Mobile Entertainment Download Service
www.eomobile.com

by

Mr. Arnon Homepirom

A Final Report of the Six-Credit Course
IC 6997 and IC 6999 E-Commerce Practicum

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
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Project Title	Mobile Entertainment Download Service
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The graduate School of Assumption University has approved this final report of the six credit course, IC 6997 E-Commerce Practicum, submitted in partial fulfillment of the requirements of the degree of Master of Science in Internet and E-commerce Technology.

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ABSTRACT

This project presents mobile multimedia download services web site or it can be called "non-voice service" under the name of Eomobile.com. Eomobile comes from the words "Entertainment on Mobile". Using the slogan "Move Entertainment to Your Mobile" as a keyword to create brand recognition among the target market and position itself as a web site of mobile entertainment which people can carry together with their mobile handset.

In the marketing plan, the information was gathered from several sources as referenced and analyzed to determined the appropriate marketing plan for the web site. Those references came from the Mobile User Survey of Brandage magazine, and articles about handset technology, mobile operators and non-voice from gsmarena.com. Other than that the online articles from Bangkokpost.com, nokia.com, gsmadvance.com regarding the market trend and consumer behavior were used to develop the company's marketing plan.

Analyzing the information from those sources, the report estimated the number of the users who would come and download Eomobile's products and services. The estimated the sales volume, calculates the break-even point and estimates that the financial plan can be done and shown in chapter 4 of this report.

In web site development, the web strategies from marketing mix and brings out those important factors to be the guideline for the web design procedures. The company employs new and vigorous web design concept to fits with the changing technology of today's situation together with the marketing plan, the company will be able to serve the needs of the customer as much as possible. As a result company can generate the stream of revenue from this online business.

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I. INTRODUCTION

1.1 Background of Project

The penetration rate of mobile phone in Thailand is still very low compared to other countries. Therefore, there is a lot of room to grow. The current penetration rate is about 8 per cent. It is forecast to reach 10 to 11 per cent at the end of this year (2002) and jump to between 20 and 40 per cent in 2005.

Presently, out of the almost 6 million phone users, 3.2 million belong to Advanced Info Services (AIS), the country's largest mobile-phone operator. And 2.2 million have signed up with DTAC. The rest are subscribers of Digital Phone Co.

Nowadays, two new players-CP Orange and Hutchison – CAT Multimedia – are expected to get off the ground. It is forecast that the number of subscribers will reach 12 million in 2004.

Mobile Phone has become one of the important parts of people's life. We tend to use the Mobile Phone in more and more different approach. The Mobile Phone will be not be used as a normal telephone anymore. With the new version of Phone and the increasing speed of data/voice transmission, the Mobile Phone will be the new gadget with variety of applications from simply " talk to your friends" to the fancy "access music video on demand".

Mobile Phone Industry will be one of the largest opportunities for Entertainment Online Division. With the variety and trendy demand of mobile users combine with the rich entertainment contents, the business call "Mobile Entertainment" will definitely be one of the most favorite web site in the future.

The project will demonstrate a mobile entertainment web site, which provides varieties of rich entertainment contents for mobile phone such as a multimedia message service, video on demand, polyphonic ringing tone, etc.

1.2 Objectives of the proposed project

(1) To create a Mobile Entertainment web site that has variety contents and related to new technologies.

(2) To study mobile phone technologies from each manufacturer and each mobile phone operator in Thailand.

(3) To analyze mobile entertainment demand and SWOT of the business and create a marketing mix of this business.

(4) To study web site technologies and all kinds of solutions, which will enhance a capability and opportunity of the web site to satisfy the mobile phone users.

(5) To apply concepts and knowledge learn from MS IEC.

1.3 Scope of the proposes project

This Project will concentrate on the design of the web site prototype, which is created according to marketing analysis and new mobile phone technologies. The prototype will demonstrate only some of interesting mobile contents web pages, which also includes some of programming to present its particular function and process.

To achieve in a marketing goal, this project also has a marketing analysis, which contains a customer need and want analysis, SWOT, value and cost delivered to customer and marketing mix of the web site.

1.4 Deliverables

The project deliverables will be as follows:

(1) Final Project report

(2) Prototype web site

II. LITERATURE REVIEW

2.1 Thai Mobile Market

The Thai mobile market is rather pitiful today in terms of mobile data services. Beyond basic SMS and ring tone and logo downloads, there are not many cool applications or services that are easy to use for the average consumer. And SMS is largely only used by teenagers.

While competition has become fierce _ thanks largely to the entry of TA Orange _ Thai mobile operators continue to compete mainly by undercutting each other on the price of voice calls. This strategy is unsustainable and unhealthy. Today, data revenue still contributes less than 3% of overall revenue for Thai operators versus 20% in Japan.

Is The Market Ready?

A recent survey shows that Thai teenagers are more interested in mobile devices than anything else _ more than cars, music, sports, etc. More importantly, people are willing to pay! Two independent surveys found that an average Thai mobile user (across all age groups) is willing to pay around 150 baht a month for compelling data services.

So how can Thai mobile users start to enjoy cool data services like in Japan? Undoubtedly, the biggest obstacles are the mobile operators. They must change from their traditional telecom way-of-thinking to a more innovative, co-operative way-of-thinking, and with strategies and execution that will deliver the best end-to-end user experience. They must make three key things work: the business model, the underlying technologies, and marketing.

On the business side, Thai operators must create a model that will attract good content providers. Good content and cool applications are what will attract mobile users to data services.

The operators must create an effective marketplace to enable mobile users to easily find the content, and then help facilitate transactions at a reasonable fee to both mobile users and content providers _ certainly not the current 50:50 revenue sharing model with content providers.

Moreover, operators must have a clear and disciplined understanding of their own role and business models. Mobile operators are in the business of generating the most traffic on their network, not in the content business.

Secondly, Thai operators must define the underlying technologies to ensure a consistent end-to-end user experience. KDDI, the second largest mobile operator in Japan, has already proven that WAP does work successfully on even a slow network. The key is to think end-to-end _ how consumers use handsets to find, access and buy mobile content.

In Japan, when you buy a mobile phone it comes preset and ready to use. No need for WAP profile settings, etc. With one click of the ``i" button on your new iMode phone; you go to the iMode portal. There you can find over 1,000 services from many reliable vendors, intuitively listed across many categories. Once you find a good service and want to subscribe, you simply enter your 4-digit PIN. That's it. The service subscription fees will magically show up on your phone bill.

Finally, operators and content providers must educate the masses and set the right user expectations with simple and clear marketing. No one cares about GPRS, CDMA or 3G. Focus on what cool applications and content consumers can get _ not the underlying technology. And importantly, they must deliver services that exceed user expectations.

What Can Be Done?

While undoubtedly mobile operators are the key, we all can also contribute to the growth of the mobile data market in some ways. As a consumer, continue to demand more from your operator and stay in tune with new applications and service developments.

As a content provider or an application developer, you can continue to apply pressure to mobile operators and handset vendors so that, together, you can create an end-to-end service delivery platform.

In closing, I'm convinced that Thailand will have a successful mobile data market if we learn what Japan and Korea have done, adapt, and apply this to the Thai market. Yes, we can do it too! And its success will bring tremendous opportunities and, most importantly, benefits to Thai mobile consumers.

Analyst: Southeast Asia's Mobile Phone Boom To Go Bust

The mobile phone industry has witnessed healthy growth in the past three years, and in the past two years vendors selling network equipment had their heyday - Southeast Asian operators signed US$1 billion worth of equipment contracts with network vendors in 1999; the amount doubled to US$2.3 billion the next year. This year, operators are expected to spend US$2.5 billion on network infrastructure.

However, this boom in the mobile network equipment market will be short-lived. The substantial increase in prepaid subscribers and the sale of 3G equipment in Singapore, which is believed to have led to the boom, will soon be replaced with declining prepaid growth and a limited initial market for 3G technologies.

The prepaid market saw an overwhelming number of subscribers, which led to operators experiencing growth rates of 100-200 percent. But as the market becomes

saturated, there will be a decline in growth. Already, growth in Singapore and Malaysia has peaked, and the Philippines and Thailand are expected to follow suit.

In its report *"Road Map Through Southeast Asia's Mobile Phone Bust,"* Internet and telecoms consultancy Pyramid Research, a division of the Economist Intelligence Unit, has predicted that the subscriber growth in Southeast Asia will peak this year, and decline rapidly going forward.

According to Pyramid's Asia Pacific analyst John Barrett, unlike prepaid pricing - which has been the main impetus behind network expenditure - 3G contracts are limited to the Singapore market, and account for only 12 percent of all contracts signed.

Barrett believes 3G will not be a major driver of network expenditure outside of Singapore any time soon because most operators consider the technology expensive, unproven and beyond the means of their subscriber base. Instead, regional operators are turning their attention to SMS and GPRS, which are cheaper technologies.

Although US$600 million in 3G-related contracts have been signed and another US$1 billion can be expected over the next five years, it is not enough to consistently maintain the equipment markets at the current level. Technologies such as WAP and GPRS are cheaper, having less of an impact on total market size. Furthermore, as many operators are already using these technologies, the number of potential equipment buyers will consequently decrease.

According to the report, vendors should brace themselves for a rapidly shrinking market starting next year. Sluggish subscriber growth will lead to fewer capacity upgrades, which will result in a corresponding decline in equipment markets.

But there are still a few bright spots amid the gloom:

(a) Over the next five years, Southeast Asia can expect 60 million new mobile phone subscribers, with Thailand accounting for a third of the figure, followed by Indonesia and the Philippines. Operators in these countries will need to spend more on network capacity upgrades.

(b) Singapore will be the major market for 3G services, with new services - not new subscribers - driving network expenditure. Operators have spent roughly US$600 million and are expected to spend another US$1 billion over the next five years. The Singapore market will account for up to 30 percent of the region's equipment market.

(1) New market players in Southeast Asia, such as in Thailand, Indonesia and the Philippines, will also drive network expenditure, investing heavily and rapidly to build a greenfield network. Equipment vendors can exploit this opportunity to clinch initial contracts and establish relationships that could lead to more purchases in future.

2.2 Understanding mobile Internet Technology

The mobile internet technology market is still in its pram but the direction of the industry is beginning to emerge. Mobile internet technology is currently growing in two areas: mobile phones and PDAs - but there are considerable advancements that need to take place before the market can really arrive.

At the moment you can receive limited information via WAP to your mobile handset, and although the service has found some pick up, it does not, in the main, deliver what consumers have been looking for - namely the ability to surf the internet in the palm of your hand. GPRS looks to improve on this to a limited extent, but it's 3G that will take mobile phones and the mobile internet to the next level.

PDAs currently offer a more sophisticated service, with the advantages of an interface, which can handle imaging. Currently you can download information from the internet to your PDA hard drive to view later. The number of sites offering this capability at the moment is limited, although transactions are now possible over Pocket PC - new site www.tedsthebusiness.co.uk is the first site to go live enabling this. Offering a 'download to my PDA' button gives consumers the chance to personalize the information they receive, and allows them to view this information wherever they choose.

Over the next two years we will see the convergence of the mobile phones and PDAs. With the emergence of 3G mobiles, Bluetooth and higher bandwidth, the capabilities of these devices will rocket, replicating the internet standards which the consumer expects over permanent connections, over a mobile internet. As a standard technology emerges, simplifying matters for the consumer, then a mass market will begin to develop.

The boom in SMS messaging shows that consumers are ready for mobile technologies. Companies need to be moving now to get an established foothold in the marketplace, so when the mobile internet explosion happens, they're positioned to take advantage of it. Yes, having a presence on a small screen is more limiting, but if you already have a website, why not go that extra mile to deliver specific information to mobile devices. Although only early adopters are using it at the moment, it gives you a chance to get it right and ready for when the market takes off.

Using the Microsoft .net technology platform enables us to harness and leverage the strengths of these various internet technologies to deliver applications and services unthinkable only a few years ago while consolidating our development efforts and reducing our time to market.

The next generation in mobile phones - Part one: GPRS

Mobile phones have come a long way since the clunky bricks that we lugged around at the beginning of the 90's. Today's mobiles are svelte and sexy, fashion statements as much as tools. They're also integral to many of our businesses, our lifeline helping us to stay in touch and on the ball regardless of our location.

At the moment, most of us are using 2G or second-generation mobiles, a technological step up from the bricks. 2G phones are digital, whereas the bricks were analogue, and they have steadily improved as time has gone by, offering us increased bandwidth and capabilities.

Recently mobile technology took a step up in the world or half a step to be accurate, with the introduction of GPRS.

2.3 What is GPRS?

GPRS or General Packet Radio Services, otherwise known as 2.5G, is an 'always on' communication service that transfers information in the same way the Internet does: by breaking data up into 'packets' that each follow their own, shortest-available route to their destination, where they are reassembled.

This allows for fast data transmission speeds - the top speed is 170 kilobits per second (Kbps). However networks are presently reporting speeds starting at around 15Kbps and going up to 60Kbps under optimum network conditions. Considering that current GSM networks allow for no more than 9.6Kbps, this is a definite improvement.

GPRS works best with 'bursty' data flow, so it's ideal for browsing the Internet and sending or receiving email. The technology lets you use Internet applications like chat and Web browsing that were previously impractical over GSM connections due to limitations in speed and the number of characters you were able to use at one time (i.e. 160).

GPRS has been designed for the transmission of data rather than voice, so if for example you get a telephone call while looking for something on the Internet, your session will be paused while you take your voice call, and will resume once you're done.

GPRS is available now, and to use it you'll need a GPRS enabled phone and a contract with a network offering the service. One of the most attractive things about it is that although it can be considered as 'always on', you only pay for when you send or receive data, not for the duration of your session. Some networks may also charge a tariff for using the service.

What can I do with GPRS?

With GPRS the mobile Internet is on its way to becoming a reality and combined with Bluetooth, a wireless one at that. With GPRS when you connect your laptop or PDA to the Internet, you'll be able to use it at speeds similar to those that you get from conventional modems. Here are some of the things you can do:

(1) Web browsing - Previously too slow to be anything other than annoying, Web browsing via your mobile is ideally suited to GPRS.

(2) Multimedia Messaging Service (MMS) - Likely to be one of the more common uses for GPRS, MMS lets you enhance your text messages with graphics and sound.

(3) Email - Have you ever been halfway to a meeting when you realised you'd left an essential part of your presentation at the office? With GPRS and applications like Microsoft Exchange and Outlook 2002, you can quickly and easily send and receive emails, even those with large attachments

(4) Information services - GPRS will facilitate the seamless delivery of information like share prices, traffic reports and flight information straight to your mobile; including visual information like maps or graphs.

(5) WAP that works - WAP has been optimised for devices like mobile phones, however slow transfer rates have hindered its success. With GPRS we may finally see WAP coming into its own.

(6) E-commerce applications - E-commerce applications like online banking are now at your fingertips.

(7) Document sharing - With GPRS you can share and collaborate on documents with your colleagues no matter where you may find yourself

(8) Remote networking - Combine GPRS with a tool like Remote Desktop in Windows XP and you can connect to and use the files, programs and resources on your office PC as easily as if you were sitting in front of it.

(9) File transfer - For those occasions when you need to move large files from one location to another, a file transfer or FTP program does the trick. With GPRS, transferring large files need no longer be limited to locations with conventional telephone lines.

(10) Chat - GPRS lets you use Internet chat as easily and effectively as if you were sitting in front of your desktop PC.

(11) Video and video conferencing - Although current line speeds do not allow for smooth video transmission, it will do in a pinch. Particularly handy for holding face-to-face meetings with a distributed team, or consider the possibilities for monitoring your premises when your offices are closed.

A word of caution

As we saw with WAP, immature mobile technologies are not only fairly expensive when first introduced, but they can take some time to find their feet. If you are considering implementing a mobile technology solution within your company, it is

advisable to begin with a short-term low-cost pilot project to ensure that you are going down the right track.

Rather than focusing on the technologies themselves, think about how they can assist you and your staff to become more efficient and profitable. Focus on your business processes and needs and evaluate how the available mobile technologies can assist in these.

The next generation in mobile phones - Part two: 3G

Half a step beyond...

The mobile phone technology and network companies are at present busily preparing for 3G or the third generation in mobile telephone devices. The precursors to this technology are due to begin to enter the market during the course of this year and 3G itself is due to have proliferated in earnest by 2005.

2.4 What Is 3G?

If 3G deliver what the developers promise, by 2004 we can look at broadband speeds via our mobile phones, plus a variety of new generation mobile devices that combine PC, PDA, camera, you name it, functionality.

With 3G, data speeds will reach upwards of 2 Megabits per second (Mbps), which will give us high-speed Web access and superlative quality video access via our trusty mobile communication devices.

3G also promises roaming capability throughout Europe, Japan and North America. 3G mobile devices will look somewhat different to the mobiles that we carry around with us today. Their appearance will be determined by their function, as discussed below.

What will I be able to do with it?

3G devices will deliver all that GPRS promises, except a whole lot faster. How about catching up with that important client who never has time for a face-to-face meeting when he's in a taxi on his way to an airport at the other side of the globe? Consider watching your favorite television program on the train on your way home from work. Consider connecting to your network, downloading files, transferring data, zipping off an email. With transfer speeds of more than 2 Mbps tasks like these can be completed within seconds.

The mobile companies are envisaging a whole new generation of mobile devices to deliver the applications promised by the new technology. Though still noticeably mobiles, they will need to be customized according to their functions. Some, for example, may have considerably larger screens to display video, while others may be small and function as part mobile, part remote control.

Nokia's concept team, for example, are currently considering four different categories for their 3G terminals:

(1) Communicators - These would be business tools, allowing users to quickly and efficiently log onto their networks, transfer information, write emails and synchronise information with conventional PC devices.

(2) Media phones - These would perhaps give access to Internet services and include Personal Information Management, audio and data functions.

(3) Imaging phones - Imagine taking a photograph or capturing video with your mobile, and being able to instantly send it to friends and family at the other side of the world.

(4) Entertainment phones - How about playing a game with a friend at the other side of the globe, or sending your distributed team a video clip of your new office?

But we're not there yet

Before 3G can be realized, a number of other technologies will need to be introduced into the market. GPRS is the first of these.

Others include WCDMA, or Wideband Code Division Multiple Access, a wideband radio technique providing high data rates, and EDGE, or Enhanced Data rates for Global Evolution, a high-speed modulation technique that triples the capacity of GPRS. The first commercial launches of these two services are due towards the end of 2002.

According to reports, 3G networks are expected to be up and fully operational by 2004, with respectable market penetration of the handsets by the end of that year.

The various networks have spent a lot of money on this technology and will spend even more before the services are launched. In the UK mobile networks have paid £22 billion just to use the required radio spectrum, so expect 3G to be costly at first, as most new technologies are. However if the technology delivers what it promises - effective mobile wireless broadband connectivity - for some of us it may well be worth it.

III. BUSINESS CONCEPT

Our business model is based on selling products to our users, by giving them the attractive mobile contents they need to decorate their mobile phones.

Eomobile.com will sell products to its users through special interactive sales channel such as website or interactive voice response (IVR) and offerings in other offline medias such as brochure or newspapers.

We will focus on creating a back end that is quick, always up, and extremely secure. The front end will allow mobile users to browse through products easier than the way they browse through products on other offline medias.

3.1 Background of the company

In the year 2001, eotoday.com was established as GMM Grammy's entertainment public relation and Internet department. The website eotoday.com was registered at that time. The meaning of "EO" came from "Entertainment Online", which implies that eotoday.com is the entertainment web site, providing all kinds of entertainment news. Including entertainment events held by the professional team.

