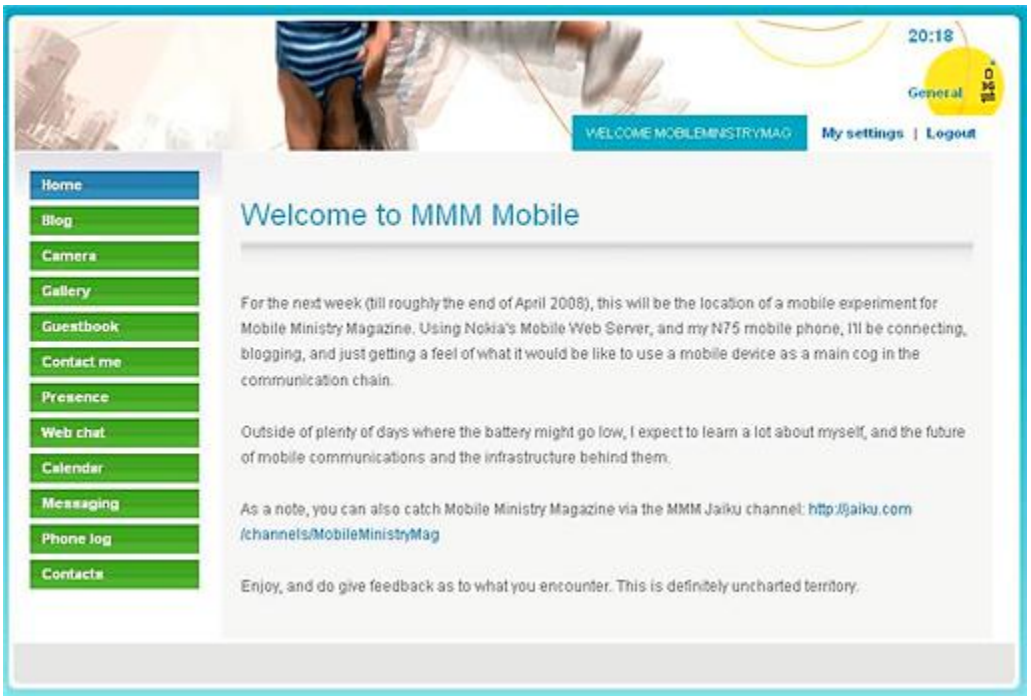
MMM Mobile Web Server Experiment Report



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Summary

It was not that long ago that the faster desktop computers were running at 400MHz, had 8GB hard drives, and could connect to a plethora of networks. It was a pioneering time for the personal computer, and forwarded the use of Internet and collaborative technologies like no other media had done before it.

But as things got faster, they also became smaller. Desktops turned into laptops; laptops turned into smartphones and tablet PCs. The ability for personal computing to take on a personal focus because easier as these devices became smaller and therefore easier to assume into our lives.

Nokia's Mobile Web Server signals the sign of yet another aspect of computing being made smaller and more accessible - the web server. The web server acts as the island by which websites are served and users congregate with one another. By taking the physical location of the web server to the mobile device, Nokia opens the door for more accessible and versatile uses of websites than has been done before. At the same time, the introduction of such software also signals that not everything is ready to be put into our hands yet.

The Mobile Ministry Magazine (MMM) Mobile Experiment is an exploration of what happens when a community and context-driven website moves to using the Mobile Web Server for 8 days. Used mainly without the assistance of developers and a manual, it is an attempt to see what is possible, and what is yet to come with websites that have a social component. The Mobile Web Server is being used on Nokia's N75 mobile handset. This model is familiar to the US audience as once being available on the Cingular/AT&T mobile carrier. This is was never a high end mobile, and therefore the experiment also shows this capabilities of such software on outdated, and mid-range hardware.

At the end of this experiment several lessons are learned about what is possible now, and what will be possible. But like with the progression from desktops to laptops to smartphones and tablet PCs, change is not just a matter of making things smaller and repeating the same actions, but developing innovative solutions that speak to the context of mobile users where they intersect with technology.

