Mobile Entertainment Industry and Culture

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WP5 – Business Models

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Mobile Entertainment Business

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EXECUTIVE SUMMARY

This document is the deliverable D5.4.2, *Mobile Entertainment Business*, and is part of the Information Society Technologies Project MGAIN – Mobile Entertainment Industry and Culture (IST-2001-38846). The objective of MGAIN Work Package 5 is to, regarding mobile entertainment in Europe:

- Study key actors, value chains and business models in order to describe industry structure and trends.
- Describe the European mobile entertainment market.
- Describe the barriers constraining and drivers facilitating market and industry development.

INDUSTRY

There appears to be a conceptual confusion within the industry and a lack of consensus within the academic world on the definition of business and revenue models. In relation to mobile entertainment (ME), we define the concept of business model as the position the company occupy in the ME value web described below and the business concept they have adopted in order to create value. The revenue model is one of its components, and is the way in which a company receives its revenues.

The ME value web is an overview of all the different value chains and value creating activities taking place among companies involved with ME. The different positions, or industry sectors, that companies are able to attain within the value web are very diverse since a range of activities have to take place in order for a ME service to be produced, marketed and delivered.

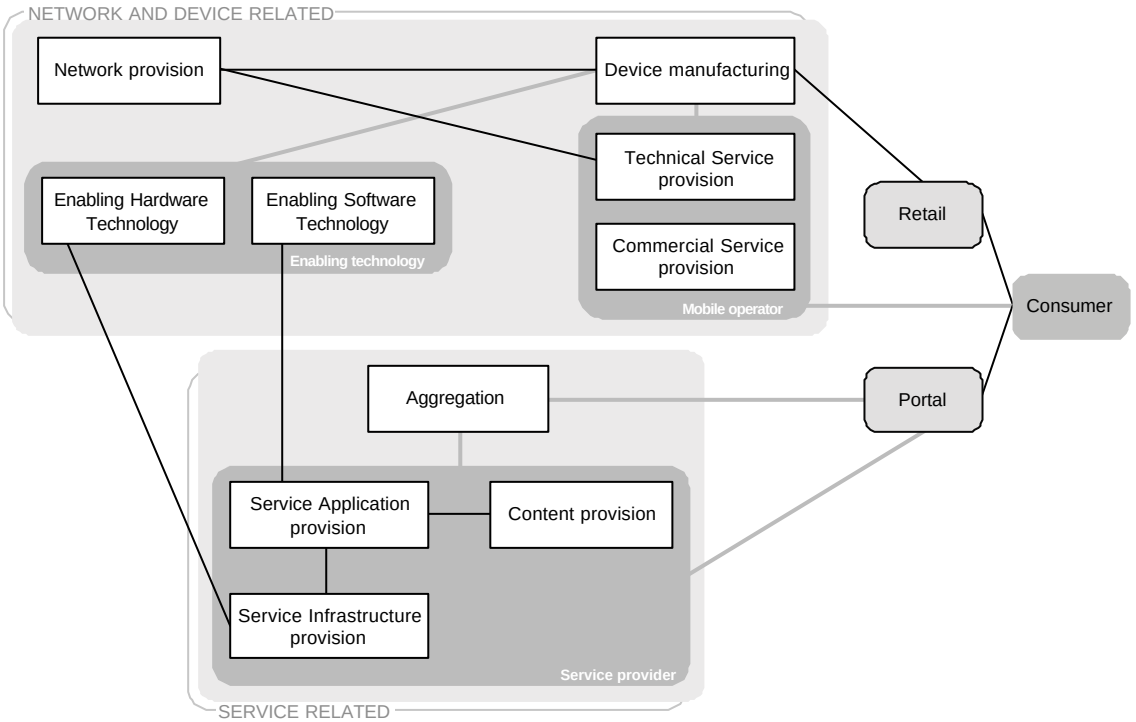

Figure 1: The European mobile entertainment value web

As the name implies, it is a *web* of different value chains where the value chains of products may look quite different and involving various industry sectors. Therefore a value web, rather than a chain, is a more appropriate way to illustrate the value creating activities taking place than the traditionally sequential approach.

Currently, there is an ongoing process of vertical and horizontal integration in the European ME value web, a situation which several forces have contributed to. First of all, mobile operators, media/content companies, service providers and also device manufacturers aim to capitalize on the inherent economies of scale of the mobile technology. Secondly, it is currently a way to ensure a competitive position within the ME value web, as it locks up critical resources from competitors and instil trust towards customer companies. Thirdly, the process of vertical integration has been a way to deal with problems of undeveloped supply and distribution channels. Finally, there is a strategic uncertainty among companies regarding what business strategies that are successful. All these forces have led to a situation where many quite different types of companies are in several cases performing similar business activities. This is a sign of an immature ME value web. Most noticeably, many different companies are currently becoming increasingly involved as portal providers. However, at the same time, many companies fail to maintain a business.

The three most dominant industry sectors, mobile operators, device manufacturers and media/content companies, are most noticeably striving towards vertical integration within the ME value web. We predict this development of horizontal and vertical integration will remain in an intense phase for at least some years. As the ME value web becomes more mature, transaction costs will be reduced. With lower transaction costs, we expect the vertical integration process within the value web to shift into a development towards specialization. With a higher degree of specialization and hence a lower degree of economic control, strategic networks within the value web will become even more important to all players than they are currently. They are and will be especially important to smaller and medium sized companies.

MARKET

On the supply side, the European ME market is highly fragmented, a fact caused by several factors. Despite a slightly increased concentration among European mobile operators, the total number of mobile operators is still large, making the mobile network distribution channel fragmented. The fragmentation is also caused by the existence of different mobile device designs and a variety of mobile platforms. On the demand side, consumers' preferences for ME vary between European countries due to language, culture and local taste. With mobile games to be seen as the foremost exception, the general demand situation across Europe for ME services can best be described as heterogeneous.

As such, we suggest that the term "European ME market" can be used to describe the aggregate of demand or sales of ME services on the European continent. It should not, however, be used by companies to describe a single isolable object of action. We further suggest that any company that seeks to supply ME services to consumers in Europe should adopt a national market strategy. Such an approach is most suitable as this is where macro factors are uniform, the number of mobile operators are few and where language, culture and taste are rather homogenous for a given market segment.

Several indications suggest that the European market size for ME services, including related revenues from data transfer is in the region of €1 billion annually by mid 2003. Regarding forecasting future market size, market signals are particularly unreliable in the early stages of the rollout of any important new technology. In addition, market analysts in general have a bad track record in performing reliable market predictions. Therefore, the immature European ME market is a risky subject on which to make market forecasts. With respect to this, companies should strive towards making their own predictions and scenario work adapted to the individual strategic information needs of the company and based on reliable facts at hand.

The physical infrastructure for network delivery of ME services, with GPRS are largely in place across Europe. By the end of 2003, some 10 million European mobile subscribers will own a ME enabled device. This equals a penetration level of 2-3%. Despite the existence of a large number of GPRS enabled phones and networks, the penetration of mobile data services is approximately only 1% in average in Western Europe. Penetration of ME services, other than ringtones and logos, is therefore obviously less than 1% and potentially significantly lower. Therefore, current ME revenues seem likely to mainly derive from simpler ME services such as ringtones, logos and SMS based entertainment. It should, however, be noted that some countries such as Italy and UK are noticeably more developed than the European average.

The three currently most promising ME consumer segments to target with services are male teenagers, female teenagers and males aged 20-39 years old. Within these three broad segments, the earliest ME adopters have been explored and were, based on the results of service preference, named the pure entertainment consumers, the social entertainment consumers and the advanced infotainment consumers, respectively for each age segment. These smaller groups of people all appear to be high consumers of other forms of technology based entertainment and possess openness towards new mobile devices and services. A company interested in serving one or all of these segments will have to break the market down further into smaller consumer segments, preferably on a needs-based level, which can be analysed and then targeted with appropriate ME services and promotional campaigns.

The markets for mobile music, video, games, gambling, and adult entertainment have been described. They have been studied regarding their definition, current and predicted market size, recent and future developments, popular services and who the most promising consumers are. Common for all these markets are that their current or immediate consumers to a large extent consist of various constellations of teenagers and males aged 20-39 years old. By mid 2003 only ringtones and games represent significant markets, but many initiatives are taking place regarding all five markets. Forecasts made by consultancy companies state a high potential for each market. Our conclusion is however that these optimistic expectations need to be considered with care. Initial successes make bad extrapolations of market trends and the focus needs to be placed on how to develop those markets.

Unlike what seems to be the general belief of many actors in the ME value web, ME services in Europe are not yet on the brink of mass market consumer adoption. The value web still faces the challenge of attracting people considered as relatively easily convinced early adopters. Groups of consumers, differently prone to adoption, need to

be treated differently. The penetration of the mass market will therefore be an additional and different challenge after attracting the early adopter segments.

BARRIERS AND DRIVERS

There are a range of factors that currently are acting as either barriers or drivers to the development of the ME value web and market. These are summarized in Table 1.

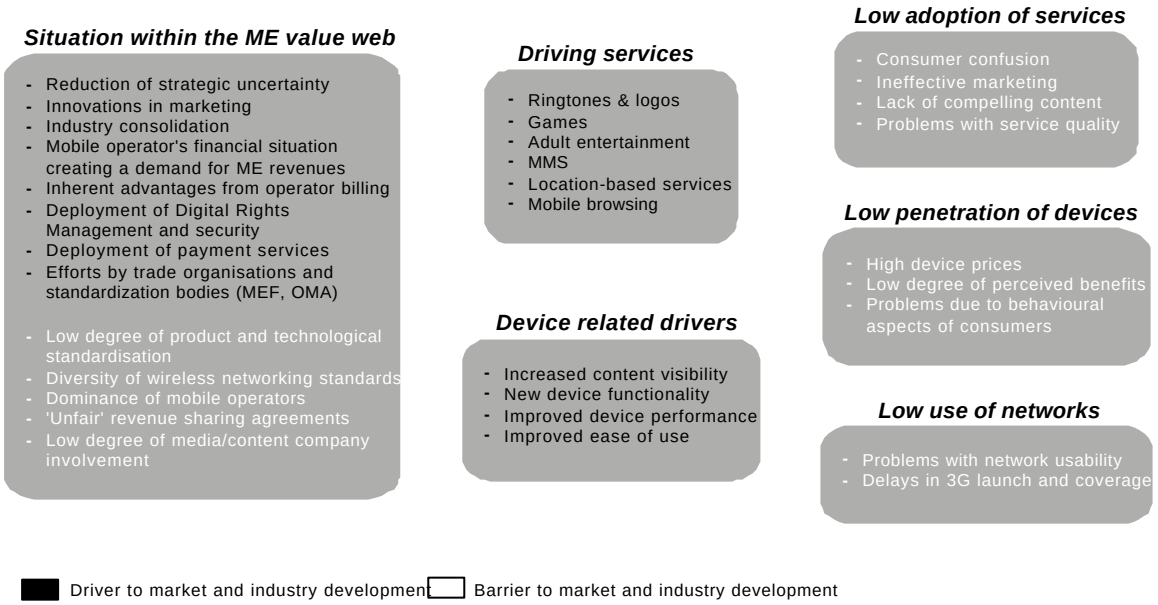

Table 1: Summary of drivers and barriers to market and industry development

Several of the barriers stem from the fact that the ME value web still is immature and that the business of providing ME services is new and relatively unexplored. Necessary actors, such as many global media/content companies, have not yet in a full scale entered the ME value web to contribute with their existing consumer relations and competence about how to compose and market consumer services. At the same time, many actors are trying to establish their technologies as standards, a situation which has created a low degree of product and technological standardization and a diversity of networking standards. This situation has resulted in problems for companies developing and providing the mobile entertainment services since the consumers have been divided into what is called a platform segmentation of the market. Further on, the existing networks' consumer usability needs to be improved and there are delays in the launch and coverage of the 3G networks. The mobile operators' dominant position in the value web is also considered to be a barrier because of their lacking knowledge about entertainment services and that they in addition are forcing 'unfair' and unconstructive revenue deals upon service- and content providers.

The reasons for the currently low adoption of ME services are to a large extent explained by the above described situation in the value web. Most noticeably, mobile entertainment service providers do not receive the proper incentives and capabilities to develop high quality content. The mobile operators are taking on the unfamiliar role of marketing entertainment services, and together with their and the device manufacturers' focus on technology, this has resulted in vague information to the consumers about what ME can accomplish. Therefore, consumer adoption has been

impeded by the market development barriers of consumer confusion, ineffective marketing, a lack of compelling content and problems with service quality. These barriers have resulted in a situation where consumers do not see the benefits of buying recently developed ME capable devices. However, there are also barriers to the penetration of these devices due to high device prices and the existence of consumer-behavioural aspects regarding the reluctance to starting to use a new kind of device and their perceived likelihood of obsolescence due to the rapid device introduction.

In spite of the problems that exist with consumer adoption of ME, there are important services that act or will act as drivers for the adoption of many other services. The driving potential these services possess stem from the fact that their advantages are easily communicated to the consumers and that their content type is easily transformed into a compelling mobile format. These services are ringtones and logos, games, adult entertainment, MMS, location-based services and mobile browsing.

Regarding the situation in the ME value web, several drivers are related to the forces that enable the value web to mature into a state where companies' increased capabilities are able to be exploited through proven and newly discovered mobile entertainment business strategies. The value web is currently in a process of vertical and horizontal integration, which will create more able companies. The process of strategic uncertainty reduction within the value web is also seen as an important driver that will spur competition and enable companies to adopt strategies that have proven to be successful. Innovations in marketing is another driving process that continuously will make significant contributions to market and industry development, since the use of new marketing and distribution channels for ME can increase the consumers' willingness to use it.

Further on, when effectively deployed by the value web, payment services, device security and digital rights management solutions will create additional ways to generate revenues and ensure that both consumers and important media/content companies will trust the mobile channel as a successful medium. The mobile operators' need for a data transmission based compensation for declining voice ARPU and the need to achieve a return on their significant 3G license fees and network investments are also important factors that put the focus on and act as a driver of ME. Efforts made by trade organizations and standardization bodies to reduce the problems with lack of standardization are a force that can play an important role for the improvement of technology development and the creation of a lesser platform segmentation of the market. Finally, improvements and innovations in device and network technology also drive development through their ability to improve and expand the value that the ME value web is able to offer the market. From the consumers' perspective, these technological improvements lie in the areas of increased content visibility and network speed, new device functionality, improved device performance and ease of use.

MARKET AND INDUSTRY DEVELOPMENT

ME services have already been able to attract the small consumer group of innovators whom are characterized by technology being a central interest in their life. This has been an important, but nevertheless rather simple step to take. However, this also means that ME services in Europe are not yet on the brink of mass market consumer

adoption. Before that challenge can be taken on by the actors in the ME value web, the also quite easily convinced consumer group of visionaries must be penetrated.

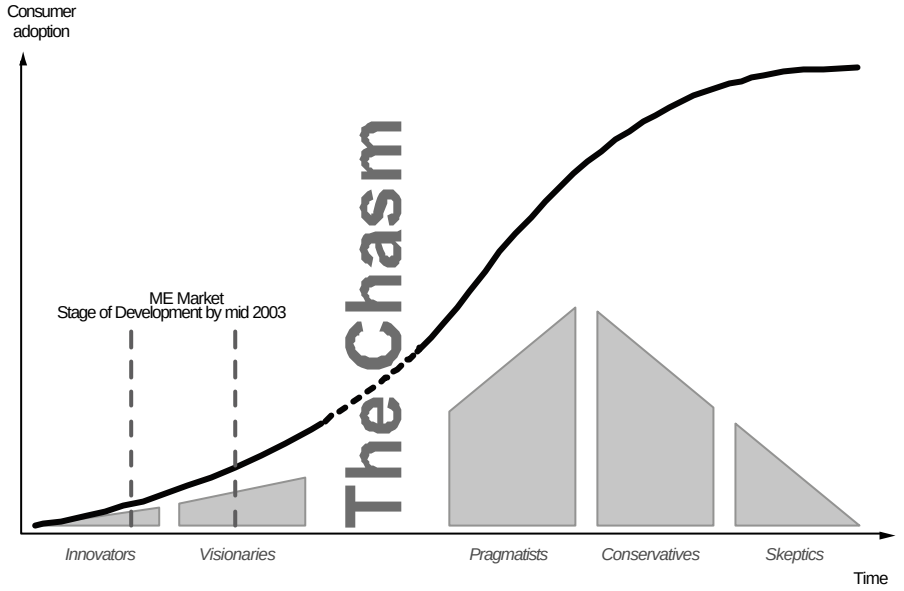

Figure 2: ME market stage of development and different consumer groups

The visionaries are early new technology adopters who easily can imagine, understand and appreciate the benefits of the services that stem from a new technology. Although several seemingly novel and innovative ME services are to be launched during fall/winter 2003, there are by mid 2003 rather few innovative services that together constitute a compelling value proposition for the visionaries. With continued product development and marketing efforts, an established customer base of visionaries could well be achieved by early 2004 in the most developed European markets.

The major challenge for the companies in the European ME value web is to take the services to mass market by attracting the first mass market consumer group of the pragmatists, thereby crossing what is called the chasm. Here, there are three main obstacles related to discontinuity, quality of services and pricing that need to be overcome. Thus, ME should be offered as an extension and improvement to the existing entertainment consumption of the pragmatists in order to minimize the discontinuity with old consumption patterns. Further, ME services need to come with a good technical quality, reliability and ease of use. Finally, unlike the innovators, pragmatists display higher price sensitivity. However, it is not enough to know the requirements of the pragmatists in order to efficiently develop the mass market. It is equally important to narrowly define and carefully select groups among these consumers, whom then should be targeted with an appropriate bundle of services. This selective and differentiated approach is how mass market consumers are efficiently convinced to become users of mobile entertainment.

CONTENTS

1. INTRODUCTION

Mobile entertainment is a new and dramatically changing industry, consisting of companies from traditional media and telecommunications industries as well as new firms focusing solely on mobile entertainment. While many feel that mobile entertainment is going to become the next big thing within media and telecommunications, by the end of 2003, there are still many issues related to both its industry and market that must be dealt with before this will happen.

As it looks today, many companies within this industry are up for difficult challenges regarding the creation, distribution and selling of mobile entertainment services. Statements about unfair revenue models, problems with the proliferation of mobile devices and standards, uninterested consumers, expensive 3G licenses and the constant quest for the killer application seem to be recurring subjects of discussion among people within this industry. However, impressive achievements also exist, but the sense that the mobile entertainment industry and market need to 'get off the ground' seems to be justified and important since many of today's stakeholders put their trust in mobile entertainment to generate the needed return on the considerable investments that have been made.

Recent forecasts regarding how the European market will develop seem bright. However, initial successes regarding ringtones and mobile games make bad extrapolations, and the predicted market development will not come by itself as witnessed repeatedly over the last few years. For example, many costly initiatives made by mobile operators have not turned out to be the successes initially expected. Developing the market is a challenging task and few people can be said to be experienced in the new business of providing mobile entertainment in Europe. Therefore, there is a need to thoroughly investigate the state of the mobile entertainment industry and market in order to reach an insight about how these can be developed and what companies can improve.

This document begins with investigating the state and ongoing trends in the European mobile entertainment industry. In this context, it discusses key actors and gives a fresh insight on the concept of business models and how mobile entertainment value chains can be considered from an industry-wide perspective. Further on, the European mobile entertainment market is described regarding its general characteristics, consumers, different types of services and its stage of development. Based on this research, the barriers constraining and drivers facilitating market and industry development are discussed. These drivers and barriers, and the analysis of them, reveal strategic key issues for individual companies and provide information about what can be done to stimulate industry and market development. Finally, a concluding discussion is made about how the mass market should be approached and what industry-wide areas for improvement that exist.

Work Package (WP) 5, primarily conducted by Linkoepings Universitet, is part of the Information Society Technologies Project MGAIN – Mobile Entertainment Industry and Culture (IST-2001-38846) and studies business related aspects of mobile entertainment in Europe. The MGAIN project and this document are independent

from all organizations and individuals within the industry and market of mobile entertainment in Europe. As such, this document offers an unbiased analysis of the European situation regarding mobile entertainment.

1.1 Objectives

The overall objective of WP5 is to provide a comprehensive understanding of the European mobile entertainment industry and market. This is achieved through the accomplishment of the three main research objectives stated below.

- Study key actors, value chains and business models in order to describe industry structure and trends.
- Describe the European mobile entertainment market.
- Describe the barriers constraining and drivers facilitating market and industry development.

1.2 Scope

Mobile entertainment (ME) includes any leisure activity undertaken via a personal technology which is, or has the potential to be, networked and facilitates transfer of data (including voice, sound and video) over geographic distance either on the move or at separate locations. (MGAIN D3.1.1 *Mobile Entertainment: Current State of the Art*, 2003)

This study focuses on business related mobile entertainment issues in Europe. Actors in the European mobile entertainment industry refers to companies active in Europe, hence they need not be European based companies. The mobile entertainment market refers to the consumer market for mobile entertainment services in Europe.

This document, adopting a pan-European scope, could appear to reflect a bias of discussions around companies in Western Europe. There is, however, a reason for this. The key actors within ME in Europe and companies focusing solely on mobile entertainment are to a great extent based in and focused to Western Europe. This can, for instance, be observed by looking at where the European members of the only trade organization solely dedicated to ME, the Mobile Entertainment Forum (MEF), are based as shown in Figure 3.