One year later (2002), www.eotoday.com became a successful entertainment web site with the hit rate as high as 20000 hits per day. The management then aimed to expand the service to other entertainment medias. A mobile phone was chosen because it was a popular device among the new generation people at that time. So the Mobile Content business was held by using the name Gmmwireless.com and was changed to be eomobile.com later, which means Entertainment On Mobile. The website was created to give people the mobile entertainment services such as ring tones, download pictures, superstar pictures and other activities through mobile phone since then.

Nowadays, "Non Voice Service" is the most favorite service among mobile users such as sending ring tone pictures, short messages and picture logos to friends, plus the

enhancing technology of handsets the business of mobile content web site has to develop itself along with the mobile service. With the distinctive web content and technological concern that eomobile.com provided to our customers made eomobile.com become one of the most famous mobile content providers in the present.

3.2 Company Structure

Eomobile.com divided the company structure into 8 departments.

(1) Marketing and Account Executive

(2) Creative and Content Developer

(3) Designer

  (a) Web designer

  (b) Mobile graphic designer

  (c) Advertising and Printing designer

(4) Music Composer

(5) Programmer

(6) System Engineer

(7) Director

(8) Division Manager

3.3 How to generate revenue

Company incomes of Eomobile.com come from 4 sources.

Content license fee from Business partner. Including the copyright and the fee of using the company's picture and music in other medias. The fee will be calculated by percentage per 1 time (agreed between partner and company).

Download service fee. It is the fee the company gets when the customer download pictures, ring tone, or message each time.

Advertisements on eomobile.com web page such as banners, news or promotional events that customer wants to deliver to mobile users.

Partner Promotion Section. It is a section on Eomobile web site created for specific partner requirement in order to promote their product or service to attract their customer.

IV. STRATEGIC AND MARKETING PLAN

4.1 Situation Analysis

As of now there's a lot of non-voice service providers, in another word Mobile Aggregator, in Thailand market. Several big and small companies share the same market. But the big companies have the advantage of the resources on hand so that they can provide the customer with varieties contents and complete services including the basic services and mobile multimedia services.

On the other hand, the small companies expecting the small market share in the part of basic non-voice services such as ring tone, SMS, and picture message. Meanwhile the over all market is continuously growing and expected to have a higher market value in the future.

4.2 Website Marketing Strategy

Online marketing will be critical to Eomobile.com. It will be the best way to spread the news about our website and let mobile users know about this new mobile content site. Another Online marketing purpose is to find the strategy that keep our target users to return to our website and also have a brand royalty.

We will start with a few key online initiatives:

We will develop partnerships with as many Mobile Operators and handsets as possible, linking to them in exchange for links to us. Such as link exchange on website or promotion event for each partner which has their brands and our brand together.

We will seek out all Mobile related - online sites, and find unique co-marketing and co-branding opportunities to allow them to expose our content to their members.

We will develop a partnership with other Entertainment Offline Partners such as cinema or Digital Photo lab in order to have a presence in the offline world.

We will develop a unique viral* online marketing program to get mobile users to spread the word to all of their friends. We will motivate mobile users to participate by letting them know that for each member that registers through them, we will give them a score to use in participating on our website's activities.

(1) *Viral marketing = "a new-fangled business plan buzzword for what is essentially word of mouth..."* -- ***Wired*** Style Principles of English Usage in the Digital Age

4.3 Company Objectives

Attract 250,000 users in the first year.

Bring in two million page views a month by the end of the first year.

Gain 1,000,000 downloads for entertainment content in the first year.

4.4 Customer Value

4.4.1 Product Value

All products of Eomobile.com including Ring tone, Logo, Screen Saver or MMS is created with the distinctive quality in order to provide the customer the best product and service. Our professional creative team dedicated their skills into every single product such as unique ring tone, super star picture and animation to make it the first choice for our customers

Apart from pictures and ring tones, special events are also available on Eomobile.com. All of them are related to the fast moving entertainment events in Thailand. For example, customer can download ring tone or graphic of the singer on the same date of the album launching date.

4.4.2 Service Value

Eomobile.com provides 3 alternative services to serve the needs of our customers.

(1) Music Downloads – Eomobile.com provided customer with the clear and easy to browse navigation menus. So that customer will be able to find the service they want easily. Other than that search engine system is available at every section on the web to make it even easier to find what the customer wants. Online service assistance also available for the basic inquiry those customers want to ask or in case that customer needs help.

(2) After Sales Services – After customer downloaded music or picture from eomobile.com, the requested data will be sent out by the server from the efficient network of the company. Our server has a high potential to support several requests at a time. Moreover we provide Call Center for the customer who needs help or have a problem in downloading the products of eomobile.com.

(3) Customer Services – This is the service held for eomobile.com members. Our member will get several special privileges from us. For example, for every download member will get the points automatically and the point collected can be used for promotional events that eomobile.com creates for member. And our members will get the updated entertainment news via their mobile phone through SMS or Email, including the updated service available on our web.

4.4.3 Image Value

Eomobile is the affiliated company of a very huge company as GMM Grammy, so it is the good image value that our customer perceives. Moreover eomobile cooperates with many partners such as mobile operators and handset vendors to have the activities and promotions together. As of now Eomobile then becomes one of the non-voice service providers in mobile users' mind.

4.4.4 Personnel Value

Our team consisted of an expert in the each specific field such as Creative, Arts and Technology. These 3 factors are very important in order to develop our web content to be up to date, nice and technological update for all the time.

4.5 Customer Cost

4.5.1 Monetary Cost

Eomobile creates contents with the well aware of the update marketing situations by our professional graphic designers, sound editors, and copywriters. Our product and service are created uniquely. So that our customers can be sure that it is worth for them to download the product from us.

Moreover customer can be sure that eomobile will not charge the customer in the case that customer doesn't get the downloaded picture, message, ring tone, etc.

4.5.2 Time Cost

Eomobile.com is the website that assembles the most updated pictures, texts, SMS, games, and activities from GMM Grammy and several leading entertainment companies. So customer can be assured that they will be able to find a newest product and service from us without searching through other website.

4.5.3 Energy Cost

With our powerful search engine system, customers can search the pictures, music, and the contents they wanted without wasting their energies. Also our online service assistant will be able to help customers to find what they want in a few clicks.

4.5.4 Psychic Cost

Eomobile.com was installed and run on the high performance server that linked between the servers of several mobile operators. And with the high reliable network, the

entire request from the customers will be carefully responded smoothly, quickly and accurately.

Other factor that can reduce customer psychic cost is that eomobile.com guarantee not to charge the customer who doesn't receive the downloaded data or receive the data incorrectly.

4.6 Market Segmentation

Eomobile.com segments the target customer by the life style of the customers in order to provide the appropriate products to meet their needs. The market is segmented into 4 groups as followed.

(1) Music Lover

(2) Movie Addict

(3) Fashionism

(4) Shopping and Leisure

4.6.1 Market Needs

Music Lover is the customer who loves music and always wants to be updated about all music matters including the news of favorite singers, music news, concert ticket reservations, etc.

Movie Addict is the group of real fan of movie or can be called movie addict person. This group of people will be able to have their favorite movie pictures downloaded into their mobile phone. Moreover we provide the movie ticket reservation service through their mobile to give them the alternative way in buying it.

Fashionism is the group of people who are well aware about the fashion. Latest fashion news, new design launching, or end of season sales of their favorite brand names will be sent directly to their mobile phone.

Shopping and Leisure is for customer who wants to have the discount coupons, free stuffs, update news, etc of their favorite shopping places or restaurants update through their mobile phone.

4.6.2 Market Trends

The important trend in mobile content market is to provide the products and services, which are attractive, user friendly and technological trendy in order to meet the needs and life style of our customers.

In the past 3 years, there were dramatically increasing number of mobile users in the market. Meanwhile the technology of the handset is developing quickly. But not every mobile user is capable to understand and use the non-voice services that we provide. So the content of non-voice service should be developed according to the basic of the market trend and the knowledge of the mobile users. Mobile users should be educated the basic knowledge of the mobile technology step by step and the benefits they will get from our services. So they will absorb and learn new technology easily.

4.7 Web site Demographics Strategies

Eomobile.com focuses on 2 types of customers, which are middle-end customer and hi-end customer.

A middle-end customer is the group of customer whose needs are only the basic non-voice services. The download process should be easily understandable not too complicated such as downloading general logos or ring tone. So the contents provided for this group of customer will be easy to follow, clear and speedy.

A hi-end customer is the group of people who already have the background knowledge in technology concern about mobile phone. They will be able to use our complicated service such as Streaming Media, Polyphonic Ring tone, etc. Content provided for this group of customer will be a little more technological concern. The

added using instruction will be available together with the Service assistant at each category.

4.8 Target Market

Mobile phone users who are interested in an entertainment content to decorate their mobile phones and also give them a portable entertainment everywhere.

Mobile phone users who want to make a payment for entertainment event via their mobile.

Mobile phone users find out a discount for any entertainment product and service.

4.9 Site Positioning

Site positioning of Eomobile.com, commerce site, is stated as follows.

Eomobile.com is the web site providing the overall entertainment contents on mobile phone, which is not only the mobile decoration but the complete entertainment world will be brought into your hand through our service. Anytime people think about mobile entertainment, they will think of Eomobile.com as our slogan, "Move the entertainment to your mobile".

4.10 SWOT Analysis

The following outlines are the most significant strengths and weaknesses of Eomobile.com, and the opportunities and threats that exist in our environment. Our objective is to leverage our strengths to take advantage of the opportunities that our market presents, develop those areas that are weaknesses, and devise contingency plans to address threats if those should become a reality.

4.10.1 Strengths

The following are the key strengths of the organization:

GMM Grammy is the copyrights owner of several songs, singers and other entertainment medias, which is the necessity to create the mobile contents. And the high

capital investment of GMM Grammy can help our company to create a strong brand promotion. Then working capital of eomobile.com is stable enough to develop new products in long run business plan. Moreover, with the on hand entertainment contents of eotoday.com, can be a support data for us to develop a mobile content. As we are the big entertainment company it is easy for us to make a connection with other business partners.

4.10.2 Weaknesses

Eomobile.com is the Affiliate Company under GMM Grammy, the big Entertainment Company, so it is difficult for Eomobile.com to gather the songs or pictures under the license of company's competitors. This is the main weakness that makes Eomobile.com becomes inferior among the competitors, which are not the specific Entertainment Company. Other competitors that are neutral will have the advantage to create the product from several entertainment companies.

4.10.3 Opportunities

As the number of mobile phone usage is increasing quickly, the mobile content market also needed to be expanded along to meet the needs of the every group of consumers.

With the developing technology of mobile operators and handset vendors, the market is growing continuously. It is a good sign that mobile service providers can continuously develop the content to make a profit along with the market situation. Thus we can create the strong brand awareness and promote our new product line, sales channel and partners.

4.10.4 Threats

The fast changing technology is the key factor that creates variety of demands. So in order to develop the product to serve those demands the company needs to have a high budget and a lot of human resources.

When the time pass by, non-voice service market will reach its' saturation. Then the fascination and attraction will fade out. Customers will not be easily attracted by these services anymore. So the buying amount will reduce as the trend fades out.

Eomobile.com is also a new brand in the market. So customer may not realize our brand as much as Shinee.com. And for some product lines that are under developing process while other web site is already launch, it makes our web site one step behind our competitors. So it is the biggest problem that our company should overcome and step ahead our competitors as soon as possible. In order to do that we will gain a brand awareness and win in the game with the existing competitors.

Operator cost is the major factor that makes our production cost increase and also increases in the product price at the same time. Such that it will affect the sales volumes of the customers in the middle – low level. So to create the good relationship with the operators will help us to get the better business contracts than other competitors.

4.11 Product Differentiation

Other content providers have their own strengths point, especially the picture graphics for mobile. Even though eomobile.com doesn't really emphasize on picture graphics as much as the competitor we do have 3 major product differentiations.

(1) Ring tone from several entertainment companies especially from GMM Grammy that eomobile.com will get the latest product before other companies. So when the customers think of the latest hit ring tone, they will think of eomobile.com as their first choice.

(2) Picture graphics either still or animation pictures of super stars or singers under GMM Grammy Company will be provided at eomobile.com only.

(3) Variety activities that let the customers join with their favorites super stars or singers from GMM Grammy on several occasions will be available at eomobile.com only.

4.12 Marketing Mix (4Ps)

4.12.1 Product

(1) Multimedia Message Service (MMS), for more details please see the table below.

Table 4.1. Multimedia Message Service.

Service Details	:	Send your Thought and your thoughts with multimedia pictures and sound
How to use	:	1. From mobile phone to mobile phone 2. From mobile phone to E-Mail 3. Varieties of service such as sending greeting card though WAP or web to mobile phone.
Price	:	*Send from mobile phone* 10 Baht per 1 receiving number or email. (Additional service for some series of mobile phone) <u>Delivery Report</u> 1 Baht per 1 receiving number. <u>Read Reply</u> 5 Baht per 1 receiving number. *Service available on Web or WAP* <u>Greeting Card</u>

15 Baht per 1 receiving number.

<u>Movie & Music</u>

15 Baht per 1 receiving number.

<u>Picture Gallery</u>

15 Baht per 1 receiving number.

<u>My Album</u>

5 Baht per 1 receiving number.

User : GSM advance and One-2-Call customers

(2) Streaming Media

(a) Music Video

(b) Drama Synopsis

(c) Fashion Show

(d) Game Show

(3) Picture Service (Mix up and Editable)

(a) Monotone

(b) Picture Message

(c) Wallpaper and Screen Saver

(d) Logo- Mini Logo- Group logo

(e) Multicolor

(f) Picture Message

(g) Wallpaper and Screen Saver

(h) Logo- Mini Logo- Group logo

(4) Digital Voucher

(5) Sound Service

(a) Ring tone

(b) Polyphonic Ring tone

(c) Star Voice

(6) SMS

(a) Word SMS (Thai / English)

(b) Animated SMS

(7) Game & Activity

(8) Karaoke

Table 4.2. Karaoke Service.

Service Details	:	Karaoke time is available anywhere anytime on your mobile phone with the polyphonic ring tone which can be download though Player program or GPRS. <u>There are 3 download categories;</u> 1. Song, 2. Dancer, 3. Background
How to use	:	Download Player program or pictures 1. Go to Service menu 2. Log in to wap.mobilelife.co.th 3. Choose service categories Entertainment 4. Choose menu Karaoke 5. Select Download for Player, song, or pictures
Price	:	1. Download Player program is free of charge 2. 15 Baht per time for 3. 12 Baht for Picture of Dancer and Background Download
User	:	GSM advance and One-2-Call customers

4.12.2 Price

Fix cost of the production is quite high because it includes the operator fees, music and graphic license fees. So it's in the range of 10-30 Baht per 1 time, depends on the production cost, commission for business partners and the complicate developing process. But the standard price of the products such as Logo, Ring tone and Polyphonic Ring tone will be set in the same range as the competitors.

Product in the categories of Games will be calculated from the production cost and the demand of the customers plus the competitor in the market. The range of the price is between 10-30 Baht and for streaming media and karaoke will be calculated by the amount of the data downloaded (kilobyte). See reference in appendix.

4.12.3 Place

Online Channel is Eomobile.com that has more interactive and more customer value added than other media.

Offline Channel is catalog on many printing media such as newspaper, brochure

Interactive Voice Response (IVR) is an interactive voice which can interacts with customers to guide them through download processes.

4.12.4 Promotion

Web site advertising

At the time we launch our web site, we use 2 kinds of medias to deliver the news to customers.

(1) Online Media: by sending the banner and link exchange to our partners' web sites, such as Mobile operator, Handset vendors and big web portal. Other than that we will added our web site to several search engines both Thai and International search engine.

(2) Offline Media: we use printing media to promote our web site such as newspaper, postcards, and brochure.

Sales Promotion

Sales promotion will be held periodically throughout the year in order to push the customer demands. Our content will adapt to the entertainment events for instance, the new launching album, movies preview, etc. By doing so our customer will be able to join the new activities and using the download point to play the games in the events.

Online Sales Strategy

In our business sales is defined as selling as much product as possible.

The more successful our online marketing, the more traffic and users we will bring to our site. As long as we build a flawless commerce site, we can then turn traffic and users into actual sales of Mobile content products.

We will also use traffic statistics to show how many times a month our users visit our site, and how much time they spend on the site, in order to sell banner advertising and sponsorships.

4.13 Keys to Success

(1) Provide unique entertainment contents different from anywhere else online, all at good quality and good promotion.

(2) Provide as much entertainment contents and relevant products as possible.

(3) Partner with various Operator and Handsets Vendor to provide the best service with latest technology to mobile phone users.

4.14 Financial Analysis

We want to finance the Eomobile.com website with initial investment from GMM GRAMMY PCL. Eomobile.com website will cost Eomobile.com an average of 874,529 baht a month or 10,494,348 per year to host and maintain.

Table 4.3. Eomobile.com Website Expenses.

Eomobile.com Expense	
Staff and Admin	**Monthly**
Personel Expanse	483,526
Administration Expanse	8,000
Public Relation Expanse	4,000
Miscellaneous Expanse	55,000
Total Staff and Admin Cost	**550,526**
Equipment	**Monthly**
Hardware	60,611
Software	26,281
Connection	188,000
PC	11,111
Web Construction	38,000
Total Equipment Cost	**324,003**
Total Expense	874,529

<u>Price per Unit</u>

As eomobile.com provide several services to our customer so the range of product price and quantity vary and hard to exactly state. What we can do is to estimate the average price by considering the amount of product sold and use the formula to calculate the average price per unit.

$$\textbf{Mean} = \Sigma f X / N$$

Table 4.4. Average sales units, product prices and monthly income.

Revenue	Price : Unit	Sale Volume : Month	Monthly Revenue (fx)
Sound Service			
Ringtone Services	15	30,000	450,000
Poly Ringtone Services	15	30,000	450,000
Picture Service			
Logo Services	15	5,000	75,000
Color Logo Services	15	5,000	75,000
Picture Message Service	15	5,000	75,000
Wall paper Services	15	5,000	75,000
Screen Saver	15	5,000	75,000
Ani Color Screen Saver	15	5,000	75,000
Short Message Service			
Thai SMS	15	1,000	15,000
Animated SMS	15	500	7,500
Java Game Download (Avg. Price)	50	500	25,000
MMS Services			
Gallry	25	1,000	25,000
eCard	25	1,000	25,000
Karaoke	50	1,000	50,000
MV	25	1,000	25,000
Digital Voucher	10	4,000	40,000
Activity (Estimate Income)	200,000	1	200,000
Total		**100,001**	**1,762,500**

From the table above we can calculate the price per unit as followed;

Price per unit = 1,762,500/101,001 = 17.62 baht

The variable cost per unit will be calculated from the cost of the production of each product line including the operator cost and advertising cost. So that we will get the average variable cost, which is 60% of the sales price as shown below;

Variable cost per unit = 17.62 x 60% = 10.57

4.15 Break-even Analysis

Break even point = Total Fixed Cost / (Price per Unit – Variable cost per unit)

= 10,494,348 / (17.62- 10.57) = 1,487,542 Unit

The following table and chart summarize our break-even analysis

Table 4.5. Break Even Analysis.

Break Even Analysis:	
Yearly Units Break-even	1,487,542 Unit
Yearly Sales Break-even	26,217,669 Baht
Assumptions:	
Average Per-Unit Price	17.62 Baht
Average Per-Unit Variable Cost	10.57 Baht
Yearly Fixed Cost	10,494,348 Baht

With fixed costs of 10,494,348 baht per year at the outset (a bare minimum), we need to bring in 26,217,669 of product revenue in order to break-even on our website costs.

We plan on reaching this break-even goal by the end of the first year of Eomobile.com's existence. Eomobile.com expects to be profitable in the second year of business.

