

msg2web Middleware: Connecting the Mobile World to the Online World

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29 June 2007

Abstract

The mobile phone has become an integral part of our lives, and improving technology means the options on a phone are increasingly advanced. Internet has also gained an important position in our lives; the youngest generation does not even know of a time where internet was not available. The focus in this paper is on the social aspect of these developments, like the rise of social websites.

The general aim of this project is to connect the mobile world to the internet world, to see if the social aspect of social software can be moved more towards the mobile side. To do this, a piece of middleware is created which allows for communication between a mobile phone and the internet, via MMS and SMS. A website has been put up to display the functionality of the software.

The software, named msg2web, is fully functional, and is available in a package that should allow for easy install on any system. It is an open source program, consisting of Apache, PHP and MySQL. It works in conjunction with the commercial SMS/MMS Gateway NowSMS. The website aspires to be a social network, but has not yet the functionality to be allowed to be called a social website.

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1 Introduction

The mobile phone has become an integral piece of many western people's lives. People carry the telephone around all day, even when they don't really want to be available, because it gives them the opportunity to still be available when their boss calls for an important message, or whatever reason. Even when someone is not in a position to speak out loud, they switch to sending text messages to each other. Or when passing on a small message, but they would rather not actually speak to those people. As such the telephone has already become, as stated earlier, an integral part of people's social lives. Approximately 50% of the network (usage of multimedia and text messaging) arises from purely interactional and social needs rather than the need to pass on information [1].

A key aspect in this development, is the ever improving technology of mobile phones. Almost everyone has a camera on their phone nowadays, especially the younger generation, which has an interesting influence on the amount and type of imagery available about a person's life. Whereas someone used to specifically bring a camera say, to the zoo, or on holiday, now that person will have a camera on them all day. It changes the type of pictures taken from a more noteworthy, to a less obvious character. As such the pictures reveal more about people's real lives due to the day to day character of the images [2]. Moreover, it appears that 51% of all pictures taken with a camera phone in a social setting, are of an affective nature; people take the picture to show appreciation of friends or family, or joke around with them etc. Furthermore, 41% of pictures taken in an individual setting, are intended for personal reflection or reminiscing, thus revealing much of a person's private emotions [3].

Another technological aspect, which is becoming more and more important in the coming generation's social life, is the internet. Most people have internet these days, some have become utterly dependent upon it, and the youngest generation has not even known a time without it. As such, people's social lives have attained a place on this net as well, as becomes visible in the uprising of the social websites. Sites like facebook [4], or myspace [5], already have millions of users and still facebook's growth rate is increasing. According to [6], facebook already had spread to 573 campuses and 2.4 million users in April of 2005; considering a group of Harvard students had only started facebook in February 2004, this is a remarkable achievement to say the least.

The size of the mentioned phenomena are such that, where someone once would have judged these websites and projects ridiculous, the sheer magnitude and position they claim in people's lives, make it impossible for that person to not at least investigate and see what all the fuss is about. Other questions that arise are of a more sociological nature; are these social, digital phenomena, a reflection of how the social nature of people growing up in an ever modernising western society? Or is in fact, the invention of such concepts, the main influence into this new, or so it seems, social behaviour of people. This behaviour being the short messages left on a website rather than a phonecall, or a comment on a picture, or fivehundred so-called friends in one long list, of whom maybe ten are actual acquaintances.

To bring the focus back to this particular paper, the general aim of this project is to combine the mobile and online world. The intent is to create a proof of concept; a small piece of (social) software that enables this connection and shows the feasibility of the idea to connect the mobile environment with the online environment. After this piece of software is created, it will be possible to think of new ways for people to interact or use new functions and implement these into the system. Somewhere in the future it might then be investigated how people make use of this system and what, if any, would be the changes in their social lives. This last question however is beyond the scope of this project.

2 Key Areas and Terms

The immediate aim in this project then, is to create the pathways needed to combine the mobile world with the internet world and create a piece of "Middleware" to enable this. The ideal outcome would be a software framework for a system that is able to send and receive SMS and MMS, which are stored in a database such that people can view their messages online. Once the framework is built, the focus is on the creation of a social network which is based on both the internet and the mobile world.

A piece of software that enables this, is called "Middleware" because it serves as an intermediary between two different environments. It receives data and information from the one medium, being the mobile world, and translates this into information useable in the online world. This particular piece of middleware will have to be able to understand "MMS", in order to be further used by "social software" such that it can be viewed on a social website containing "User-Generated Content".