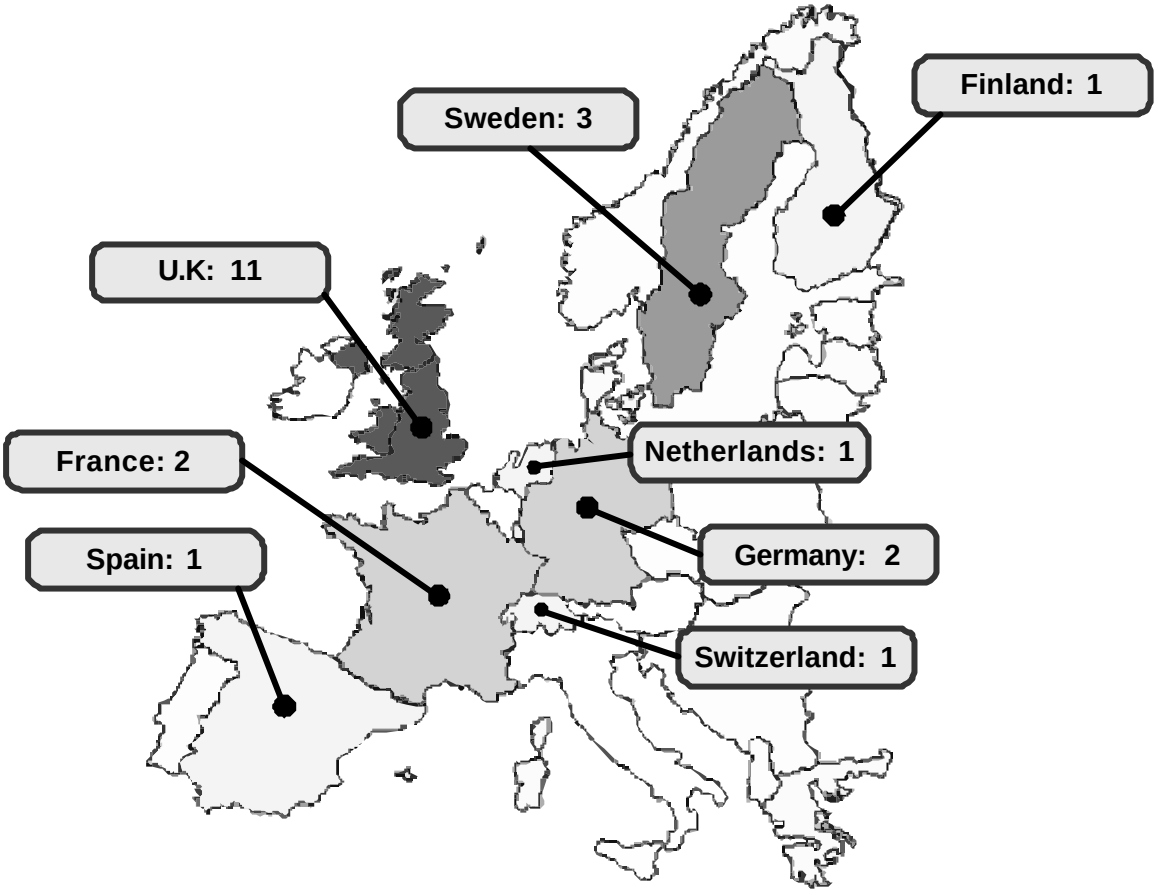

Figure 3: Country bases for European MEF members August 2003

Likewise on the market side, the discussions in this document will primarily focus on Western Europe and only to an extent discuss the acceding countries situated in Eastern Europe that will join the European Union by 2004. This is due to the relatively small economic impact and undeveloped markets of the latter. This issue is further explored in Section 4.1.

1.3 Methodology

Research for this document has been carried out since the beginning of 2003. In an iterative feedback loop process with industry representatives and fellow researchers within the MGAIN consortium, the analysis of the situation of mobile entertainment industry and market in Europe has gradually emerged into what is presented in this document. The dynamic nature of this emerging industry and market has led to that data on which the analysis is based, have been necessary to update on several occasions.

The main research methodology of WP5 has been to provide scientific analysis based on broad review of surveys, consultancy reports, newspapers, company information and scientific literature. In order to grasp the diverse nature of the emerging mobile entertainment industry and market, key individuals from different parts of the industry have been interviewed, including mobile operators, device manufacturers, media companies and application developers just to name a few. A total of 30 individuals have been interviewed in the scope of WP5, either face to face or by telephone. The

list of interviewees can be found in Chapter 7. The interview guide used for the interviews can be found in Appendix 2.

A study and compilation of scientific literature have been made in order to create a theoretical frame of reference on which to base analyses and conclusions. In addition, two existing mobile entertainment value chains on the market have been mapped and investigated as case studies regarding the structure and the business and revenue models used.

1.4 Disposition

This report is divided into six main chapters. Chapter 1 has outlined the objectives and scope of the study as well as the methodology applied. Chapter 2 discusses theoretical tools and concepts that are used throughout the document. Chapter 3 describes industry structure and analyses the current state of industry as well as industry trends. Chapter 4 surveys and analyses the situation on the European mobile entertainment market. Based upon Chapter 3 and 4, Chapter 5 looks at the barriers and drivers of the development of the European mobile entertainment industry and market. Building upon the previous chapters, Chapter 6 offers a discussion on industry and market development and the way forward towards a mass market adoption of mobile entertainment services.

Each of these main chapters is concluded by a two page summary section that summarizes the main findings of each chapter. Figure 4 displays a graphical overview of how these chapters fit together in this document.

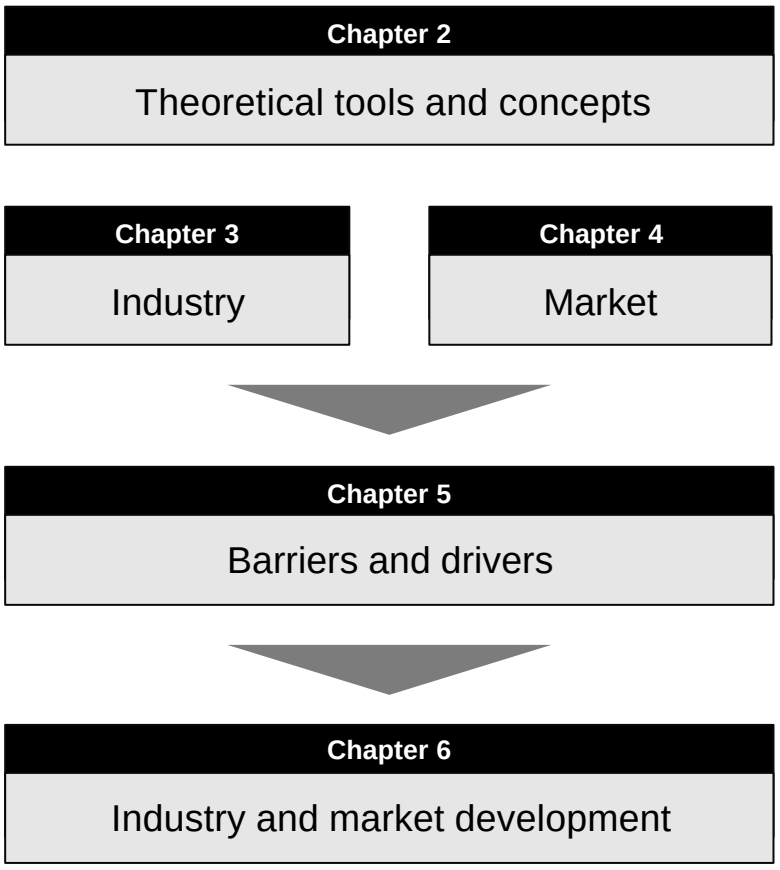

Figure 4: Structure of the report

2. THEORETICAL TOOLS AND CONCEPTS

This chapter, divided into three main sections, discusses theoretical models and concepts that are used throughout the document.

In the first section, the concept of business and revenue models, the notion of value and different value configurations are discussed. Further, this section discusses business models and different authors opinions on this issue to provide a conceptual framework for the case studies described in Appendix 1 and the analysis made in Chapter 3.

The second section discusses general theoretical tools that can be applied in market analysis, such as the product life cycle model and the s-shaped adoption curve. It also highlights problems regarding the credibility of predictions made by market analysts.

The third section discusses a theoretical foundation regarding industry and market development, primarily using the influential framework of Michael Porter's Competitive Strategy (1980). This framework is used in order to describe and analyse the state of the emerging mobile entertainment industry and market for the purpose of identifying barriers and drivers to their development.

The mobile entertainment 'industry' is throughout this chapter named as the European mobile entertainment *value web*. The reason for this and the implications this has is thoroughly explained below and in the beginning of Chapter 3.

2.1 Business models, revenue models and value

2.1.1 Value and value creation

In order to give a theoretical background to the concept of business models, it is necessary to explain the notion of value and value creation. Amit & Zott (2002) state that the main locus of value creation spans companies and industry boundaries and can be captured by the business model. Porter (1985) defines value as

> *"the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue… A firm is profitable if the value it commands exceeds the costs involved in creating the product".*

Value creation is hence about creating value for somebody or something. Porter's (1985) value chain is often the starting point when discussing value and value chains. His classic value chain framework analyses value creation at the company level. The value chain analysis identifies the activities of the company and then studies the economic implications of those activities. (Porter, 1985) Although the original purpose of a value chain was to identify the fundamental value-creating processes involved in producing a product or service within a company, the concept has since been broadened and is often used to describe an entire industry. However, Porter's (1985) value chain has often been criticized for being applicable only to production and manufacturing firms, and unable to capture the essence of service firms. (e.g. Norman & Ramirez, 1993; Stabell & Fjeldstad, 1998). Maitland et al (2002) also

questions if the value chain model, implying that product and service development is necessarily a sequential process, is an adequate way of describing the value creation taking place. We suggest that a sequential process description model is especially ill-suited for the ME 'industry' due to its web like structure as discussed later in this report. Accordingly, alternative value configurations have been produced by different authors in order to bridge the gap between Porter's (1985) value chain and the nature of service-oriented firms. Stabell & Fjeldstad's (1998) states that the value chain should be regarded merely as one out of several different value configurations.

According to Norman & Ramirez (1993), the company has a position in the value chain and the challenge for the company is primarily to position the company in the right spot in the value chain. As new technology and global competition make it possible to find new ways of creating value, making uncertainty and risks to grow, new companies can alter the rules of the game overnight (Norman & Ramirez, 1993). Hence, the focus of the analysis according to Norman & Ramirez (1993) is not the company, nor the industry, but the value constellation, containing suppliers, partners and customers where everybody is involved in the value creation. Porter (1985) also states that one company's value chain is a part of a value system that contains several value chains that are linked together. This value system includes suppliers, distributors and customers.

Using Norman & Ramirez (1993) definition, the mobile entertainment value creation activities could be said to constitute one very large and very diverse value constellation. The largest unit of analysis in this study, including all activities taking place in order to produce, transport, market and sell mobile entertainment services, will hence forward be referred to as *the mobile entertainment value web*.

2.1.2 Definition of business and revenue models

There have been many attempts to classify all business models emerging with the new economy in order to understand how companies on the new markets are making or not making their money. However, there appears to be a conceptual confusion within the industry, something that was clearly noticed when conducting interviews with industry representatives, and a lack of consensus within the academic world on what business and revenue models really are and how existing theory regarding e.g. value creation can be applied on the evolving mobile entertainment value web. Porter (2001) e.g. argues

"the definition of business model is murky at best".

Some authors refer to *business model* as the source of revenue, while others have defined it as the core strength of the business. In all, there is a significant disparity between definitions of business model. The definition of *business model* by Amit & Zott (2001) is however somewhat more clarifying.

"A business model depicts the content, structure and governance of transactions designed so as to create value through the exploitation of business opportunities."
Amit & Zott (2001)

According to Magretta (2002), a business model should be able to answer the question: "What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?" According to Dubosson-Torbay et al (2002), a business model is nothing else than the architecture of a firm and its network of partners for creating, marketing and delivering value and relationship capital to one or several segments of customers in order to generate profitable and sustainable revenue streams. We define the concept of business model, in accordance with Dubosson-Torbay et al (2002), as the position the company occupies in the ME value web and accordingly the business concept they have adopted in order to create value.

A revenue model, sometimes incorrectly mistaken for a synonym to business model, is the method in which the company obtains its revenue streams, e.g. micro payments via the operator, subscription fees or licensing fees for software. According to Dubosson-Torbay et al (2002), the revenue or pricing model of a company is not to be regarded as the unique and most important element of a business model, but merely as one component out of many. In accordance with Dubosson-Torbay et al (2002), we define revenue model as the way in which a company receive their revenues created through their value creation and recognize it as one component of the business model.

2.1.3 An analytical model for mobile business models

There have been many attempts to produce theoretical models designed to capture the essence of business models used in different industries. Much of the academic work performed on business models on the mobile market draws on theoretical work on e-commerce business models (Internet-business) and this work in turn draws on an extensive amount of management and economic theories (Amit & Zott, 2001). These theoretical models, designed for example to be applied on companies in the complex mobile entertainment value web, often turns out to be too complex themselves to be of any practical use. This is especially the case when describing and discussing the business activities taking place within the diverse European ME value web.

Dubosson-Torbay et al (2002) e.g. propose a model for categorizing and positioning business models in several categories and dimensions. Other authors have similar approaches e.g. Afuh & Tucci, 2001, Hamel, 2000, Gordijn, 2000 (Dubosson-Torbay et al, 2002). We will, however, in this study use a slightly more simplified theoretical model focused on structural issues to analyse business models within the ME value web in two case studies and on value web level. This model, however simplified, will draw on other theoretical models and an existing theoretical framework within the field of business administration. This analytical model, consisting of four elements; position in the value web, economic control, strategic networks and revenue model, is summarized in Figure 5 and further explained in the following sections.

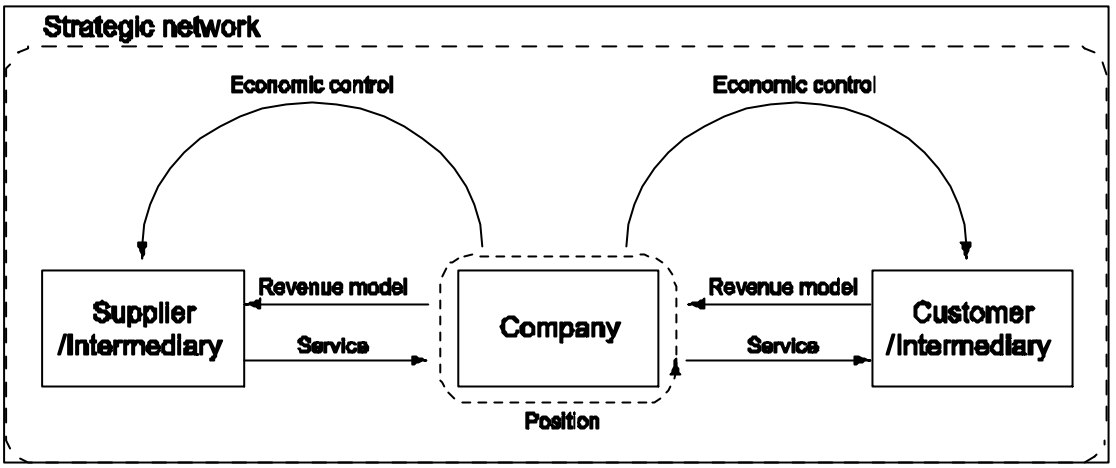

Figure 5: An analytical model for mobile business models

2.1.3.1 Position in the ME value web

The company occupies a certain position in the value web, and an important challenge for the company is to position the company correctly in the value chain. According to Norman & Ramirez (1993), the focus of the analysis is not the company, nor the industry, but the value constellation, containing suppliers, partners and customers where all is involved in the value creation.

The value created by the company (often referred to as the value proposition) has a target, which refers to e.g. geographical scope of the offering and if that is directed towards businesses or consumers. (Dubosson-Torbay et al, 2002) The target of the value creation affects the position in the mobile entertainment value web the company positions itself in.

To summarize, the value web position component in this analytical model outlines the position of a firm within the ME value web and hence it's customers and/or suppliers.

2.1.3.2 Economic control

Transaction cost economics discusses why some business transactions are internalized while others are conducted in markets. A company can either produce a product or service themselves internalized into a hierarchy, or they can buy it on the market, for example by outsourcing a certain activity. The reason for why all transactions are not conducted on an open market and the reason for the very existence of companies are intimately connected to transaction costs (Douma & Schreuder, 1992).

One main assumption within transaction cost economics is that individuals have bounded rationality and that they sometimes act opportunistically. (Douma & Schreuder, 1992 ref. to Williamson, 1975). Bounded rationality coupled with uncertainty and complexity, asymmetric information and opportunism in situations where there are only a small number of players are conditions that increase the transaction costs. (Amit & Zott, 2001) High transaction costs result in activities being internalized in a hierarchy (firm). On the other hand, the total cost of acquiring a product or service for a company depends both on the transaction cost as well as the production cost. A company might reduce the transaction costs for cleaning services

by having it in-house for example, but the total cost might still be larger as the core competence of the company in question might lie elsewhere.

The choice between market and hierarchy is therefore about economic control over resources and thereby avoiding uncertainty, complexity and opportunistic behaviour from other actors versus outsourcing activities that others can conduct more efficiently and instead focus on core activities.

Companies acting in a complex and immature value web, like the mobile entertainment value web, could seem likely to strive towards vertical integration in order to reduce insecurity and opportunistic behaviour by players in adjacent parts of the value web. An example could be a media company that decides to develop their own mobile application for a given content instead of buying it from an application developer.

To summarize, the economic control component in this analytical model explains if a company aim for conducting their business activities in an internalized hierarchy or on an open market. In this, the question of vertical integration is important.

2.1.3.3 Strategic networks

Strategic networks have an intimate connection with the discussions within the transaction cost economics view that was displayed in the previous section. A strategic network can be described as something in between market and hierarchy. It could also be thought of as an alternative to the economic control that hierarchy offers. (Jarillo, 1988)

According to Jarillo (1988), a strategic network can be used by a company in order to strengthen their position on the market. The pre-requisite for a strategic network to evolve is that it has to be profitable, meaning that all involved firms will have to be better off with, than without it. The efficiency in the network is guaranteed by that the companies within it do not have any legal agreements that force them to stay if any of them are not satisfied with the strategic network. Joint ventures could also be thought of as strategic networks. They are however to a larger extent controlled by legal terms and have therefore slightly different characteristics.

The network has to be both effective and efficient and in order for the network to remain the additional value created through the existence of the network has to be divided "equally" between all partners. At least, all involved firms have to be "satisfied". If not, the firms that find acting outside of the network as a more profitable alternative will leave the strategic network. (Jarillo, 1988)

The strategic network (or partner ditto as defined by Dubosson-Torbay et al, 2002) details how the value creation process is distributed among the partners of the firm. Whereas strategic networks often have a larger hub-firm (Jarillo, 1988) that initiates and leads the collaboration, it is the smaller firms that can use the networking as an important instrument in order to get access to external resources.

To summarize, the strategic network component in this analytical model outlines if and what types of strategic networking that is used in the value-creation process of an individual firm.

2.1.3.4 Revenue model

Internet was a great user success but it was a revenue capture fiasco, as service providers could not figure out how to monopolize the IP traffic generated by the customers (Olla & Patel, 2002). Many content providers on the Internet have had similar experiences with difficulties to actually get customers to pay for content provided. Olla & Patel (2002) therefore state that the integration of the Internet with mobility will require a re-engineering of revenue models.

"A revenue model refers to the specific modes in which a business model enables revenue generation."

Amit & Zott (2001)

The revenue or pricing model of a firm is one important component of the business model. It is a part of the business model and exists in relationships between actors that conduct transactions. A carefully designed revenue model captures the created value and turns it into revenue. According to Dubosson-Torbay et al (2002), a revenue model can be based on subscription costs and fees from the customers, advertising and sponsoring revenues from other firms, commissions and transaction cuts from provided services, revenue sharing with other firms, and by simply selling a product. Further, it is important that the revenue model is aligned with the nature of the product. (Dubosson-Torbay et al, 2002)

In case of a revenue-sharing model being used, this model outlines how the revenue is divided all across, or in parts, of the value chain. To summarize, the revenue model component in this analytical model explains the way in which a company receive their revenues created through their value creation.

2.2 Market analysis

Like many theoretical fields within business administration, much of the existing academic literature on market analysis have the company as the starting point for the theoretical models and frameworks regarding market analysis. One example of this is Kotler's et al (2001) well known framework on segmentation, targeting and positioning (STP). As the analysis in this survey is not done from a single company's viewpoint but rather from an 'above perspective' and on an aggregated level, this leads to a situation where many of the existing analytical tools are less useful to apply considering the research objectives stated in the previous chapter. Nevertheless, some of the analytical tools at hand can be transformed in order to be usefully applied on the European market for mobile entertainment services and the mobile entertainment value web. These analytical tools are discussed in the subsequent sections.

2.2.1 Market research

According to Kotler et al (2001), there are three main types of market research; exploratory research, descriptive research and casual research. Exploratory research is mainly regarding gathering information in order to be able to define the problem and to suggest possible hypotheses. Descriptive market research focuses on gathering

information for the purpose of describing e.g. the potential for a certain product or demographics of the targeted customers. The objective of casual market research is to test hypotheses about cause and effect relationships.

This survey focuses on description and discussion of the situation on the European mobile entertainment market regarding e.g. market size and potential. As such, this survey can best be described as a typical descriptive market survey.

Market analysis is of crucial importance to developing well-founded and best-use conclusions for business and market strategy. However, one of the most important elements of market analysis, demand forecast estimates, is often given passing consideration due to budget and time constraints (Jortberg, 1996). Kotler et al (2001) also concludes that limitations regarding time and money often results in that the market demand research will have to rely on secondary data that usually are quicker and cheaper to retrieve than primary data. As secondary data can provide information that otherwise would either not be directly available or too expensive to collect, it is often the most efficient alternative.

One way of retrieving market information is to consult forecasting experts. The inherent advantage of applying this method, besides the cost aspect, is that forecasting experts have more data available and more forecasting expertise. (Kotler et al, 2001) That is not to say that experts are always right, on the contrary, their track record in general is far from impressive. (Bird, 2000) This survey will to an extent rely on predictions made by various experts such as consultancy companies. This issue and its' implications for this survey is further discussed in the subsequent section.

2.2.2 Experts and forecasting

There have been several quantitative studies made in order to evaluate the performance of analysts forecasting accuracy. By comparing analysts forecast figures with actual data the overall performance of analysts have been closely examined by different scholars (e.g. Brown, Foster & Noreen, 1985; Dreman & Berry, 1995; Bird, 2000). The results clearly indicate that the forecasting accuracy of analysts in general, such as business consultant company analysts, deserves to be questioned.