Break Even Graph

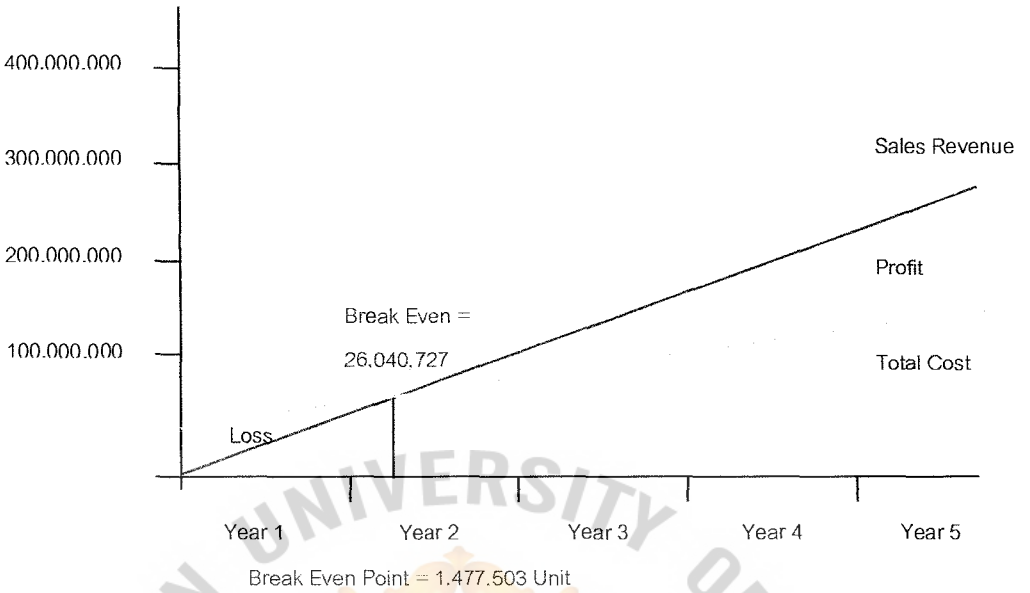

Figure 4.1. Break Even Graph.

Expense and Contributions

Our projected expenses and contributions are shown in the following table, with sales increasing from more than 22 million in product the first year, to more than 45 million from all revenue sources and profit will be gained in the second year of operation.

Table 4.6. Cost and Revenue.

	Year 1	Year 2	Year 3	Year 4	Year 5
Total Cost	30,243,525	43,992,702	71,491,056	126,487,764	236,481,180
Sales Revenue	22,596,000	45,192,000	90,384,000	180,768,000	361,536,000

As with the break-even, we are projecting very conservative cost of sales and gross margin. Our cost of sales should be much lower and gross margin higher.

Although we lost in the first year but after that we will try to increase volume of sales in double and will gain revenue to cover our cost.

The detailed monthly projections are included in the performa income statement of Eomobile.com Table.

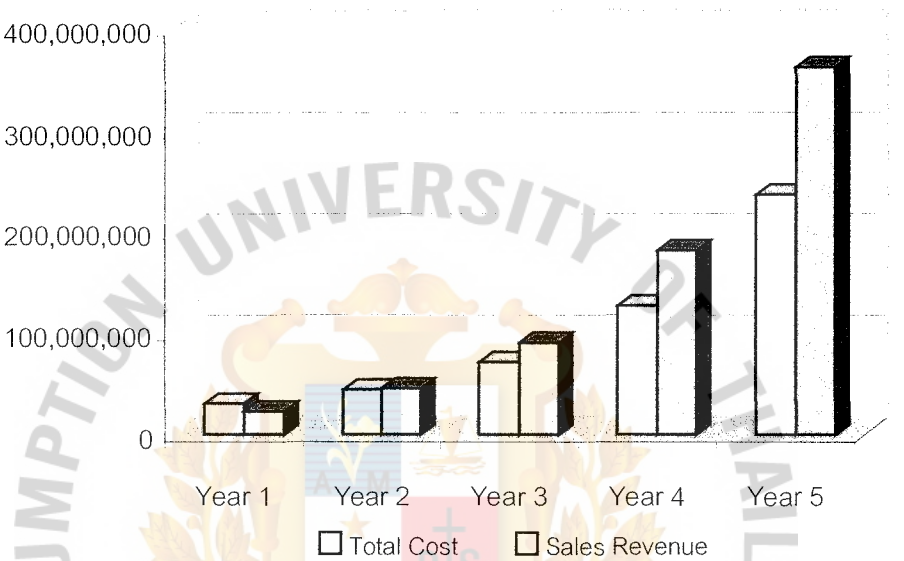

Figure 4.2. Sales Vs. Expense Yearly.

Table 4.7. The Performa income statement of Eomobile.com.

Fix Cost						
Staff and Admin	Monthly	Year 1	Year 2	Year 3	Year 4	Year 5
Personel Expanse	483,526	5,802,312	5,802,312	5,802,312	5,802,312	5,802,312
Administration Expanse	8,000	96,000	96,000	96,000	96,000	96,000
Public Relation Expanse	4,000	48,000	48,000	48,000	48,000	48,000
Miscellaneous Expanse	55,000	660,000	660,000	660,000	660,000	660,000
Total Staff and Admin Cost	550,526	6,606,312	6,606,312	6,606,312	6,606,312	6,606,312
Equipment	Monthly	Year 1	Year 2	Year 3	Year 4	Year 5
Hardware	60,611	727,332	727,332	727,332	727,332	727,332
Software	26,281	315,372	315,372	315,372	315,372	315,372
Connection	188,000	2,256,000	2,256,000	2,256,000	2,256,000	2,256,000
PC	11,111	133,332	133,332	133,332	133,332	133,332
Web Construction	38,000	456,000	456,000	456,000	456,000	456,000
Total Equipment Cost	324,003	3,888,036	3,888,036	3,888,036	3,888,036	3,888,036
Total Fix Cost	874,529	10,494,348	10,494,348	10,494,348	10,494,348	10,494,348
Variable Cost						
Cost of Good Sold	Cost : Price	Year 1	Year 2	Year 3	Year 4	Year 5
Sound Service	63.67%	6,876,360	13,752,720	27,505,440	55,010,880	110,021,760
Picture Service	63.67%	3,678,120	7,356,240	14,712,480	29,424,960	58,849,920
Short Message Service	63.67%	149,697	299,394	598,788	1,197,576	2,395,152
Java Game Download	50.00%	150,000	300,000	600,000	1,200,000	2,400,000
MMS Services	60.00%	2,220,000	4,440,000	8,880,000	17,760,000	35,520,000
Digital Voucher	50.00%	300,000	600,000	1,200,000	2,400,000	4,800,000
Activity	25.00%	375,000	750,000	1,500,000	3,000,000	6,000,000
Total Cost of Good Sold		13,749,177	27,498,354	54,996,708	109,993,416	219,986,832
Cost of Ad & Promotion						
Ad & Promotion	500,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000
Total Cost of Ad & Promotion	500,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000
Total Variable Cost		19,749,177	33,498,354	60,996,708	115,993,416	225,986,832
Fix Cost + Variable Cost		**30,243,525**	**43,992,702**	**71,491,056**	**126,487,764**	**236,481,180**
Revenue						
Service	Monthly	Year 1	Year 2	Year 3	Year 4	Year 5
Sound Service	900,000	10,800,000	21,600,000	43,200,000	86,400,000	172,800,000
Picture Service	450,000	5,400,000	10,800,000	21,600,000	43,200,000	86,400,000
Short Message Service	22,500	270,000	540,000	1,080,000	2,160,000	4,320,000
Java Game Download	20,500	246,000	492,000	984,000	1,968,000	3,936,000
MMS Services	315,000	3,780,000	7,560,000	15,120,000	30,240,000	60,480,000
Digital Voucher	50,000	600,000	1,200,000	2,400,000	4,800,000	9,600,000
Activity	125,000	1,500,000	3,000,000	6,000,000	12,000,000	24,000,000
Total Revenue	**1,883,000**	**22,596,000**	**45,192,000**	**90,384,000**	**180,768,000**	**361,536,000**
Net Profit Before Tax		7,647,525	1,199,298	18,892,944	54,280,236	125,054,820
Net Profit After Tax 7%	0.98	7,112,198	1,115,347	17,570,438	50,480,619	116,300,983

V. WEB DEVELOPMENT AND DESIGN REQUIREMENT

5.1 Web Design requirements

Web Design requirement is to be able to meet user needs. To accomplish this, Eomobile's methodology involves seven elements and these elements are continuously implemented:

Planning and Research: define target audiences, purposes, objectives, and policies for information development and uses.

Analysis: check technical construction of web with validation tools; evaluate information consistency and verify correctness of domain information.

Design: separate information into page-sized chunks; connect pages along with the routes of use and user thought; provide information, context, and navigation cues; create a consistent look and feel.

Site Content and Structure: is a group of contents or topics presented to audience. They will be grouped and link together into clear website structure. Site structure is a guide for graphic designer to make a clear navigator and scenario presented to audiences.

Implementation: create an extendable directory and file structure; use HTML tools where helpful; use templates for supporting consistent look and feel; check implementation in various browsers.

Promotion: target publicity releases for general Web audiences, potential users, and current users; follow online community norms and practices; innovatively connect with users to meet their needs.

Innovation: continuously and creatively work for improvement to meet user needs; use testing, evaluation, and focus groups to shift and change web's content as user needs change.

5.1.1. Planning and Research

In this process we will take the opportunities for competition and set overall goals for a web. We'll need to define our web's intended audiences, formulate a statement of our web's purpose, objectives, gather and maintain domain information to support our web.

Goals for a web

(a) What are the short-term goals?

(1) Web promotion must be done so that a web gains the attention of users and makes the existence of a web known to online communities through publicity as well as forming business or other information relationships with other webs. This will help eomobile to create the brand awareness among Thai Internet Users.

(2) Eomobile must include provisions for surveillance of competitor webs, new presentation technologies, techniques, or styles. So that web can compete with other webs and will survive in the future.

(3) Design and content of the web must be satisfied to its users such as clear navigation, easy to use and has attractive environment to convince user to make buying decision.

(4) Generate revenue from mobile entertainment content loading and gain profit in the end of first year.

(b) What are the long-term goals?

(1) To become the ultimate mobile entertainment website which has one stop service for mobile users.

(2) To maintain royalty of customers as well as creating the new potential target market (both corporate and individual).

(3) To maintain the contract with business partners and creating new opportunity with new business partners.

(4) Generate profit at 500% of investment.

The following is the issues that we include in our research phase.

(1) Make a consumer behavior survey regarding the use of mobile phone. Also including the experience of using Non Voice Services and required services they want. The group of consumers is divided by the Life Style as follows.

(a) Music Lover

(b) Movie Addict

(c) Fashionism

(d) Shopping and Leisure

(2) Study the technological trends of the Handset in order to develop new content.

(3) Study competitor's web site both good and bad points, visual designs, contents, and navigations to be the case study as to develop our own web site as competitive as possible.

5.1.2. Analysis

Eomobile will gather and compare information about the web and its operation and use in order to improve the web's overall quality and to identify problem areas.

Eomobile will check whether the web accomplished its stated purpose and meeting its objectives for its intended audience or not. We'll conduct 2 analyses.

Technically: Is the web's presentation functionally operate and consistent with its specifications and design as well as current HTML practices and syntax?

Semantically: Is the web's domain information content correct, relevant, and complete? Is the web's user interface usable and effective?

Table 5.1. Analysis Checklist.

Point	Evaluate if the web...
A	Attempts to reach an audience that has and will use Web access
B	Contributes new information (accomplishes goals that haven't already been done)
C	Is self-consistent (its purpose matches its objectives and specifications)
D	Is correct (the domain information it presents is accurate, up-to-date, and complete)
E	Is accessed in a balanced manner, both in terms of its own files and in terms of outside links into it
F	Is accomplishing objectives that meet the needs of the users

We will weigh alternatives and gather information to enhance other processes of web development, including planning, design, implementation, promotion, and innovation.

Key Analysis Practices

(1) Observe representative audience members using our web (usability analysis).

(2) Evaluate the consistency and verify correctness of the information content of our web.

(3) Check the technical implementation of the web with validation tools.

5.1.3. Design

Eomobile's web designers will work within the web's specification, make decisions about how web components will accomplish the web's objectives. Design is

any visual element in website that communicate directly to user perception such as images, color, and sound.

Our web designer takes into account the web's purpose and audience. They will use many design tools to achieve the effects called for in the most flexible, easy to use, efficient, and elegant way. In this session we separate design into 2 groups as shown below:

Key Graphic Design Practices

(1) Create a consistent look and feel for the web.

(2) Separate information into manageable page-sized chunks.

(3) Provide cues for the reader about the web's information structure and contents, context, and navigation.

(4) Use links to connect pages along the routes of use and user thinking.

5.1.4. Site Content and Structure

We emphasize on the details and structures of the web site as follows:

Identify content and functional requirements

(a) Static

Eomobile has many static contents and functions such as download instruction, news, game and activities. These contents will provide interesting information and activities to customer so that they can update their knowledge about new product, technology and have many activities to participate.

(b) Dynamics

As we are the informative web site, so our web content has to be dynamic in order to attract our customers to visit our site regularly. Here are some dynamic contents learning course, today discount, sales promotion, etc.

5.2 SITE CONTENT

SPLASH PAGE

RINGTONE

- NOKIA
  - TYPE
    - NEW RELEASE
    - TOP DOWNLOAD
    - RECOMMENDED
    - AROUND THE WORLD
  - COMPAMY
    - GMM
    - SONY
    - WARNER
    - BAKERY
  - SINGER
    - BAND & DUAL
    - MALE
    - FEMALE
  - DOWNLOAD
    - HOW TO DOWNLOAD
    - SEND TO FRIEND
    - REQUEST
- MOTOROLA
- SIEMENS

MITSUBISHI

POLYPHONIC TONE

NOKIA

TYPE

NEW RELEASE

TOP DOWNLOAD

RECOMMENDED

AROUND THE WORLD

DOWNLOAD

HOW TO DOWNLOAD

SEND TO FRIEND

REQUEST

WAP SETTING

MOTOROLA

SIEMENS

MITSUBISHI

SAMSUNG

PANASONIC

SAGEM

LOGO

BW LOGO

NEW RELEASE

TOP DOWNLOAD

GROUP LOGO

FAMILY

FRIENDS

VIP

BE AWARED

MINI LOGO

ARTIST

CARTOON

LOVE

ANIMALS

FUNNY

OCCASION

COLLECTION

COLOR LOGO

NEW RELEASE

TOP DOWNLOAD

ARTIST

CARTOON

LOVE

ANIMALS

FUNNY

OCCASION

COLLECTION

HOW TO DOWNLOAD

HOT COLOR LOGO

PICTURE MESSAGE

NEW RELEASE

TOP DOWNLOAD

ARTIST

CARTOON

LOVE

ANIMALS

FUNNY

OCCASION

COLLECTION

HOW TO DOWNLOAD

HOT PICTURE MESSAGE

WALLPAPER

NEW RELEASE

TOP DOWNLOAD

ARTIST

CARTOON

LOVE

ANIMALS

FUNNY

OCCASION

COLLECTION

HOW TO DOWNLOAD

HOT WALLPAPER

THAI SMS

LOVE

SAD

SUPPORT

FUNNY

OCCASION

HOT THAI SMS

JAVA GAME

DIGITAL VOUCHER

HOT ACTIVITY

MMS

MUSIC VIDEO

GREETING CARDS

LOVE

HAPPY BIRTHDAY

FUNNY

SPECIAL EVENT

STAR GREETING

MOBILE NEWS

COMMUNITY

MEMBER CORNER

5.3 SITE MAP

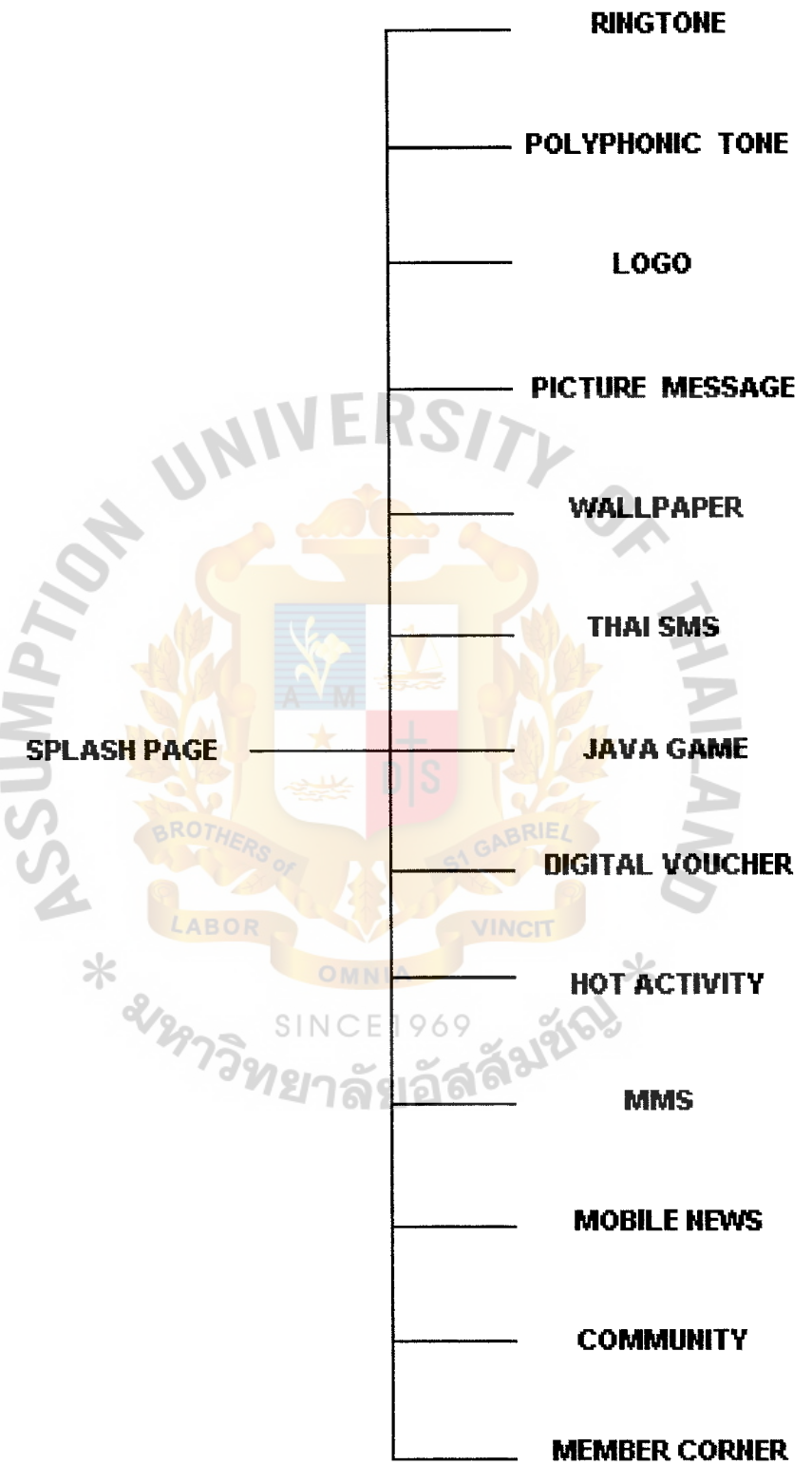

Figure 5.1. Site Map.