2.1 MMS

The Multimedia Messaging Service (MMS), first initialized around 2002, [7], is a system focussed on delivering multimedia context as a sort of richer SMS message (Short Messaging Service) as it were. With SMS being extremely popular, it seems logical to advance to the next level by adding photo's, audio or even video to the message.

The Open Mobile Alliance, and the 3GPP are the two important standards that define MMS technology [8]. A multitude of protocols are used in the sending and receiving of MMS. The most important in this project, i.e. the ones that are in use during the communication from the user to the software and back, are MM1, MM4, and MM7 [9].

2.2 Social Website

A social website is essentially a social network of people, enabled online. This means people have basic means of communicating with eachother through this online network. What it means today to be a social website, is to be able to

link "friends". This simply means being able to maintain a list, in which you select other users of the same social website to be listed as your friends. Basic functionality in these sites is being able to create a profile for yourself, i.e. state your interests, your hobbies or whatever other information you would like to share. Another essential function is to be able to leave messages. Most often these messages will be posted up for everyone to see, and are of a short nature (at most five sentences), though the ability to send longer, private messages is often included. Relevant examples of such websites are the popular myspace.com [5] or facebook.com [4] (though there are a dozen more, all of whose popularity swings up and down). Another very interesting example which has been founded in 2000 and acquired by Google in 2005, is the New York based Dodgeball. Dodgeball is a mobile-based social network (whereas the others mentioned were web-based), in which people can be updated and informed on their friends' status and whereabouts via text-messaging [10].

2.3 Social Software and UGC

User-Generated Content (UGC) refers to media generated by the end-users themselves. As an example relating to this project, the users would send an image to the website, and then view that image online. What they view online then, has been created by themselves and merely mediated by the website. From studies involving the use of mobile multimedia it seems that user-generated content is a key element in the success of mobile multimedia [1].

"Social Software" is a piece of software that enables the creation of a social website, which, inherently contains, user-generated content. In fact a social website is a quintessential example of a giant online structure which is provided as an empty framework, only to be filled up by the millions of user profiles, messages, articles, pictures etc.

3 The Task at Hand

In this chapter the specifics of the requirements of the software product are laid out. First are the basic requirements as to what sort of functionality should be supported. Secondly the communication pathways that are needed for this project are laid out, and thirdly the task of creating a social website is explained.

3.1 Functionality

By functionality is meant the basic functions that the program needs to have incorporated. This consists of demands for this project, or short term demands, and demands for the long term. The aim is that the endresult of this project can be expanded upon.

3.1.1 Now

The program should be able to send and receive SMS messages. Furthermore it should be able to receive MMS messages:

- User can send SMS or MMS to the program and will receive a notification reply SMS that the message is received by the server
- The server stores these messages and defines a username and password for the sender of the message
- the user can use the username and password to go to a website, then log in and view their sent messages
- If the user sent a photograph via MMS, this image should be displayed on the webpage containing her messages

To be able to do this, first of all a communication pathway has to exist from the user, to the software program. Secondly, a software program then has to be made to interpret the messages and upload the messages to a database. Thirdly, the program should generate a website containing the user-specific content, which means users need to be registered in the database, and a website needs to be hosted by the server.

3.1.2 Future

Supposing the software program is in this place, it is important that this can be expanded upon. The aim for future research is finding out how people intend to use such a service and what will be popular and what not. Added functionality as such would be to process the incoming MMS images and, for instance give the images a happiness rating using an algorithm based on brightness of the image (this is an arbitrary example). To be able to do such a thing, the program should leave room for easy implementation of such functions. To be able to expand upon a software program also means that it has to be well and logically structured. The better the structure of the software the easier it is to alter, change, or expand certain aspects of the program.

3.2 Laying Communication Pathway

A communication pathway has to be established between the user and the server. This is a combination of mobile technology, server-side scripting, and an HTTP connection.

As can be seen from 1, everything from user up to the server-side is handled by services different from the program. Everything on the serverside should be handled by the program. This can be done via a gps/gprs modem that talks to a gateway on a computer. This gateway is a software program that can interpret MMS and SMS from the modem and pass these on to the program that is designed in this project.