Part One:

- Reasons and Goals of the Experiment
- Explanation of Nokia's Mobile Web Server and my Device
- Social Networking Component

For eight days in April 2008, Mobile Ministry Magazine's Antoine RJ Wright conducted an experiment where the Mobile Ministry Magazine website was hosted completely on a mobile device using Nokia's Mobile Web Server. The goal of this experiment was to test the viability of such a mobile platform as a solution for running a community website, to investigate the capabilities of mid-range mobile phones and smartphones as a communications hub, and to investigate possible uses for such technology in various social and economic environments.

Backing up this software, Mobile Ministry Magazine used the Jaiku social networking service as an offline community component. The reason for this is that limitations in the phone hardware would mean that the mobile web server (MWS) would be offline; yet there needed to be some means for consistent communication with the MMM reading community. This channel of the Jaiku network contains aggregated RSS feeds from several websites that speak towards life and technology in Christian circles.

With these two aspects set, the MWS server was activated, and MMM Mobile began to live. In this section of the report, we will talk in detail about the technical and physical look of the MWS, and then take a look at some real-life applications.

Nokia's Mobile Web Server

Nokia released software based on the Python programming language called the Mobile Web Server (MWS). Expanding the methodology of their N-Series mobile devices being the "next stage of computers," the MWS is a project to demonstrate the ability of mobile phones today, and to explore the use of a server, or data and application hosting platform, on a connected and mobile device.

Setting up the MWS requires the registration of a user name at the MWS website (http://mymoobilesite.net). . This user name will become the address of the website (username.mymobilesite.net). After setting up the user name, you then set up information such as a profile, offline page, and then download the software.

The MWS software is compatible only with Symbian S60 mobile devices. While there are a few devices by Samsung and Motorola, only Nokia devices with Symbian S60 have been tested to work with MWS. Unfortunately, not all Nokia S60 devices will work, and many will have limitations based on their hardware. This limitation will show up later as a reason where a solution for its use is limited technologically and economically.

The mobile device used for this experiment is the Nokia N75. This S60 smartphone is one of three 3G devices that Nokia currently has made available in the US. This device was featured on the Cingular/ AT&T wireless carrier a little over a year ago and for most purposes is about at the end of its marketing life. This doesn't mean that it is incapable, only that better is here and coming. I purchased this device in December of 2007 in order to better learn about the S60 operating system and have something that would have ample value to my usage as a person who enjoys and lives on the web and mobile devices/ applications.

The Social Networking Component

As a nearly-30 adult, much of my online time is spent on email and within social networks. While I do not have a presence on MySpace or Facebook, I do have one with Jaiku. A recent Google acquisition, Jaiku found favor with me because of its mobile client application, the ability to consolidate RSS feeds into one singular area, and a community of people from multiple background, faiths, and locations. In terms of social network services, Jaiku belongs to a subsection called lifestreaming applications. Lifestreaming meaning one can have several streams of their life appear in this service. From microblogging to sharing photos on services such as Flickr, to community channels, Jaiku is one part a community and another part a gate where you can allow people to come in and out of your life.

For Mobile Ministry Magazine, Jaiku is used as an RSS feed aggregator and community window.

Through discussion and the RSS feeds, our community focus is seen and shared. Because of this ability to be a window made it a suitable back-chatter component for this experiment.

Part Two:

- Day to Day Use
- Immediate Challenges
- Accessibility versus Versatility

Having set up the Mobile Web Server application on my device, and creating the Mobile Web Server website, I had to set up some initial pages so that in coming to the site, Mobile Ministry Magazine readers would be greeting with more than just a blank page. There are two parts to setting things up for day to day use; one part is on the mobile device and the other is through a browser (that can be on the mobile device or not; but most might choose not to go that route and just use a separate computer).

Setup on the Mobile Device

On the mobile device, one navigates to the Web Server application and is presented with a series of screens. First, you are asked to insert your user name and password that was set up on the MWS website. There are a few easy to figure out section of the application that is always shown when it is opened from here: Users, Status Message, Statistics, Access Log, Folders, and Settings.