5.4 Visual Design

Layout Grids

SPLASH PAGE

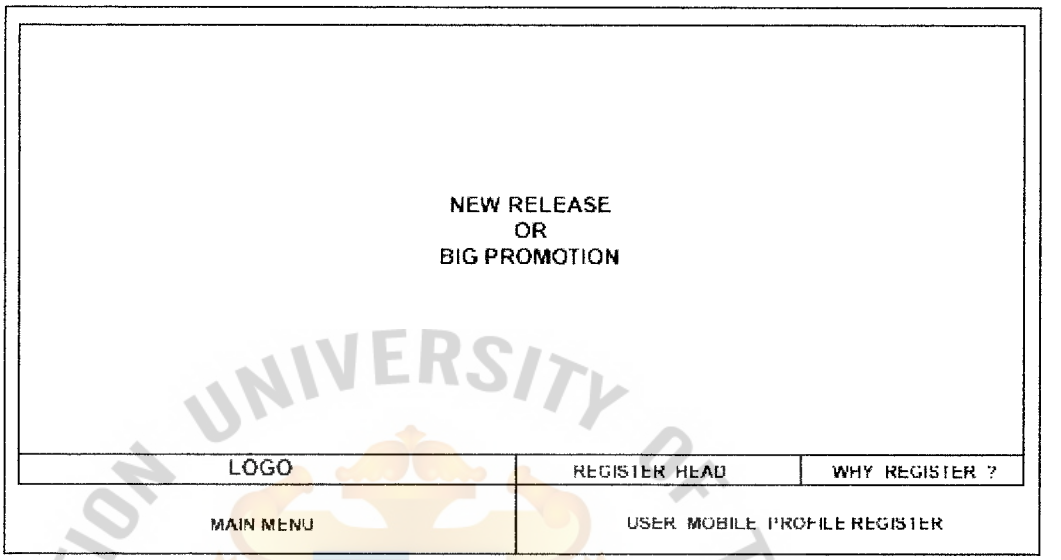

Figure 5.2. Splash Page.

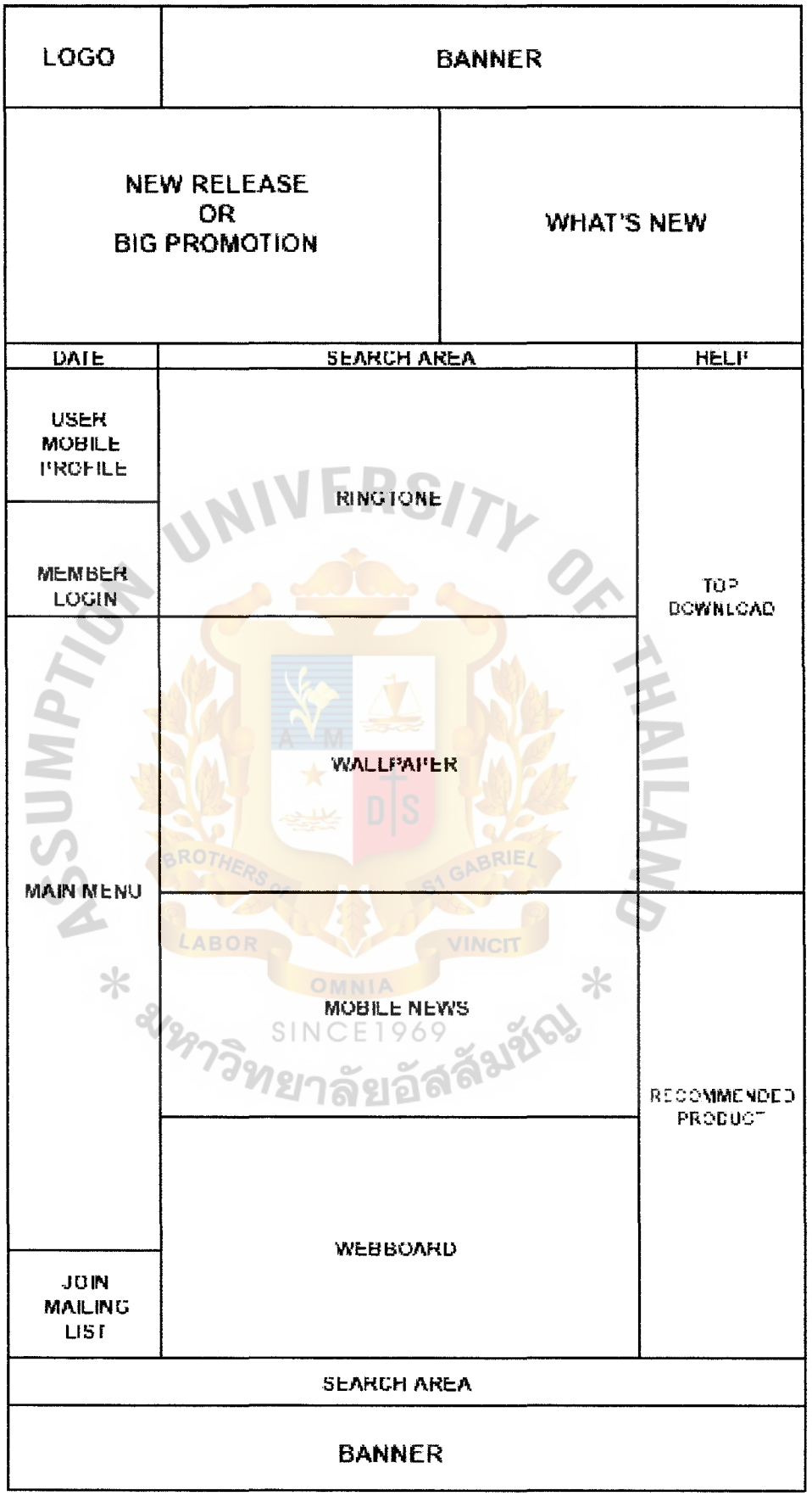

Figure 5.3. Index Page.

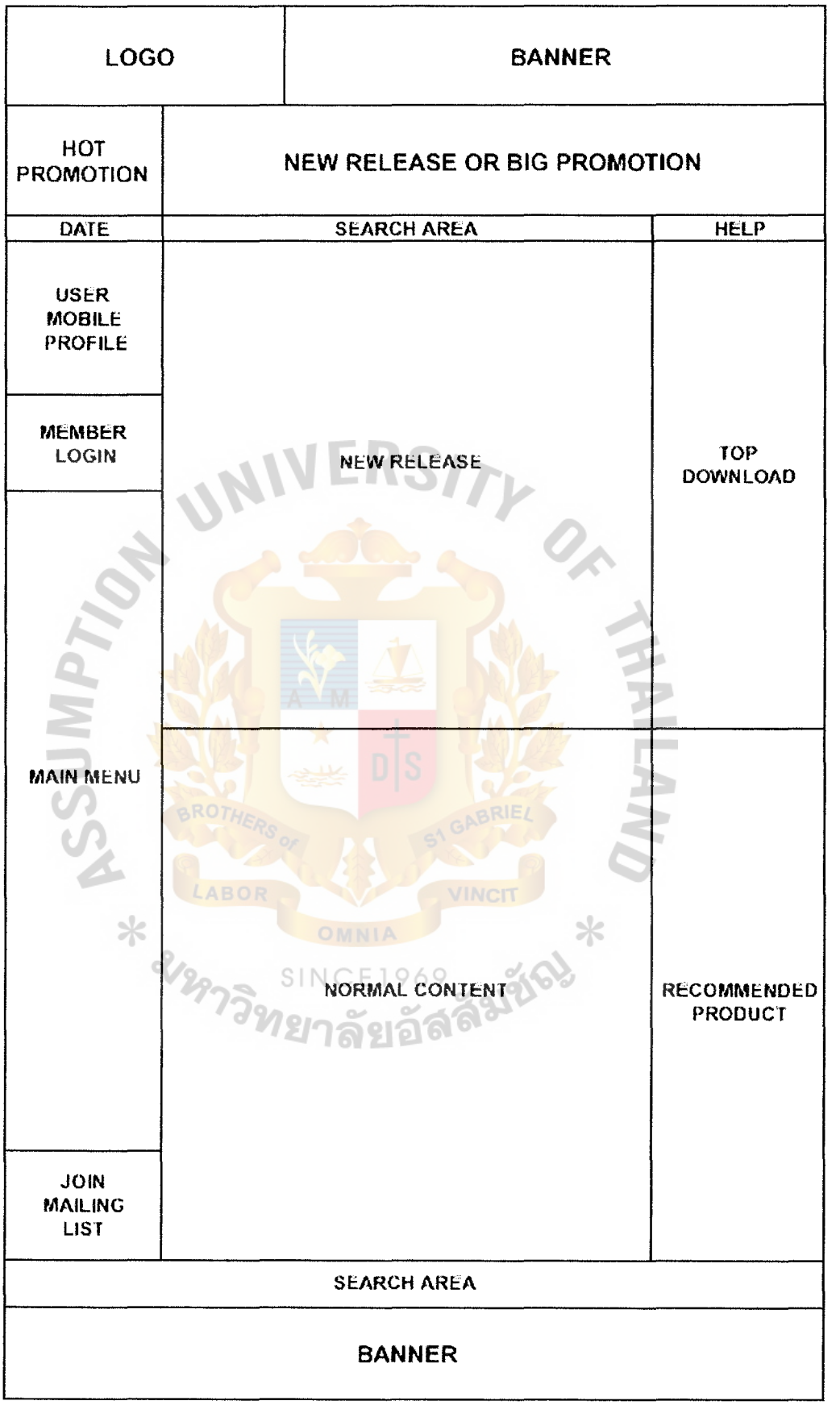

Figure 5.4. Content Page.

Figure 5.5. Splash Page Design.

Figure 5.6. Index Page Design.

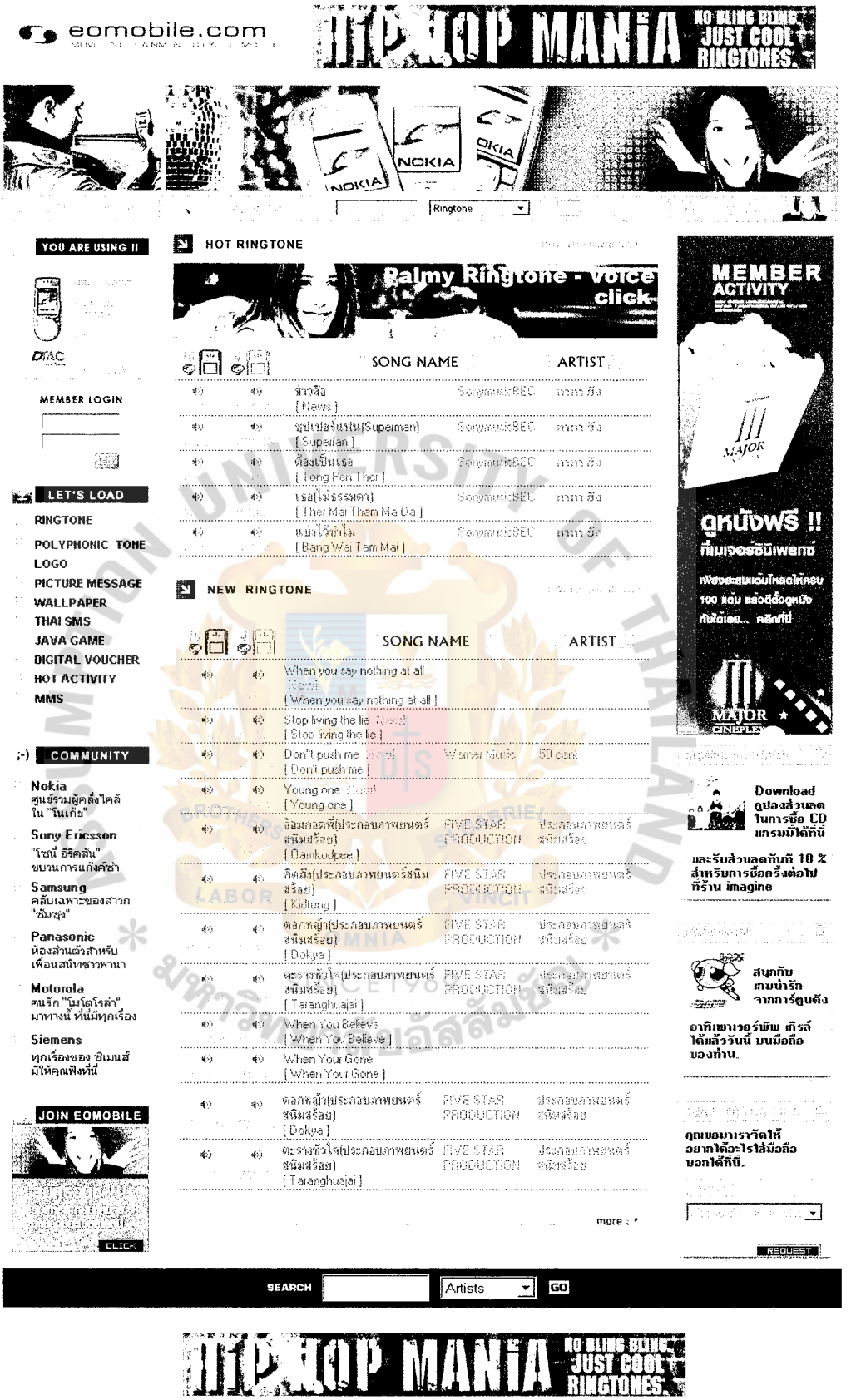

Figure 5.7. Ringtone Page.

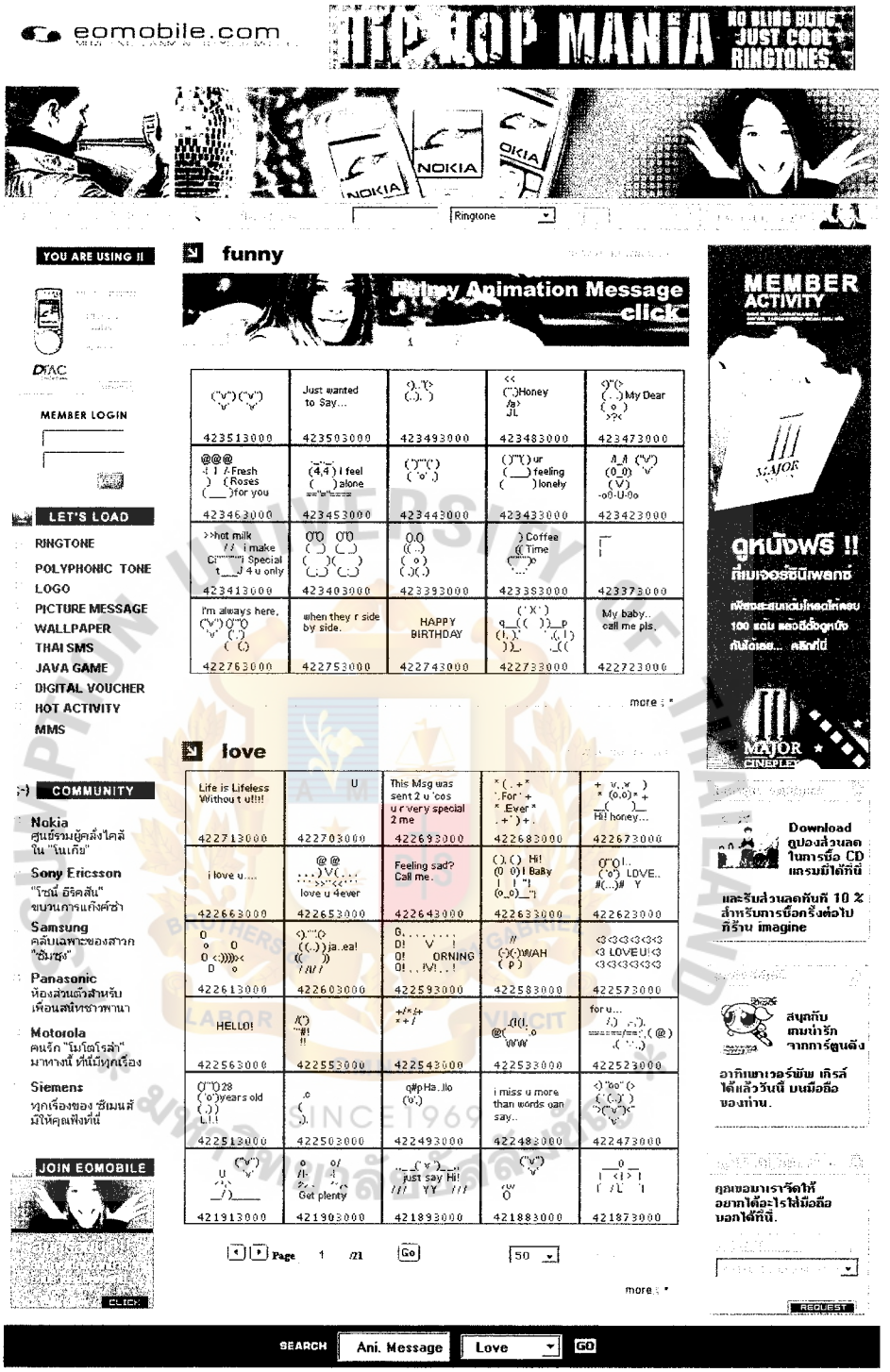

Figure 5.8. Animated Screen Saver Page.

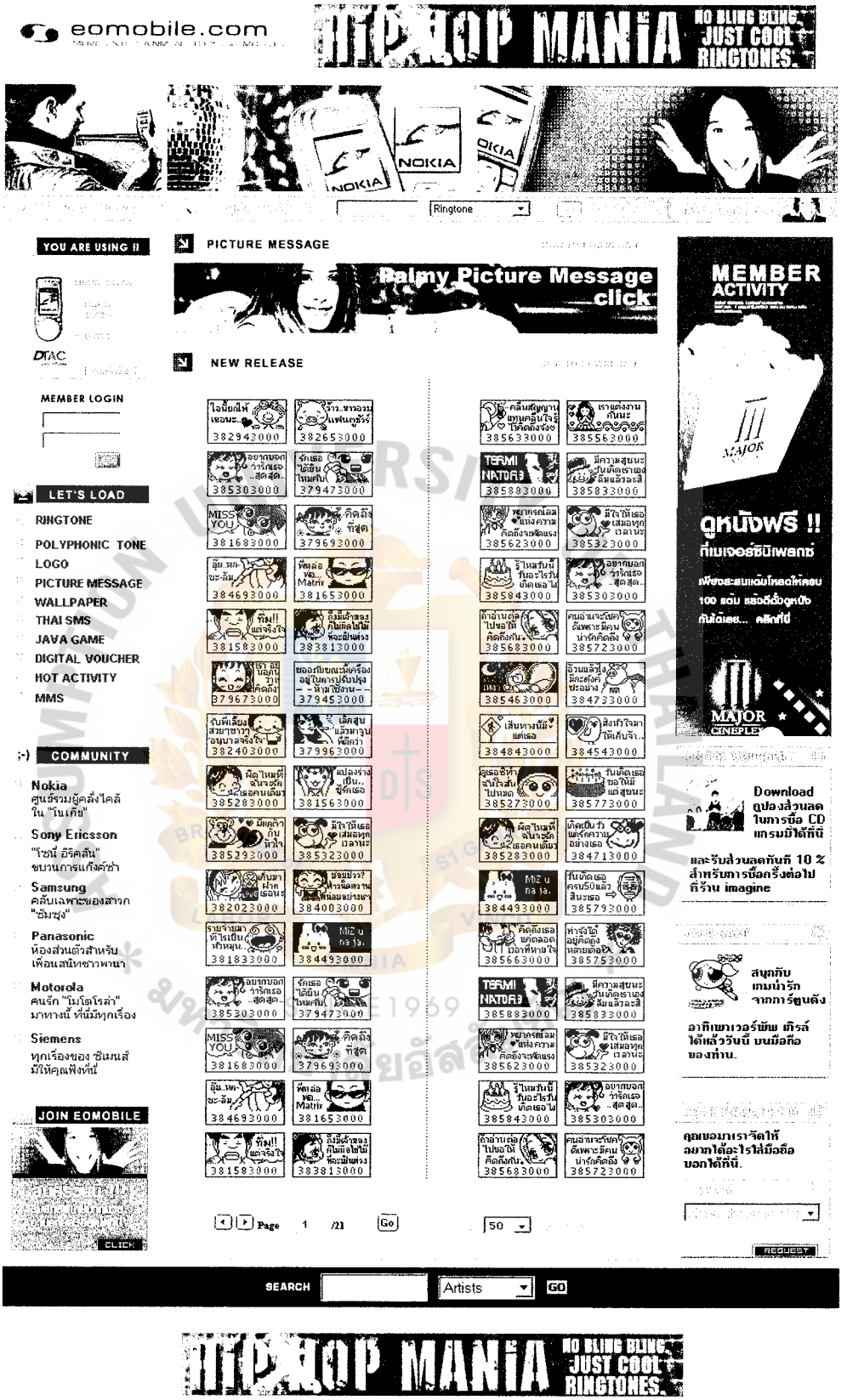

Figure 5.9. Picture Message Page.