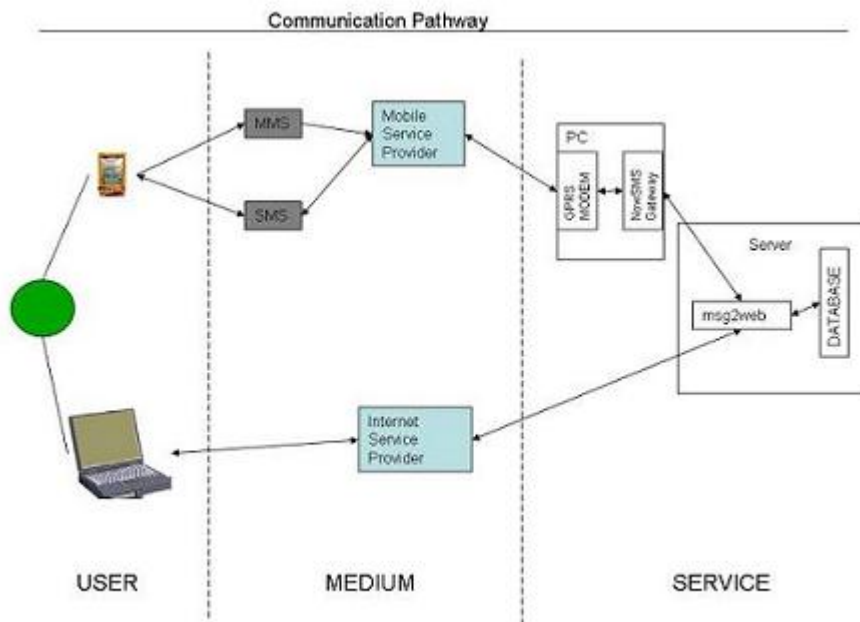


Figure 1: Communication Pathways

This program talks to a server that hosts a database and a website, such that the messages can be stored in the database. This server also acts as the home where users can go to via HTTP to view their content.

3.3 Creating the Website

The website is where the user that sends the message, can view what they have sent. This means the website cannot just display everything it has in its reach, but has to generate this content as specified by the user. To enable this UGC then, every user should be registered such that, upon identification, the website displays the appropriate content.

As the whole system is supposed to work as a social network in the near future, this brings in a list of other issues into the situation. One very important factor is design [11]. What seems to be very crucial in successful social websites is how the site is designed; how are users defined, what makes up a profile, how can people send messages to each other, how can people link to each other, and the list goes on. As is apparent at this time of writing, a website such as myspace.com can be very popular at a certain time, but for no very obvious reasons, a new site such as facebook.com can pull away many of their users and overshadow another, what once was, giant in the social networking world. Hopefully the resulting system will provide the opportunity to do research into what makes a social network popular and what has the opposite reaction?

4 Approach Method

The problem underlying this project is how to, in a fixed amount of time, develop a program that both shows the potential and functionality of the project, and has reasonable structure and integrity. The intent of the program is a proof of concept,

More specifically, the technical problems to be solved are the following:

- Choosing the proper programming language enabling the right functionality and the least developing time
- Creating an environment in which the database, website and all other components can run smoothly
- Configuring a gateway that can deliver the received messages to the program
- Developing a program that can interpret and pass on the messages, and has a structure that makes room for expansion
- Designing a dynamic website that is both attractive and functional

4.1 Environment and Programming Language

The environment of choice is the AMP Module [12]. The AMP Module is a combination of Apache, MySQL, and PHP. It has the advantage of being open source, which has a lot of advantages. First of all, all of it is free, which is good for developing costs and help is readily available at all sorts of online forums. Secondly, it's required to be non-platform specific, which enhances the portability of the software. Another point is that an open source program does not restrict other programs to be incorporated in it, or adapted to. There are more advantages to open source, but these are the main ones.

Apache acts as the Web server and is very common in usage, both professionally and non-professionally. Very often it is used when the software program it is serving, is of considerable size.

PHP is a server-side scripting language enabling dynamic websites. Choosing for this language is because it is very flexible and with a programming background the learning curve is relatively small, making it very useful for development. Also, even though it is primarily a scripting language, it can in fact be used purely object-orientated, which is the intent of this project. Making it object-orientated increases portability also to other languages, as well as making the program more structured, more stable and powerful, and easier to comprehend and thus expand.

MySQL is the database construct with which PHP and Apache work together to produce the dynamic website. It is a very popular version of a Structured Query Language server also used professionally.