The Users section was probably the one that I spent the most time with initially. There is a default Guest account where one can set Guest access to the MWS; and then from contacts in one's address book, you can set specific users to have ability with a user name based on their name in your address book and a password that you have set for them. I quickly abandoned doing this for a lot of people and just settled on making sure that I had a user group for my family to special sections of the MWS site, and everyone else just got the Guest account.

Truth be told, I spent a lot of time looking at the Access Log. I wanted to see how many people were hitting the site, and it was kind of neat the first few days of the experiment. We averaged about 10 unique users per day and for the most part people did not have issues with logging in (user names are case-sensitive; found that out halfway through the project).

Setup through the Web Browser

There is a setup wizard that one has to access from a device that has a suitable web browser while the mobile web server (MWS) is running. On my end, I used my Nokia N800 Internet Tablet connected to a Wi-Fi hotspot at a local coffeehouse while the MWS was running on my N75.

Two parts of this allow you to set up things like the welcome screen, offline page and message, and get a badge that can be displayed on several websites. After this wizard, there is a control panel that keeps the latter items, and allows for presence updates on the status page. One can change the theme to several types;however they are nothing more than color and banner changes. Unless you want to dig in the mobile device and play, there is no way to create custom layouts or fiddle with the CSS for more customization.

From the web browser one is able to set all types of options and create content and points of contact.

- Home
- Blog
- Camera
- Gallery
- Guestbook

- Contact Me
- Presence
- Web Chat
- Calendar
- Messaging
- Phone Log
- Contacts

By default, guests only see the Home, Blog, Presence, and Contact Me sections. The Gallery has to be setup to either show (share) pictures that are shared from the phone's internal memory, memory card, or both. I found that the Guestbook was a bit of a redundant feature, but it could prove beneficial in some applications. The Web Chat section is interesting as when someone starts a web chat, there is notification on the mobile device of the chat and then an IM-like interface is given. From there chat happens just as it would in any other chat room.

The Calendar, Phone Log, and Contacts are pulled right from the mobile device and gives a browser-accessible means to see and edit content. I liked this feature, but wished that there was more granularities so that some users could see "Busy" instead of the specific event. Presence tells the state of the mobile phone such as how long it has been idle, battery life, and a status message. And finally Messaging allows one ot send an email or SMS message directly to you as well as see all the SMS and MMS messages that are stored on your mobile device (Inbox and those sent).

One neat feature that is present throughout is the fact that all contacts that appear in various applications such as Calendar and Messaging are linked to their contact card. This contact card shows the last call as well as links to the address book entry. Simple, but really neat.

From registration to setting up the welcome page and basic access rights it took about 30 minutes to get rolling. After that it was just a matter of running the MWS on my device and engaging with people as they visited MMM Mobile.

Day-to-Day Use

The Mobile Web Server is pretty much a set it and forget it type of application. I let it run most of the day, taking it down in the AM in order to use my mobile device as a modem for my Internet Tablet and desktop. During this time, I updated the status message to point visitors to the MMM Jaiku channel. In pointing people to the MMM Jaiku channel, it was my hope to engage the regular readers of MMM, and the new visitors of the breadth of content related to Mobile Ministry Magazine, as well as engage in some discussions across a social network in a slightly different function than what is normally done in blog-driven websites.

On the downside of the day to day use, the MWS was an inconvenience in terms of the other connectivity that I aspire to have on my mobile device. Usually, I run the Emoze email client and the Jaiku Mobile client. Because of the MWS, I was not able to run these and have a long functioning device. Either the MWS would take over the connections, or the applications would consume too much memory and cause one or all of them to shut down. During the experiment, I only suffered one total device crash, but this was an instance where the hardware specifications of my N75 (which has about 15MB of memory free for running programs at boot) was at the very bottom of what is needed to run the MWS.

Because of this limitation, I was not able to use programs such as widgets to keep me abreast of what was going on at the MWS without opening the application. That being said, it was quite nice to have the server running and not have to think about it unless I needed some kind of functionality that was a bit more than normal.

A small note: the Nokia N75 is a 3G phone, meaning that it has the ability to use a high speed data network called HSDPA. Because of the specifications of this network, the device is able to use applications that connect to the Internet at the same time as using voice functions. While running the MWS, there was no drop off in voice quality or phone functions except for occasional slowness for MMS message processing.