Figure 5.10. Member Page.

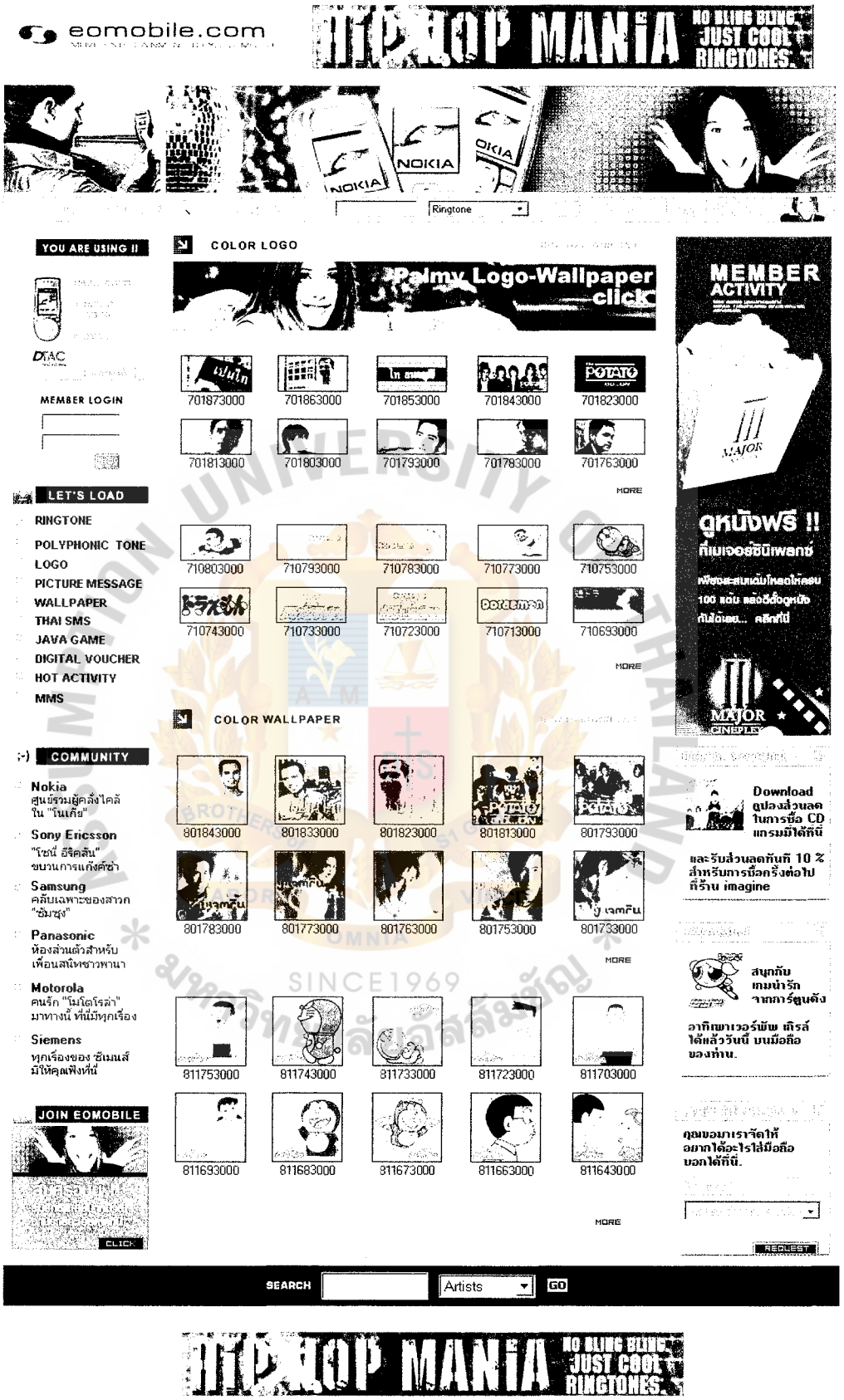

Figure 5.11. Color Logo and Color Wallpaper Page.

5.4.1. Implementation

Web Flow

At the outset, we will create an extendible directory and file structure to manage the web's files and/or software components (CGI or Java programs).

(1) Use HTML tools where helpful.

(2) Check the web's implementation in various browsers.

(3) Use templates or web generating schemes for supporting a consistent look and feel.

Transaction Flow

First of all when user visits Eomobile.com home page, they will be able to easily browse through the web content which is divided into 2 categories.

Downloadable Content: User can download this kind of content directly from the web site such as Ring Tones, and Logos by browsing through 2 ways;

(1) The link from the articles on the web site. For example when the user read through the movies article there would be the option labeled "Mobile Content". It will bring the user to the related mobile content such as the screen savers, logos or picture messages from the movie and let the user to download directly from the section.

(2) Go to download the needed product directly without browsing through any article by choosing the categorized menu to go to the exact page.

5.5 Transaction flow of Normal Content

(1) *Membership Content:* is the content for member who has been registered the payment method such as Account debit or Credit card prior to the time they purchase the product such as concert ticket reservation, movie ticket reservation, order of DVD, VCD, or other products.

Security Design

Security is the most important factor in creating E-commerce web site. Customers need to be ensured that the information that they are giving out is secured. Such that we need to emphasize more on making our web site secure enough for customer to make online purchase. In order to do so the following things will be applied.

(1) Data Encryption will be used for data traveling through an Internet.

(2) Data Encryption will be used for data kept in the database server.

(3) To ensure the privacy of our customer's information and the security of electronically transferred data such as credit card numbers, we utilize SSL (Secure Socket Layer) encryption. This is a widely accepted and supported standard in Internet security.

(4) Back up disk will be used as a back up unit to prevent the loss of data.

(5) The Anti Virus will be installed to protect data and programs.

Firewall will be implemented to protect the system from the malicious attacks and to filter the information coming through the Internet connection into our computer system. If an incoming packet of information is flagged by the filters, it is not allowed to go through. It also protects our computer databases and corporate information from harm.

5.5.1. Promotion

Eomobile.com will handle all the public relations issues of a web. These include making the existence of a web known to online communities through publicity as well as forming business or other information relationships with other webs. Promotion will use specific marketing strategies or creating business models.

Key Promotion Practices

(1) Follow online community norms and practices.

(2) Innovatively connect with users to meet their needs.

(3) Target publicity releases for general Web audiences, potential users, and current users.

Web Promotion Techniques

Our main goal of promotion is to keep the general public and the web's users informed about the purpose and offerings of the web. As described previously, the need for continuous web promotion arises from the dynamic environment in which mobile content web site exists; new resources, new information, and new forums for communication come into existence all the time. These changes alter the context in which users experience a web.

Users of the Web experience information overload. Every moment, new services and information become available on the Web, some of which grab the audience's attention, so making a web known to the Web public at large is a difficult task. There's no central point to announce a new web to the world. Moreover, there are few subject-related What's New pages, so someone interested in what a web promoter has to offer might not easily come across a particular special-interest web. A web promoter can use certain strategies to publicize the web, however. This publicity has several goals:

(1) To inform the general Web public as a whole of the existence of the web and what it has to offer

(2) To attract the interest of the target audience members and let them know about how the web meets their needs

(3) To educate the current web users of new developments on the web

We will use many strategies for reaching a variety of Web audiences, starting with the most general audience and then focusing on the narrower audience for a particular

web. Other techniques help keep publicity and information flowing to the existing web users.

5.5.2. Innovation

Eomobile.com will continuously improve the usability and quality of the web to meet and exceed user expectations.

We'll find creative or unique ways to improve the elements of the web or engage the web's audience.

Key Innovation Practices

(1) Continuously and creatively work for improvement to meet user needs.

(2) Based on analysis, user testing, and focus groups, identifies new user needs.

(3) Identify new technologies that may help you meet user needs better.

Eomobile.com Innovation Techniques

Eomobile.com will be creatively monitor and understand user needs and develop web structures to meet those needs.

Because the World Wide Web is dynamic, highly enmeshed, competitive, and often a continuously available, global service, developing a web never stops. The information space in which a web operates constantly changes, and, possibly, the domain information of a web changes. The changing of the web depends on users' needs, the nature of the domain information, and other factors such as the growth of competitive webs. The key to approach this need for continuous development is to keep all web-development processes operated. After plans are made for a web, those plans should be reevaluated and adjusted to new conditions. Both of new handset technology and mobile operator technology must be adjusted to our contents in order to improve the web for the user.

Content Improvements

To improve the processes for information retrieval, selection, and presentation, web innovators also can work on the following points:

(1) Accuracy of sources. In the early days of widespread use of the Net, any information on it or about it was welcome. Today, the variety of information sources requires users to seek out only those sources that are the most accurate and useful.

(2) Link freshness. Because Net resources constantly change, keeping links updated is a constant task. Using link verification tools, the web analyst can identify stale or broken links and direct their repair.

(3) Reducing redundancy. If outside links to resources are made in the web, developers should seek the highest-level, most stable, most comprehensive information sources for the given topic.

(4) Improving annotations. The language in a web is used in keyword databases to index its information. Therefore, annotations of external links and well-written descriptions of a web's offerings might be key to bringing a web to the attention of users.

(5) Providing alternate views. Because of the multi-path nature of hypertext, higher level and alternate views of a web can be made. Different segments of the user audience might have different needs for information. Creating expert or beginner layers over a web's domain information might help users get what they need more quickly or with more help.

5.6 Web Development Requirements

Eomobile.com website will be initially developed with a team of engineers (Web developers, JSP programmers, and software developers). It will be a site heavy on technical infrastructure, allowing us to store a very up to date, and easy to manipulate, product database.

Eomobile.com will focus on an extremely easy to use UI and will employ a team of producers and UI experts to develop the site internally. This is a core competency for Eomobile.com.com and cannot be outsourced to a design firm.

The website will be launched in the first year with three main development phases:

(1) PHASE I will provide an array of the top 90% of popular mobile contents, with 80% of those basic products including logo, ring tone, sms, picture message, screen saver and 10 %of Hi-End products such as Multimedia Messaging Service and Polyphonic Ring tone.

(2) PHASE II will expand the offering to include 100% of the non- voice services and products available in most update technologies, and will add more brand royalty to our customer. Including Mobile Entertainment Payment such as Concert Ticket and Movie Ticket

(3) PHASE III will add more interactivity such as cartoon idol, which will help customer to download our contents and will recommend for interesting products.

5.6.1 Front End

For Eomobile.com the UI design of the website is a key to the success of the company. The UI needs to:

(1) Have a clear and easy to use navigation scheme.

(2) Fast loading, non-graphic-intensive pages. Many of the mobile users will be accessing the site from home on their dial-up connections.

(3) Graphics and UI that mobile users can identify with. The site needs to have a friendly and funny interface to appeal to the target audience.

(4) A consistent front-end UI on all applications built for the content. Users should always know how to browse through products and find relevant product information such as how to download and setting.

(5) Eomobile.com will need to engage mobile specialist and marketing spescialist to recommend products, reslove problem and answer questions for our customers.

(a) *Front end = what you see onscreen (the part of the software you interact with).* -- *Wired* Style Principles of English Usage in the Digital Age

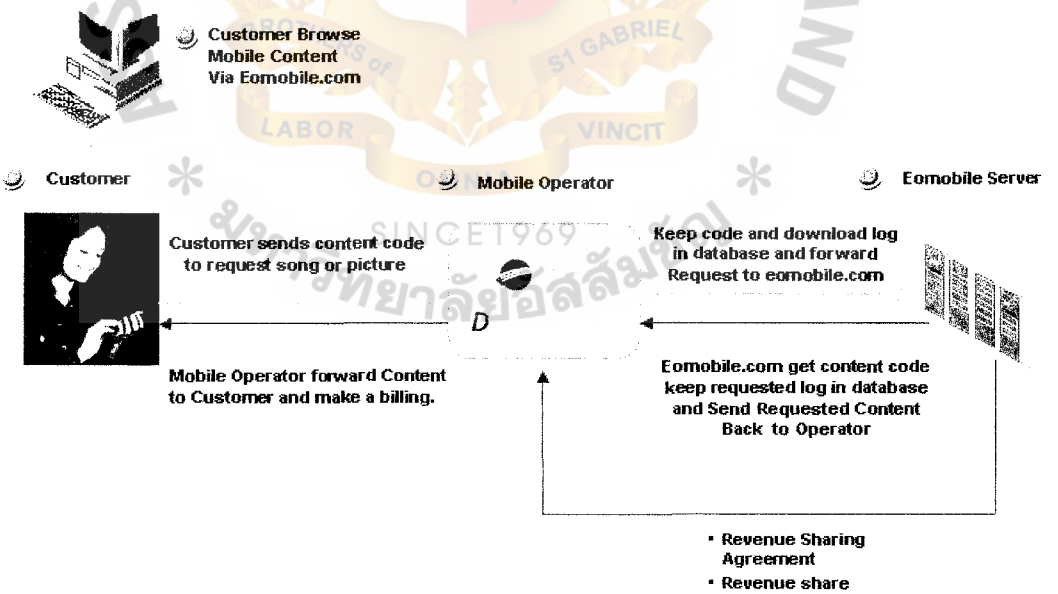

Figure 5.12. Transaction flow on Front End.

5.6.2 Back End

The back end of our website will need these features:

(1) Web hosting with 99.99% uptime and High performance networks, which are connected with mobile operator.

(2) Statistics to determine: page views, unique users, banner impressions, sponsorship impressions and clickthroughs.

(3) A back end that is easily plugged into the following commerce tools:

(a) Member Score Database that store customer data and their score for each download.

(b) Product database that is easily browsed and searched.

(c) Recommendations and Search engine.

(d) Ability to rate products or recommend them to mobile users such as top download or new release.

(4) Back-end application to support newsletters and a robust email alert system.

(5) Security and data back up for our database and web server.

(a) *Back end = software that runs on a network server (behind the scenes). - - Wired* Style Principles of English Usage in the Digital Age

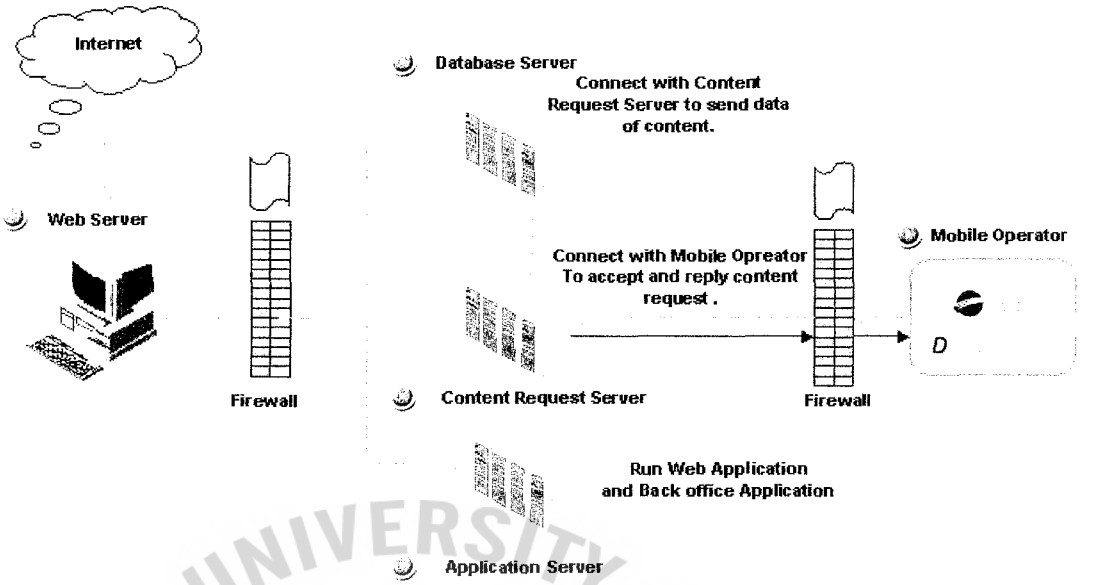

Figure 5.13. Transaction flow on Back End.

5.7 Resource Requirements

Eomobile.com will need the following resources to complete their website:

(1) 2 software developers (with java, wap and jsp experience).

(2) Two veteran Internet producer and creative.

(3) One well trained and seasoned UI expert.

(4) One business development resource manager to cut partnership deals with mobile operators and handset manufacturers.

(5) Two Web developers with experience with Java script, PERL, PHP, and other template languages.

(6) Three Music Composers with experience in much type of music and music composer tools.

(7) Four graphic designer to create advertisement on printing media and create graphic or animation on mobile

(8) One expert System Engineer to maintains servers and networks

5.8 Operating System and Software requirements

The operating system that we use for our e-commerce web site is Window 2003 Server. We will use SQL Server 2000 to be as database server. SQL Server 2000 is the latest version, includes support for XML and HTTP, performance and availability features to partition load and ensure uptime and advanced management and tuning functionality to automate routine tasks and lower total cost of ownership. We choose Microsoft .NET Framework 1.1 as our develop software.

Web designing softwares are Adobe Illustrator, Adobe Photoshop and Macromedia Dreamweaver.

5.9 Future Development

After initial implementation of the Eomobile.com website, future development will be based on resources and business needs.

(1) PHASE II will expand the offering to include 100% of the non- voice services and products available in most update technologies (such as streaming media, karaoke), and will add more brand awareness and brand royalty to our customer.

(2) PHASE III will add more interactivity such as cartoon idol that will help customer to download our contents and will recommend for interesting products.

VI. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Refer to the articles and survey, which we used for analyze the mobile business, it shows that in the near future the non-voice service will play the major role in mobile market. As of the number of mobile purchasing rate are now reaching the highest point so the competition in the market will depends more on the value add technology service from the mobile operator.

From the reasons above, it is evident that the non-voice service still has the opportunity to grow in the market and make a lot of profit for content provider who has a qualified content which are up to date and unique. And from the SWOT analysis, Eomobile.com has those strength points of the copyright contents either ring tones or super star pictures from GMM Grammy that are modified and used as entertainment content on mobile. But the web site still have the weakness points in our brand loyalty, which is not yet popular among mobile users because the web site are quite new among other mobile content providers. But with the unique content, it is believed that Eomobile.com will be able to compete with other competitors and generate the stream of revenue in the non-voice service market.

The marketing plan, the products provided in the first phase divided into 7 categories, which are Multimedia Message Service (MMS), Streaming Media Music Video, Picture Service, Digital Voucher, Sound Service, Short Message Service (SMS) and Game & Activity Product. By doing so these products and services are created and carefully selected to meet the need of the customers analyzing from the survey and article of mobile operators and handset vendors. The products and services are created to be compatible with several handset models from varies handset vendors.

The sales promotion will be held periodically through out the year in order to push the customer demands. The web site content will adapt to the entertainment events for instance, the new launching album, movies preview, etc. By doing so the customer will be able to join the new activities and using the download points to play the games in the events.