4.2 Gateway

A gateway has to be configured to speak to the program. This gateway is a piece of software that can speak to a GPS/GPRS modem. This modem receives the messages and passes the data on to the gateway, this gateway then has to interpret the messages and pass these on to the software in a comprehensible way. To ensure succesful communication the links have to be made to the different hardware and comports, which, in short means a lof of work configuring the gateway properly.

The specific gateway used in this project is the NowSMS gateway, a commercial software program that can act as a gateway for SMS and MMS, and it works on Windows. There are open source alternatives; the main reason NowSMS is chosen, is because they have a very well documented piece of software which considerably speed up the development process. Furthermore, NowSMS translates the messages and passes these on as HTTP POST operations, which are perfect for interpration using PHP.

4.3 Structured Program

For the program, a design will have to be made as to create a sensible architecture. The program essentially has four main tasks:

- Interpreting the HTTP posts coming from the gateway, and redirecting all the incoming data
- Registering all events and information in a database
- Outputting proper (for a browser) understandable HTML containing UGC
- Executing additional processing algorithms on the incoming messages to gain information about the data

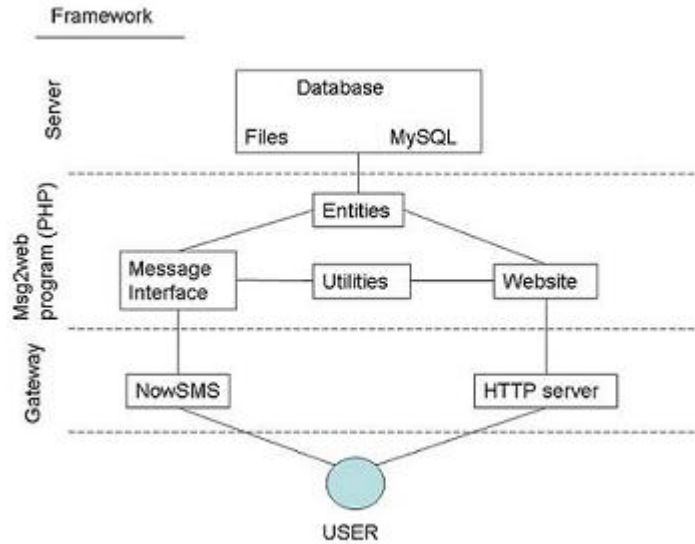
4.4 Dynamic Website

The final part will be the creation and design of the website where an aesthetic component comes into play. Creating an appealing site is key for the users. A full investigation into what would make a creative site and how this would look is beyond this project.

However what is important is that there is room within the software to create a nice design and basically making it look like however the website designer wants it to look. To make this possible, the structure has to be such that it is possible to incorporate things like CSS (Cascading Style Sheets, very popular nowadays for a website design) or JS (JavaScript, used for flashy functions and applications on the website).

5 Framework msg2web

In this chapter the framework of the program, given the developmental name 'msg2web' in this project, will be fully explained. The environment in which it is run, and its components will be explained, as will the structure of the code with its separate modules and packages. The diagram of the framework can be seen in figure 2, and this diagram will be referenced to throughout this chapter.



Figure

2: Framework msg2web

5.1 Environment

Msg2web is written on a Windows XP machine hosting an apache webserver which runs PHP and phpmyadmin with a MySQL server. An easy Furthermore the gateway software NowSMS/MMS Gateway is used, in combination with a Samba GSM/GPRS modem. See appendix A for the technical specifications of every part.

For the setting up of this apache server, combined with PHP, mysql and PHPmyadmin, a simple install program was used called EasyPHP [13] which sets up the entire server ready to be used.

The Gateway that is used, NowSMS, is not open source and is specifically designed for windows. This gateway talks to the modem directly via a com-port. In this setup, the modem is a usb-modem, containing an activated sim-card. It will have to be configured such that it is talking to the modemdriver via a comport, and it talks to the server via the correct port on which the server is running.

The whole setup has not been run on a remote server yet, but only locally. This means the server and website as well as the PHP scripts that NowSMS talks to are all accessed via localhost. Since NowSMS, upon receiving a message, does http-posts containing the messages, it is not difficult to place the software at a remote host. However, if you want to use NowSMS to send a message, the computer NowSMS is running on, will have to be accessible to remote http posts as well.