Immediate Challenges

While there were those hardware challenges, the large and more pertinent challenges to using the MWS was trying to keep the same kind of communicative presence that had been done at Mobile Ministry Magazine. Essentially, opportunities to post to the blog, upload pictures, and engage the reading community were all things that seemed a lot easier when connectivity was spread across devices instead of being centered on one device.

For example, whenever I needed to use the web browser on the N75, I had to shut down the MWS because the two applications were too large to run at the same time. This meant that I would have to create a status message saying that the server was down and point people to the MMM Jaiku channel; then initiate a discussion at the MMM Jaiku channel; and then I would be able to continue with using the web browser. Certainly, having a device with later hardware (more memory and processor speed) would have been great here.

Another issue that I found was that in order to publish to the blog, I needed some type of dual connection. Using the MWS made situations of traveling to WI-Fi hotspots a bit of an adventure as now instead of using them just as a rest place, I wanted to be strategic in making sure that I could create a conversation piece around the use of the technology. It was not until later in the experiment that I realized that there would be times that I would be able to use the web browser on the N75 in order to populate the blog. This stretched the mobile device, but creating a blog post where I was able to live blog a sermon and have my notes created on the N75 instantly appear online was quite exciting (mental note: taking a T9 typing class before doing this should be a prerequisite).

Accessibility versus Versatility

This challenge of balancing multiple devices, multiple input methods, and then just the plan fact that a web server can really go with you anytime makes one feel more accessible than ever. The granular level of being able to assign contacts or groups of contacts to various parts of one's mobile device presents a solution that is present already in some enterprise applications such as SharePoint and even commercial ones like Movable Type. But those are PC-focused solutions. Nothing wrong with that, but as mobile devices become more versatile, one should not just assume, but see that a lot more of what we do can be driven from a mobile platform.

The Mobile Web Server is an answer to a question that is not yet asked so loudly yet though. Its not so much an issue of how does one stay accessible, as many connected devices open to you; but it allows you to determine how you want people to connect to you based on the social network that you have built - your phone book. This is more powerful and empowering when combined with a communications strategy and a personality that invites people to want to connect to you. That being said, its not accessibility that is the focus of using the MWS, its versatility. Versatility meaning that you are empowered to take your social network with you, and how they connect to you is determined by you, not by the service that you subscribe to.

This is if you where using the software and service makes a change from being just a piece of software or just another online service. It would be easy to just put the MWS into one of those categories and then judge it based on its benchmarks; but there is nothing to just it against. Nokia's Mobile Web Server is a canvas that if given the network and the hardware (and economies) becomes a canvas that enable the

kind of personal computing that was dreamed about in the 1950s when the foundations of the Internet began, and now realized with the fast and (nearly) open wireless networks that most of the world has access to.

Part Three

- Lessons Learned
- Current and Future Applications
- Why This Is A Model for the [Digital] Church

Lessons Learned

At this point, the MMM Mobile Experiment seemed to be a solid idea that is just a bit further than where people want to go with interacting with websites and at the same time, its not far enough in terms of how organizations and ministry can reach out to one another. What I saw in the first few days was that in order to get people to come to MMM Mobile, I had to be proactive about advertising and up front about limitations such as loading speed and the log-in issue. After getting used to it from a lifestyle perspective, I had to come to grips with the ability of attainable technology not being up to snuff with the demands of a web server being backed up by a social network. The frame work is there, but there is a gap before this can be applicable on a broad scale.

I did learn some things that were quite positive, and gives me hope that maybe the Body is better equipped to use near-solutions in effective ways. For example, in talking to my pastors about the MMM Mobile Experiment while it was going on, they had a genuine interest in how it would pan out and how it could be relevant to them. One of the smaller experiments was to live-blog during one of the sermons and then forward them the link to get their thoughts. Live-blogging the sermon on a mobile phone brought stares from people unaware of what I was doing, despite knowing my technical bent. Getting my pastors to be able to log in without issues became a problem because I did not noticed the case-sensitive issue for logging in under the guest account. And even during the sermon, I was not prepared for the out of memory error that running the browser and mobile web server would cause, preventing users from even accessing the site. it was advantageous to try, but in light of things, could have been better planned out.