The general conclusion that can be drawn from the studies made is that analysts' forecasts are not very precise. According to Bird's (2000) findings, even a strategy of assuming that the next year's revenues will be the same as this year's outperforms the consensus forecasts of the analysts. Furthermore, analysts demonstrate a consistent upward bias in forecasting. The tendency to overestimate is most significant when current revenues are low; profitability is low and for forecasts that stretch long into the future. (Bird, 2000). Several explaining factors for this phenomenon have been suggested such as the need to avoid upsetting managers who are the primary source of information for analysts as well as a general human psychological tendency towards overconfidence.

In addition to the inaccuracy of analysts' forecasts, Porter (2001) states that market signals are particularly unreliable in the early stages of the rollout of any important new technology, such as the new mobile technology that enables mobile entertainment. New technologies trigger experimentation by both companies and

customers, and the experimentation is often economically unsustainable (as was the case with many dotcom businesses). Therefore, Porter (2001) suggests that market signals in such environments must be interpreted with caution.

In order to describe the situation and the future potential of the European mobile entertainment market, we will use secondary data and refer to and discuss forecasts made by various analysts and consultancy companies. With respect to the inaccuracy of analysts' forecasts in general and the difficulty of making predictions in an immature business area to a large extent based on new technology, all predictions and forecasts should be interpreted with much caution. Hence, a cautious and critical approach to such forecasts and estimates will pervade this study.

2.2.3 Adoption of innovations and general market patterns

Regarding general product patterns for a products' market development over time, the most well known model is the product life cycle coined by Dean (1950). On the product life cycle, Kotler (2001) describes how a product moves through different phases: from the product development stage through introduction, growth and maturity and eventually into a decline phase as shown in Figure 6.

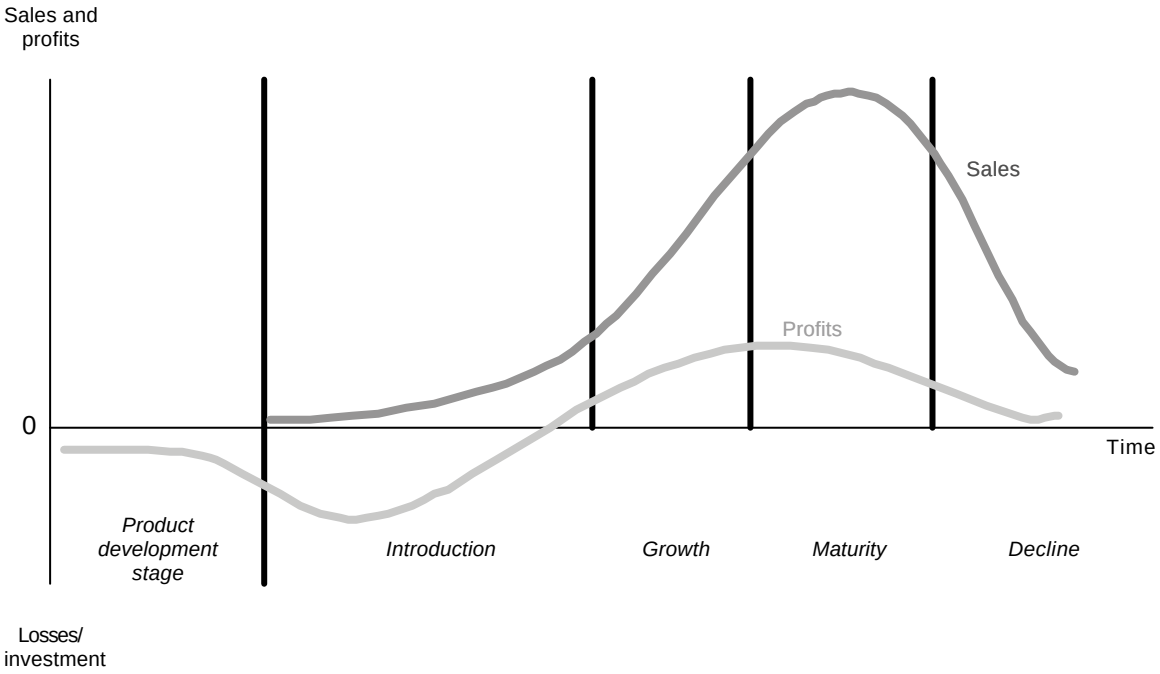

Figure 6: The product life cycle (Kotler, 2001)

During the development phase the sales are zero and the investment costs mount. Introduction is a period of slow sales growth as the product is introduced to the market. Profits are nonexistent in this stage because of heavy product introduction expenses. Growth is a period of rapid market acceptance and increasing profits. During maturity, sales slow down because the product has achieved acceptance by most potential buyers. Decline is the period when sales fall off and profits decline. (Kotler, 2001) The product life cycle model can also be applied on a product class (Kotler, 2001), such as mobile entertainment services, however scholars have sometimes questioned the usability of the product life cycle model. For example, Porter (1980) states that the duration of the stages varies widely from industry to

industry and market growth does not always follow the product life cycle curve at all. This does of course diminish the usability of the life cycle model. Scholars within the field of diffusion and adoption of innovations such as Moore (2002) and Rogers (1962) have however complemented the market evolution analysis tool that the life cycle model constitutes, thus making it more applicable.

Rogers (1962) defines diffusion as a process by which an innovation is communicated through certain channels over time among the members of a social system. According to Rogers (1962) communication refers to the process in which participants create and share information with one another in order to reach a mutual understanding. Furthermore, diffusion is defined as a social change, as this process tends to affect the structure and function of a social system. Social change takes place as a consequence of the invention, diffusion and adoption or rejection of new ideas. As many people depend upon the subjective evaluation of an innovation by others that have previously adopted the innovation in question, there is a dependence on the experience from near peers for potential adopters. (Rogers, 1962) In other words, the high level of uncertainty regarding a new technology, and that uncertainty's decrease over time as the diffusion process moves forward, is utterly important to the decision making of potential adopters.

Rogers (1962) created an S-shaped curve to illustrate the rate of adoption and show that as information about the new technology increase and the degree of uncertainty is reduced, the number of adopters increases and the risk connected to adoption is reduced. The S-shaped adopter distribution rises slowly at first, when there are few adopters in each time period. Then it accelerates to a maximum until half of the individuals in the system have adopted the innovation. The adoption rate then accelerates at a gradually slower rate as the few remaining individuals adopt as shown in Figure 7.

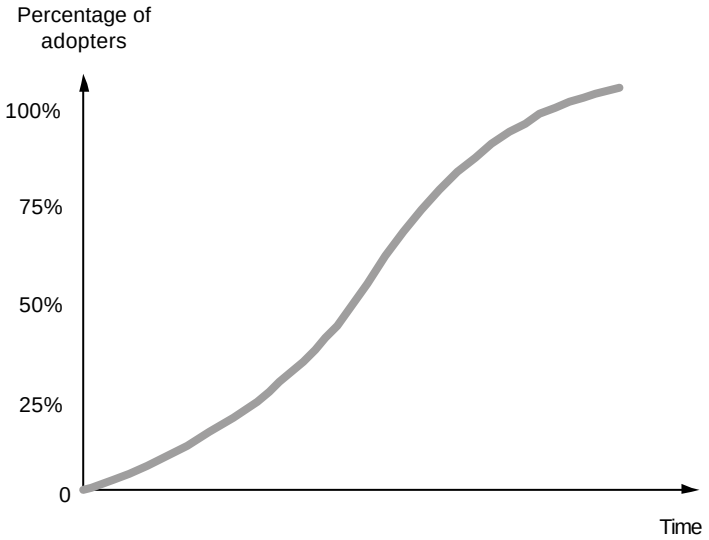

Figure 7: The cumulative s-shaped curve for an adopter distribution (Rogers, 1962)

Moore (2002) presents a reinterpretation of Rogers' (1962) work on diffusion of innovations. Moore (2002) concludes that moving through the different stages of technology adoption is not necessarily smooth. Between any two groups of customers

along the bell curve there is a gap that symbolizes the dissociation between the two groups. This refers to the difficulty any group will have in accepting a new product if it is presented in the same way as it was to the group to its immediate left. Between the visionaries and the pragmatists the gap is described as a chasm due to the very different nature of the two groups of customers.

Rogers' (1962) work emphasizes that early adopters accept the risk of being early adopters and take a longer time to test the innovation than late adopters do. This can explain the reason for the chasm and the cracks in the bell curve as Moore (2002) defines it. Figure 8 describes how the five different categories of adopters are distributed on a standard bell curve and where the chasm is located.

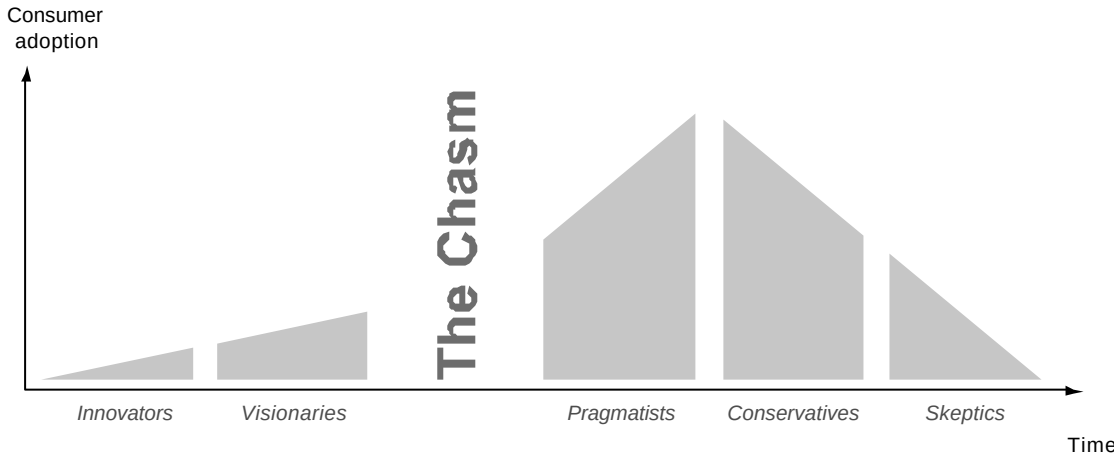

Figure 8: Consumer adoption categories and the chasm (Moore, 2002)

There are gaps between all segments but there is a particularly big gap between the early adopters and the pragmatists. This gap is called the chasm. The pragmatists worry about stability, dependability and reliability; they want to use the technology but do not want to be victimized by breakdowns or held hostage by single suppliers. Moore (1995) further uses the technology adoption life cycle to show that at different stages, companies must alter their strategies. Moore (1995) states that in order to move from the early market to the mainstream market, proving the merit of the technology and attacking specific niche markets will lead to wide acceptance of the technology and start what Moore (1995) calls the tornado. Once the chasm is crossed the market will grow rapidly due to the herd behaviour of the pragmatists.

The theoretical models discussed in this section can be applied in order to understand the general market trends for new product classes and will be used in this report in order to describe and discuss the current status and future potential for the European mobile entertainment market.

2.3 Industry and market evolution

In order to describe and analyse the nature of the emerging mobile entertainment value web and market, a theoretical foundation regarding industry and market development have been applied, primarily using the framework of Michael Porter's Competitive Strategy (1980). Porter's (1980) competitive strategy framework has been very influential in both business and academia over the last decades and is

generally considered to have stood the test of time. Slater & Olson (2002) in *A fresh look at industry and market analysis* states that since the introduction of Porter's framework a substantial body of research has been compiled that generally either supports or complements Porter's (1980) work. In his later work such as *Strategy and the Internet* (2001), Porter also concludes that the digital era and dotcom boom did not change the strategy fundamentals outlined in his competitive strategy framework.

Porter (1980) discusses what he calls industry evolution and also fragmented and emerging industries. Included in this are also aspects of market development. The young European mobile entertainment value web can be considered to be emerging, as services utilising wireless digital networks have only since a few years ago been trying to reach a mass market. In addition, this market is in its infancy with respect to even the most modest future market size predictions. Finally, several of the industry sectors in the mobile entertainment value web are fragmented and consist of many new companies.

More specifically, Porter (1980) describes what he calls evolutionary processes that drive industry evolution. He also describes factors that characterize emerging and fragmented industries and discuss problems constraining their development. Drivers and barriers, as defined for this study in the introduction to Chapter 5, are factors facilitating or constraining development. Therefore, these theories to a large extent reach into the area of this document's barriers and drivers. The compilation of these parts of Porter (1980) into a framework, where each component then is examined regarding its applicability and relevance, enables this study to in a more reliable way look for and analyse what constitutes both industry trends and also barriers and drivers. This framework is presented in more detail in the subsequent sections.

However, it is also important to highlight that Porter's (1980) views, to an extent assuming an industry evolution perspective, have not been left completely without criticism. Baden-Fuller & Stopford (1992) agues that the fortune of an individual company is not as closely tied to its industry as e.g. Porter (1980) states. They further stress that only a fraction of differences in profitability between companies can be attributed to industry characteristics. Their conclusion is that the industry context is largely unimportant to an individual firm; it is the company's own strategic choices that matters. Hamel & Prahalad (1994) further states that it is the perception of the industry rules and structure that guides a company's behaviour and that the influence of this perception can be even more powerful than the underlying economic, technological, political and social factors themselves.

According to de Wit & Meyer (1998), advocates of the industry creation perspective such as Baden-Fuller & Stopford (1992) and Hamel & Prahalad (1994) does however not deny that in many industries developments are to a large extent evolutionary. Further and most importantly, they recognize the industry evolution perspective as a powerful explanatory lens for understanding the dynamics in industries. As the analytical level of this study lies on or even above the industry level, Porter's (1980) framework can with regards to this be used as an analytical tool.

2.3.1 Evolutionary processes

According to Porter (1980), it is possible to generalize about the processes that drive industry evolution, although their speed and direction will differ depending on the industry. These processes are of different types and are related to:

- market behaviour
- industry innovation
- increase in know how
- cost changes
- uncertainty reduction and
- external forces, such as government policy and structural change in adjacent industries.

Each of these evolutionary processes identifies strategic key issues for the companies within the industry, and their effects are usually described as either positive or negative from an industry development perspective. As an example, uncertainty reduction is an evolutionary process that leads to increased adoption of successful strategies among companies and the entry of new types of companies into the industry. Regarding the mobile entertainment value web, both of these effects are considered to contribute to industry development and this evolutionary process is therefore seen as a meaningful part of a framework with the purpose of identifying barriers and drivers.

2.3.2 Emerging industries

There are common structural factors that can be said to characterize many emerging industries. According to Porter (1980), most of them relate either to the absence of established bases for competition, other industry specific rules of the game or to the initial relatively small size and newness of the industry. These characteristics can be used for the establishment of a view of the current industry situation and what challenges the companies in it are facing in relation to barriers and drivers.

Porter (1980) also identifies a range of problems that emerging industries may confront in order to develop further. These stem from the newness of the industry, its dependence on growth on other outside companies and organizations, and its need to give rise to customer adoption of the new product. The issues lie in the areas of:

- undeveloped supply and distribution channels
- instilling trust towards customers and potential stakeholders and
- the absence of established rules within the industry.

2.3.3 Fragmented industries

Porter (1980) discusses what factors that make an industry fragmented. These factors regard:

- industry entry and exit barriers
- cost issues
- diversity of market needs
- possibilities for product differentiation

- government regulations
- conditions for economies of scale and
- other advantages of size.

In the same way as for emerging industries, these characteristics can be used to establish a view of the current industry situation, support the analysis of how the influence or absence of these factors affect industry development and what challenges the companies in it are facing.

Porter (1980) also discusses what might drive companies to overcome the fragmentation as well as how to cope with it. In these two cases the challenges are either about unlocking (if possible) the factors leading to the fragmentation (described above) or finding possible strategic alternatives which can be achieved through:

- specialization
- achieving a focus
- increasing the value added
- cost reduction or
- backward integration.

In the parts of the mobile entertainment industry where the business is relatively new and the rules of the game are less established, both these strategies of overcoming and coping with fragmentation seem to be applied. Therefore, the above aspects that Porter brings forth become a tool for describing what might impede or facilitate these strived for strategies.

Altogether, this body of theory reveal key issues about what might drive and constrain development in a fragmented and emerging industry like the one for European mobile entertainment.

3. INDUSTRY

The mobile entertainment (ME) 'industry' consists of a range of different types of actors. Many are new companies focusing solely on the business of mobile entertainment and many are large established companies taking the opportunity to capitalize on an emerging market. The mobile entertainment 'industry' can generally be seen as the integration of the value chains of two industries – those of the mobile voice and the media/content industries. (*Mobile Multimedia Study*, 2002) Mobile operators are for example extending their networks' capabilities to facilitate mobile data services and the mobile device manufacturers are introducing devices that supports increasingly advanced applications and compelling user experiences. As a consequence to this development, established media and content companies have started to show an interest in supplying their entertainment content through the mobile channel.

How do you describe the value chains and business models in this kind of diverse 'industry'? To begin with, the common use of the word industry is very often far from its use in academic contexts. The most common definition of an industry, set by Porter (1980), would not allow for mobile entertainment to consist of merely two industries, as the activities taking place within this field are far too diverse. Porter's (1980) definition, based on a supply-oriented perspective, stands for a group of companies that produce products or services that can be said to be close substitutes to each other. Using this definition, the mobile entertainment industry could probably be said to constitute of over twenty or thirty distinct industries ranging from development of operating systems, production of mobile phones to the recording of a ringtone.

According to Sabat (2002), the different parts of the mobile data industry are very fluid and could well be grouped in many ways in the response to the dynamic landscape. As Porter's (1980) definition of industry would make an investigation less comprehensible we have, in accordance with Sabat (2002), narrowed down the different activities taking place within the field of mobile entertainment into twelve categories, from now on described as *industry sectors*.

So how do these industry sectors relate to each other, regarding value chains and business models? When describing the diverse set of industry sectors and the complex network of interrelationships that constitutes the mobile data industry, consultancy company Durlacher establishes the term *value web* in their survey *UMTS report – An investment perspective* (2001). Li & Whalley (2002) share the perspective that terms like value web (they are, however, using the plural term value networks) are more appropriate for reflecting the actual state of the mobile data industry. They describe "the industry" as a series of inter-twined value chains where some nodes are simultaneously involved in more than one value chain. Considering this complex business to business environment the companies in the scope of this study find themselves in, we will therefore refer to them as the *mobile entertainment value web* from here on.

This chapter begins with a structural overview of the mobile entertainment value web. This is done in order to describe the general positions, or industry sectors, the

involved companies have attained as part of their business models (see definition of business model in Section 2.1.2) The interrelationships between these sectors are then described, mainly in terms of value chains. Finally, the current state and ongoing trends within the value web are described concerning economic control, positions, strategic networks and revenue models. This chapter is partly based on two ME value chain case studies that can be found in Appendix 1.

3.1 Positions in the ME value web

The building blocks of the mobile entertainment value web model are not the companies within it. These blocks instead consist of the *positions* these companies assume regarding their value creation and whom the target of that value creation is. At the most fundamental level, the positions the companies in the mobile entertainment value web can assume are divided into the industry sectors related to *networks and devices*, *services* and the *consumers*. The first two blocks, both delivering their end-products to the consumers, and the consumer related block are displayed in Figure 9.

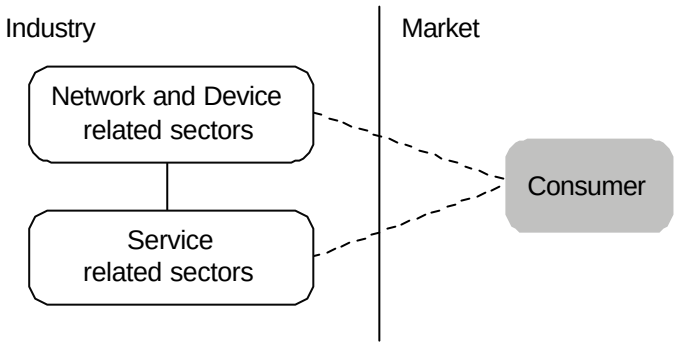

Figure 9: Fundamental structure of the European mobile entertainment value web.

In order for successful ME services to be created, the ME value web needs a development of technical equipment, such as wireless networks and mobile devices. At the same time, in order for data capable mobile devices to sell, content and services need to be developed to be used on them. Finally, the consumers need to be approached with the suitable points of sale. Several companies in the ME value web simultaneously assume positions in all of these three blocks, but are then assuming three fundamentally different positions and therefore business models. In the figures to follow, black lines symbolize a relation between two industry sectors and grey lines the relation between an industry sector and a group of industry sectors

3.1.1 Network and device related sectors

The network and device related part of the value web consists of 6 industry sectors as illustrated in Figure 10. The industry sectors relations to each other, in the figure illustrated as black lines, are described later in Section 3.2.

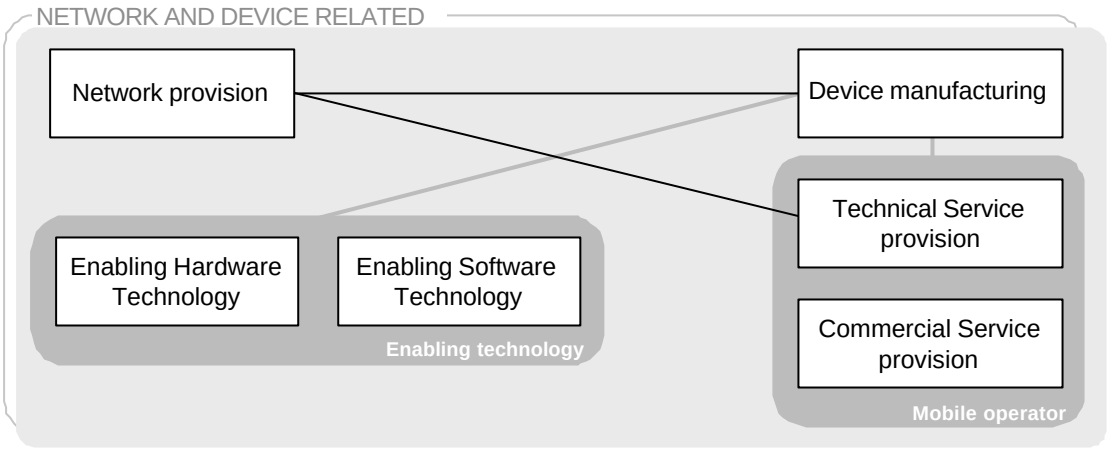

Figure 10: Network and Device related sectors within the ME value web.