5.2 Code structure

The middle section of figure 2, comprises the part that is handled by the code (see also figure 3 for the folder structure of the program, as it reveals how the program is built up internally). The language chosen for this project is PHP, because it is relatively easy to use, it can be used object-orientated, and it is very easy to use in combination with mysql, which speeds up the developmental process. All the functionality that is necessary for this program could be written in one or two long scripts that would simply fully execute upon receiving a message or an http request. However, in light of the possibility for expansion and reusability of this code, much thought has been put into the structure. The aim has been to keep everything as object-orientated as possible. It consists of three main components; entities, interface, and website.

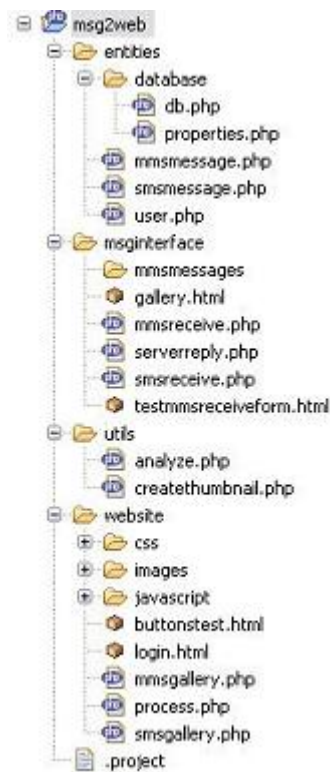


Figure 3: Folder structure msg2web

5.2.1 Entities

This is the part that makes it possible to register all events and information in the database. It contains all necessary objects that talk to the database, and are necessary throughout the whole program. These are the database, which contains all information to connect to and upload to the actual MySQL database. Other objects are an SMS object, MMS object, and a User object.

All the objects themselves contain an upload function that directly uploads all of the object's information into the database.

The database object also includes a special file ("properties.php") of which the purpose is to contain all specific values for names given to the database, or a username and password for access to the database. If all these values and names are kept in one file, it is easy to change for instance the file storage server without having to look through lines and lines of code to see if every path is reset.

5.2.2 Message Interface

This is the component responsible for redirecting all the incoming data. The message interface contains all scripts necessary for the sending and receiving of the messages. The NowSMS gateway posts to these scripts and these scripts create the messages virtually and create a user object, and send the message to wherever it has to go in the program.

Then it creates a smsreply object, based on the current user: if it's a new user, a password will be generated, and the user will be registered. The new user then receives an sms that contains his/her username and password. If the user is already registered, the reply SMS will simply contain a message saying that the server has received their message.

5.2.3 Utilities

The fourth part then, "Utilities", is the space created for all sorts of algorithms that could be used in order to analyze for instance the image sent by MMS. It will not contain much at this stage, as this is meant for future work, but it has been incorporated into the program. The message interface can easily implement functions from utilities, and so can the website component. These functions are intended to simply take some input and create some output, which then can be further handled in either the message interface, or the website component.

5.2.4 Website

As might be obvious from the name, this part is concerned with outputting proper HTML. The website is a combination of HTML pages combined with javascript, CSS and PHP. The CSS and javascript are mostly used for aesthetic purposes, whereas the php generates the actual important content. The website itself is kept very simple with the main purpose of showing the functionality of msg2web. The particular website made for this project, has gotten the developmental name "Mosi" (a combination of the words mobile, social and internet).

The website begins with a login page; the username and password is posted to a following script, which instantiates a user-object. On the basis of this user-object, an image gallery is created. This gallery exists as special object within the website component, because it is only used here and it's main function is to output html. This object, mmsGallery, creates an html div element for every mms that this user has in the database (see the screenshot, figure 4).