The statistic of mobile users and the reference surveys, we can analyze the break-even point as followed;

With fixed costs of 10,494,348 baht per year at the outset (a bare minimum), the web site needs to bring in 26,217,669 of product revenue in order to break-even on the web site costs.

The company plan on reaching this break-even goal by the beginning of the second year of Eomobile.com's existence. Eomobile.com expects to be profitable in the second year of business.

For the web site design the company emphasized on the ease of use concept and layout design having the colorful unique and always up to date. The promotional content such as new ring tone, pictures, etc will be held. And the promotional activities will be added in each web page just to catch the attention from the visitors. The search and help function is available to make customer find out what they want easily. For the support system, Eomobile.com has a link between the operators with the high-speed networking so that the data transferred will be done quickly and correctly to the right receiver. In the near future new generation mobile handsets will be launched into the market. And those new handsets will consist of several new functions which Eomobile.com doesn't overlook on this point thus we plan to develop the new contents to catch up with it and add several new contents in to our web site such as Mobile

ayment, Real-time Entertainment, Game, and promotional activities for the customers. Such that Entertainment can stay with you anywhere anytime.

6.2 Recommendation

At this moment the existing products are quite famous and attractive for customer in Thailand market. Thus the web site should has to develop new products and services in order to replace the existing products, which are fading out of the market. So to study consumer behaviors, needs and wants analysis and non-voice service technological trends will be a helpful tool for the company to understand the market situation and able to produce the product and service to meet market needs.

As the technology moves very fast, customer relation becomes a major factor that effect customer buying decision. Because of the complication of handset technology and hi-tech of non-voice services are confusing. So the website must emphasize on enhancing a call center to answer the questions, inquiries or technical problems that occur during the use of our services. The website's call center will help the customer to familiarize with varies products and services and also leads the sales opportunity.

The number of business partners increase as this business is growing. Several companies join in this business such as mobile operators, content providers, and entertainment companies. So the Win-Win Business strategy will be applied in order to work with EOMOBILE.com's partner to create a strong co-operate business. The cooperate activities will be held periodically in order to create the good relationship between business partners. For example Seminars, Sports or promotional events.

APPENDIX A

GSM – THE WIRELESS EVOLUTION

GSM - The Wireless Evolution

The Wireless Evolution is achieved through the GSM family of wireless technology platforms - today's GSM, GPRS, EDGE & 3GSM.

Welcome to the wireless evolution where you will find a wealth of information on the GSM family of wireless communications. GSM is a living, evolving standard - growing and adapting to meet changing customer needs.

It is the basis of a powerful family of platforms for the future - providing a direct link into next generation solutions including GPRS (General Packet Radio Services) EDGE (Enhanced Data for GSM Evolution) and 3GSM*.

GSM's unrivalled success can be attributed to many factors, including the unparalleled co-operation and support between all those supplying, running and exploiting the platform. It is based upon a true end-to-end solution, from infrastructure and services to handsets and billing systems.

GSM is a standard that embraces all areas of technology, resulting in global, seamless wireless services for all its customers. It's all part of the Wireless Evolution.

Use the links on the left to find more information about the entire GSM family of technologies (GSM, GPRS, EDGE, 3GSM) that make up the Wireless Evolution, as well as mobile services and applications such as SMS and WAP. Many sections also contain links to other websites on these topics.

**3GSM represents third generation services delivered on an evolved core GSM network. 3GSM services are delivered at a technical level on third generation standards developed by 3GPP, which utilise air interfaces for W-CDMA and, in some specified markets, EDGE.*

Today's GSM Platform

Today's second-generation GSM networks deliver high quality and secure mobile voice and data services (such as SMS/Text Messaging) with full roaming capabilities across the world.

Today's GSM platform is a hugely successful wireless technology and an unprecedented story of global achievement. In less than ten years since the first GSM network was commercially launched, it became the world's leading and fastest growing mobile standard, spanning over 190 countries.

Today, GSM technology is in use by more than one in ten of the world's population and it is estimated that at the end of 2002 there were 787 million GSM subscribers across the 190 countries of the world.

The growth of GSM continues unabated with more than 160 million new customers in the last 12 months. Since 1997, the number of GSM subscribers has increased by a staggering 10 fold. During late 2003 or early 2004, it is predicted that global GSM subscribers will smash through the one billion mark.

The progress hasn't stopped there. Today's GSM platform is living, growing and evolving and already offers an expanded and feature-rich 'family' of voice and data enabling services.

EDGE Platform

A technology that gives GSM the capacity to handle services for the third generation of mobile telephony. EDGE provides three times the data capacity of GPRS. Using EDGE, operators can handle three times more subscribers than GPRS, triple their data rate per subscriber, or add extra capacity to their voice communications. EDGE uses the same TDMA (Time Division Multiple Access) frame structure, logic channel and 200kHz carrier bandwidth as today's GSM networks, which allows existing cell plans to remain intact.

Further enhancements in data capability over the core GSM network will be provided with the introduction of Enhanced Data rates for GSM Evolution - known as EDGE*. This will achieve the delivery of advanced mobile services such as the downloading of video and music clips, full multimedia messaging, high-speed color Internet access and e-mail on the move.

3GSM Platform

3GSM* is the latest addition to the GSM family. 3GSM* is about having third generation mobile multimedia services available globally. 3GSM* focuses on visionary communications, in more ways than one. It's about the new visual ways in which people will communicate and the unique vision of the GSM community, which has always focused on the future needs of our customers.

The technology on which 3GSM* services will be delivered is built around a core GSM network with a Wideband-CDMA (W-CDMA) air interface, which has been developed as an open standard by operators in conjunction with the 3GPP standards development organization. Already over 85% of the world's network operators have chosen 3GSM's* underlying technology platform to deliver their third generation services. 3GSM* is a key element of GSM-The Wireless Evolution.

**3GSM represents third generation services delivered on an evolved core GSM network. 3GSM services are delivered at a technical level on third generation standards developed by 3GPP, which utilize air interfaces for W-CDMA and, in some specified markets, EDGE.*

Generations of mobile phone

1G

The first wireless cellular systems (1G) started appearing in the 1980s. 1G networks are based on the AMPS (Advanced Mobile Phone Service) standard. Unlike their predecessor wireless networks, 1G networks are based on the idea of cells. 1G networks provide analog voice service but no data service. 1G was analog, not digital. The spectral efficiency of 1G networks was very low and the effective "energy/bit" was high. Handsets had short talk/standby times.

2G

2G wireless networks are digital networks (for spectral efficiency and not for digital services). There are several 2G standards in use:

(1) TDMA (Time Division Multiple Access). Used primarily in the USA.

(2) GSM (Global System for Mobile Communications). Widely used in Europe and countries other than USA, now appearing in the USA.

(3) CDMA (Code Division Multiple Access). Used in USA and its use is spreading in the rest of the world.

(4) PDC (Personal Digital Cellular). Used only in Japan where iMode uses packet switched PDC.

Some characteristics of 2G networks are:

(a) Maximum data rates of 9.6 Kbits/second to 14.4 Kbits/second if you are in just the right place.

(b) Digital voice (results in a lower quality voice but uses less precious spectrum).

(c) Enhanced telephony features such as caller-id.

(d) Services such as text based messaging (big winner), downloads of still images and audio clips, etc.

2.5G (Between 2G and 3G)

2.5G networks, which are still not available everywhere, are essentially General Packet Radio Service (GPRS) packet overlays on 2G networks. Besides enhancing GSM and TDMA networks by making them packet-based networks, GPRS also increases their data rates. GPRS is primarily a software upgrade of GSM. Some characteristics of 2.5G networks are:

(1) Data rates of 64 - 144kb/second.

(2) Packet based.

(3) Always-on connectivity.

(4) Instant messaging with small attachments.

A new wireless standard, Enhanced Data GSM Environment (EDGE), has been developed to increase the bandwidth of GPRS. EDGE triples the bandwidth capacity of

GPRS to 384 Kbits/second thus allowing GSM and TDMA operators to offer high-speed services. EDGE based networks fall in between 2.5G and 3G networks.

3G

3G is the third (next) generation of wireless network technology that provides high speed bandwidth (high data transfer rates) to handheld devices. Specifically, 3G wireless networks support the following maximum data transfer rates:

(1) 2.05 Mbits/second to stationary devices.

(2) 384 Kbits/second for slowly moving devices, such as a handset carried by a walking user.

(3) 128 Kbits/second for fast moving devices, such as handsets in moving vehicles.

With such high bandwidth rates, 3G networks will be able to offer a variety of new services that combine high voice quality telephony, high-speed mobile IP services, information technology, rich media, and offer diverse content. What Came Before 3G? 3G wireless networks represent an evolution of wireless network technology, and were preceded by 1G, 2G, and 2.5G wireless networks

Table A.1. Summary Table Generations of mobile phone.

Generations of mobile phone	Features
1G (80s to early 90s)	Simple analogue voice service. No data capability.
2G (Mid 90s – today)	Also known as GSM, 2G offers phone calls, voicemail, simple email (SMS) and basic data services (WAP, operating at 10kb/s).
2.5G (2001 – today)	2.5G has only recently become available in the UK. Also known as GPRS, it offers phone calls, voicemail, e-mail, and web browsing. Data speed is around 10 times faster than 2G at 64-144kb/s

3G (expected 2003/4)	In addition to voice services, it is expected that 3G phones will offer high-resolution video and multimedia services while on the move. These would include mobile office services, virtual banking and online billing, home shopping, video conferencing and high-speed web access (data speeds between144kb/s-2mb/s).

APPENDIX B

MORE INFORMATION OF 3G

More information of 3G

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(5) Timescales for 3G

(6) 3G Specific Applications

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(b) Voice Over Internet Protocol

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(d) Moving Images

(e) Virtual Home Environment

(f) Electronic Agents

(g) Downloading Software

(h) Download Time

(7) Optimal Bearer by Application

(8) 3G Mobile Terminals

(9) When will 3G arrive?

(10) 3G and the media industry?

(11) 3G and radio

(12) Summary

(1) Introduction

This white paper is a summary version of the report 'Yes 2 3G' which contains nearly 300 pages of highly detailed information on all aspects of the Third Generation of mobile telecommunications. Written in an easy to read, non-technical style we hope you find it useful. For the complete picture, there is no replacement for the full version of 'Yes 2 3G'. To order your copy for just 495 US dollars, visit www.mobile3G.com or contact Mobile Life streams.

The telecommunications world is changing as the trends of media convergence, industry consolidation, Internet and Internet Protocol (IP) technologies and mobile communications collide into one. Significant change will be bought about by this rapid evolution in technology, with Third Generation mobile Internet technology a radical departure from that which came before in the first and even the second generations of mobile technology. Some of the changes include:

(1) People will look at their mobile phone as much as they hold it to their ear. As such, 3G will be less safe than previous generations- because television and other multimedia services tend to attract attention to themselves- instead of hands-free kits, we will need eyes-free kits!

(2) Data ('non-voice') uses of 3G will be as important as and very different from the traditional voice business

(3) Mobile communications will be similar in its capability to fixed communications, such that many people will only have a mobile phone

(4) The mobile phone will be used as an integral part of the majority of people's lives- it will not be an added accessory but a core part of how they conduct their daily lives. The mobile phone will become akin to a remote control or magic wand that lets people do what they want when they want

As with all new technology standards, there is uncertainty and the fear of displacement. Third Generation (3G) mobile is topical and contentious for several reasons:

(1) Because the nature and form of mobile communications is so radically changed, many people do not understand how to make money in the nonvoice world, and do not understand their role in it

(2) 3G licenses have been awarded around the world, in many cases at huge cost, necessitating that existing mobile communications companies in the 2G world think about and justify their continued existence

(3) 3G is based on a different technology platform- Code Division Multiple Access (CDMA)- that is unlike the Time Division Multiple Access (TDMA) technology that is widely used in the 2G world. GSM (Global System for Mobile Communications) was based on TDMA technology

(4) The US, Japanese and European mobile players all have different technology competences and are now unified in this single standard- the separate wireless evolution paths and European wireless leadership are thereby challenged

(5) Japanese network operators will be the first to implement 3G networks in the year 2001, and Japanese terminal manufacturers, who have not had much market share outside their home market, will be first with 3G terminals

(6) Many industry analysts and other pundits have questioned the return on an investment in 3G technology- questioning whether network operators will be able to earn an adequate return on the capital deployed in acquiring and rolling out a 3G network.

(7) Many media and Internet companies have shown a strong interest in using 3G technology as a new channel to distribute their content, opening the opportunity for new entrants and new partnerships and value chains.

(2) Summary of Mobile Lifestreams' View on 3G

As detailed in its full 'Yes 2 3G' report, Mobile Lifestreams believes relating to 3G:

(a) 3G can be thought of as 2.5G services such as GPRS plus entertainment (games, video, mobile multimedia) plus new terminals. 3G brings with it significantly more bandwidth. Whereas GPRS terminals will have the same range of form factors as today's 2G phones do, many 3G terminals will be video centric.

(b) There is a clear business case for investing in 3G for existing network operators that are facing congested 2G networks. Voice traffic over 3G networks will be the cash cow that supports and ensures the 3G business case can pay for itself. The main positive (rather than defensive) reason for mobile network operators to secure 3G network licenses is to solve capacity issues in terms of enabling far greater call capacity than today's digital mobile networks allow.

(c) Nonvoice (data) traffic will also be huge, with new mobile multimedia applications such as mobile postcards, movies and music driving new applications and services along with corporate applications. Applications and services available through the Internet, intranet and extranet will drive the interest in and traffic on 3G networks.

(d) Providing that network operators adopt an open model to all Internet traffic, the business case for 3G fuelled by both greater data and voice traffic is clear

and Mobile Lifestreams is confident that the business case for winning and rolling out a 3G network is compelling. If the network operator insists upon a closed model in which data traffic is funneled primarily through its own in-house portal or limits access to its customers for eCommerce and other Internet services, the business case is endangered.

(e) Third Generation technology is essential- think about the huge change that will happen in the next five years from today's rudimentary and crude text based if elegant services such as Short Message Service to moving video clips.

(f) It is often assumed that early adopters will be corporate customers for 3G, but Mobile Lifestreams expects that since consumer electronics devices as their name suggests appeal to consumer markets and will have 3G built in. Mobile multimedia- games, entertainment and the like are much more consumer oriented that the buttoned down sober suited business people. Mobile Lifestreams expects 3G to be a consumer revolution and not a corporate one.

(g) Many people will not have a fixed phone at home. Preventing this until now has been the slow speed of mobile data in 2G and even so called 2.5G technology that has made Internet access the principle application for home phones.

(h) There will be a lot of suppliers of mobile terminals as Japanese, mobile handheld computer manufacturers (Palm, Microsoft), information appliance and IT suppliers enter the global mobile terminal market. Mobile enabled devices will proliferate as all portable consumer electronics devices get mobile communications (and short range wireless communications)

technology built-in. The successful handset vendors will be those that can deliver new products rapidly and reliably.

(i) Given the fragmented market for wireless phones, alliances and mergers between Korean, Japanese, European and American mobile phone and consumer electronics manufacturers will continue and accelerate since few if any companies have all the enabling technologies in-house from video to camera to mobile to interfaces. Smaller players in all of these sectors will continue to consolidate, as companies such as Sagem and Benefon (with data skills and location centric smart phones respectively) are acquired to gain better distribution for their technologies.

(j) 3G terminals will be very significantly more complex than today's GSM phones, because of the need to support video, more storage, multiple modes and new software and interfaces, better battery life and so on. Given that the biggest single inhibitor of take up of new services such as Wireless Application Protocol (WAP) and High Speed Circuit Switched Data (HSCSD) has already proven to be a lack of handsets, and given that every stage in the data evolution path for GSM from today to 3G requires a new handset, once again we see that terminals are mission critical and their timely volume availability will be critical factor in determining when 3G is a success.

(k) Partnerships will increasingly develop between (US based) Internet, IT and IP companies, traditional mobile communications vendors (from Europe and the USA) and (Japanese) consumer electronics manufacturers. Different regions have different strengths and are likely to leverage them through strategic alliances.

(l) From a network operator technology point of view, the introduction of packet data services such as GPRS to circuit switched networks is more challenging than the move from GPRS to 3G- this is because GPRS is the first time addition of packet capability to a circuit switched network, whereas 3G is the addition of more packet.

(m) From an end user point of view, the move from GPRS to 3G is much more revolutionary than the move from Second Generation data services to GPRS. GPRS allows the mobile network to catch up with the data bandwidths available over fixed telecommunications networks, whereas 3G provides unprecedented bandwidth for mobile users, so much bandwidth that new applications will need to be invented to use it.

(3) The Standards for 3G

Third Generation (3G) is the mobile phone system that will begin to be available commercially in the year 2001/2. The idea behind 3G is to unify the disparate standards that today's second-generation wireless networks use. Instead of different network types being adopted in The Americas, Europe and Japan, the plan is for a single network standard to be agreed and implemented.

3G Standardization Process

In 1998, the International Telecommunications Union (ITU) (see www.itu.int) called for Radio Transmission Technology (RTT) proposals for IMT-2000 (originally called Future Public Land Mobile Telecommunications Systems (FPLMTS)), the formal name for the Third Generation standard. Many different proposals were submitted: the DECT and TDMA/ Universal Wireless Communications organizations submitted plans for the RTT to be TDMA-based, whilst all other proposals for non-satellite based solutions were based on wideband CDMA- the main submissions were called Wideband

CDMA (WCDMA) and cdma2000. The ETSI/ GSM players including infrastructure vendors such as Nokia and Ericsson backed WCDMA. The North American CDMA community, led by the CDMA Development Group (CDG) including infrastructure vendors such as Qualcomm and Lucent Technologies, backed cdma2000.

3GPP

In December 1998, the Third Generation Partnership Project (3GPP) was created following an agreement between six standards setting bodies around the world including ETSI, ARIB and TIC of Japan, ANSI of the USA and the TTA of Korea. This unprecedented cooperation into standards setting made 3GPP responsible for preparing, approving and maintaining the Technical Specifications and Reports for a Third Generation mobile system based on evolved GSM core networks and the Frequency Division Duplex (FDD) and Time Division Duplex (TDD) radio access technology. For example, ETSI SMG2 activities on 3G have been fully transferred to 3GPP. The Chinese and the CDMA Development Group were unfortunately not original members of the 3GPP.

In the first half of 1999, much progress was made in agreeing a global IMT-2000 standard that met the political and commercial requirements of the various technology protagonists- GSM, CDMA and TDMA. In late March 1999, Ericsson purchased Qualcomm's CDMA infrastructure division and Ericsson and Qualcomm licensed each other's key Intellectual Property Rights and agreed to the ITU's 'family of networks' compromise to the various standards proposals.

3G Air Interface Modes

The proposed IMT-2000 standard for Third Generation mobile networks globally is a CDMA-based standard that encompasses THREE OPTIONAL modes of operation,

each of which should be able to work over both GSM MAP and IS-41 network architectures. The three modes are:

Table B.1. Source Mobile Lifestreams.

Mode	Title	Origin	Supporters
1	IMT DSWCDMADirect Spread FDD (Frequency Division Duplex)	Based on the first operational mode of ETSI's UTRA (3G Terrestrial Radio Access) RTT proposal	Japan's ARIB (Association of Radio Industries and Businesses, the Japanese standards setting body) and GSM network operators and vendors. To be deployed in Japan and Europe.
2	IMT MCcdma2000Multi-Carrier FDD (Frequency Division Duplex)	Based on the cdma2000 RTT proposal from the US Telecommunications Industry Association (TIA). Consists of the 1XRTT and 3XRTT components	cdmaOne operators and members of the CDMA Development Group (CDG). Likely to be deployed in the USA.
3	IMT TCUTRA TDD (Time Division Duplex)	The second operational mode of ETSI's UTRA (3G Terrestrial Radio Access) RTT proposal.	An unpaired band solution to better facilitate indoor cordless communications.Harmonized with China's TD-SCDMA RTT proposal. Probably will be deployed in China.