Starting with an essential industry sector, a company in the business of *Network provision* is involved in the development and manufacturing of the network infrastructure equipment over which ME services are delivered, providing for example telecom masts, wireless network standards, routers and switches. These businesses, which easily could be divided into further industry sectors for purposes other than mobile entertainment, stands as a base for mobile telecommunications and sets the fundamental boundaries for what data transfer speeds mobile entertainment services can utilize. Although exceptionally important, this is the least directly involved industry sector in the value creation process of ME services.

Another essential part of the mobile entertainment value web is the *Device manufacturing* industry sector, providing the market with mobile devices such as mobile phones and PDA's.

The industry sectors concerned with *Enabling Technology* are involved with the invention and development of enabling software and hardware for the mobile devices. Providers of enabling software technologies deliver for example the essential operating systems, application platforms and execution environments. Enabling hardware technology providers supply handset equipment and accessories such as cameras, screen displays, battery solutions and positioning systems etc.

The business of the *Mobile operator* can be divided into a technical and commercial industry sector. *Technical service providers* manage the investment in technical platforms and network infrastructure and *Commercial service providers* are concerned with the market related aspects of providing functions such as billing and customer care. The sales and marketing roles are assumed by the commercial service provider. Traditional mobile operators work as both technical and commercial service providers. Mobile virtual network operators (MVNO) do not manage any network infrastructure of their own and hence only operate within commercial service provision.

3.1.2 Service related sectors

The service related industry sectors are, as the name suggests, involved with the supply of mobile entertainment services towards other parts of the value web. These four industry sectors are shown in Figure 11.

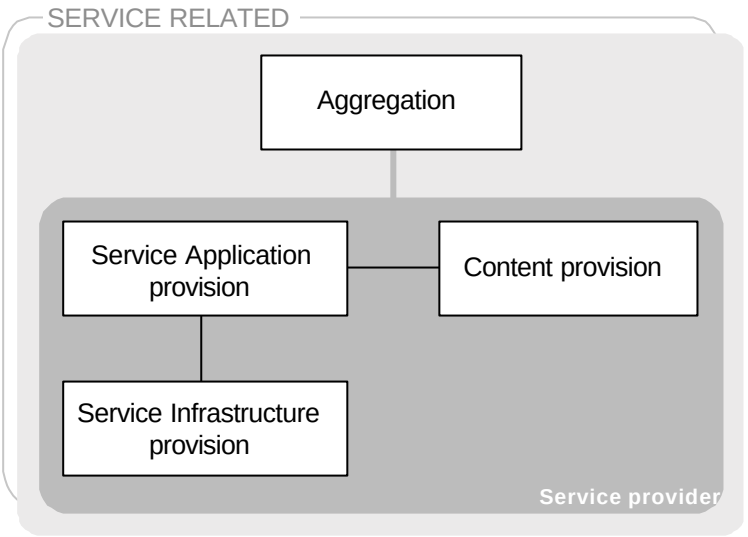

Figure 11: Service related sectors within the ME value web.

The three *Service provider* industry sectors, having a grey background, develop content, applications and service infrastructure solutions regarding various types of mobile entertainment services. Following the value chain of a given ME service, the *Content provider* develop and manage content and brands. These content rights are then licensed to other parties in the value web or used for in-house development of ME services. In close relation to the content provider are the *Service application provider* and the *Service infrastructure provider*. The service application providers develop the actual entertainment service and the requested platforms, therefore 'packaging' the content into a format ready for mobile use. The *service infrastructure providers* make the necessary infrastructure solutions available, such as SMS gateways and networked multiplayer platforms, which are required for a service to run and to be wirelessly available to consumers for example using different mobile operator subscriptions.

The last industry sector of the service related block is the *Aggregators*. These actors work as a middle-person between the large amount of service providers and the downstream industry sectors offering the services to the consumers. The aggregator buys or licenses the rights for a chosen collection of services and then promotes them on different portals.

3.1.3 The value web's relationships to the market

In this section, the industry sectors having a relationship to the consumers are described. As shown in Figure 12, there are three industry sectors in the value web that have this relationship.

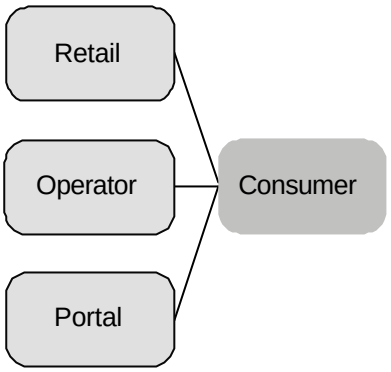

Figure 12: Direct industry sectors-to-market connections within the ME value web.

Depending on type of service or product, the mobile entertainment value web uses either *retail* channels or *portals* to reach the consumers. Also, as described in Section 3.2, the mobile operators have a direct relation to their consumers regarding for example billing, subscription and customer service.

Through *retail* stores, consumers can buy the services and products the value web produce. By mid 2003 this usually means mobile subscriptions and mobile devices with their appliances. However, the retail channel can also be used for the distribution of mobile entertainment services stored on physical memories. This option is rarely used today but could come to increase as more mobile devices are able to handle physical memories (e.g. Nokia's N-Gage). Digital Bridges supply their services through retail stores such as Virgin Megastores and The Carphone Warehouse (www.digitalbridges.com, 2003-09-16). This however requires that the user is able to transfer the games, stored on a CD, from their PC to the mobile device. The retail stores can for example be owned by mobile operators or be a part of various kinds of retail chains.

A *portal* can be seen as an online store where companies can offer their services for sale, but also use for advertising. These are run as an independent business or are owned and managed by companies that are also operating in other parts of the value web such as mobile operators, aggregators or content providers. These portals can also display their content through advertising in e.g. TV and print media.

3.2 Value relationships in the ME value web

The general positions within the European entertainment value web have been described. Figure 13 displays the entire value web, together with lines representing the value chain connections or other important relationships between the industry sectors. In this figure, black lines symbolize a relation between two industry sectors and grey lines the relation between an industry sector and a group of industry sectors. Depending on the level of abstraction, additional or fewer lines can be drawn. A service application provider could for example be said to have a direct relationship to the people using that entertainment service, especially if the service encompass interactivity between the users and the application service provider. In this description, the most relevant relationships regarding how the industry sectors relate to each other by mid 2003 are discussed. Occasionally, when a more specific type of entertainment service is studied in relation to the value web, slightly adapted value

web configurations would provide a more appropriate picture. This is to some extent the case with mobile games, as discussed below. Despite this, the illustration in Figure 13 is to be considered as a model whose structure is able to successfully cover all the different positions or value creating activities that companies in the European ME value web can attain.

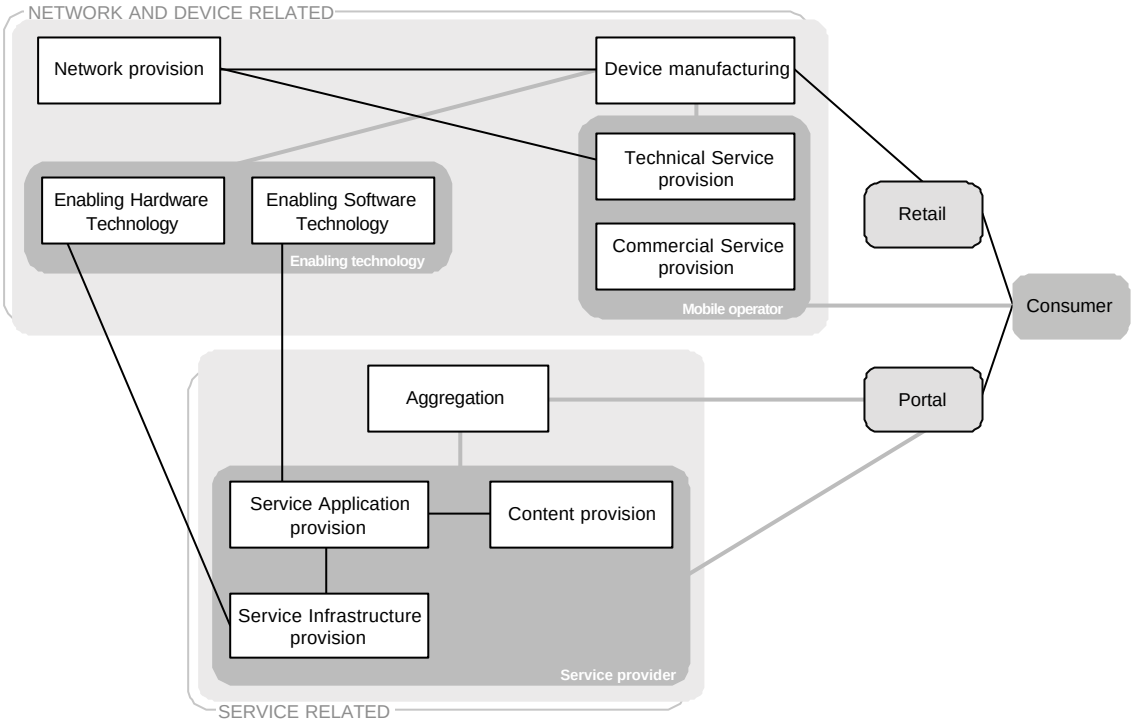

Figure 13: The European mobile entertainment value web.

Starting with the network providers, companies like Cisco, Nokia, Ericsson and Qualcomm provide their network solutions and components to traditional mobile operators like Vodafone Group, 3 and Deutsche Telekom. Network providers also have a relation to the device manufacturers, as handset device technology is built upon various network standards. Several companies also attain both positions and therefore act as both wireless network providers and mobile device manufacturers. These are companies such as Nokia, Motorola, Siemens and Ericsson. Network providers are positioned furthest away from the consumer in the ME value web, as their business regarding entertainment services have no direct relationship to the end user.

The device manufacturers have value relations with both the technical side and the consumers. The relation between the device manufacturing and the enabling technology industry sectors are important for the development of improved handset device technology and software operability. Symbian's Series 60, Qualcomm's Brew and Sun's J2ME are examples of important enabling software technology platforms used by several device manufacturers. It is also common for companies acting as device manufacturers to also conduct the whole enabling technology group, like Siemens Mobile and their augmented reality lab or Nokia with the Series 60 standard.

There is also a relationship between the device manufacturer and the mobile operator. If a mobile operator supports specific mobile devices, and therefore becoming to some extent involved in the development, enhanced compatibility can be ensured regarding the services the mobile operator provides as a portal. Also, mobile operators like Deutsche Telekom or Vodafone Group and MVNOs such as Virgin or MTV offer their consumer subsidized phones as a part of their relationship with the device manufacturer.

Using retail and authorized outlets, device manufacturers are able to establish an indirect connection to the consumers. The consumer relations connected to the mobile operator concerns direct communication regarding billing and customer care, but also questions related to the mobile devices. As can be seen in Figure 13, device manufacturers and mobile operators are the industry sectors within the *network and device* related block to be placed closest to the market side, meaning they have the most noticeable and frequent relation to the mobile consumers.

In the *service* related block, the industry sectors are usually not as consumer close as some of the sectors in the *network and device* block mentioned above, as mobile operators, retail stores or portals are used as intermediaries. With this in mind, the service provider industry sector most noticeable to the consumers is the content provider with their branded content such as Disney's characters, THQ Wireless's game Worms or Privates adult content. If not developing the content on their own, the service application provider needs to have a relation to the content provider. It is not uncommon for companies acting as service application providers to also provide the ME service with content, original ideas and branded material themselves, such as Mforma, hence attaining both positions as part of their business model.

For a ME service to be commercialized, the service application provider also needs to establish a relation to the service infrastructure provider, who are able to put the service application on a telecom infrastructure solution. Companies like Codetoys invent their own content, develop their own service applications and provide it to their own network infrastructure solution. They are therefore acting as a full service provider covering all three industry sectors in the service provider group. Aspiro and iTouch are established aggregators and service providers except from being involved in the infrastructure provision. A company like Digital Bridges covers the whole service related block of the ME value web.

For service application providers, the development of services often benefit from having a relation to, or also acting as, an enabling software technology provider. This gives them the possibility of offering enhanced products, which is the case for Synergenix and their Mophun platform, In-Fusio with their ExEn and Digital Bridges with UNITY. The same goes for service infrastructure providers. A close relationship to enabling hardware providers also gives them opportunities of establishing improved technical infrastructure solutions for ME services.

Service providers usually use aggregators or direct relationships with portals managed by other companies to deliver their services downstream towards the consumers. Portals like Club Nokia usually involves direct downloads of mobile games- or services via WAP or Internet web pages, or use advertised short codes to be typed in

by the consumers to activate the service. Other portals work as a gateway for mobile Internet by using a custom user interface to its services, as have been seen with i-mode and Vodafone Live!. Service providers do also in some cases act as portals as well.

The aggregators work as an intermediary between the service providers and the portals. They sign contracts with service application providers, often mobile gaming related, or content providers and offer their collection to the portals. Mforma, Motorola and Digital Bridges are examples of aggregators that provide their entertainment services to companies like Vodafone, TIM, Telefonica and T-Mobile.

Regarding mobile games, the value web undertakes a somewhat different role by introducing the industry sector of *Publishing*. Mobile games is far more developed than most other types of ME services. This could be the reason for the publishers' emergence, but it might also be the case that they are not necessary elsewhere. The modification of the value web is shown with broken lines in Figure 14.

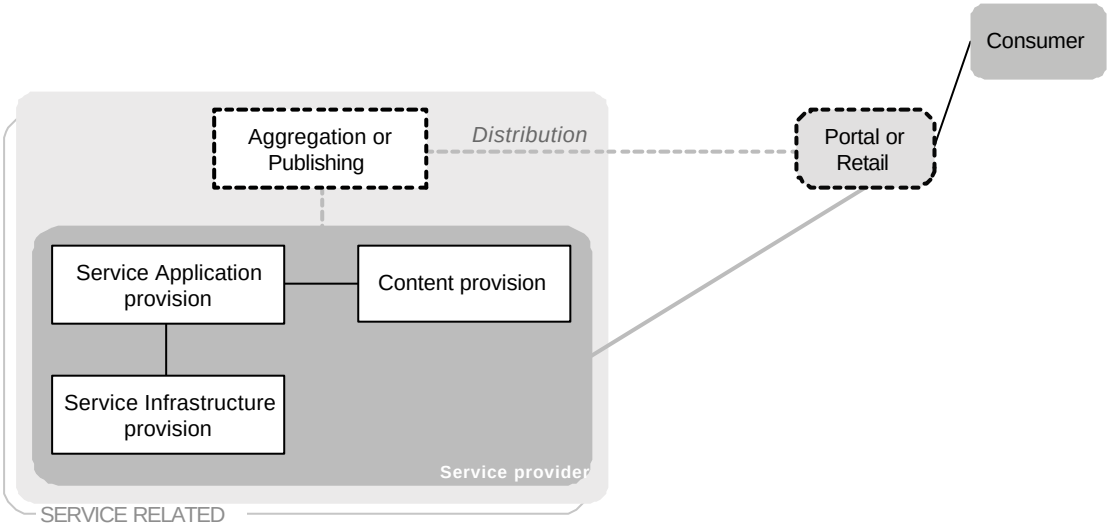

Figure 14: Adjustment of the ME value web model for mobile games.

The difference between the aggregators and the publishers is that the latter select the services to be developed and the type of content to use. They may also license brands from content providers. In the case with mobile games, both retail- and portal related industry sectors are used to offer the games to the market.

3.3 Current state and trends within the value web

With the basic structure of the value web described regarding positions and value relationships, this section extends the discussion about the value web to all four industry wide elements of a business model as it is defined in Section 2.1. Beyond positions, the aspects of economic control, revenue models and strategic networks is now introduced. This is done in order to describe both the current state of the value web and the trends that shape its development in relation to these aspects.

3.3.1 Positions among companies in the ME value web

An early observation when studying the value web in this manner is that companies with seemingly similar original core competencies have attained quite different constellations of positions. Some companies choose to remain focused on just one industry sector while others try to gain benefits from increasing their number of positions.

According to Li & Whalley (2002), radical changes are happening in the telecommunications industry. The interviews performed among industry participants clearly points in the same direction. Ralph Simon, founder of Yourmobile/Moviso, executive chairman Digital Express, Chairman of MEF Americas Group (2003-02-19) comments the situation:

"The space is still relatively fluid."

And Phil Terrett, Founder and CEO of The Third Stage, former CEO of Cybiko (2003-01-21) state:

"There is a tendency in the value chain that everybody thinks they could do the other players jobs."

Figure 15 shows five different types of companies' positions in the value web. Originally, these companies operated as quite different businesses but are now having areas of operations that overlap. Since the value web is a model providing a perspective of the mobile entertainment 'industry' at a very aggregated level, companies in the same industry sectors do not necessarily have to be direct competitors; there are many different types of services, platforms and roles to play within the mobile entertainment value web. Therefore, this illustration primarily reveals the value web's dynamic state in terms of different companies attaining similar positions.

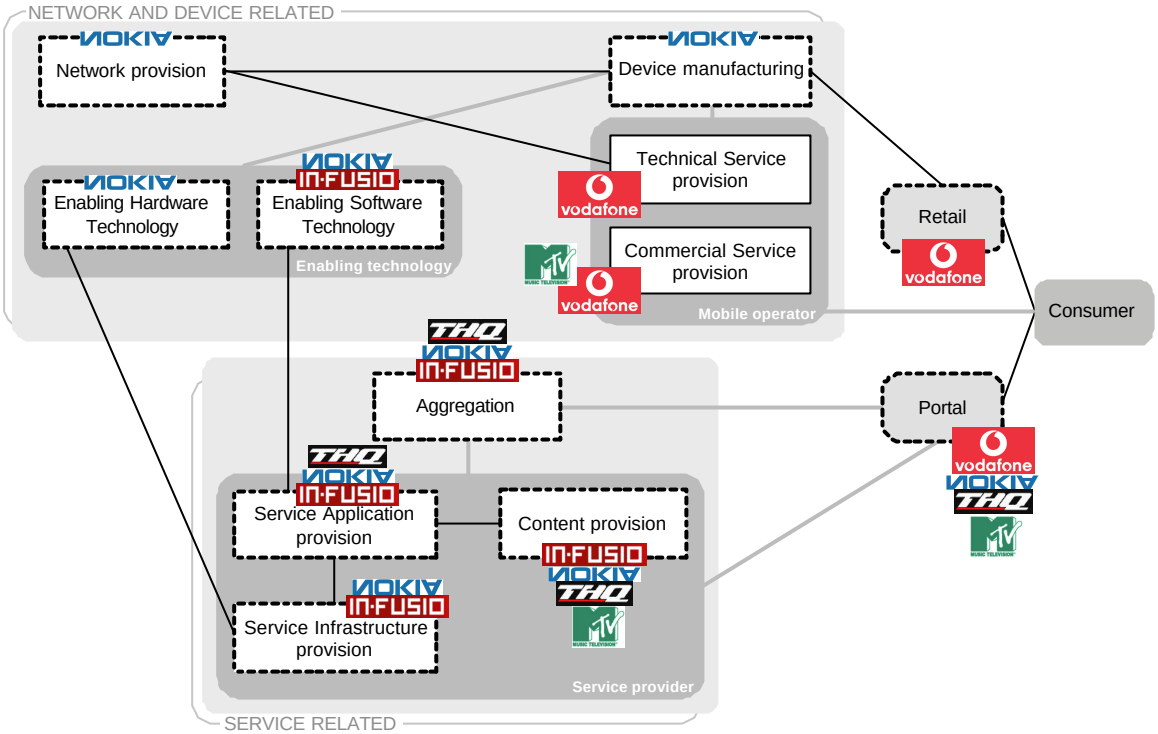

Figure 15: Positions among different types of companies within the European mobile entertainment value web

The majority of the mobile consumers recognize Nokia as a device manufacturer, but their line of business is far more wide-ranging than that. Except from developing mobile devices, Nokia is a worldwide provider of wireless network solutions and infrastructure for both W-CDMA and UMTS. Nokia is also involved in enabling technology, both software and hardware wise, by developing mobile accessories such as Bluetooth headsets and cameras, but also enabling software like the Symbian OS and Series 60. Although not direct competitors to Nokia, IN-FUSIO also operates as an enabling software technology company with their mobile game oriented platform.

With Club Nokia, Nokia acts as a portal providing the consumers with mobile entertainment services. In the same position, having a very different origin compared to a device manufacturer, is the mobile operator Vodafone with their Vodafone Live! portal. In turn, originally very different from both NOKIA and Vodafone is media company MTV with their Hello MTV portal and publisher THQ Wireless with madtap.com. MTV also acts as a commercial service provider (MVNO), thereby competing with Vodafone regarding that position.

Nokia also performs aggregation regarding for example their new N-Gage device, allowing third parties' mobile games from for example Sega, Ubi Soft, THQ Wireless and Eidos to be sold to N-Gage's future gamers. THQ Wireless and IN-FUSIO also acts as aggregators (publishers) to for example portals.

Regarding service provision, Nokia provide mobile entertainment with services and content developed in-house. *Pathway to Glory* for N-Gage is one example (http://www.n-gage.com, http://www.nokia.com, 2003-07-03). Having parts of Nokia developing and maintaining supporting service platforms, they can also be seen as a

service infrastructure provider. In the same way, IN-FUSIO also develops their own entertainment services and content for those. These two companies are not focused on being content providers in the same way as MTV is in the value web. However, since Nokia and In-Fusio fully develop their own entertainment services including content, they deserve to be included in the content provider industry sector. THQ Wireless, being both publisher and portal, also develop their own mobile game titles and content.

To conclude, different types of actors are attaining several similar positions in the mobile entertainment value web. It is by mid 2003 regarding several industry sectors a fluid space where few industry rules have been set regarding who is best suited to perform the different activities and what positions that convey the most bargaining power. At this stage of industry development, many different players seem to want to act as portals, aggregators and service developers, with several wanting to be all of these at the same time. With this aspect of the ME value web's state described, this chapter will continue with the description of two ongoing and important trends connected to this state; horizontal and vertical integration.

3.3.2 Horizontal integration

A trend of horizontal integration, or consolidation, has for some parts of the ME value web been occurring for at least the last few years and is predicted by practically all of our respondents to go on as companies acquire their competitors at the same time as companies go bankrupt and drop out of business.