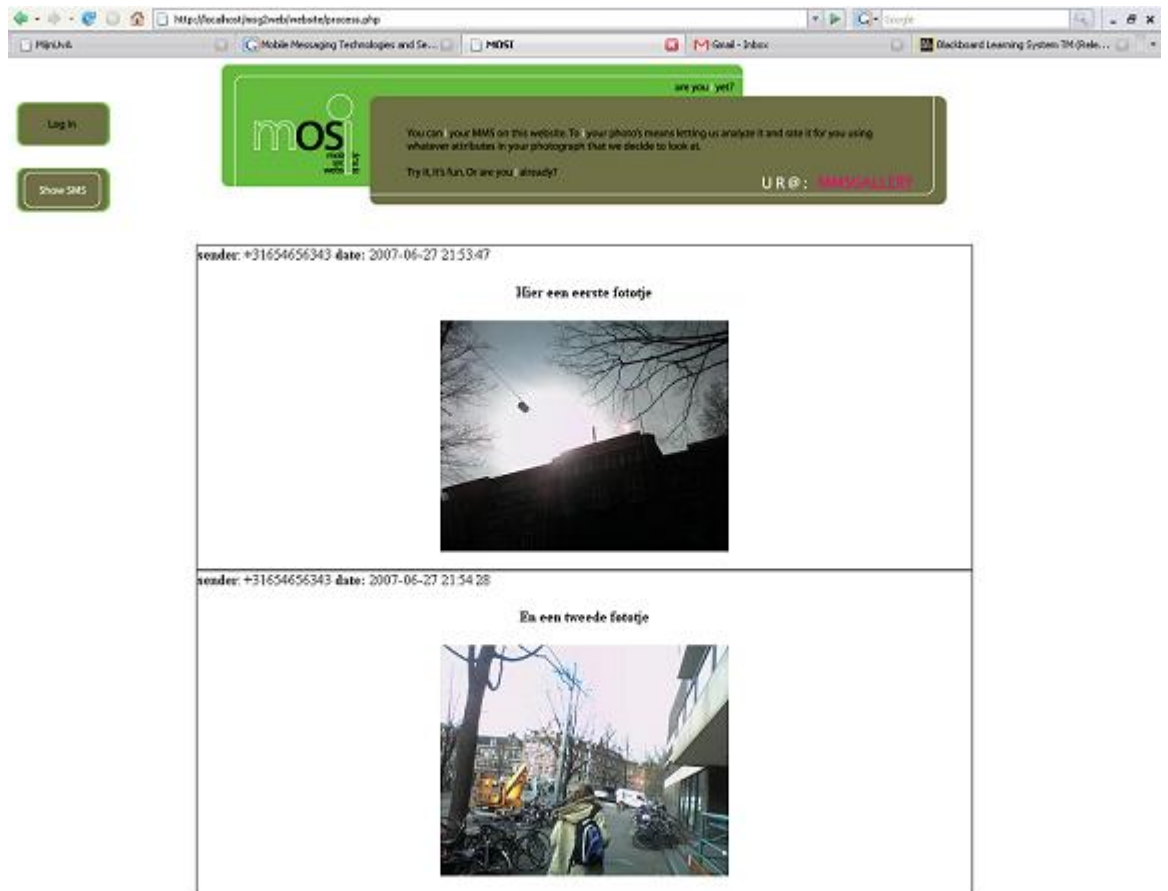


Figure 4: Screenshot of MMSGallery

5.3 Database

The database consists of a file server and a MySQL server. The MySQL server stores information about the user, the SMS's and MMS's the user has sent to the server, and the SMS's the user has received from the server. As such the database consists of four tables, and the user information combined with the desired messages can thus be queried by combining the user table with the message table of preference.

Initially the idea was to store the files sent by MMS as binary objects in the MySQL database, as this would greatly increase portability of the program. However this also greatly increased the complexity of retrieving and showing an image gallery, and it slows down the PHP program tremendously program. As a result, it is decided to store the absolute image location in the MMS table, and simply write the file to a location on the fileserver specified for it. For a

complete specification of the database used, see the file `properties.php`, in the folder `Database` underneath `Entities`. This file contains the SQL query that creates the database.

6 Achievements and Results

As this project was not so much about experimenting but about the development of a framework and product, the following paragraphs will contain an overview of what the system is capable of so far, what aspects of it worked out well, and which aspects did not work out well.

6.1 Current Functionality

6.1.1 Mobile side

Currently, if an SMS message is sent to the modem, `NowSMS` receives it and does an HTTP post operation to a php script. This script makes sure that the SMS is uploaded.

The program then goes on to create a new user and a standard password if the user was not registered yet. This new user is uploaded into the database, and the `replysms` is also uploaded into the database and sent to the user. If the user was already registered, the new message is uploaded, the user's message count in the database is increased, and the reply sms is sent and logged in the database. This has been fully tested and works properly.

Receiving MMS has not been fully tested from the point of a user to the gateway; however the code has extensively been tested using a html post not generated by `NowSMS`, but with the same structure as the `NowSMS` one would have. This works perfectly, the image in the MMS is uploaded to the fileserver and the path to it is stored in the database, along with the rest of the message information. There were some difficulties testing the sending of an actual MMS, either phonerelated or networkrelated. However, any issues with this are in the configuration of `NowSMS`, not in the scripting, as that has been fully tested.