Having three different modes, one for Europe and Asia, one for Japan and one for the US is not all that different from the existing 2G situation. The main change is that Japan has joined the European GSM community and based WCDMA.

As can be seen from the table above, there are several different names for each of the air interface modes, and furthermore, new names are regularly introduced! For the

sake of this book, we refer to WCDMA, cdma2000 and FDD wherever possible, and refer to UWC 136 and 3G separately.

In fact, strictly speaking, the final ITU recommendations for IMT-2000 stipulated five terrestrial radio interface standards when DECT (IMT FT) and EDGE (IMT SC or IWC 136) are included. EDGE and DECT will NOT be the topic of this introduction to 3G.

There are three radio interface modes with two (existing) major core network standards- GSM MAP and TIA IS-41 (from Telecommunications Industry Association, a US standards setting body). The core network is the physical network infrastructure to which the radio access network is connected in a mobile network. A radio access network is the portion of a mobile network that handles subscriber access, including radio base stations and other nodes.

3G Data Rates

The International Telecommunications Union (ITU) has laid down some indicative minimum requirements for the data speeds that the IMT-2000 standards must support. These requirements are defined according to the degree of mobility involved when the 3G call is being made. As such, the data rate that will available over 3G will depend upon the environment the call is being made in:

<u>High Mobility</u>

144 kbps for rural outdoor mobile use. This data rate is available for environments in which the 3G user is traveling more than 120 kilometers per hour in outdoor environments. Let us hope that the 3G user is in a train and not driving along and trying to use their 3G terminal at such speeds.

<u>Full Mobility</u>

384 kbps for pedestrian users traveling less than 120 kilometers per hour in urban outdoor environments.

Limited Mobility

At least 2 Mbps with low mobility (less than 10 kilometers per hour) in stationary indoor and short range outdoor environments These kinds of maximum data rates that are often talked about when illustrating the potential for 3G technology will only therefore be available in stationary indoor environments.

(4) 3G Network Nodes

3G networks will require new radio and core network elements:

Radio Network

A new air interface is needed for 3G. This will require new Base Station Systems (BSSs). Specifically, the BSS changes needed are:

The 3G radio access network will comprise a RNC (Radio Network Controller) and Node B.

Radio Network Controller

A Radio Network Controller (RNC) will replace the Base Station Controller. The RNC will include support for connection to legacy systems and provide efficient packet connection with the core network packet devices (SSGN or equivalent). The RNC performs radio network control functions that include call establishment and release, handover, radio resource management, power control, diversity combining and soft handover.

Node B

A Node B is equivalent to a Base Station in the 2G network but also incorporates support for the 3G air interfaces.

Cell Planning

New cell planning methods will be needed to support the new frequency allocations for 3G and the radio interface changes- more 3G base stations will be needed compared to the comparable 2G coverage area. This gives an advantage to GSM 1800 and 1900 network operators whose cells already cover a smaller coverage area than those for GSM 900 networks. GSM 900 network operators will need to 'fill in' coverage in between existing cell sites.

Core Network

The 3G core network will be an evolved from GPRS or equivalent 2.5G core network systems. GPRS nodes such as the Serving GPRS Support Node (SGSN) and Gateway GPRS Support Node (GGSN) are described in detail in 'Data on GPRS' from Mobile Lifestreams. Upgrades to the mobile and transit switching systems to deliver packets will also be needed.

A new piece of network infrastructure for 3G is Media Gateways (MGW) that resides at the boundary between different networks to process end user data such as voice coding and decoding, convert protocols and map quality of service. The connectivity layer also provides access to backbone switches and non-mobile networks such as Cable Television. In some vendor solutions, MGWs are controlled remotely by the Mobile Switching Centre (MSC) and GSN servers by means of the Gateway Control Protocol. The ITU Study Group 16 and the IETF Megaco H.248 are working to ensure the GCP is an open standard protocol.

Existing network operators can then upgrade their Mobile Switching Centre (MSC) and GSNs to implement 3G OR ALTERNATIVELY to implement a new standalone MGW that is controlled from the server part of an upgraded 2G node.

Backbone Network

The radio network will be connected to the core network by a backbone network allowing wideband access and interconnection of subscribers. The 3G backbone network can use any transport technology but is certain to be based on packet technologies such as Asynchronous Transfer Mode (ATM) and Internet Protocol (IP). The backbone network is built as a mesh of IP routing or ATM switching nodes interconnected by point to point links. Technologies such as IP over ATM may be used that uses ATM switching to multiplex IP traffic. This IP over ATM architecture supports voice traffic alongside IP. Many vendors prefer a 'pure' end to end IP approach whereas others (such as Fujitsu profiled below) prefer an ATM/ IP hybrid to guarantee quality of service.

Alternatively, IP over SONET/ SDH is a different backbone network solution that eliminates the ATM layer by establishing point to point links between IP routers directly over SONET/ SDH rings which run over a Dense Wavelength Division Multiplexing (DWDM) layer that enables Terabits per second (Tbits/s) of aggregate network bandwidth.

Support System Changes

Of course, platforms and systems such as the value added service centers, gateways, billing systems, customer service elements, Intelligent Network systems and the like will also need to be upgraded. Once again, this is likely to be an evolution from 2.5G data centric services such as GPRS where packet charging elements and so on were introduced.

There may also need to be a change in personnel as more applications specialists, alliance managers, Internet sector managers and the like are hired to develop content and applications over 3G networks.

(5) Timescales for 3G

When a new service is introduced, there are a number of stages before it becomes established. 3G service developments will include standardization, infrastructure development, network trials, contracts placed, network roll out, availability of terminals, application development, and so on. These stages for 3G are shown in Table 4 below:

Table B.2. Source Mobile Lifestreams.

Date	Milestone
Throughout 1999	3G radio interface standardization took place, and initial 3G live demonstrations of infrastructure and concept terminals shown
2000	Continuing standardization with network architectures, terminal requirements and detailed standards
May 2000	The formal approval of the IMT-2000 Recommendations will be made at the ITU Radio communication Assembly in early May
2000	3G licenses are awarded by governments around Europe and Asia
2001	3G trials and integration commence
2001	3G launched in Japan by NTT DoCoMo
Summer of 2001	First trial 3G services become available in Europe
Start of 2002	Basic 3G capable terminals begin to be available in commercial quantities
Throughout 2002	Network operators launch 3G services commercially and roll out 3G.- Vertical market and executive 3G early adopters begin using 3G regularly for nonvoice mobile communications

Table B.2. Source Mobile Lifestreams (Contunued).

Date	Milestone
2002/3	capable terminals become available, fuelling 3G usage
2004	3G will have arrived commercially and reached critical mass in both corporate and consumer sectors.

(6) 3G SPECIFIC APPLICATIONS

There are several applications that will be enabled by the broadband bandwidth that will come with 3G. These applications include:

Audio

Audio or video over the Internet is downloaded (transferred, stored and played) or streamed (played as it is being sent but not stored). The later tends to be of lower quality than the former. Content is transferred using various different compression algorithms such as those from Microsoft or Real Networks or the MPEG-1 Audio Layer 3 (better known as MP3) protocol. In fact, MP3 is a codec- a compression/ decompression algorithm. MP3 was invented in 1987 in Germany and approved by the Moving Pictures Experts Group, a part of the International Organization for Standardization, in 1992.

With 3G, MP3 files will be downloadable over the air directly to your phone via a dedicated server. There are numerous business models to allow both the network providers as well as the copyright owners of the MP3 material to benefit financially. Mobile Lifestreams expects that the integration of mobile telephony with everyday consumer products will emerge within the next four years to the extent that we will be able to retrieve data - be it voice, Internet or Music - anytime, anyplace through the next generation of mobile devices.

The era of downloading multimedia content from the Internet over fixed telecommunications and cable links to PCs is only just beginning and is dependent upon

bandwidth to a large degree- with quality of image and availability of service inversely proportionate to the amount of available bandwidth.

Due to bandwidth constraints, currently, users go online and downloaded files to their portable device over the fixed network which are then watched and listened to a later date- there is no real time audio and video streaming over mobile networks.

Since even short voice clips occupy large file sizes, high speed mobile data services are needed to enable mobile audio applications. The higher the bandwidth, the better- hence the attractiveness of 3G for mobile multimedia applications such as mobile audio and video.

Voice Over Internet Protocol

Another audio application for 3G is Voice over IP (VoIP)- the ability to route telephone calls over the Internet to provide voice telephony service at local call rates to anywhere in the world. With 3G and higher rate 2.5G technologies such as EDGE, VoIP will be available for the first time on mobile phones. To make a voice call, Voice Over IP can be used as an alternative to regular service. The irony here being is that voice has now become an application- and a very popular one- in its own right!

VoIP is not however a replacement for standard voice services since VoIP services are bandwidth demanding- there needs to be a high switching rate on the IP backbone to minimize the very high likelihood of delayed and lost packets.

Still Images

Still images such as photographs, pictures, letters, postcards, greeting cards, presentations and static web pages can be sent and received over mobile networks just as they are across fixed telephone networks.

Two variables affect the usability of such applications- bandwidth and time- and they are inversely related. The faster the bandwidth, the less time is needed to transmit

images, and vice versa. This is the reason why transmission of image based rather than textual information has not been a popular nonvoice mobile application until now- it takes too long given the slow data transmission speeds that were available prior to the introduction of mobile packet data.

Once captured, images can then be sent directly to Internet sites, allowing near real-time desktop publishing. The size of the file for a picture depends on the resolution and type of compression. Typically each picture is between 50K and 100K in the JPEG format. This can be transmitted quickly using mobile packet data.

Still image transmission is a much touted application for lower packet data services such as GPRS and beyond. Many people see still images as a killer compelling applications for GPRS.

Whilst a picture paints a thousand words, and this amount of text can easily be handled by GPRS, we expect the single image to be used instead!

Moving Images

Sending moving images in a mobile environment has several vertical market applications including (monitor sensor triggered) monitoring parking lots or building sites for intruders or thieves, and sending images of patients from an ambulance to a hospital. Videoconferencing applications, in which teams of distributed sales people can have a regular sales meeting without having to go to a particular physical location, is another application for moving images that is similar to the document sharing/ collaborative working applications reviewed below. Skeptics argue that vertical markets don't need video and consumers don't want it. However, with the Internet becoming a more multimedia environment, 3G will be able displaying those images and accessing web services.

The transmission of moving images is one of the applications that GPRS and 3G terminal and infrastructure vendors routinely and repeatedly tout as a compelling application area that will be enabled by greater data rates. And they are not incorrect to do so. However, it must be noted that even demonstrations of one megabyte of data over the air using Microsoft NetMeeting to perform a video conference facility do not deliver smooth broadcast quality video images. However, improving compression techniques should allow acceptable quality video images to be transmitted using 64 kbps of bandwidth.

Whilst videophones have failed to alight the public's imagination on fixed networks, this could be a function of the fact that a videophone is only as good as the number of other people who have one too. Corporations with several people with video capable mobile phones could easily hold virtual remote sales meetings between all their regional sales representatives.

As such, whilst we are confident that still images such as pictures and postcards will be a significant application for GPRS, moving images may not be of high enough quality initially to elevate the communication above the medium. Users could spend all their time adjusting the size of the image on their screen and trying to work out what they are seeing.

This is where 3G comes in- once again, the bandwidth uplift it and allows for high quality image transmission over the mobile network. As such, we see all moving video and image transmission application migrating to the 3G bearer as soon as it becomes available. By the time 3G is here, full length moves could be downloadable from Internet sites.

Virtual Home Environment

A Universal Mobile Telephone Service (3G) service that is often mentioned in the vendor's brochures is so called Virtual Home Environment (VHE), a service that simply lets customers have seamless access with a common look and feel their services from home, office or on the move and in any city as if they were at home. VHE is therefore aimed at roamers (a small subset of total mobile phone users).

VHE could also allow some other more useful services by placing their Universal Identity Module (UIM) into ANY terminal- and those terminals could be something other than mobile devices if smart cards are more widely supported than they are today.

Virtual Home Environment could hardly be described as a killer application though, especially since email and other services are increasingly available worldwide as the Internet becomes more widespread and services migrate to the Internet and can therefore be accessed from any Internet browser- with or without a smart card!

In general, smart cards are hyped beyond their usefulness. They have very limited storage capability (64 K counts for being the state of the art) but are useful in switching devices (users are likely to have multiple devices in different form factors in the 3G world) and for non-mobile applications such as identification and security for mobile banking and the like.

Electronic Agents

Electronic agents are a technology that Mobile Lifestreams believe will pay an important role for mobile working in the future- as agents are dispatched to carry out searches and tasks on the Internet and report back to their owners. This is an efficient way to get things done on the move.

Electronic agents are defined as "mobile programs that go to places in the network to carry out their owners' instructions. They can be thought of as extensions of the

people who dispatch them." Agents are "self-contained programs that roam communications networks delivering and receiving messages or looking for information or services."

Certainly, 3G terminals will give their owners much more control over their lives than today's mobile phones. They will be eAssistants, eSecretaries, eAdvisors and eAdministrators. This kind of control is what Home Automation applications anticipate. Indeed Orange in the UK has a vision expects that within ten years, our mobiles will be waking us up, reading out our emails, ordering our groceries, telling us the best route to work, reminding us and translating our conference calls. The key question is the extent to which these processes are human initiated or computer generated and controlled and the extent to which devices can 'learn' individual preferences and act accordingly.

Downloading Software

In the twenty-first century, software will increasingly be downloaded electronically from the Internet rather than purchased as boxed product in stores. This is a like file transfer applications that involve downloading the software itself. You might for example need WinZip or Abode Acrobat to read a file- and can download that over the 3G network to your 3G terminal.

Downloading software has several advantages because it is:

(1) Environmentally friendly: there is no packaging to throw away or store.

(2) Quick and convenient: downloadable products are delivered direct to your computing device. It arrives in minutes, not days.

(3) Value for money: you pay no delivery charges.

Download Times

Download times vary depending on the speed of your modem and the size of the application. Typical download times vary from 10 minutes to two hours.

Here are download times for a 5 Megabyte (MB) application:

Table B.3. Download times for 5 Megabyte (MB) application.

Connection Speed	Download Time
Very fast corporate type connection (e.g. T1)	30 seconds
Corporate type connection (e.g. ISDN)	12 minutes
Typical home modem (e.g. 28.8 modem)	104 minutes

Sites such as beyond.com and Mobiledatashop.com from Mobile Lifestreams offers many software products for immediate electronic download. Additionally, the Application Service Provision (ASP) market in which software platforms and server software is being hosted by third parties and accessed by client software mimics this 'thin client' world in which the bandwidth is high enough for applications and files to be retrieved from the Internet on the fly whenever they are needed.

Since it relies on the bandwidth that 3G provides, 3G is likely to be the key bearer for downloading software.

(7) Optimal Bearer by Applications

By designing applications to minimize the effects of the limitations of existing mobile services- such as the length of a short message or the speed of a Circuit Switched Data call- existing nonvoice mobile services can often be successfully used for mobile working. However, many nonvoice applications are graphics intensive and the new faster data services such as 3G will allow BETTER VERSIONS of today's existing nonvoice applications.

It is often assumed that early adopters will be corporate customers for 3G, but Mobile Lifestreams expects that since consumer electronics devices as their name

suggests appeal to consumer markets and will have 3G built in. Mobile multimedia-games, entertainment and the like are much more consumer oriented that the buttoned down sober suited business peoples. Mobile Lifestreams expects 3G to be a consumer revolution and not a corporate one.

The most ideal bearer for each application- 3G, GPRS or the Short Message Service (SMS).- is an important question we will consider next.

The optimal bearer for each type of application will be:

Table B.4. Mobile Lifestreams.

Application	Preferred Bearer
Voice over IP (VoIP)	3G
Moving Images	3G
File Transfer	3G
Downloading Software	3G
Virtual Home Environment	3G
Web Browsing	GPRS/ 3G
Document Sharing/ Collaborative Working	GPRS/ 3G
Audio	GPRS/ HSCSD/ 3G
Home Automation	GPRS/ 3G
Remote LAN Access	GPRS/ 3G
Electronic Agents	GPRS/ 3G
Dynamic Authoring	GPRS/ 3G
Job Dispatch	GPRS
Still Images	GPRS

Table B.4. Mobile Lifestreams (continued).

Application	Preferred Bearer
Still Images	GPRS
Information Services- Qualitative	GPRS
Unified Messaging	SMS/ GPRS
Internet Email	SMS/ GPRS
Chat	SMS/ GPRS
Remote Monitoring	SMS/ GPRS
Instant Messaging	SMS/ GPRS
Mobile banking	SMS/ GPRS
Corporate email	SMS/ GPRS
Information Services- Quantitative	SMS
Affinity programs	SMS
Simple Person to Person Messaging	SMS
Voice and fax mail notifications	SMS
Prepayment	SMS
Ringtones	SMS
Electronic commerce	SMS
Customer Service	SMS
Vehicle Positioning	SMS
Over The Air	SMS
People Location	SMS
Remote Point of Sale	Circuit Switched Data

Of course, stating optimal and primary bearers does not mean that handset vendors, network operators, application developers and customers will not develop all

kinds of applications using all kinds of bearers. However, these bearers are considered to be the optimal means to deliver the customer's requirements in the most efficient and convenient way.

(8) 3G Mobile Terminals

As shown and described in detail in Mobile Lifestreams 'Yes 2 3G' report, there are common trends in 3G terminals:

Bigger and better screen technology- screens will be color which unusual today and have to be bright and have considerably larger screen areas in many cases than today's phones.

Video is central to the technology demonstration- of course, multimedia is the biggest single new understandable thing about 3G. Videoconferencing is an application that many of the concept terminals anticipate.

Consumer electronics and mobile phones converge, as cameras are built into mobile phones. The majority of these devices include built-in miniature cameras.

The most popular form factor that has been shown in the 3G concept devices is the video palm- a device form factor that can be held in one hand and supports video applications with varying small, medium or large screen sizes.

Nearly all of the devices are in form factors that are familiar to us today- we may use the phone for different things and in different ways, but it will probably look similar to today's mobile phones

The broadband bandwidth on 3G networks enables mobile multimedia as will the devices. When the networks and the devices are in harmony and the customer is king, the Three Dimensions of the Third Generation will be enough level of applications and services never before possible on mobile networks.

(9) When will 3G arrive?

Most current mobile phones are using 2G technology, however, 2.5G phones are now available. The first 3G phones should arrive in the UK in 2003. Japan is ahead of Europe and the biggest mobile player, NTT DoCoMo, launched a 3G network in October 2001which offers mobile video conferencing and video streaming.

(10) 3G and the media industry?

With convergence of phone, PC and web browsing services into one terminal, available anywhere and anytime, many commentators believe there will be implications for how media will deliver information and entertainment.

News providers could offer constantly updated news feeds, music companies could offer previews of video clips and banks could offer instant access to stock prices. One of the areas likely to develop is the ability to pay for goods via your 3G mobile, with the cost appearing as part of your phone bill.

(11) 3G and radio

Although technically possible to listen to internet radio via a 3G mobile, the cost to the consumer would be high. More likely is the incorporation of DAB Digital Radio into the mobile device allowing listening for free. This has the additional benefit that large amounts of information (data) can be downloaded for free via DAB Digital Radio (see Byte 5) with 3G being used for response.

Combining the mobile medium (radio) into the 3G mobile would be a powerful combination, with consumers able to instantly interact with stations and respond to advertising messages – requesting information and even buying goods.

(12) Summary

The Third Generation of mobile communications will bring with it mobile multimedia with high data bandwidths and sophisticated mobile terminals and new services and applications.