"There will definitely be a consolidation on the market; it has in fact already started."
Thomas Lindgren, Founder and CEO of Gamefederation, 2003-02-19

"A consolidation has already happened and there will be a consolidation in all parts of the value chain"
Jamie Conyngham, Business Development Manager – Europe, Hexato 2003-02-19

One recent example regarding device manufacturers is Palm's acquisition of Handspring (*Palm Announces Acquisition of Handspring to Bolster Industry Leadership*, Jun 4 2003, Palm press release). Also, many of the small 2G operators in Europe are disappearing by being acquired by their larger competitors. (Lewin, D., *Prospects for European mobile operators*, March 2003, in ovum.com). Consolidation is also occurring among media companies. In the U.S., restrictions are about to be eased regarding the allowance of an increasingly consolidated media ownership (*FCC: Media rules will change*, Jun 2 2003, in cnn.com). In Europe, the move to create regional or pan-European media groups such as RTL Group, Bertelsmann and Vivendi-Universal is expected to continue, although a relatively high level of fragmentation is likely to remain (*Mobile Multimedia Study*, 2002).

This consolidation, leading to a decline in national and an increase in pan-European mobile entertainment players, is difficult to predict regarding how long the consolidation process will go on and exactly how it will shape the mobile entertainment value web. It seems clear, however, that the consolidation will go on for at least a few years. Regarding the mobile operators, *Mobile Multimedia Study* (2002)

predicts that the development is heading towards the emergence of about 5-6 European mobile operators.

3.3.3 Vertical integration and economic control

Figure 15 showed that several different types of companies have entered the same industry sectors. This section describes that situation as a result of ongoing cross industry sector movements performed in order to achieve further economic control of the value web. The mobile operators, media/content companies and device manufacturers will separately be discussed regarding this development. The remaining companies will also be discussed with a focus on the service related industry sectors, in many cases being pure mobile entertainment or mobile data companies.

Beginning with the mobile operators, many of our respondents have stated that they in particular have tried and are trying to increase their economic control in different parts of the ME value web.

> *"Operators in Europe want to be more than just distributors of data"*
> Göran Sander, Director of business development, Synergenix, 2003-02-21

> *"Some operators are becoming more of media companies already"*
> Graham Thomas, VP Strategic Marketing & Content, Cash-U, 2003-02-18

Also, according to *Mobile Multimedia Study* (2002), mobile operators are likely to increasingly take up the portal role, which will make them even more influential. Relatively successful examples are today Vodafone Live! and NTT Docomo's European i-mode. In *Mobile News Study* (2002), it is also stated that the mobile operators are likely to take the lead and be the most influential players pushing content to the consumers. Companies such as Vodafone, Orange (France Telecom), T-mobile (Deutsche Telekom) and TIM are hence likely to be able to strongly influence the development on the European mobile entertainment market.

Turning to the media companies and the large content owners, these companies have in general not been dealing with mobile entertainment for as long as mobile operators and device manufacturers. Their economic control is so far not very strong in the value web. However, major names such as Disney, Sony Corporation, EDGE Games, Eidos Interactive, Sega, The EMI Group, BMG, Universal, Viacom International and others are now entering the ME value web, by licensing brands, titles and artists for use in mobile entertainment services (*The State of Mobile Entertainment*, 2002). In addition to increasingly acting as content providers, however rather slowly, several of these companies might further expand their positions in the value web if they see significant revenues are being generated.

> *"Content owners might move downstream the value chain".*
> Yann Mondon, Head of Corporate Communications, In-Fusio, 2003-02-20

These companies are potentially expected to increase their economic control to other service provider industry sectors and thereby increasingly perform the entertainment service development in-house. Other areas of their expansion are portal provisioning

and also commercial service provisioning (MVNO). This would ensure these companies to achieve a more direct relationship to the mobile entertainment consumers.

One example is MTV's recent entry as an MVNO, offering hit list music, news and chat to their subscribers all over Europe. Another example is THQ wireless, a mobile games publisher and to an extent also application service provider. In September 2003 they launched their own multinational mobile games portal (*THQ Wireless launches madtap.com*, Sep 4 2003, THQ Wireless press release). As a result they have expanded to a new position in the value web. What is especially interesting with this action is that THQ Wireless therefore acts as both portal and supplier to other portals, such as portals operated and branded by the mobile operators'.

The performed value chain case studies (Appendix 1) revealed that the content provider Private Media Group hinted that they might come to increase their economic control by moving downstream the value chain. This would be done through carrying out the application and platform provision as well as the service and infrastructure provisioning. This would mean that Private increased their economic control of the value creation process and that they would be able to achieve a direct relationship with the mobile operators' distribution and billing for Private's services. In this case, Private's current platform and service provider would be excluded from the value chain of the Private Stars service. If actions like this would come to dominate the development of the value web, the economic control of those often smaller independent players would gradually decline as those activities would be performed by the content providers.

Being some of the largest companies acting in the mobile entertainment value web, the global media companies have the potential to strongly influence its development. Companies like AOL Time Warner, Vivendi-Universal, Disney and Viacom with worldwide revenue figures measured in € ten billions have the resources, brands and entertainment related know-how to be able to make a significant impact and generate revenues from the mobile entertainment market.

Further on, Li & Whalley (2002) have noted vertical integration among device manufacturers such as SonyEricsson, Nokia and Motorola, who for example expanded into the operating system market when they established Symbian in 1998. This finding points in the same direction as our empirical findings. Several statements in the news media also point towards a development of vertical integration. For example, the chairman and CEO of Sony Corporation clearly stated:

> *"I really want to own either Symbian or Palm"*
> Perkins, T., *Sony's CEO unplugged*, Feb 4 2003, in AlwaysOn Network.com

With Nokia as an extreme example (see Figure 15), device manufacturers also seem to be willing to increase their economic control in other parts of the value web. Several device manufacturers are active as service providers, portals and aggregators. Nokia's gaming oriented mobile phone N-Gage is an example of an action that lessens the mobile operators' portals role as the main distributors of mobile games. However, this is primarily an indication of that the market is developing in different

directions and not as a way for Nokia to remove the mobile operators from the mobile entertainment distribution loop.

Relatively new, pure mobile service providers here find themselves in the 'middle' between these three different types of giants that are extending their positions in the value web. In order to ensure that they will play significant roles in the ME value web in the future, these companies are consolidating their positions through mergers, acquisitions and vertical expansions. For example, Aspiro has merged with mobile music content provider and portal company Mobilehits (*Aspiros förvärv av Mobilehits fullföljs*, Jul 8 2003, Aspiro press release) and also with mobile games company Picofun (*Aspiro acquires Picofun AB*, Aug 9 2002, Aspiro press release). Part-aggregator Aspiro has therefore strengthened and extended their positions as content provider, service application provider and portal manager.

To summarize, the positions and movements within the mobile entertainment value web reveal that companies from all three dominant sectors; mobile operators, device manufacturers and content providers (mainly traditional media companies), are to a varying extent increasing their economic control over several other industry sectors. However, according to most of our respondents and our own analysis of the situation, the players within these three sectors seem unlikely to move into each other's sectors. The ongoing trends within the ME value web are summarized in Figure 16.

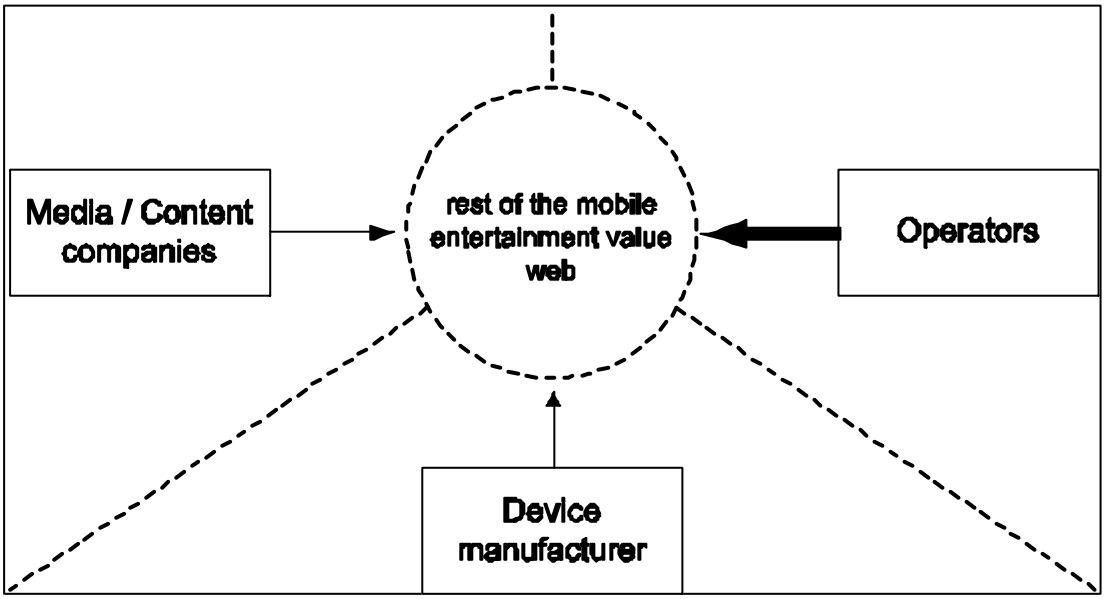

Figure 16: Companies from the three most dominant industry sectors are to a varying extent moving into additional parts of the mobile entertainment value web, but not into each other's.

Media and content companies, mobile operators and device manufacturers are hence from their own 'untouchable' positions to a varying extent moving into the fluid space that constitutes the rest, or the 'middle', of the mobile entertainment value web. This development seems to be due to transaction costs caused by the insecurity and complexity due to the vast number of actors, especially in the 'middle' of the value creation processes taking place within the ME value web. These actors in the middle

are therefore trying to strengthen their positions and economic control in order to raise their bargaining power towards the other actors. It could also to an extent be explained by the struggle for positions taking place within this very immature value web. The question is how the future development will be in this respect.

What are the forces encouraging the trends described above? To begin with, within the value web as a whole, there seems to be an uncertainty regarding what strategies are successful. This is a common situation for most new industries where for example rules have not been set and where companies are competing for positions. The result is experimentation with different strategies. The mobile operators seem to believe in the strategy of controlling the consumer base. An interesting development here is that mobile operator mmO2 is about to release their O2 branded mobile music player manufactured by Siemens (Simon Gordon, *Press Relations Manager at mmO2 plc*, 2003-08-20). This development can be seen as an additional example, beyond portals, of how mobile operators are trying to control the consumer base. Given that consumer-close position, in a way a gatekeeper ditto, and the sheer size the mobile operators possess, it gives them a strong bargaining power towards the other actors in the mobile entertainment value web. For smaller companies, for example in the 'middle' of the value web, vertical integration in a fragmented industry like the ME value web is a way to gain an advantage over competitors. According to Porter (1980), vertical integration for these purposes leads to an increased control over critical resources such as platforms and the supply of services.

Further on, these trends have also emerged because companies are trying to deal with the problems they are facing. These problems stem from the fact that the ME value web is a new and immature industry. As discussed in Chapter 2, this leads to transaction costs in the shape of for example uncertainty and asymmetric information. These transactions costs for exchanges on an open market are eliminated when companies internalize certain business activities. Therefore, a company's actions of attaining new positions in the ME value web do not necessarily have to be in line with their intended business model or core competence.

> *"Today many players do several different things only because they have to"*
> Johan Lenander, Member of the Board, Aspiro. Former CEO Picofun, 2003-02-20

According to Porter (1980), such problems partly stem from a new industry's relatively frequent problem with undeveloped supply and distribution channels. This, for example, implies that a service application provider or aggregator could enter the portal business because they want to increase the probability that their mobile entertainment services will achieve the needed market exposure. For the same reasons, a device manufacturer could set up a service provider business in order to ensure there are enough services that will utilize the advantages of the new device when it is introduced on the market.

The mobile operators are also experiencing the problems of undeveloped supply and distribution channels. They are the stakeholders that have the greatest need to rapidly develop the market, considering their need to both compensate for a declining voice ARPU and start generating a return on the wireless network investments made. This situation is expressed by the following quote:

"I don't think the operators want to expand into additional roles in the value chain, but I think they will be forced to, if the media companies don't take on more responsibility and a more active role."
Thomas Lindgren, Founder and CEO of Gamefederation, 2003-02-19

A second problem Porter (1980) brings forth regarding emerging industries, acting as a force behind the current trends, is lack of trust from customers and potential stakeholders. A major content developer, with significant investments in their brands, preferably requests a service application provider who can take on their whole suite of content and relatively fast transform that content into various types of mobile entertainment. In addition, they want a stable company that reliably will be around as a potential long term partner. In order for the service application provider to instil this trust, they probably crave to merge with other similar companies or acquire further positions in the value web. This is likely to be one reason for the actions among companies in the 'middle' of the value web.

3.3.4 Specialization

In a more long-term perspective, as the mobile entertainment value web matures, the forces behind the trends described above might be replaced by the benefits of specialization. Hagel and Singer (1999) state that because electronic commerce has such low transaction costs, it is natural for internet-based businesses to concentrate on a single core activity. Extrapolating to the ME value web, many of our respondents support this statement.

"I believe that the degree of specialization will increase."
Johan Lenander, Member of the Board, Aspiro. Former CEO Picofun, 2003-02-20

Interestingly, Johan Lenander was the CEO of the company Picofun that was specialized on game development before it was acquired by Aspiro. Aspiro is now, as previously described, conducting several steps in the value chain. This has been concluded as a result of the currently ongoing trends. However, in spite of ongoing consolidation and vertical integration, the value web is likely to continue to consist of many companies. One way for a company to cope with such a fragmented industry is according to Porter (1980) to specialize on fewer activities in order to gain competitive advantage.

"Companies have a core-skill and companies that try to take on too many different roles seem likely to fail."
Phil Terrett, Founder and CEO of The Third Stage, former CEO of Cybiko, 2003-01-21

If the mass market starts adopting mobile entertainment and significant revenues begin to flow in to the value web, this trend is likely to increase. The first reason for this is that more consumers often lead to further opportunities for differentiation, a situation that according to Porter (1980) encourages fragmentation and therefore specialization. Secondly, the increased profitability will also attract new entrants, again a force usually leading to increased fragmentation and specialization. In addition, as new companies with lower risk profiles enter the market, the existing

ones can no longer rely on uncertainty as one factor protecting them from increased competition. One way to cope with this situation is to specialize.

According to our respondents, specialization is likely to become relevant for the mobile operators. In addition, a mobile operator specialization is by some of the interviewees considered to be desirable for their own businesses.

"Operators have traditionally shown that they have a poor understanding of how to grow an audience as opposed to growing subscribers"
Ralph Simon, founder of Yourmobile/Moviso, executive chairman Digital Express, Chairman of MEF Americas Group, 2003-02-19

"Operators have already got multiple roles. It is a temporary thing because players are fighting for positions."
Jamie Conyngham, Business Development Manager – Europe, Hexato, 2003-02-19

Despite the fact that the mobile operators are moving into additional positions, it seems as if this development might eventually come to a halt. As the market grows and new revenue streams as well as new companies enter the value web, specialization is likely to become the dominating trend. However, with the present complexity of the mobile entertainment value web, we believe that there is so far no case of specialization in the mobile entertainment value web and that this lies several years into the future.

3.3.5 Strategic networks

A development that is especially related to the effects of specialization is the emergence of strategic networks. Strategic networks work as a way to solve the many relations that are needed when companies are more specialized. Nokia seem to believe that mobile operators would be more successful in the long run if they within the value web were to focus less on economic control and more on strategic networks.

"The success of mobile industry is built upon openness, interoperability, the right timing, and operators' flexibility in positioning themselves in the value chain… Flexible positioning in the value chain for operators will enable creative business models that can provide enhanced services with third-party offerings"
J.T. Bergqvist, Executive Vice President, Nokia Networks
(*Nokia Enables New Business Models for the Mobile Industry at the 3GSM World Congress*, Feb 18 2003, in CNN.com)

Olla & Patel (2002) discuss business models for the mobile communication market with emphasis on the mobile operators. Taking the starting point in predictions that ARPU (average revenue per user) will drop rather significantly and that many mobile operators have invested heavily in 3G infrastructure and licensing fees, they argue that mobile operators must partner with organizations not normally associated with mobile telecommunications. These different organizations should then be able to each contribute with their core competence. Through, but not without, this partnering it will be possible to deliver innovative and value added services to the customers.

Olla & Patel (2002) uses the term "value chain network" to describe these partnerships, but despite that they do not explicitly use the term, it is clearly a reference to strategic networks discussed in Section 2.1.3.3. As described in the previous section, the long-term future development of the ME value web seems to go towards more specialization and is hence in accordance with Olla & Patel's views. There are already many examples of different types of strategic networking within the mobile entertainment value web. The Symbian operating system jointly launched by Psion, Ericsson, Nokia and Motorola is one example (Motorola has now, however, left Symbian and joined Microsoft). Phil Terrett, Founder and CEO of The Third Stage, former CEO of Cybiko (2003-01-21) on the subject of strategic networks within the mobile entertainment value web even states that:

"This is the way companies do business in this industry"

Nokia Tradepoint is one example of a strategic network initiated by Nokia where smaller application developers through Nokia and Tradepoint get to expose and trade their applications to potential customers (e.g. mobile operators and aggregators). (http://www.tradepoint.nokia.com, 2003-02-28) In this case, Nokia is clearly to be regarded as the hub-firm of this strategic network. This is a good example of advantages with strategic networks for smaller firms mentioned by Jarillo (1988). In the case of Nokia Tradepoint, smaller firms get access to external resources in form of Nokia's large network of contacts and influence within the industry. These are external resources that these smaller companies otherwise never would have been able to acquire on their own. The fact that there are many small and a few extremely large players within the mobile entertainment industry makes the need for strategic networks if this type obvious. Through the Tradepoint, Nokia gains the development of a diverse set and large amount of mobile entertainment applications, potentially creating an increased consumer demand for advanced handset devices. Brandenburger & Nalebuff (1995) states that cooperation and competition can exist simultaneously in what they call *coopetion*. According to them the most important lessons from game theory is that companies should not focus just on themselves but on other players such as customers, suppliers and competitors as well, i.e. the entire value web. Through coopetion, companies can create win-win situations by changing the rules of the game. Nokia's Tradepoint appears to be an attempt to change the rules of the game of mobile entertainment business through strategic networking and coopetition.

In our case study of "Who Wants to be a Millionaire?" we found that the hub firms of the strategic networks were situated in the beginning and the end of the value chain. Through this, for example smaller companies like Codetoys can get access to external resources of the much larger actors Celador and anonymous major European Operator.

The revenue sharing agreements within mobile entertainment connected to some strategic networking deals are yet another example. The revenue sharing agreements are at the same time an example of a threat to the very existence of many strategic networks within the mobile entertainment value web. The primary pre-requisite for the existence of strategic networks according to Jarillo (1988) is that the value created within the strategic network has to be rather equally distributed between the involved

parties. This does not appear to be the case within the ME value web, where mobile operators presently seem to be taking advantage of their dominant position in order to receive short-term profits. The issues of revenue sharing agreements and the seemingly unfair distribution of revenue within the value web are further discussed in Section 3.3.6.2.

The rules of the game of mobile entertainment have yet to be written. Strategic networking and coopetition, through for example revenue sharing models, creates possibilities for smaller companies' business models to prevail. At the same time, larger actors like Nokia have the possibility to create rules of the game favourable to them, turning it into a win-win situation.

3.3.6 Revenue models

The way the revenue models are composed in an industry are able to give several indications about an industry's state. The focus in this section is both on the billing models the value web applies towards the consumers and also the revenue models that stretch from the market related- to the service provider industry sectors.

3.3.6.1 Consumer billing

Regarding consumer billing, there are many different models used. As shown in our case study of Private Stars the billing could be done through for example a fixed rate premium SMS charge. In the following tables various billing models (used not only in Europe) are presented as to show the diversity of methods that can be applied. Table 2 shows different examples of how the consumer can be charged for data transfer. Table 3 shows examples of how consumers can be billed for entertainment content.

Model	Description	Example
Session-based charging	Per-minute charges Per-session charges	Linking to multiplayer games Wi-Fi 802.11b connectivity
Volume-based charging	Per-kilobyte charges	Downloading/Sending tunes, music, digital photographs, GPRS, EDGE
Upload vs. Download charges	Different prices for uploads than on downloads	0.5€ to backup data to network, 2.5€ to download same data.
Mobile Internet Access and Basic Content Subscription Services	Portal Service (Limited number of kilobytes allowed)	America Online NTT DoCoMo - successful I-mode service charges users a $2.50 monthly fee, plus 25 cents per data packet (one packet is equivalent to 128 bytes of data).
Mobile Internet Access with Unlimited or Premium Content Subscription Services	Advanced Portal Services (unlimited kilobytes included in monthly fee)	America Online Verizon Express Service Palm.net Unlimited Volume Plan OmniSky - Pricing Plan EarthLink, the buyer of bankrupt OmniSky assets, has begun offering Internet service to wireless handheld computer users for $40 to $60 per month.
Peak/off-peak times fees	Time-dependent cost structure.	

Table 2: Examples of data transfer billing models (some examples from: http://www.ebstrategy.com/Books/M-Business/RevenueModels.html, 2003-03-03)

Model	Description	Example
Flat rate per content type	Pay-for-what-you-use	No monthly fees. In Singapore, Virgin Mobile, an MVNO who uses SingTel infrastructure, charges a flat rate of 16 cents per minute. MobileOne Asia, charges 20 cents during peak hours, 10 cents during off-peak hours and five cents after 9 p.m. and on weekends.
Flat rate per content type	'All-you-can-eat' models	SMS messaging, corporate and personal email, instant messaging. For instance, BT Genie (now O2) offer subscribers access to a centralized mailbox where they can pick up their voice, email and fax messages through their microbrowser-enabled phone.
Free to end-user	Sponsored services	Operator delivers a football clip sponsored by i.e. a beer company which pays the operator for putting its logo on the clip.
Pay-Per-Level fee	Pricing for different levels of a game	Sprint in the US.
Quality or delivery time-based charging	Pricing models depending on the urgency of the need for the service.	Gold (immediately), Silver (within 5 minutes) and Bronze (within 24 hours) standard service for delivery of a football goal being scored

Table 3: Example of mobile entertainment content billing models (some examples from: http://www.ebstrategy.com/Books/M-Business/RevenueModels.html, 2003-03-03)

Even though these are just examples of different billing models that are and can be used, it seems clear that from a consumer perspective it is not as easy to grasp what you are paying for, how, and what the total cost will be for using different entertainment services. If a consumer for example wants to play a game on her mobile phone, she might download a game when the charge rate is €10 per megabyte. The size of the game application is 80 kilobytes. In addition, the game costs €4 for the first five levels of the game and then an additional 1€ for every new five levels. How much will it cost you to play the desired game?