6.1.2 Website

The website is up, albeit locally. The user can go to a login page, where they fill in their username and password. If it validates, they can go on to the gallery page, where they can either see all their SMS messages ordered by date, or all their MMS messages containing the picture they sent.

Other than that, the website is still very limited. An attempt has been made to create a proper design, but is nowhere near what it should be. The CSS (Cascading Style Sheet) used in the website is of minimal complexity and merely serves the purpose of showing that the website is functional.

6.2 Expandability

The code is all object orientated which should mean that it is easy to expand on the program. Nevertheless this is no guarantee and the answer as to whether the program has been written well, can only truly be answered once someone is trying to expand on it, and runs into problems.

Having said that, one could easily implement new functions such as image analysing algorithms which have been suggested earlier (when stating the aim of the project). Simply by placing the algorithm in the specified "Utils" folder, calling the algorithm from the receive script, and inputting the image into the function, the algorithm would be implemented. Or if someone wants to include more information in the SMS object or MMS object, this can easily be done by finding the correct class for the object, and adding whatever functionality one would want.

As far as robustness of the code goes, many criteria could be mentioned but a few important ones are readability, reusability, and efficiency. The written code is well commented in that every function contains comments as to what it does, every class contains information as to what its purpose is, etc. Having it all be object orientated should make it reusable and changeable. Whether it is efficient has not been properly tested; to get a good answer to this question the system would have to be tested with a multitude of users at the same time, both sending messages and viewing the site on the internet.

Website wise, the next step then is to create a page where a user can add all sorts of information about themselves, and can be linked to other users that they know. Once this is in place, the website can be officially called a social network. This could easily enough be incorporated in the user object and the MySQL database; the website however would need to be properly structured both internally and externally and it does not possess such a structure at this time.

6.3 Product

A zip file containing the full setup of EasyPHP already containing the website, is made. This should be functional on virtually any platform and computer. All settings are already specified within the files in this ZIP so it should be ready upon extraction by running the appropriate files (see Appendix B for a quick installation and startup guide).

All that then is left to do is to install NowSMS (which is proprietary so cannot be included in the zip file) and be properly configured. Since the configuration of NowSMS is very much computerspecific, a general guide cannot be given but there is a lot of support on NowSMS.com [14].

6.4 Problems Experienced

One very timeconsuming and underestimated task was the configuring of NowSMS. This seemed a trivial task, but this is not the case. It requires a lot of debug-

ging, a lot of technical knowledge about the modem and the software itself, once something does not work. Issues with setting up hardware should be a real concern in any project, and should not be considered trivial.

Working with a new programming language requires looking up a lot of functions and methods and general information about how the language works. What this also means is that very often upon knowing a way to do something, a week later you might find that there is a much more efficient or cleaner way to code something, and find yourself coding the same piece over and over again. Deciding when something is efficient enough or clean enough, or when it is appropriate and important enough to recode, are issues that require a lot of on the go decisionmaking which is not always so straightforward. Even when already knowing exactly what you want; coding something new, how trivial a function, might end up consuming twice or three times as much time as initially thought. This is one of the reasons why developing software is an expensive and lengthy process.

For an inexperienced web designer, designing a website is daunting. A good start is considering the standards set by W3C[15]; however, this is merely to get started and there are a thousand and one ways to create a table in HTML, or to create the layout of the webpage. Deciding when to use CSS, JS, Flash, pure HTML, XHTML, or what not in what context, seems to be more of an instinctual choice rather than anything else. Opting for the most popular choice is a way, but by no means the best way for designing a website.

6.5 Remaining Issues

One issue that still remains is the issue of security. Because of the developmental nature, no time is spent on securing the software. Should it, however, be used as a social website, then privacy is a very important concern. A lot of people provide very real information about themselves on such a website, and it is important that this be protected [16].

Another issue is that the social network has not yet been created. In order for it to be a social network, the possibility should be there to link different users together and to be able to send messages to eachother. This means internally creating more functionality and code, which has to be added to the user object and database, as well as the website itself. The website will have to be expanded and improved.

The website, as well as the program, will also have to be hosted online. Currently, the program runs on the same computer on which the database is located, the modem is attached, and NowSMS is running. The website is only available by connecting the browser to the localhost. The website can be made online available through a couple of different configurations. The easiest option is to have everything running on the same computer and turn that computer into the server; this might not be the best solution however. Another option is to place the package on a remote server, but NowSMS is bound by the location of the modem. Because NowSMS works via http post operations, that computer must become an accessible server as well, as the program has to be able to post

to that computer.

