database with the maximum of consideration according to the front-end delivery. The role of interpretation and delivery of pages would be taken by a Server Side technology such as Active Server Pages (Microsoft). Thus the database would be in direct relation with pages through ODBC connection. Another part of my project would be to develop both versions of the interface of the system. As the devices have their own specifications (HTML or WML) and the possibilities of content presentation are quite different, I will have to keep in mind the condition of the final users of the system. Depending to bandwidth, weight, technologies involved, a choice will be made for each interface. The key is to deliver information and slightly integrate some graphics for the navigation.

3. Progress to date (Max. 5 sides of A4)

a) Research undertaken

According to the specifications of the project, the research undertaken was based on three major subjects. In order to develop the voting system, I had to discover step by step ASP Technology (Active Server Pages from Microsoft) for server side content generation, Access Database Design for content storage and retrieval, WAP Protocol and a solution for providing data driven graphs as results interface. Finally, I needed to find a simulator for WAP functionalities.

- Content Storage and Retrieval: Access Database.
- Content Generation and System Management: Active Server Pages.
- Content Structure requirements: WAP Protocol.
- Web Results Interface and Display: Flash and Generator Components.
- WAP Simulator.

Content Storage and Retrieval: Access Database.

Through a first book, called “*ASP3 Sites Web Dynamiques*”, I learned to plan an entire project using ASP and a relational database. An important point at that stage was to design the database and the corresponding tables. As the database is in fact the core of the system, I had to be careful to efficiency and also scalability. I mean by the term scalability that the database could be adapted to several kind of voting application and not only a specific man of the match. The design of the database involved taking into account its complexity. That is why I used relations between tables so I could easily notice any error during the implementation process. The database communicates with ASP pages through ODBC connections. SQL queries and Recordsets achieve the retrieval, manipulation of the data.

Content Generation and System Management: Active Server Pages.

As I already knew a bit of ASP and the different requirements for implementation (Software and Hardware), my task was mainly focused on adaptation of content and especially delivery of WML structured files. The ASP pages and in particular the VBScript codes are responsible for the generation of files.

The dynamic purpose of this technology provides the possibility to create any kind a content format, which is based on a mark-up language as HTML or WML. The second interest to use ASP is the management of the system. As ASP technology is based on communications between client and server, it is easy to send data, hide scripts parts, store temporary data using session variables or interact with databases. In my particular case, I will use ASP for the following functionalities:

- Interface to Database.
- Content Generation.
- Dedicated Scripts (authenticate users, add user, email check process....)

A good book that I read during my research was an ASP book called “*E-commerce with ASP3*”. Even if the book is much more based on e-commerce applications, I found some interesting parts, which could help me such as logs files or users profiles.

Content Structure requirements: WAP Protocol.

The WAP world was something absolutely new for me, that is why I first looked at the WAP forum web site (<http://www.wapforum.org>). Thanks to this web site, I discovered the framework of the Wireless Application Protocol and the technologies involved by mobile requests of content. I looked at different web sites but except general information on the protocol or WML language, I didn't really find examples of applications development. Finally I bought a very good book called "*Construire une application WAP*" where professional examples of projects were presented. The good thing is that it enclosed an example using ASP.

The book gave me an exact view of the different devices that could access to WAP applications and the structure of the WML pages. WML being the language used in the WAP protocol to define the structure and the way those pages are displayed. The structure of WML files is based on decks containing cards.

After the previous steps of my research, I started to get an idea of how my system would be built. As communications by WAP require requests from mobile devices, the system use a gateway to interpret the GSM request into a normal HTTP request to a content server. The advantage of using ASP is that I will be able to use the same server of content and gateway for the interpretation.

Another aspect important in WAP is the user interface limits and requirements of formats. The format used for pictures on WAP devices is WBMP, thus a conversion processing will be necessary in order to be able to use original pictures. The size of the screen for majority of mobiles does not let us the possibility to create very impressive interface. The key is to build a navigation interface very simple using normal links between pages.

Web Results Interface and Display: Flash and Generator Components.

Part of my project is to display results of votes on a regular web page. So in order to deliver attractive graphs, I found two main solutions. Looking at ASP programmers web sites, I noticed that the first solution is to use a component like Inteligraph (<http://www.asp-help.com/articles/inteligraph.asp>). If I choose this kind of component, I could easily generate bar charts with data from the database. The component is represented by an ASP page acting like a class file. I would only need to include that ASP component file with the page responsible for the display of the statistics and call the methods for the component.