This is just one example of a situation a consumer could end up in when considering to buy a mobile entertainment service. Naturally, it does not always have to be as complicated to calculate the cost for all mobile entertainment services. However, it seems clear that the presence of unclear billing models from a consumer perspective will make consumers more reluctant to consume mobile entertainment services. Mobile operator 3 has solved this problem by offering all their mobile entertainment services at one fixed cost also including data transfer in their 3G networks. This does however only apply to 3's own services at their own embedded portal. If the consumer chooses to purchase an entertainment service from any other supplier, the consumer will have to pay both a premium fee and a data transfer fee to 3.

Many of our respondents have commented on the present situation regarding the billing of consumers for mobile entertainment services.

"Presently if you for example download a video-clip, you are charged twice: first for the premium content, and then for the data-transfer. This is unsustainable."
Bob Crompton, VP operator relations, the Mobile Entertainment Corporation, 2003-02-19

"The easier the better. Transparency is essential. With WAP [without GPRS] *you never knew what you paid for."*
Yann Mondon, Head of Corporate Communications, In-Fusio, 2003-02-20

However, there are also views reflecting an opinion that diversity regarding billing models would be something desirable for the consumer.

"We should provide as many billing alternatives as possible so the end-user can choose for themselves."
Phillipe Bornstein, Corporate VP Marketing & Development, Netsize, 2003-02-19

It still seems as if too many different choices and alternatives regarding consumer billing could come to be a problem if consumers become uncertain about how much they are paying, which, in turn, will result in a lower probability for a buy-decision. Of course there is no answer to how the consumer billing models within the ME value web should be designed, but a few general characteristics of preferable revenue models for the benefit of the ME value web as a whole still seem to exist. Dubosson-Torbay et al, (2002) stress the importance that the revenue model is aligned with the nature of the product (service). Brian Greasly, CEO Digital bridges (2003-02-20) states the same thing:

"If the consumer should be billed for every time he uses the service, the value must be significant. If the value is not significant the billing could be done by subscription service."

To conclude, there is a range of different billing models being used towards the consumers. There seems to be a lot of experimentation regarding this aspect, confirming the early stage of the mobile entertainment market. What is important is that the revenue model is aligned with the nature of the service. Furthermore, it is vital that simplicity and transparency become general characteristics of the revenue models used in order to avoid consumers becoming reluctant to pay for entertainment content. In this, the mobile operators, currently acting as billing interfaces, have a great opportunity and responsibility to see to that this is implemented.

3.3.6.2 Revenue sharing

Potentially, there are several different ways to distribute revenues from the market related industry sectors and through the value web all the way back to the service provider industry sectors. Dubosson-Torbay et al (2002) mention for example commissions and transaction cuts from provided services, revenue sharing with other firms, and by simply selling a product. Software and content license fees are additional examples.

Companies within the ME value web are presently experimenting with different revenue models, but the prevailing and by mid 2003 most desired model is revenue sharing. For example, in the case studies of Private Stars and "Who Wants to be a Millionaire?", revenue sharing seemed to be the one way used to distribute the revenue generated from the consumers. Private Media Group also expressed that they would like to expand the revenue sharing model to also include other media companies used in their marketing process.

"I think the main advantage is that you share the risk and share the success. This brings you closer to your partners and makes everybody pull together"
Nonna Lamponen, Sales Director, Codetoys, 2003-02-27

"It is important that the revenue consumers generate is distributed along the value chain"
Rann Smorodinsky, MEF chairperson & VP and founder of Cash-U, 2003-02-18

However, it is clear that many companies are, to say the least, not satisfied with how this revenue is shared between the different industry sectors. One could of course expect all participants to argue for why their industry sector should receive a larger revenue share, and there is also a tendency within the ME value web to possibly unjustifiably 'blame the mobile operators'. In this case however it appears quite clear that the mobile operators are taking advantage of their strong bargaining position.

"Operators are too greedy."
Phillipe Bornstein, Corporate VP Marketing & Development, Netsize, 2003-02-19

"Operators should take some 5%, not 50%, in transaction cost fee"
Johan Lenander, former CEO of Picofun and board member of Aspiro, 2003-02-20

It seems clear that the revenue generated from the common efforts of all the companies within the ME value web are not distributed in a 'fair' way, using the terminology of Jarillo (1988). However, this is nothing more than a result of the respective industry sectors' bargaining powers against each other. Mobile operators are large players compared to many other companies in the ME value web, in addition having a quite strong control over the consumer base and most billing channels. At the other side of the spectrum stand the many small service application providers. By mid 2003, mobile entertainment services are of a relatively simple nature, making the entry barriers to becoming a service application provider relatively low. This has resulted in many small companies competing with each other in a close to commodity business, which is a situation mobile operators and portals easily can benefit from considering their important role in the immature ME value web with relatively a relatively undeveloped supply and distribution channels.

To conclude, the existence of pure revenue sharing agreements, with no upfront payments and the current way the revenues are distributed between different industry sectors, are signs of strategic uncertainty within the value web. Few actors seem to believe they are in a position of sufficient market knowledge and the ability to reliably generate revenues from the market. Had this not been the case there would have been more companies acting as either publishers or portals that actually partly buys the services up front since that risk in turn would have 'fairly' entitled them to a high share of the generated revenues. Instead, this high share is grabbed anyway, since the strategic uncertainty has resulted in short-sightedness and the exploitation of bargaining powers from mainly the financially pressured mobile operators. However, this situation is a significant incentive encouraging new distribution channels and payment solutions to emerge that avoids this bargaining power to be exerted.

3.4 Summary and conclusions of industry

There have been many attempts to classify the business models emerging with the new economy (e.g. Amit & Zott, 2002; Dubosson-Torbay et al, 2002; Olla & Patel, 2002; Li & Whalley, 2002) in order to understand how companies on the new markets are making or not making their money. However, there appears to be a conceptual confusion within the industry and a lack of consensus within the academic world on what business and revenue models really are. In relation to mobile entertainment, we define the concept of business model as the position the company occupy in the ME value web and the business concept they have adopted in order to create value. The revenue model is one component of the business model and is the way a company receives their revenues.

The mobile entertainment (ME) value web, displayed in Figure 17, is an overview of all the different value chains and value creating activities that takes place among companies involved with mobile entertainment. The different positions, or industry sectors, that companies are able to attain within the value web are very diverse since a range of activities have to take place in order for a ME service to be produced, marketed and delivered to the consumers. These activities call for involvement from several industry sectors such as content providers, application developers, portal providers, mobile device manufacturers, mobile operators and providers of other software and hardware technology.

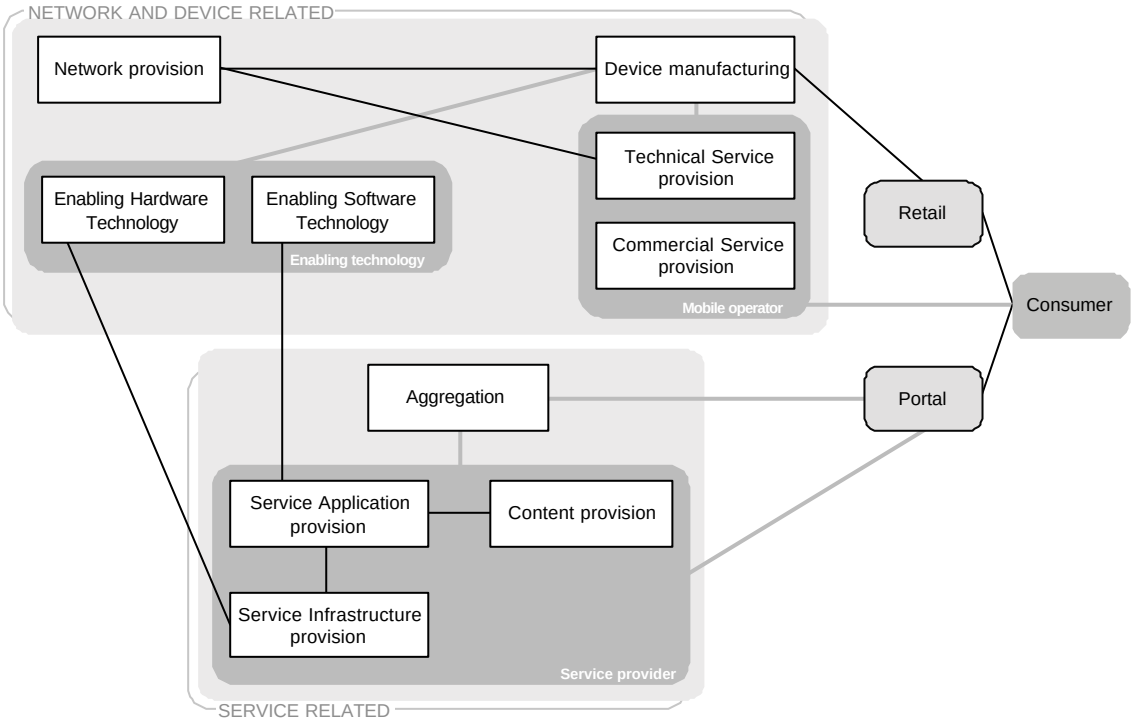

Figure 17: The European mobile entertainment value web

In addition, as the name implies, it is a *web* of different value chains where the value chains of different products may look quite different, involving various industry sectors in various ways. Therefore, a value web is a more appropriate way to illustrate the value creating activities taking place among mobile entertainment companies than the traditionally sequential approach. In Figure 17, black lines symbolize a relation

between two industry sectors and grey lines the relation between an industry sector and a group of industry sectors. Depending on the level of abstraction, additional or fewer lines can be drawn.

Pan-European mobile operators like Vodafone Group and Deutsche Telekom appear to possess a strong bargaining power towards the other actors in the ME value web. Other companies in this position are the large multinational companies that are active in several industry sectors, such as Nokia and Motorola. Global media companies and brand owners like AOL Time Warner and Disney have the potential to strongly influence the development of the value web and market in the future.

Currently, there is an ongoing process of vertical and horizontal integration in the immature European ME value web, a situation which several forces have contributed to. First of all, mobile operators, media/content companies, service providers and also device manufacturers aim to capitalize on the inherent economies of scale of the mobile technology. Secondly, it is currently a way to ensure a competitive position within the value web, as it locks up critical resources from competitors and instil trust towards customer companies. Thirdly, the process of vertical integration has been a way to deal with problems of undeveloped supply and distribution channels. Many different companies are for example currently becoming increasingly involved as portal providers in order to ensure their services will reach the appropriate market exposure. However, at the same time, many companies fail to maintain a business.

We predict that this development of horizontal and vertical integration will remain in an intense phase for at least some years. The three most dominant industry sectors, mobile operators, device manufacturers and media/content companies, are most noticeably striving towards vertical integration within the ME value web. However, smaller companies, such as In-Fusio, also base their business model on performing several steps in the value creation process.

As the value web becomes more mature, the actors will experience less uncertainty and complexity. At the same time, the number of players will decrease due to the ongoing consolidation process. As such, the transaction costs will decrease. With lower transaction costs we expect the vertical integration process within the value web to shift into a development towards specialization. With a higher degree of specialization and hence a lower degree of economic control, strategic networks within the value web will become even more important to all players than they are currently. The strategic networks are and will be especially important to the smaller and medium sized companies.

In order for these strategic networks to prevail, fair revenue sharing agreements are imperative. Revenue sharing appears to be a generally accepted revenue model within the value web and has the advantage that it creates explicit incentives for all parties to contribute to the value creation process. However, mobile operators are presently taking advantage of their strong bargaining power towards the rest of the value web. The business models of the third-party companies will be unsustainable without decent revenue sharing agreements.

The ways in which consumers are billed seem likely to affect consumer uptake of mobile entertainment services. The general characteristics of the revenue models that should be used when billing consumers are: association with the service, simplicity and transparency.

4. MARKET

The European mobile entertainment (ME) market is the marketplace where ME services are sold to consumers across Europe. These services range from ringtones and mobile games to adult entertainment and sport video clips only to name a few. Across a multi-facetted European continent these services are starting to gain ground and potentially there are large revenues to be generated. Market analysts have predicted multi-billion € revenues for several years now, but can these forecasts be trusted? Even though predictions of future market development could be interesting, the actual situation should not be forgotten. What is the current state of the European ME market in the second half of 2003 and what services are offered to consumers? How should companies approach this very interesting market and who are the current and imminent consumers of these services?

This chapter describes the state of the European mobile entertainment market. This is fulfilled through an investigation to find out if there are factors that argue for a fragmented European market and what implication this has for companies acting on the market. In addition, current and imminent consumers of ME services are identified. Further, this chapter offers an overview of the current state of the aggregated European ME market as well as five predefined ME content categories. Based upon this analysis, the stage of development of the European ME market is plotted.

4.1 Scope of the European ME market

This chapter focuses on the European market for mobile entertainment. The global market for mobile entertainment is not explicitly investigated but is occasionally discussed where it is necessary in order to put the European market in a perspective.

In order to study the European market for mobile entertainment, it is crucial to define what is meant by "market" and to discuss what the European market refers to. The distinction between the two terms "market" and "industry" is rather vague in many contexts, and can sometimes refer to the same thing (Slater & Olson, 2002). However, while industry in academic contexts is commonly defined as a group of firms producing products that are close substitutes for each other (Porter, 1980), market is where buyers and sellers meet to execute an exchange. While the definition of industry has a supply-oriented focus, the term market puts focus on the demand side (Slater & Olson, 2002).

Geographical Europe consists of more than 40 different countries. However, despite that it has a relatively small effect on an analysis based on an entire continent such as Europe, it should be noted that some countries in the outskirts of Europe and outside the European Union (primarily Eastern Europe) are sometimes left out in surveys that are referred to in this document. Typically, these states have low penetration of mobile phones, are considered to be marginal markets and/or are very difficult to retrieve reliable information from. To put the economic importance and impact of the 13 acceding- and candidate countries in a perspective, the total telecom expenditure of EU-15 in 2001 was € 303,318 million compared to a total of €30,158 million for the

acceding- and candidate countries. (Eurostat, 2002, *Information Society Statistics*, Theme 4 – 17/2002) The discussions in this document will therefore primarily focus on Western Europe and only to an extent discuss the acceding countries situated in Eastern Europe that will join the European Union by 2004.

Having established how the term market is defined as well as discussed the geographical focus of the study, it is further necessary to define the market for mobile entertainment. From an end-user perspective, a mobile entertainment service can typically be "play a network game while on the move" or "place a bet on a horserace while on the bus". From a supply perspective, such services require supply of mobile applications, entertainment content, physical network infrastructure, a mobile device enabled with the right capabilities etc. This means that every consumer demand for mobile entertainment services can be translated into a need for supply of several distinct products and services that must come together in order for mobile entertainment to be delivered to the consumers. However, as the market is where buyers and sellers meet, we will regard the mobile entertainment market as the market for mobile entertainment consumer services. It should also be noted that while mobile devices are both central and directly crucial regarding mobile entertainment, they do not constitute entertainment per se and will as such merely be regarded as an important part of the infrastructure for the delivery of mobile entertainment services.

4.2 How to regard the market

How should the European market be regarded? The industry representatives interviewed for this study have expressed views on whether or not there exists a pan-European market for mobile entertainment services. The views expressed could at first sight appear to refer to the same issue, but rather they imply that the answer to this question is threefold.

"…again and again it has been proven that if you are in other parts of the world you see it [Europe] *as one land mass. But when you arrive here and try to do something pan-European you fail. Because Europe, even though you have the European Union, is still a bunch of different countries."*

Phil Terrett, Founder and CEO of The Third Stage, former CEO of Cybiko, 2003-02-21

The macro environment of Europe deserves to be discussed in order to be able to conclude how the European market should be regarded. This is performed in Section 4.2.1.

"That's the way you look at whether it's a consolidated market, whether you can actually roam across it freely, without any extra charges"

Esther Dyson, Chairman of EDventure Holdings, 2003-06-10

Could there be factors related to the mobile operators and other factors regarding the supply structure of mobile entertainment services that affects how the market should be considered? This is discussed in Section 4.2.2.

"Usage is different, a service that is successful in Scandinavia is not successful in the same way in Spain."
Phillipe Bornstein, Corporate VP Marketing & Development, Netsize, 2003-02-19

What can be said about the nature of consumer demand for mobile entertainment services across Europe is important to how the market should be regarded and is hence discussed in Section 4.2.3.

4.2.1 Diverse macro environment

When assessing the macro environment of a market, the so-called P.E.S.T. analysis is often used as a tool. P.E.S.T. stands for political, economical, sociocultural and technological factors. (Johnson & Scholes, 1993) Political factors include legal framework, taxation and intellectual property protection. Economical factors concern e.g. government interventions, Gross Domestic Product (GDP) and economic growth rate. Sociocultural factors regard issues such as language and religion. Technological factors concerns for example rate of technological diffusion and pace of technological change. Without making any attempt of conducting a complete P.E.S.T. analysis on the entire European continent, this section will highlight and discuss some relevant macro factors in order to be able to discuss whether or not there is one general European macro environment.

The European Union (EU) currently consists of 15 countries predominantly situated in Western Europe. During the next couple of years the acceding countries will join the EU. These countries are Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia. The candidate countries initially included the now acceding states, but also Romania, Bulgaria and Turkey.

Statistics from OECD (2003) shows that while the EU-15 average GDP per capita (adjusted for current purchasing power parities) is $26,000 many of the eastern European countries shows significantly lower levels with Poland at $9,900 and Hungary at $13,400. Even within EU-15 differences are significant with Luxembourg ($48,700) and Norway ($36,500) topping the chart while EU countries such as Portugal ($17,600) and Greece ($16,300) reside at lower levels. (OECD, April 2003 http://www.oecd.org/pdf/M00018000/M00018518.pdf) These figures show just how diverse both Europe and the EU are regarding degree of economic development.

Looking at the penetration rates of mobile phones, the European average is 50 per 100 inhabitants while most EU-15 countries have penetration levels over 80. Still, there are significant differences within EU-15 where countries such as Italy, Iceland and Sweden are peaking at levels around 90 while France only has a penetration level of 65 per 100 inhabitants. Out of the acceding states, Czech Republic, Slovenia and Malta had the highest number of mobile phones at the end of 2002 and are at the same level as most of the EU-15 countries. Many of the acceding countries, such as Poland and Latvia, do however have penetration levels as low as 35-40 per 100 inhabitants. A complete list of the European situation regarding number of mobile subscribers, compound annual growth rate (CAGR) and penetration levels are shown in Table 4.

	Number of Subscribers 2002 (k)	CAGR 1995-2002	Penetration per 100 inhabitants
Albania	800	-	20
Andorra	24	53	30
Austria	6 760	51	83
Belarus	465	87	5
Belgium	8 136	66	79
Bosnia	376	-	9
Bulgaria	1 550	105	19
Croatia	2 278	83	47
Cyprus	418	38	60
Czech Republic	8 610	109	85
Denmark	4 478	27	83
Estonia	881	62	65
Finland	4 400	23	85
France	38 585	62	65
Germany	59 200	49	72
Greece	9 240	65	84
Greenland	17	42	30
Guernsey	32	54	50
Hungary	6 562	58	65
Iceland	260	36	90
Ireland	2 969	52	76
Italy	52 316	45	93
Jersey	61	55	70
Latvia	917	80	39
Lithuania	1 632	96	47
Luxembourg	455	50	101
Malta	277	59	70
Moldova	225	402	5
Netherlands	11 700	55	72
Norway	3 842	22	84
Poland	14 000	111	36
Portugal	8 529	58	82
Romania	3 845	174	17
Russia	17 668	113	12
Serbia and Montenegro	2 750	-	26
Slovak Republic	2 923	118	54
Slovenia	1 667	80	84
Spain	33 475	67	82
Sweden	7 915	22	89
Switzerland	5 734	44	79
TFYR Macedonia	223	-	11
Turkey	23 374	77	35
Ukraine	2 225	133	4
United Kingdom	49 921	36	84
Europe	**401 715**	**50**	**50**

Table 4: Statistics showing number of mobile subscribers, compound annual growth rate and mobile penetration in Europe. (International Telecommunications Union, April 2003, own compilation)

As Table 4 shows, European countries differ substantially regarding penetration of mobile phones. The differences are not restricted to EU vs. non-EU countries, although EU countries have a higher average rate of penetration. As stated by a TNS survey, mobile phone penetration patterns do not follow geographic and/or regional boundaries. In Western Europe for example, high penetration countries are generally not clustered together (*Wireless and Internet Technology Adoption by Consumers Around the World*, 2002).

Apart from the clear differences regarding degree of economic development and penetration of mobile phones, nations often do vary regarding language, legal system, technological infrastructure, business culture and fiscal regime to name a few. This is clearly the case also for Europe with different languages, extensive variations in purchasing power parity and economic growth, different regulatory bodies and levels of taxation.

Given that both Europe and the EU as one entity vary extensively regarding important macro factors, it becomes clear that there is, from a market perspective, no meaning in applying a P.E.S.T. analysis on a continental basis. As a P.E.S.T. macro environment analysis of Europe from a market perspective appear to be meaningless, this leads to the conclusion that Europe cannot be treated as one unit, or market, regarding macro factors.

Apart from extensively varying political, economical, sociocultural and technological macro factors the supply structure for mobile entertainment services in Europe seem likely to affect how the market should be regarded by any company that seeks to supply European consumers with ME services and is accordingly discussed in the following section.