7 Conclusion

Overall the goal has been reached. a tangible product has been delivered in which the immediate aims have been met. The program is functional and it is capable of receiving an MMS, replying by means of SMS, and showing the user-specific content on a website.

An actual social network is not yet in place however, as the program still misses the basic functions for such a system. The website itself is also not ready for that yet, as the design and structure of the website is still very basic and unstable.

The program was designed as a basis upon which can be built. In what level the structure allows this, can unfortunately not be said right now, and will be revealed once it is used to develop further.

As to the language and setup used, it might be a good step to port the program to another language such as JAVA, as JAVA is more advanced and stable. Especially when expanding to client applications on the mobile phone, the JAVA J2ME (Java mobile environment) is the obvious choice [17].

Since this project was developmental to see if and how it could be done, NowSMS was a good choice. In the future however, it would also be a good step to change from NowSMS to an open source gateway. For one, open source has many advantages, of which one of them is that it's free. Secondly, it allows for the writing of a full package where the gateway is included in the package.

8 Future Research

For the immediate future it would be interesting to see this package be developed further into a full social network containing all the functionality such a system contains. More interestingly is to go beyond that, and add functions such as image analysis to for instance rate a user's picture to see how people will use it.

A more advanced image analysis would be to include face recognition and create links between people on pictures, on the basis of who took that picture, and who is in the picture. This can created automated links to people for an even more vibrant and dynamic social network.

Considering current technology, it would soon be appropriate to include GPS data into messages. This can be accomplished by writing a client application for their mobile phone, which, upon using the function, instantly takes a photo and takes an MMS including GPS coordinates and current date and time, all with one press of a button. This information can then be used by the program to send out invitations to friends to join their other friends, based on vicinity, both space and time wise, of the picture taken.

Once such applications are in place, it might be possible to find an answer to another question posed in this paper. How would people make use of the

available technology, and will it show more of their own social nature, or will it influence their social nature? What also becomes interesting is to see if, by moving the focus from the internet to the mobile world, people become more active moving around. Do people become more social in the real world by being able to move around and knowing when friends are in the vicinity? Would they look those people up in reality when they are not tied to the internet anymore, for such social contact? Or will the internet remain the focus of such social networks?

A Specifications

Stated below are the exact specifications of the different components used:

Operating System:

- Windows XP

EasyPHP 1.8 Containing:

- Apache 1.3.33
- PHP 4.3.10 (manually updated to this version)
- phpMyAdmin 2.6.1 running MySQL 4.1.9

Gateway:

- NowSMS/MMS Gateway v2006.10.31 (free 60-day trial version)

B Quick Installation Guide

To start using the service, a GSM/GPRS modem is required with a valid simcard (without pin protection would be easiest; pin protection of a simcard can be disabled somewhere in a mobile phone's settings menu).

B.1 Installing the full package containing EasyPHP and msg2web

The package is a .rar file named ApacheServerWithMSG2WEB.rar. Unzip this anywhere you like. This should install all necessary libraries and no other installation process is needed. A folder should now be created, called ApacheServerWithMSG2WEB.

To start running the server, look for an executable called EasyPHP.exe which should be located in the unzipped directory (default 'ApacheServerWithMSG2WEB'). Upon running this executable, a server should be started running on localhost. Make sure no other program is using port 80 (as this server uses port 80 as default). To access phpmyadmin, simply go to <http://localhost/mysql/> in your browser. This should request a username and password. A username and password combination is 'admin' with password 'henkiedoedel'. Upon login this can be changed to a preferred password and username.

The folder called 'www', is the root folder for the http server. Thus, this is the server that contains the msg2web program and all its html pages and php code. in the file `/ApacheServerWithMSG2WEB/www/msg2web/entities/database/properties.php`, all the different settings can be found.

To go to the login page of the website, point a browser to <http://localhost/msg2web/website/login.html>.

B.2 Only installing msg2web

Subsequently one can choose to only install the msg2web part of the full package. To do this, go into the zipfile and locate the folder msg2web, and unzip this entire folder into the root directory of the selfmade http server.

B.3 Configuring NowSMS

All that is left to do is point the NowSMS post operations to the php scripts in the msginterface folder of msg2web. The script for receiving MMS is called `mmsreceive.php` and the script for receiving SMS is called `smsreceive.php`.

Configuring NowSMS is more specific to the computer and what modem to use, so please read the NowSMS manual for this.

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