Other parts that proved positive were in just the evangelism of mobile devices and the Internet as being tools of connectivity. I found that with the MWS active that I had more time to spend on mobile devices, thereby getting me in places where I could engage people and allow various aspects of using mobile technology open the door for conversations. In one instance, interacting with a child in a coffeeshop was made more fun when I took his picture via the Web Camera feature and then showed it to him and his parents from the screen of my N800 Internet Tablet. This showed to them that technology has a way to touching us even more than we think without having to have a Star Trek moment.

Current and Future Applications

Having done this experiment, it is easy to say that it can be used. However relevance for the mobile web server has its place in only a few areas, mainly because of the hardware and connection requirements that would necessitate more affluence than the market can share at this time.

In terms of a software platform, having a web server on a mobile phone can present the opportunity to remove a few middle layers of device management and information management software that has been slow to catch on in some areas. Normally, we think of this as syncing, backup, and personal information management (PIM) software; the structure of this mobile web server platform offers a few aspects of use that previously were harder to get newer users to adopt:

- If the the smartphone is online (cellular broadband or Wi-Fi) accessing it though an IP address or domain name assigned to the device (or SIM card) give the opportunity to do things such as add

and remove applications, connect contacts to social networks, backup contacts to an offline storage area, or even lock down the device in case of theft;
- If the device is not online, these same tasks can be done through a Bluetooth or Wi-Fi ad-hoc network where all that a person needs is a browser with a larger screen in order to extend the functionality of their device;
- Adding an email component would essentially make the MWS platform a replacement (on the consumer level) or products like MS Exchange as the device is the server and there is nothing that needs to be additionally added to the device.

This is thinking about the mobile web server as it can have present relevance in the way that people want to get the most of their devices. For this to work best however, unlimited data plans, and seamless connectivity needs to be the norm and not the exception. Also, quality of service in terms of mobile operating systems, cellular lines, and even user experience will play a larger part in letting this connectivity option be the norm rather than the exception for mobile computing.

Taking things a bit further, the mobile web server has the ability to innovate in small business and organizational communications by:

- Intranet for a low-funded ministry or non-profit organization
- Website for a traveling missionary who travels in well connected areas and has has the funds to connect frequently enough to make this viable
- *Future*: platform for sharing documents and calendars as a family point of contact system
- Multi-campus connector for small groups spread over a large area

This is not to say that there are not other applications; only that in using the Mobile Web Server, I spoke with and engaged with organizations where the relevance of a mobile device that can handle these connections made for opportunities to remove buildings, excess tools, and in some cases a learning curve, therefore making more time for the connections that a web server and interpersonal communication allows to happen.

Why This Is A Model for the [Digital] Church

I was asked very bluntly at the conclusion of my experiment why I felt that this was a model for computing that the Body should be receptive to. I was given the reasons about economics, device availability, and even preconceptions that a mobile device should only be used for talking. My reason for thinking and believing that the mobile web server in various forms is a suitable means to enable the digital church is simply that it is something that has not been done before. Its new ground, and puts the Body at the place of pioneering and setting the bar in terms of what is possible with communication technologies.

I do not say this to mean that there are not other organizations that would not benefit from what has been written here, but to say that because the church has a mission to connect and empower people, it should take what is available and not duplicate solutions, but create them.

The book of Acts is an account of a fledgling church finding its legs after Jesus left the scene. He deposited within them the Holy Spirit to empower and equip them with the innate ability to go to the ends of the earth and be a representative of Him and carry the Gospel's message of a redeeming and justified love. Since taking the plunge with Nokia's Mobile Web Server, I can see how that would not just be a radical idea, but an attainable one. The question is, are we innovative enough to capitalize on what has already been deposited in us to do since Acts.

Appendix

- Screenshots of the MMM Mobile Experiment (Share on Ovi)
- Another Use for the Mobile Web Server (Mobile Ministry Magazine)
- Live Blogging with the Mobile Web Server (Mobile Ministry Magazine)