4.2.2 Fragmented supply structure

4.2.2.1 Mobile operators

According to statistics from Cellular Online (http://home.intekom.com/cellular/stats, 2003-07-24), there were in 2003 56 GSM networks that operated in Western Europe alone. The actual number of mobile operators is slightly fewer as some of the largest mobile operators own several GSM networks. One example is Deutsche Telekom (T-mobile) who fully owns T-Mobile (Germany), One-to-One (UK) owns Max Mobil (Austria) and has a minority share in Wind (Italy). All subsidiary brand names were renamed to T-Mobile in 2002. Another example is the mobile operator Vodafone Group that has subsidiaries in twelve European countries and (non-branded) minority shares in further five (http://www.vodafone.com, 2003-07-24).

Looking at 3G and the UMTS networks, 62 licenses have been awarded across Western Europe (*3G Rollout Status*, 2003). The actual number of 3G networks has however turned out to be slightly lower than the number of 3G licenses due to e.g. bankruptcy and withdrawal from the market. As with the GSM networks, some mobile operators like Hutchison Whampoa (brand name 3) and Orange (owned by France Telecom) control licenses in several European countries.

This fragmented network landscape in Europe is an important factor in how the supply structure for mobile entertainment services functions. In this context, the

answer to how many distinct mobile operators that can be said to operate rather independently in Europe depends upon how the mobile operators (or holding companies) that have majority shares in several networks manage their subsidiaries. If the separate networks and brands are not, at least to an extent, actively managed centrally, then the fact that the same company owns them becomes irrelevant, as each network in that case will be managed independently of all the others. At present, Deutsche Telekom (T-mobile) does not manage the operations of all their subsidiaries centrally and hence T-Mobile subsidiaries PTC in Poland and MTS in Russia have so far kept their local brand names (http://www.t-mobile-international.com, 2003-07-25).

The 3G mobile operator 3 is to an extent managed centrally on a pan-European level where for example mobile games that are offered on 3's national portals across Europe are purchased centrally (Niclas Lilja, Chief Information Officer, 3 Sweden, 2003-06-30). The same applies for Vodafone, who has a pan-European strategy where consumers are offered a discount for calls made within Vodafone's global network and where prepaid subscriptions can be refilled in all European countries where Vodafone operates. (http://www.vodafone.com, 2003-07-24)

Despite the fact that the consolidation process among European mobile operators have made the network landscape somewhat less fragmented over the last couple of years, the European supply structure that has to be used by any company seeking to supply a European market with mobile entertainment services is still fragmented. If a service application provider (or aggregator) pursues to launch a mobile game on a continental basis, they would be forced to make individual deals with a vast number of mobile operators across most nations in Europe. In addition, the national nature of the supply structure for ME services is usually reinforced by the national regulatory framework. As an example, mobile operators receive licenses to provide services in countries that are awarded on a national basis.

The trend of consolidation and the trend with pan-European strategies among the largest mobile operators in Europe appear to be strong. As an example, which was mentioned earlier, many of Deutsche Telekom's subsidiaries changed their brand name to T-mobile in 2002 and do today operate with a pan-European strategy (http://www.t-mobile-international.com, 2003-07-25). This trend could eventually come to change how any company that seeks to push a mobile entertainment service on a pan-European level can regard the supply structure regarding European mobile networks. The current situation with a fragmented mobile network supply structure is nevertheless clear.

4.2.2.2 Mobile devices and platforms

Any company acting within the field of mobile entertainment services must take into account the existence of several different mobile device manufacturers that have yet to standardize their devices. Across the European continent, consumers use mobile devices from a variety of large manufacturers such as Nokia, Motorola, Samsung, Siemens and SonyEricsson but also smaller and niche manufacturers such as Sendo. The devices are technically different in areas such as user interfaces, screen sizes- and resolutions and a service application provider therefore have to adjust their applications for each design accordingly.

There are also several different platforms on mobile with client-side execution environments such as Sun's Java 2 Micro Edition (J2ME) and Qualcomm's BREW, together with operating systems such as Palm OS, Symbian OS, Microsoft Smartphone and PocketPC. Regarding mobile games, there are competing game engine platforms such as Synergenix' Mophun and In-Fusio's ExEn.

As will be discussed in Section 5.1.4, a lack of product and technological standardization is often common symptoms for a new industry, but do still impose problems on the ability to successfully reach a larger market. According to Porter (1980), the inability to agree on standards impedes cost improvements and creates barriers to the supply of complementary products that mobile entertainment services constitute in relation to platforms.

The operating system on the users' mobile device decides what type of content and services that can be executed and played. As such, the multiplicity of platform standards is especially affecting the companies that want to develop and provide mobile entertainment content. Apart from the obvious problem with increased development costs as applications have to be developed for several platforms; the multiplicity of platforms contributes to the fragmentation of the supply structure for ME services.

Consumers using a Nokia phone embedded with a J2ME execution environment can only be supplied with Java based applications. For any content- or service application provider this makes the European platform landscape fragmented. Even though standardization initiatives like Series 60 and initiatives by the Open Mobile Alliance (OMA) have opened up for a development of a less fragmented European platform landscape, the current situation for the supply structure of mobile entertainment services in Europe should still be described as fragmented.

4.2.2.3 A fragmented supply structure for ME services in Europe

The existence of a large number of mobile operators, different mobile device specifications and a variety of mobile platforms contribute to a fragmented supply structure for mobile entertainment services in Europe. This does not imply that the existence of a large number of companies within each field is disadvantageous to other companies that are dependent upon this infrastructure as a larger number of competitors spur competition. The point is that all of these fragmenting factors will have to be taken into account by any corporation that wish to supply European consumers with mobile entertainment services. This fragmentation will of course affect what approach the company can have in their market strategy and is discussed further in Section 4.2.4.

4.2.3 Demand heterogeneity

As technology keeps evolving, the possibilities for people around the world to communicate are enhanced. During the last decades this development has been more tangible than ever. There is and has been talk about globalization; increased awareness and enhanced knowledge about the global community, stronger ties between different parts of the world and possibly a more homogenous pattern of consumer demand across the globe. The main issue in this context from a business perspective is whether or not consumer demand, as a result of globalization, is

becoming more homogenous around the world and if global integration or local responsiveness should be pursued as corporate strategy.

There is no single general understanding of the consequences of the increased communication and integration. There is an ongoing debate within the field of business and market strategy on the issue of globalization, where some scholars emphasize the increased similarities between countries and state that globalization is starting to wipe out borders between countries (e.g. Levitt, 1983; Prahalad & Doz, 1987). On the other hand there are scholars that accentuate that important international differences will not change easily and that on many issues nations will not integrate with one another. In some circumstances international variety could actually increase (e.g. Douglas & Wind, 1987; Dosi & Kogut, 1993). Porter (1986) agrees that the world is becoming highly integrated, although in some industries more than others. However, Porter does not agree that the world in all ways is becoming more similar. In fact, Porter (1986:2) argues that growing international integration encourages international diversity. One recent example from the global music industry is the shift from consumer demand for international to domestic rap music. During the 80s black American rap music was exported and consumed in many parts of the world, whereas nowadays the demand for this music outside the U.S. is relatively low at the same time the demand for domestic rap-artists in their respective country has become significant (Ralph Simon, former Executive Vice President of Capitol Records and Founder of EMI New Media, 2003-02-19) Expressed in a different way, cross-cultural exchange as a part of globalization created a worldwide demand for rap music, but eventually the demand for American rap music fell at the same time as the demand for domestic artists grew, making the rap music market more fragmented instead of homogenous.

We agree with Douglas & Wind (1987), Dosi & Kogut (1993) and Porter (1986) that regarding consumer demand, the importance of language, cultural preferences and taste does not appear to have been dramatically reduced by globalization, neither globally nor in Europe. Rugman (2001) has compared successful and unsuccessful multinational corporation (MNC) strategies and profiled the strategies of 20 MNC, arguing that there is no simple, global strategy. Rugman considers McDonald's and Coca-Cola as global brand names that have adapted their products and services for local tastes; Coca-Cola has long adjusted its soft-drink formula and can sizes for local markets, while McDonald's markets vegetarian sandwiches in India, spicier food in Asia, and coffee bars in its Italian restaurants. The conclusion is that demand often differs across nations and that this must be reflected in the company's approach to the market.

What can then be said about the demand situation for mobile entertainment services in Europe? As reflected in Rugmans's (2001) findings, it seems that despite the tangible business effects of globalization such as the presence of multinational corporations that conduct business in many or even all parts of the world, the market demand for mobile data entertainment services is far from homogenous. Practically all of our respondents have stated that the demand situation across Europe is to be characterized as heterogeneous, however with one primary exception which is games and is characterized by these following quotes.

"Somebody from France will not have the same mobile entertainment taste as somebody from the UK, but there will be universal themes that will work in a pan-European sense like for example mobile gaming will absolutely have a field with few variations in that particular space."
Ralph Simon, founder of Yourmobile/Moviso, executive chairman Digital Express, Chairman of MEF Americas Group, 2003-02-19

"Is it a pan-European market? No. Vodafone is making a nice attempt to make it a pan-European market, but it doesn't exist."
Rann Smorodinsky, MEF chairperson & VP and founder of Cash-U, 2003-02-18

"In terms of [gaming] *content, you see both pan-european titles, for example Fifa and Tiger Woods, and also a lot of regional stuff."*
Kevin Bradshaw, Founder & former CEO of Digital Bridges and partner at MTGP, 2003-02-20

In response to the cultural and linguistic diversity of Europe, the European media industry is characterized by a relatively high level of fragmentation. That is why regional rather than pan-European media groups exist in Europe. This is an important indicator of the heterogeneity of consumer demand for entertainment services in Europe given the long historical existence of the European media industry. In addition, the demand for local entertainment content varies from one European country to another. Regarding music, over 50% of all songs in the French charts come from local artists and the equivalent figure in Belgium is only 15%. (*Mobile Multimedia Study*, 2002) Another content type with predominantly national characteristics is sports with national leagues in major sports such as football and ice hockey.

"The content has to be highly local to be relevant"
Robert Tercek, former President of Packet Video, former Senior Vice President of Digital Media, Sony Pictures and Partner, MTGP, 2003-08-01

An exception to the heterogeneous demand for mobile entertainment services appears to be mobile gaming. As stated by several interviewees and by *Mobile Multimedia Study* (2002), from a cultural viewpoint, there is no real need for gaming content to be locally adapted. This can be observed through the pan-European and global success of PC games such as The Sims, Battlefield 1942, Unreal and Quake. Nonetheless, mobile games will in most cases have to be adapted for local languages.

Despite globalization, the existence of multinational corporations and cross-cultural exchange, consumers' preferences for ME still vary between countries due to language, culture and local taste. With mobile games as the foremost exception, the general demand situation across Europe for ME services can best be described as heterogeneous.

4.2.4 The European market for ME services is fragmented

With extensively varying macro factors, a fragmented supply structure and a demand situation that is far from geographically homogenous, the European market for ME services must be described as fragmented. In fact, given its diverse nature we question

if there currently exist such a thing as a pan-European market for ME consumer services.

"Any company that wishes to distribute content pan-regionally find that they have a lot of cost in doing so. They have to spend quite a lot of money in porting and optimising games for individual handsets, in each individual language, in each individual carrier network in each individual territory."
Robert Tercek, former President of Packet Video, former Senior Vice President of Digital Media, Sony Pictures and Partner, MTGP, 2003-08-01

It is evident that companies like Vodafone and T-mobile have started to, at least partially, adapt a pan-European market strategy. This does not, however, imply that there is such a thing as a pan-European market or that a pan-European market approach is a viable strategy.

Swedish mobile portal company Mobilehits have apparently applied a pan-European market strategy as their portal interface (except for language) and content (ringtones and logos) are almost identical across their portals in Sweden, Spain, Germany, UK, Austria and Italy (www.mobilehits.com, 2003-07-31). Since the company is based in Sweden, their foreign consumers are offered ringtones based on music from local Swedish artists that presumably are unknown abroad. Likewise, logos with greetings in Swedish and with references to local Swedish traditions are offered to consumers across Europe. In addition, apart from the Swedish portal, hardly any local content is to be found on any of the portals with the exception of national artists that happen to be internationally viable. This type of approach seems likely to be able to capitalize on economies of scale, but does nonetheless clearly appear to be an ill-suited market strategy for a diverse and complex European market. It should be noted that this seemingly ill-adapted market strategy could well be a temporary solution in response to a lack of time and resources in an initial launch phase, still it serves as a good example of the importance of local strategy adaptation.

A fragmented nature of the mobile data market have previously been implied by e.g. Amit & Zott (2001) who highlights fragmentation due to local languages and tastes as well as cross-border logistics in the shape of roaming charges. A study made for the European Commission in 1999 on the mobile market also concluded that the market for mobile consumer services was of a national nature. Further, the study stated that there is no certainty that a pan-European approach will ever be a viable business proposition. (*Consumer Demand for Telecommunications Services and the Implications of the Convergence of Fixed and Mobile Networks for the Regulatory Framework for a Liberalised EU Market*, 2000) This appears to still be the case, although the fragmentation on the supply side, regarding the number of mobile operators, has been slightly reduced since the EC study was made.

We suggest that the "European ME market" can be used as a term to describe the aggregate of demand or sales of mobile entertainment services on the European continent. We do however argue that the term cannot be used by companies to describe a single isolable object of action, and hence not a subject of a single market strategy. With a few exceptions of tendencies to regional homogeneity, we suggest that any company that seeks to supply mobile entertainment services to consumers in

Europe should adapt a national market strategy, as this is where macro factors are uniform, the number of mobile operators are few and where language, culture and taste are rather homogenous for a given market segment. The problem with a fragmented supply structure due to different mobile devices, operating systems and platforms will however have to be dealt with also on a national level.

4.3 General market characteristics

This section gives an overview of the current size of the European market for ME services. It further discusses the predictions and forecasts made by various consultancy companies and market analysts.

As concluded in Section 4.2.4, the European market for ME services can be a misleading term that implies that there is such a thing as isolable object of action on a pan-European level. The term can, however, be used in order to describe the aggregate of demand or sales of ME services in Europe.

4.3.1 The current size of the market

The current size of the market depends on how it is defined and on what revenue streams are included in the compilation. As stated in Section 4.1, this study defines the market as the European market for mobile entertainment consumer services. One important issue is whether or not data transfer revenues, which derives from the delivery of ME services, such as GPRS download fees, should be included. One good reason for including data transfer revenues is the extensive variations in the relation between content and data transfer fees across Europe (and even within nations). In the case of Vodafone Live!, a game download from the UK Live! portal as of July 2003 will cost a premium fee for the game plus an additional charge for data transfer (http://www.vodafone.co.uk, 2003-07-30) while a survey by Soundpartners in February 2003 showed that the Live! consumers in UK were only charged a single premium fee for the game and no data transfer fee (Brydon, A., *New research shows Vodafone live! set to exceed conservative growth targets*, February 2003, in Sound Partners). Vodafone has hence changed their billing structure regarding content versus data transfer.

In Scandinavia, Swedish mobile operator TeliaSonera charges their consumers both a premium content fee and a data download fee (http://www.teliamobile.se, 2003-07-31), while Norwegian mobile operator Telenor only bills for the premium price announced on their portal (http://telenormobil.no, 2003-07-31). The shifting and unstable relationship between data and content fees suggest that both should be included in a total market estimate. From the consumers' point of view, the price they are willing to pay in order to consume a given ME service is the total price of the service, regardless if the price is divided into two sums or not. Market size for ME services discussed in this document will therefore include the premium- or content fee as well as the data transfer fee.

There is no question that there already are some popular mobile entertainment services in Europe. The German mobile portal Jamba!, who offers ME content such as ringtones, screensavers, mobile games and entertainment based video clips, have more than 3.5 million customers (http://www.oplayo.com/press/230503.htm, 2003-08-01). T-Mobile states that hundreds of thousands of ringtones are being downloaded

each month on their mobile portal t-zone by around 3.5 million worldwide users (*T-Mobile reports 3.5 million t-zones users per month worldwide*, Jul 23 2003, in Telecom.Paper**).** Estimates of the market size vary for the most popular ME service, mobile ringtones, but figures from Informa Media Group stated that authors' collection societies collected $71 million in royalties from ringtone sales in 2002. The royalties' figure, which is typically 10-15% of the total sales from ringtones, would suggest that the total global market is over $700 million annually, and possibly as high as $1 billion (http://www.vibelebanon.com/news_2.htm, 2003-08-01, quoting *Reuters*). In addition, mobile games are being sold and gaining ground across Europe, entertainment based video clips are available at 3's 3G portal and the first mobile gambling services have been rolled out.

It seems quite clear that the European ME market is already becoming more than just a rare occurrence. The question is how big it is and with what degree of certainty the current market size can be estimated to? The fact that market forecasts can be both unreliable and quite shaky is far from surprising, but it is somewhat more unexpected that estimates of current market size also appear to vary extensively. For example, current estimates of the size of the global ringtone market varies from less than €1 billion as mentioned above, up to $5 billion, stated in a recent article in Forbes Magazine (Murphy, V., *Name That Rap Tune*, Jul 21 2003, in Forbes Magazine). In the news flow around mobile entertainment and mobile data, there are many seemingly exaggerated estimates that are quoted by companies and organizations that benefit from a general belief that the market is big and also of course by companies that profit on the news per se. There do, however, appear to be a greater consensus between larger and more established consultancy firms on this issue. These companies are by no means unbiased, nor completely trustworthy as discussed in Section 2.2.2, but do in relation to other existing sources of information appear to be the most credible.

Several market analyst and consultancy companies have estimated the current total European market for mobile entertainment services, including data transfer fees. Many of the recent estimates for ME services in Europe indicates a total market size in the region of €1 billion. For instance, Strand Consult estimates that ME service revenues in Western Europe in 2002 totalled €0.92bn (*How to Make Money on Mobile Services*, 2002), while Analysys estimated mobile content in Western Europe to have generated $1.1bn in 2002 (http://www.cellular-news.com/story/7990.shtml, 2003-08-06). From a report released in June 2003, Jupiter Research estimated the consumer expenses on ME content in Europe to reach €0.97bn for 2003. (*Using the Web to Generate Mobile Revenues*, 2003). These figures are also in line with Booz-Allen-Hamilton's estimate for global ME revenues in 2001 of €1.5bn (*Future Mobile Entertainment Scenarios*, 2003).

Exactly how large the margins of error in these estimates are remain unknown, but a total European market size in the region of €1 billion annually in 2003 appear credible enough to serve as a landmark for the current size of the European ME market.

4.3.2 Future size and potential of the market

What can then be said about the future size and potential of the European ME market that currently has a total size of approximately €1 billion? Undoubtedly, a consumer

market that already, from a technical point of view, can reach more than 400 million European mobile subscribers has an enormous potential. Still, there are numerous obstacles on the way to a mass market, both technical- and consumer related. Despite that an extrapolation of previous market growth, assuming that most potential adopters eventually will adopt and consume ME services, would indicate the rise of market measured in two or even three digit € billions, it is by no means certain that this will actually happen, as will be discussed later in this report.

As discussed in Section 2.2.2, market analysts in general have a bad track record in accurately making reliable market predictions and have a tendency to overestimate future revenues, particularly when current revenues are low and for forecasts stretching long into the future (Brown, Foster & Noreen, 1985; Dreman & Berry, 1995; Bird, 2000). Further, Porter (2001) states that market signals are particularly unreliable in the early stages of the rollout of any important new technology. The European ME market, which still is in an early stage, is therefore a very risky subject on which to make market forecasts.

By looking at forecasts made in the WAP-era that promised a prosperous and extremely profitable future for WAP services, it can be usefully illustrated how these forecasts quickly can lose touch with reality. A quote from WAPCON2000 cited by Rediff shows great expectations in the year 2000.

> *"In terms of value, the WAP market size alone will be $ 1.7 trillion by 2005."*
> Chand, F. *A wireless world beckons India*, in Rediff Jun 14, 2000

In accordance with what was stated above, existing forecasts on the potential of ME services vary extensively. For example, the global market size for mobile games has been predicted to reach $3.6bn (Informa Media Group), $4.6bn (Ovum Research) and $17.5bn (Datamonitor) by 2006. These contradictory figures that were all presented during 2002 shows both the difficulty of making predictions in the ME space and that they hardly can be used by companies as a credible basis for strategic decisions. Moore (2002) describes his perception of market forecasting in new and immature markets as follows

> *"This stuff is like sausage-your appetite for it lessens considerably once you know how it is made. In particular, the kind of market forecasts that come out of even the most highly respected firms–the ones that get quoted in the press as showing the bright and promising future for some new technology or product-are, by necessity, rooted in multiple assumptions. Each of these assumptions has enormous impact on the resulting projection, each represent an experienced but nonetheless arbitrary judgement of a particular market analyst…"*
> Moore (2002) p. 91

Instead of making uncertain predictions about total market size that will display very large margins of error if subject to a sensitivity analysis, this section aims towards displaying relevant facts and discussions around the current situation on which predictions and scenario work for different purposes can be made by individual companies.

4.3.2.1 Indicators and tendencies

The physical infrastructure for delivery of ME services in Europe are starting to get in place. Although this has been the case for several years already in the GSM networks and on 2G mobile phones, in order for ME services other than simple SMS based dittos to be delivered and consumed, this physical infrastructure is not considered to be sufficient. GPRS or 3G networks and ME enabled devices have to be in place as most forms of mobile entertainment call for more capable devices and networks. ME enabled devices refers to devices equipped with capabilities such as colour screens, gaming platform capabilities, GPRS/3G and polyphonic ringtones.

By the beginning of 2002 more than 50 of Western Europe's mobile operators had launched their GPRS networks (*The Reality of GPRS in Europe: subscribers and revenue*, 2002) and by mid 2003 most European mobile operators had a functioning GPRS network in place (*EMC World Cellular Data Metrics*, June 2003). Chart 1 shows the global growth of GPRS networks.