This white paper is a summary version of the report 'Yes 2 3G' which contains nearly 250 pages of highly detailed information on all aspects of the Third Generation of mobile telecommunications. Written in an easy to read, non-technical style we hope you find it useful. For the complete picture, there is no replacement for the full version of 'Yes 2 3G'. Order your copy priced at just 495 US dollars, visit www.mobile3G.com or contact Mobile Lifestreams.

APPENDIX C

MOBILE SERVICE USAGE

The number of yuppiephone carriers more than doubled to 17.4 million last year, a market penetration of 28%; final figures for 2002

And this year 2003 yuppiephone carriers is 20 million so it can refer that mobile phone user are increasing around 10 % each year.

A recent survey shows that Thai teenagers are more interested in mobile devices than anything else _ more than cars, music, sports, etc. More importantly, people are willing to pay! Two independent surveys found that an average Thai mobile user (across all age groups) is willing to pay around 150 baht a month for compelling data services. (Data from bangkokpost)

Non voice service Usage Analysis

From the research of Brand Age magazine about the mobile usage and non-voice services are as follows.

Basic Non voice service Usage

The percentage of the subscriber who used to download logo screen saver or sms are over 75% or around 10 million subscribers but the rest never.

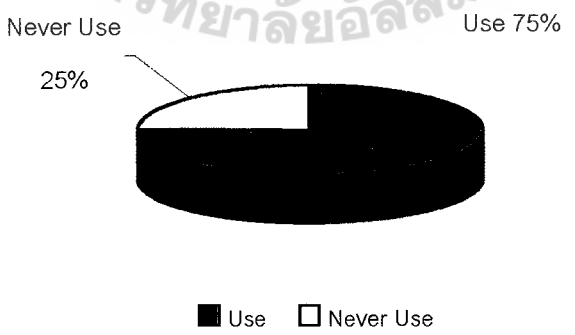

Figure C.1. Basic Non voice service Usage.

Logo and SMS Download

The frequency of the use of logo and SMS service in one week are as following;

Table C.1. frequency of the use of logo and SMS service in one week.

Frequency	Percentage
Daily	22.9
Once a week	18
More than once a week	33.7
Once every 2 weeks	5.6
Once a month	9.5
Other	10.5

From the table above, it implies the average amount of target customer equal to 33.7% or 3.4 million persons.

Ringtone Download

From the graph below can estimate the number of people download ringtone around 4 million persons per month. (41% of 10 million people)

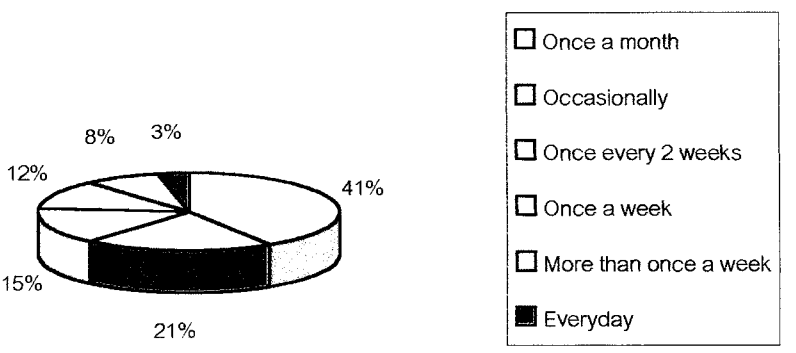

Figure C.2. Frequency of Ringtone download.

Wap Service Usage

Percentage of the user who uses the WAP Phone is 28.8 % and WAP Service is 28.4% or around 2.8 million people.

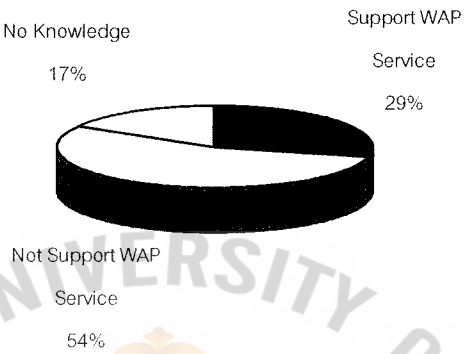

Figure C.3. Wap Service Usage.

Most of the WAP service that mobile users use is Movie Ticket reservation (44.40%). Next service is e-mail, which is 42.20%. You can see that mostly it is the entertainment-related services.

Table C.2. Percentage of WAP usage.

WAP Usage	Percentage
Movie Ticket Reservation	44.4
Email	42.2
Internet	31.1
Banking Balance Checking	17.8
Find the places	8.7
Others	6.7

At this time the number of people using WAP service is around 2.8 million people and the ringtone download, astrology or other non-voice services through WAP is around 6.7% or 2 hundred thousand persons.

GPRS Usage

Nowadays most of mobile phones can support GPRS technology. But the percentage of use of GPRS Phone is lower than the normal phone. And the use of GPRS technology is only 20.04 % or around 240,000 person.

Table C.3. Percentage of GPRS usage.

GPRS Support	Percentage
Yes	11.9
No	87.9

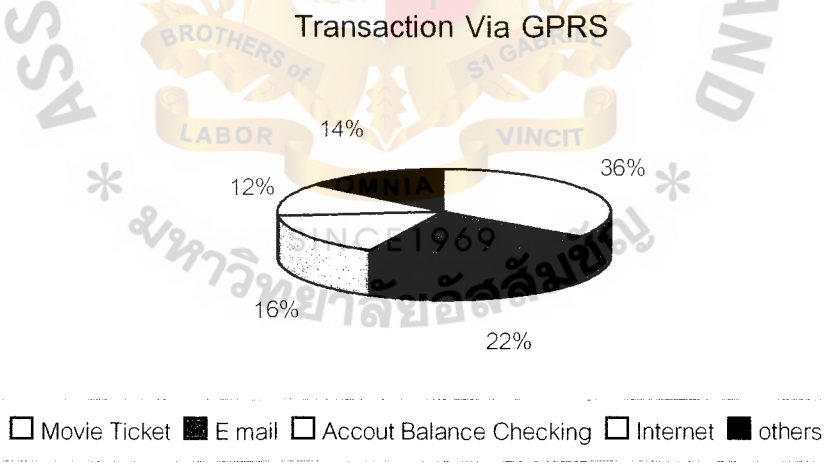

Figure C.4. Transaction Via GPRS.

240,000 persons of GPRS users, there are 16.3% or 40,000 persons who are interested in using other services of non-voice services.

The following is the summary of the non-voice services usages

Table C.4 Summary of the non-voice services usages

Service	Potential Users
Logo,Sms,Picture Message	3,400,000
Ringtone	4,000,000
Wap Service (Polyphonic, Color Graphic, MMS)	200,000
GPRS Service (Karaoke, MV, MMS)	40,000

Table C.5 Summary of the market share of Eomobile.com in Thai market

Service	Potential Users	Market Share	Sales Volume
Logo,Sms,Picture Message	3,400,000	30 %	1,000,000
Ringtone	4,000,000	50 %	2,000,000
Wap Service	200,000	50 %	100,000
GPRS Service	40,000	50 %	20,000

APPENDIX D

EOMOBILE.COM DATABASE STRUCTURE

The following is the Database structure of Eomobile.com

Table D.1. Ring_song Table.

FIELD	TYPE
song_id	int(11)
song_code	varchar(8)
singer_id	int(11)
song_name	varchar(64)
song_desc	varchar(64)
version	varchar(20)
type_check	char(1)
flag_recommended	tinyint(1)
flag_hotwave	tinyint(2)
flag_best_of	int(4)
flag_most_request	tinyint(1)
flag_top_download	tinyint(2)
flag_new_ring	tinyint(1)
flag_new_release	tinyint(1)
company_id	varchar(10)
composer_id	mediumint(8)
licensor	varchar(150)
writer	varchar(150)
date	datetime
updatetime	datetime

Table D.2. Ring_rttl Table .

FIELD	TYPE
id	int(11)
storage_name	varchar(11)
rttl	text
date	datetime
updatetime	datetime

Table D.3. Ring_hex_rttl Table.

FIELD	TYPE
id	int(11)
storage_name	varchar(11)
rttl_hex	text
date	datetime

Table D.4. Composer Table.

FIELD	TYPE
id	mediumint(8)
storage_name	varchar(100)
date	datetime
updatetime	updatetime

Table D.5. Company Table.

FIELD	TYPE
id	varchar(10)
name	varchar(100)
percent	varchar(10)
date	datetime
updatetime	datetime

Table D.6. Singer Table.

FIELD	TYPE
sing_id	int(11)
singer_name	varchar(50)
singer_desc	varchar(50)
starpic	varchar(64)
date	datetime
updatetime	datetime

Table D.7. Ring_storage Table.

FIELD	TYPE
storage_id	int(11)
storage_name	varchar(8)
song_id	int(11)
mobile_id	tinyint(1)
active	tinyint(1)
preview	tinyint(1)
date	datetime
updatetime	datetime

Table D.8. Logo Table.

FIELD	TYPE
logo_id	int(11)
logo_name	int(11)
category	varchar(64)
sub_category	varchar(64)
licensor_id	int(2)
picture	text
create_date	datetime
logo_type	int(11)
active	int(1)

Table D.9. Picture Message Table.

FIELD	TYPE
picture_id	int(11)
picture _name	int(11)
category	varchar(64)
sub_category	varchar(64)
licensor_id	int(2)
picture	text
create_date	datetime
picture_type	int(11)
active	int(1)

Table D.10. Wallpaper and Color logo Table.

FIELD	TYPE
wall_id	int(11)
wall _name	int(11)
category	varchar(64)
sub_category	varchar(64)
licensor_id	int(2)
picture	text
create_date	datetime
wall_size	int(11)
wall_type	int(11)
active	int(1)

Table D.11. MMS Table.

FIELD	TYPE
mms_id	int(11)
mms_name	int(11)
category	varchar(64)
sub_category	varchar(64)
licensor_id	int(2)
picture	text
create_date	datetime
operator	int(11)
mms_type	int(11)
active	int(1)

Table D.12. Digital Voucher Table.

FIELD	TYPE
voucher_id	int(11)
voucher_name	int(11)
category	varchar(64)
sub_category	varchar(64)
licensor_id	int(2)
picture	text
create_date	datetime
voucher_type	int(11)
expire_date	datetime
active	int(1)

Table D.13. Member Table.

FIELD	TYPE
member_id	int(11)
member_name	int(11)
category	varchar(64)
member_point	int(4)
member_activity	text
login_date	datetime
phone_id	int(6)
oper_id	int(2)
active	int(1)

Table D.14. Phone Table.

FIELD	TYPE
phone_id	int(5)
phone_vender	int(11)
phone_model	varchar(64)
phone_fea	int(5)

Table D.15. Phone Feature Table.

FIELD	TYPE
phone_fea	int(5)
service_id	int(11)

Table D.16. Operator Table.

FIELD	TYPE
oper_id	int(2)
Oper_desc	text

Back Office Screen

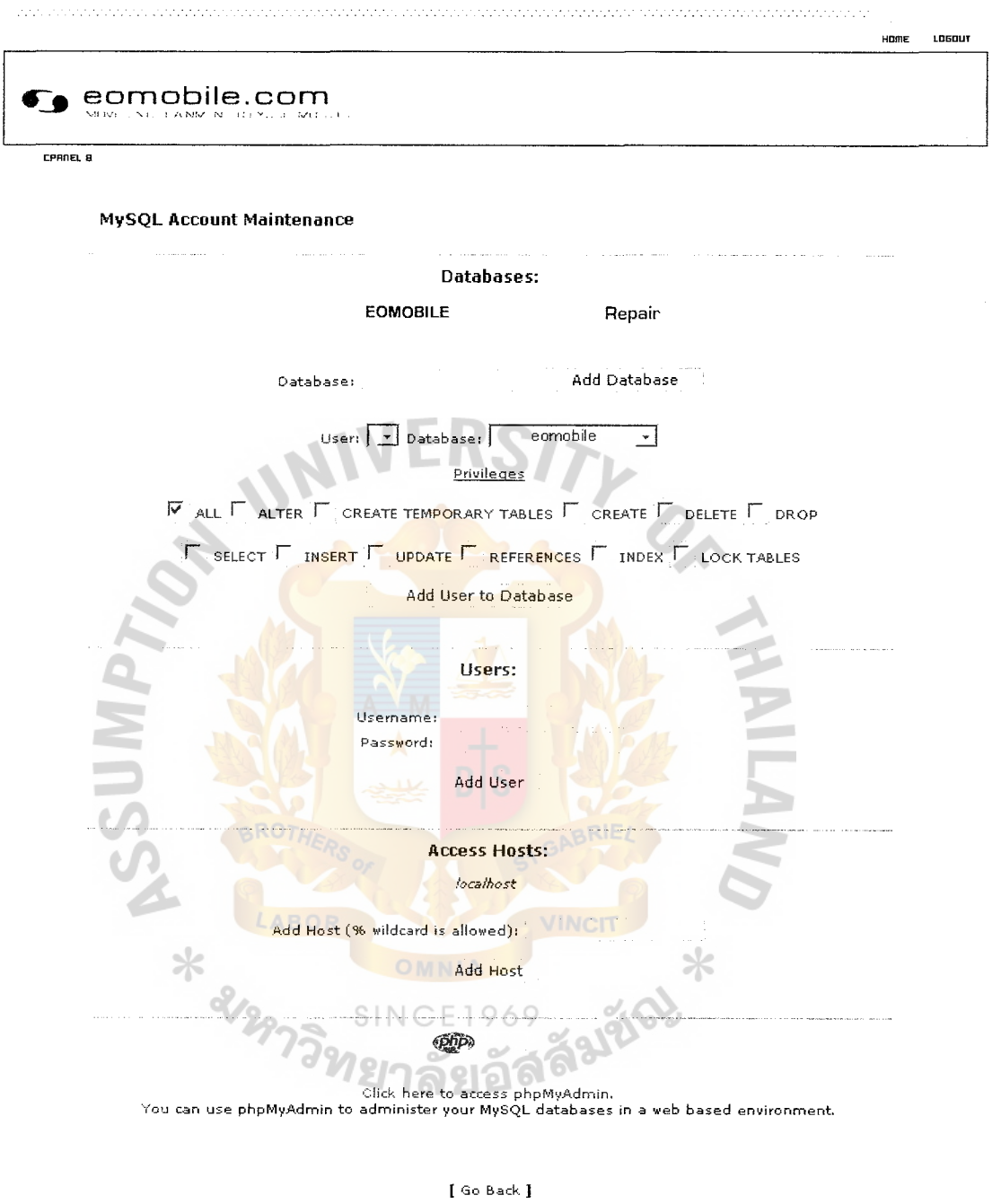

Figure D.1. Database maintenance Login screen.

Database *EOMOBILE* - Table *Logo_table* running on *localhost*

Home

eomobile (8)
- ring_rttl
- ring_hex_rttl
- composer
- company
- ring_song
- singer
- ring_storage
- logo_table

Structure | Browse | SQL | Select | Insert | Export | Operations | Empty | Drop

Field	Type	Attributes	Null	Default	Extra	Action
logo_id	int(11)		No			Change Drop Primary Index Unique Fulltext
logo_name	int(11)		No			Change Drop Primary Index Unique Fulltext
category	varchar(64)		No			Change Drop Primary Index Unique Fulltext
sub_category	varchar(64)		No			Change Drop Primary Index Unique Fulltext
licensor_id	int(2)		No	0		Change Drop Primary Index Unique Fulltext
picture	text		No			Change Drop Primary Index Unique Fulltext
create_date	datetime		No			Change Drop Primary Index Unique Fulltext
logo_type	int(11)		No			Change Drop Primary Index Unique Fulltext
active	int(1)		No			Change Drop Primary Index Unique Fulltext

Check All / Uncheck All *With selected:* Change *Or* Drop

Indexes : [Documentation]

Keyname	Type	Cardinality	Action	Field
PRIMARY	PRIMARY	256	Drop Edit	Product_ID

Create an index on 1 columns Go

Space usage :

Type	Usage
Data	23,000 Bytes
Index	4,096 Bytes
Overhead	1,240 Bytes
Effective	25,856 Bytes
Total	27,096 Bytes

[Optimize table]

Row Statistic :

Statements	Value
Format	dynamic
Rows	256
Row length ø	85
Row size ø	106 Bytes
Creation	Aug 29, 2003 at 09:07 PM
Last update	Sep 22, 2003 at 03:36 PM

- Print view
- Add new field : 1 At End of Table Go
- Propose table structure [Documentation]

Run SQL query/queries on database topofthe_topofthe [Documentation]

```
SELECT * FROM `logo_table` WHERE 1
```

Fields: logo_id, logo_name, category, sub_category

Insert

☑ Show this query here again

Or Location of the textfile : Browse...

Go

- Insert data from a textfile into table

Figure D.2. Database Table Detail.

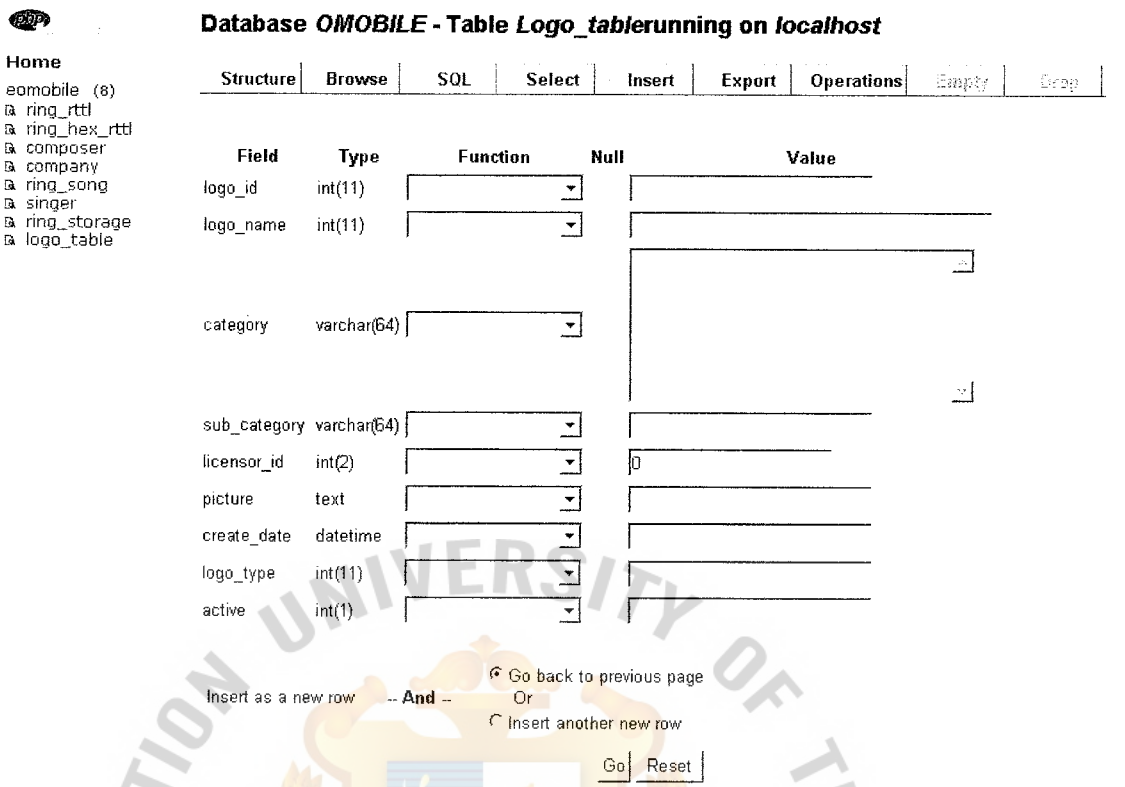

Figure D.3. Database Insert Data Screen.

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