The other solution I found is the use Generator components available from Macromedia. This solution offers the advantage to create attractive presentations using Flash template. The content of the Flash animation would be dynamically generated with data taken from the database. The Generator components include some graphs objects such as Pie charts or Bar charts. This solution is based on a book I bought called "*Flash Dynamique avec ASP, PHP, XML et Generator*". This choice would be a very good improvement of the quality of the system but as it requires some knowledge with Flash (I already used flash for animations in the past),

the implementation of that kind of template would depend on the progress of the project.

WAP Simulator.

One of the main tools required by the project is a WAP simulator. After several tries of different software, I finally chosen the simulator provided for free by the company "YourWAp.com". In fact the simulator is called Wireless Companion and offers a particular advantage compared to the others: the possibility to see at the same time WAP and WWW version of a site. In addition to that, different devices can be chosen during the simulation, so I could check the efficiency of the interface for a wide set of mobiles devices.

b) Practical work undertaken (e.g., requirements capture, design, implementation)

At this stage of the project, I carried out the design step of the system. I mean that both database and functional design have been achieved on paper. The physical database is already in place according to the design. I have implemented about 70 % of the overall WAP functionalities such as register, vote, contact and administration scripts.

Any user, has already the possibility to register to the service and vote for subjects available. The vote subjects are organised by categories which can be browsed by simple click on links.

As stated in the project specification, the initial prototype is based on a man of the match award. That is why I created sports category and subcategories which lead to a vote for the American All Star Game of NBA basketball.

Two different sources contain the list of possible choices, and in particular the different players to vote for.

The administration part provide at the moment a few functionalities like create a new category, create a new vote subject, create sources of choices and see results.

The remaining functionalities are deleting, and clearing votes.

To develop the system, I use IIS (Internet Information Server) from Microsoft on my local machine at home.

The prototype implemented would be shown during the project presentation using the simulator. The system at this time will be transferred on the net and hosted on my personal provider.

4. References (Must be cited in 3a)

Books

Reseaux et Internet, CampusPress 2001

ASP3 Sites Web Dynamiques, Micro Application, Le Grand Livre

Construire une application WAP, Eyrolles

Flash dynamique, ASP, PHP, XML et Generator, Dunod

E-commerce avec ASP3, CampusPress

Pages Web dynamiques (ASP et PHP), CampusPress

Web Sites

<http://www.wapforum.org/>

<http://www.asp-help.com/articles/inteligraph.asp>

<http://www.4guysfromrolla.com/webtech/LearnMore/WAP.asp>

http://www.anywhereyougo.com/wap/Article.po?type=WAP_Tutorial

<http://www.perfectxml.com/articles/wap/wap.asp>

<http://www.asppipeline.com/codesamples/k13/bargraph.htm>

http://www.vbxml.com/wap/articles/dynamic_wap_asp/default.asp

<http://www.christeresson.org/www/wap.asp>

<http://francewml.ovh.org/>

<http://www.hanengcharts.com/>

http://haneng.com/lessons_18.asp

<http://www.macromedia.com/support/generator/programs/genasp/>

http://www.macromedia.com/support/generator/templates/pie_chart/

<http://www.nokiko.com/wap/links.asp?ID=6>

http://www.vbxml.com/conference/wrox/2000_vegas/html/content/karli_wap.asp

5. Self-assessment of progress (Max 150 words)

According to the Gantt chart below, I am glad to be almost on time with the initial plan. As far as I have been working on the project, I did not meet particular major problem. The only problem could have been the hosting of the system but I did register since a few time to a professional hosting provider in France with all the technologies required (ASP and Access Database enabled). I am really enjoying the implementation of the WAP part of the system, because I was at first a bit scared to this new world but at the end of the day, it appears quite similar to HTTP connections.

During the design process, I met different problems with the database design as I wanted to build a system as adaptative as possible. So I lost some time because my initial design did not take into account those parameters and I only focused on a man of the game Award voting system. But I realised that it was not the best point of view or way to design the system. Some of the ASP pages needed to be modified.

Another problem was the question: do I let users create their own vote subject too and then the system would be presents a lack of privacy. My first idea was to create like a web service rather than a software system. Once again, I had to modify the database in order to be sure that I would keep the system on the specifications.

At the moment, I only regret to not be a bit farther as I really wish to integrate the Flash template and dynamic graphs on the Web interface.

The good thing about the progress is that everything implemented is actually working and is continuously tested with new functionalities.

6. Gantt chart

Please attach a Gantt chart showing actual against estimated progress to date, and planned activities to hand in.