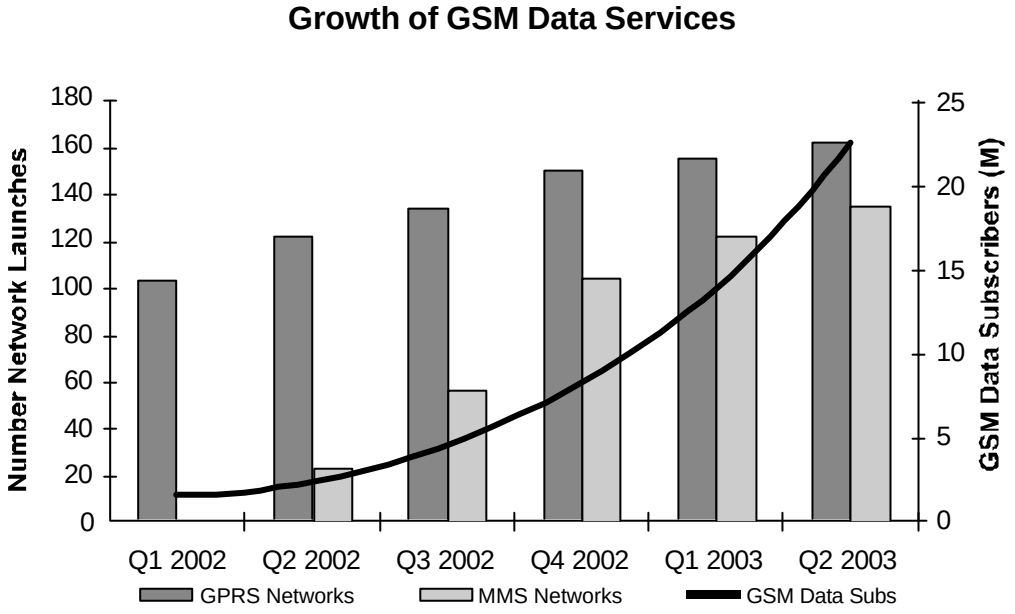

Chart 1: Growth of global network launches and GSM data subscribers (EMC World Cellular Data Metrics, June 2003)

Besides GPRS, 3G displays outstanding multimedia opportunities well-suited for various mobile entertainment services. But, considering the, on a pan-European level, yet undeveloped and unused 3G networks, the GPRS networks' capabilities is the most critical aspect regarding ME services market development in the short and medium term.

Regarding devices, in the beginning of 2002 around 3.3 million GPRS devices had been sold in Europe (*The Reality of GPRS in Europe: subscribers and revenue*, 2002). The penetration of GPRS devices has since then increased and according to an estimate of April 2003, by the end of 2003 between 8 and 12 million colour GPRS smartphones will be in the hands of European consumers (http://www.3g.co.uk/PR/April2003/5150.htm, 2003-08-06).

The penetration of ME enabled devices among Europe's 400 million mobile subscribers is hence in the region of 2-3% in 2003. It is difficult to forecast by what speed the uptake will increase, but it is no question that it will take several years for the penetration level of ME enabled devices to reach the mass market levels of regular 2G phones. One market outlook from Analysys states that devices that are not ME enabled, according to the definition in the beginning of this section, will be manufactured and sold in Europe until 2007. (http://www.cellular-news.com/story/7907.shtml, 2003-08-06). Similarly, a study from Allied Business Intelligence states that smartphones will not completely outpace regular mobile phones until 2008 (Sundgot, J., *Smartphones to dominate by 2008*, Jan 15 2003, in Infosync.com). Further, sales figures from IDC reveal that in the first quarter of 2003, the worldwide-converged handheld device (smartphones) market grew significantly, but still only reached 1.76 million units out of a total of 107.6 million units. (http://home.intekom.com/cellular/news_2003/1-_2003_phone_sales_figures.htm, 2003-08-06) Taken together, penetration levels of ME enabled devices seem unlikely to reach a significant proportion of European consumers in both the short and the medium term.

The presence of GPRS networks and GPRS enabled handsets is still, however, no guarantee that usage of mobile data services actually will take off. In Sweden, all mobile operators have had GPRS networks available for two years, and in mid 2003, almost 2 million (equal to 30%) of Swedish mobile users own a phone with GPRS functionality. Despite this, according to the Swedish National Post and Telecom Agency, only 100,000 consumers actually use this functionality (*Framväxten av nya mobila marknader*, July 2003). This represents a usage rate of 5% among those who can access data services through GPRS or 1.7% of all mobile subscribers, which is in line with a major survey Telecompetition released in August 2003, which stated that mobile data services had been slow in Western Europe and that GPRS penetration only exceeded the 1% penetration level. (*Worldwide Mobility Report,* 2003)

Consequently, revenues from mobile data services, SMS excluded, are small in comparison to revenues from voice services according to figures from The Research Room as shown in Chart 2.

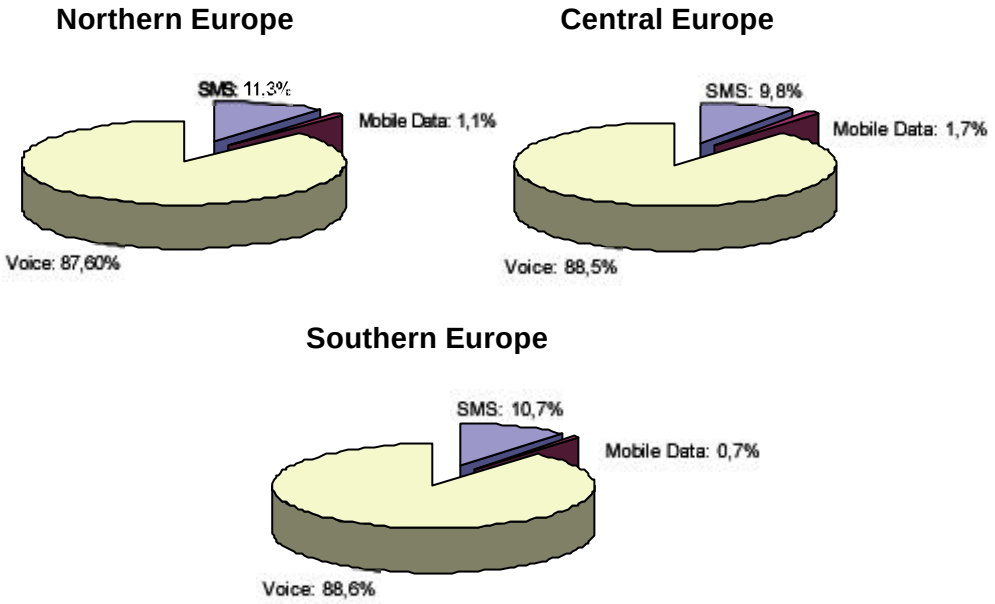

Chart 2: Allocation of total service revenue, June 2003 (Wireless Horizons, August 2003, by The Research Room)

The mobile data revenues constitute approximately 1% of the total mobile service revenues across Europe. Figures from Vodafone Group's quarterly report summarising the status by June 30 2003 also support this. Data revenues (excluding messaging) were 0.9% in Northern Europe, 1.0% in Central Europe and 0.5% in Southern Europe (*Vodafone Announces Strong First Quarter Performance*, Jul 28 2003, Vodafone press release). The mobile operators' mobile entertainment revenues are a subset of the mobile data revenues. It is somewhat more uncertain how large this subset actually is and how it is divided between different types of ME services. It does however seem likely that the lion's part of the current ME market in the region of €1 billion constitutes of simpler ME services such as ringtones, logos and SMS based entertainment services.

Reliable pan-European figures on actual usage of ME services, other than ringtones and logos, are very difficult to retrieve due to that most mobile operators never release this data, possibly because it does not indicate any success but rather show a weak service uptake or low revenues. Various statements have been made from mobile operators that e.g. downloads of Java games are increasing significantly. The statements do, however, not contain any actual figures nor any information regarding from what starting level this increase is calculated.

To conclude, in mid 2003 most European mobile operators had functioning GPRS networks that allowed for delivery of ME services to consumers in Europe. 3G networks allow for even more sophisticated ME services to be delivered, but few networks are yet in operation and usage is very modest. Some 2-3% of European mobile consumers own a mobile device that can download and handle ME content other than simple ringtones, logos and SMS based entertainment. Still, consumption of mobile data services appears to be rather low even within this group of consumers. Further, penetration levels seem unlikely to increase rapidly in the short- and medium

term. Revenues from mobile data services, excluding messaging, currently account for approximately 1% of mobile operators' service revenues. ME revenues are a subset of these revenues, but it is unclear how these are distributed between different types of ME services, although it seems likely that the majority of the €1 billion European ME market derives from simpler ME services.

4.3.2.2 The future

There are some signs that a prospering and profitable European mobile entertainment market could lie ahead. For example, in 2002 a Booz Allen Hamilton survey showed that 46% of the German mobile consumers surveyed listed "fun" as their biggest reason for using mobile data services (*Mobile data services market study in German-speaking countries*, May 2002). Also, a large pan-European consumer study by TNS in 2003 showed that the majority of those users interested in 3G were prepared to pay extra for advanced mobile data services (*TNS Telecoms 3G report*, 2003).

Still, as stated in previous sections and as illustrated by the quote below, making market forecasts in such a new and unpredictable market serve little purpose.

> *"I think it's, to be honest, just anyone's guess at the moment"*
> Ron Schaeffer, Head of Product Strategy and Planning, Sendo, 2003-06-10

Market forecasts can serve a strategic purpose for individual companies, given that they can display a reasonable level of accuracy. If not, they tend to move the focus from the relevant issues to speculation of how bright the future will be. It could appear very obvious, but the authors of this document still want to stress that the future of the ME market does not lie in the uncertain market forecasts, but in the knowledge about the market and the proactive measures taken by companies in order to create it. The following sections will discuss the ME consumers, the state of individual ME content markets and the way forward towards a mass market adoption of ME services in Europe.

4.4 The consumers

What specific and different kinds of consumers do the European mobile entertainment market consist of by 2003 and what preferences do they have? These questions are a central part of any market research for the formulation of market strategy. So far no killer application has emerged to win over the mass market to mobile entertainment. As a consequence, the identification, understanding and conquering of the initially most promising market segments is now at the focus of attention. In a more long-term perspective this is also important in order to leverage the penetration of the whole mass market. This section starts with dividing the mobile entertainment consumers by age and gender, two aspects that have shown to say a fair amount about how consumers of mobile services differ. Further on, the current and early market will be identified as mainly consisting of three segments. These segments are then further described and referenced in later sections in this chapter regarding for example their preferences concerning different mobile entertainment services.

The research performed has unfortunately not had access to any comprehensive pan-European studies in this area and this section will therefore base its findings on a patchwork of smaller studies mainly performed in Britain and Northern Europe. The

aspect of national differences of mobile entertainment consumption is therefore not part of this investigation. Considering there are country specific differences regarding consumer preferences as stated earlier in Section 4.2.3, the information provided should be interpreted to other countries with care. However, different European countries find themselves in various stages of adoption regarding mobile services. To use countries in the forefront of adoption is therefore seen as a meaningful approach; partly because of the larger amount of information that can be obtained from a more developed market and partly because the market situation in these countries to an extent can be extrapolated to emerging or future market situations in other countries.

4.4.1 Classification of consumers

The two most researched aspects regarding the consumers of mobile services are age and gender. These aspects have been used to understand some of the consumers' preferences and who the current consumers of mobile services are. For the purpose of formulating market strategy, segmentation by demographics does not tell enough about the peoples' needs or what specific products they want. However, the objective here is to provide an initial description that will leverage further insight into this subject.

The six segments in Table 5 divide the consumers by age and gender. According to performed research described below, these segments have different mobile entertainment relevant characteristics. They have for example different preferences and interest regarding services, some adopt mobile services before others and they seem to be prepared to spend different amounts of money on their mobile service consumption.

Mobile Entertainment Consumers

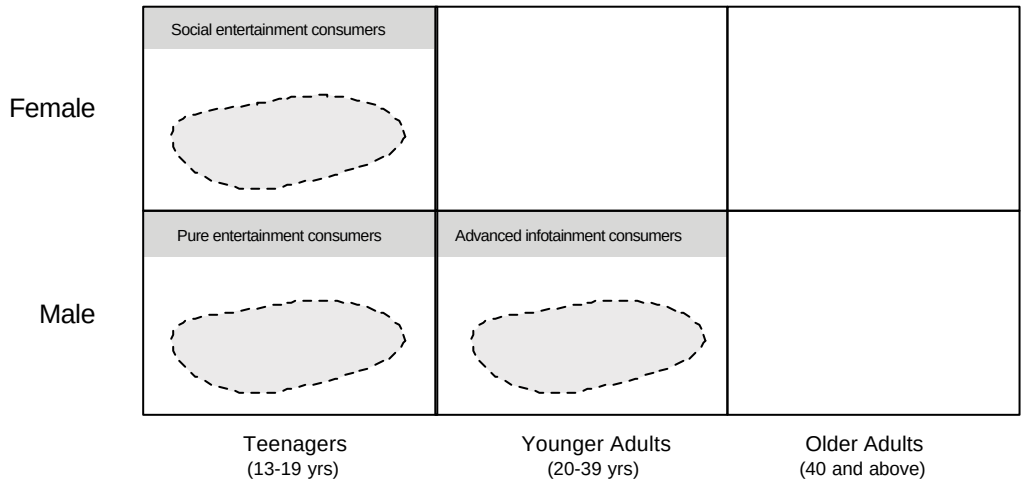

Table 5: Mobile entertainment consumers

There are people within all these six segments that currently use or are interested in mobile entertainment services. However, among these segments, three have emerged as containing the largest part of the current and early market for mobile data services and thereby mobile entertainment as well. These, more mobile entertainment prone, segments are teenage males and females (13-19 years old) and the so-called younger

male adults (20-39 years old). More or less all research reviewed support this statement and a few of these are described below.

According to a Swedish study, market research and consulting company Stelacon states that the there are differences regarding the general use and interest of mobile data services between younger and older people (*Användningen av mobila tjänster*, 2003). People below 40 years old consist of more than 65% of what Stelacon defines as the currently most advanced mobile consumers. The same study also assigns these people to consist of 60% males and 40% females. A study in the UK by NOPWorld found that there are also differences between teenagers and other age groups (*The UK mobile content market*, 2002). They are more discriminating about what their preferences of future use of services are. The older age groups' lower discrimination is stated as a demonstration of their lower interest. In addition, there is also a high level of discrimination of service interest by gender with males being the most interested group. A third study by Oftel (*Consumers' use of mobile telephony*, 2002) also reveals gender and age differences in the spending on mobile services in the UK. On average, 15-34 year olds spend 25£ compared to the 35-54 year olds' £19. Males spend £23 a month while females spend £16. The NOPWorld study supports this beyond voice services, stating 31% of males and 21% of females (between 15-34 years old) claimed to have spent money on purchasing mobile content during the last month (*The UK mobile content market*, 2002). Regarding age, the same study reveals that the younger the consumers were the more likely they had spent money on content. Finally, a survey in eleven European countries by TNS (*UMTS Survey*, 2002) reveals that across Europe, younger consumers (under 35 years old) showed the highest levels of interest in 3G. Similarly a greater proportion of males expressed an interest in 3G than did women.

As seen above, different studies divide these age groups in different ways as part of both their methodology and conclusions. It seems probable that there are no significant differences that are able to motivate where the exact boundary should be set between two age groups. Different aspects of for example service interest and preferences are more likely to e.g. gradually decrease or increase with age. The age boundaries set here should therefore be seen merely as an instrument in order to generalize about differences.

Within these three generally more mobile entertainment prone segments there are naturally people who are not as interested compared to others. All of them should therefore not be considered a part of the early market. The research performed has in addition to the demographic segmentation identified a few further characteristics regarding the people within these segments that seem to be the most prone to early adopt mobile entertainment. Also among these people there are of course many differences but a few pieces of research have explored a few characteristics that discern them from the rest of their peers. However, a lot more information is needed to pinpoint more specifically what different kinds of people these promising consumers are and what mobile entertainment wants and needs they have. Therefore, along with the experimental approach of observing what services that are accepted by whom and what services that are not, needs-oriented market research is what truly is necessary in order to successfully develop and market mobile entertainment services.

However, this information can for exploratory purposes indicate some of the mobile entertainment relevant consumer characteristics.

4.4.2 Characteristics of the most promising mobile entertainment consumers

To begin with, the most promising ME consumers seem to in a higher degree be users of other technologically based forms of entertainment. According to the study by Stelacon, the most advanced mobile consumers have in a higher degree access to DVD-players, game consoles and set top boxes for digital TV (*Avändningen av mobila tjänster*, 2003). They are also the most frequent consumers of filmed entertainment, both regarding visits to the cinema and number of video rentals. The Stelacon study also states that they are to a greater extent living in urban areas above 200,000 inhabitants. These facts would mean that many of the people most receptive to mobile entertainment can be efficiently reached through other entertainment channels. An urban lifestyle might also be an effective characteristic to develop services and marketing campaigns upon.

Turning to the differences between these people, the research presented in Section 4.4.1, argues that teenage males seem to be the largest and most promising market segment. They are high spenders on mobile voice and content services today; they have the highest interest in current and future mobile services and are the most discriminating about their preferences. Females in general do not seem to spend as much on mobile services and are to a lower degree a part of the early market. However, among these, young females have the highest interest in services and spend more compared to older females. They are more interested in future services and are today familiar with entertainment services such as daily horoscopes, ringtones, logos and games. The NOPWorld study states that the younger the consumers are (down to 15 years old), the more interested they seem to be in mobile entertainment services (*The UK mobile content market*, 2002) like ringtones, music and games. These indications point out this young generation to be the first and currently most important market for many mobile entertainment services.

What are the characteristics of some of these young people that turn them into such an attractive market? According to Context Based Research Group, European teens have integrated wireless into their lives more than any other age groups. They have grown up with wireless devices and are used to a rapid introduction of new consumer technologies. They are comfortable with incorporating constantly evolving devices into their lives, for both functional and entertainment purposes and they are also very aware of the presence of mobile devices. This awareness makes them care about the devices' aesthetics and functions, and they feel the need of being on the watch for the newest things. In addition they are technologically apt and therefore learn how to use devices and services quickly. (*The Mobiles*, 2003) Although usually cost conscious, this group see the value in many services and are therefore ready to pay a premium for new services according to NOP Research Group (*How Can Mobile Development Deliver Customer End-Value?*, 2000). These characteristics among many teenagers argue for that they to a large part constitute what Moore (2002) calls the early market, consisting of innovators, visionaries and pragmatists. These are relatively more open to exploring new technologies and are interested in finding new things to do trough them. This connection to Moore's (2002) theory further strengthens the argument that young people constitute a vital part of the early mobile entertainment market.

Regarding differences in preferences for mobile entertainment among teenage males and females, the NOPWorld study indicates that males are most appealed by various types of games and to some extent also adult content (*The UK mobile content market*, 2002). Females on the other hand seem to be appealed by content that is packaged in a more socially and communicative manner such as daily horoscopes and communities. They are also more interested in games if they include multiplayer support. These differences in preferences is supported by the study and report made by Netlight which states that young females tends to be most interested in mobile services that incorporate communication and other people. These findings indicate that people being the most interested in mobile entertainment among young females and males can be labelled as "the social entertainment consumers" and the "pure entertainment consumers" respectively.

Turning to the younger adult males (20-39 years old), these are high spenders on mobile services. They belong to the people being most interested in future services and have the highest purchasing power among the three segments. A description by NOP Research Group further narrows down who some of these people might be (*How Can Mobile Development Deliver Customer End-Value?*, 2000). According to them, they are often occupying higher social grades and are rarely cost conscious about their level of mobile spending. This is reflected by the fact that they tend to be heavy users of additional mobile services than just voice. Keeping up to date with new technology is also important to this group and they describe themselves as liking to try new products and services. Again, this description of characteristics fits with Moore's (2002) definition of the early market.

This group seem, according to the NOPWorld study, to have a lower interest in pure entertainment services compared to young males (*The UK mobile content market*, 2002). Instead they tend to be more interested in services of an informative character that makes their lives easier. In addition, according to a Finnish study by Tampere University of Technology, mobile multimedia services are currently being used by mainly educated 25 to 30 year old men (Poropudas, I., *Multimedia services await breakthrough*, Jul 2 2003, in mobilemonday.net). This group of consumers also seem to be the major owners of more advanced devices. A self selecting survey of AvantGo PDA users in the U.S. identified these consumers to be mostly male (84%), well educated and well paid (*2003 Mobile Lifestyle Survey*, 2003). Many had an active outdoor lifestyle consisting of for example golfing, biking and hiking and had a high interest in watching sports. More than half of these consumers conduct online purchases of for example books, PC software and CD's. Despite the obvious limitations of a self-selected survey of only AvantGo users it supports the general assumption that PDA's are more popular among affluent males older than teenagers. Regarding the early market for mobile entertainment this indicate that services which connects to these above characteristics are the ones that will be appealed to this group of people. This group of early market participants is therefore, for the purpose of differentiating them from the other two segments, labelled as "the advanced infotainment consumers".

That these three more specific consumer groups are the most promising is for example supported by the view of TNS. The research firm predicts that marketers who concentrate on the youth and affluent population segments will have the greatest

chance of capturing the wireless Internet market (Greenspan, R., *Youth and Upscale Consumers Want an M-Lifestyle*, May 24 2002, in CyberAtlas). TNS also stress the importance of further understanding these segments. For those marketers whose core competencies are in consumer insights, new-product development and branding, the potential is according to them very promising. This means the market needs to be broken down further into identifiable segments defined by the consumers' needs and behaviours which then can be targeted by the appropriate entertainment services and promotional campaigns.

As a discussion, the social entertainment consumers seem to be most interested in services that exploit the social aspects of mobile entertainment such as having fun with friends. The pure entertainment consumers seem to be most interested in entertaining and challenging services for their own sake. For this reason, they are more likely to want to exploit the full capabilities of the mobile devices. The last group, the advanced infotainment consumers, are open to more expensive and increasingly advanced services. They are likely attracted to services that make their existing entertainment consumption easier or give them an interesting angle. This group are open to try new expensive devices and would for example be the most interested and able to pay for services such as mobile gambling and sports video clips.

4.5 Mobile entertainment services

Mobile entertainment can take many shapes and be categorized in many ways. Some of the types of content that will be consumed are probably not even invented yet. That the entertainment industry has rarely begun to scratch the surface of the potential market for mobile entertainment services was the theme of the keynote speech that Larry Shapiro, Vice President of Walt Disney Internet Group, held at the iWireless World conference in August 2003 (Marlowe, C., *Disney surveying mobile frontier*, Aug 5 2003, in The Hollywood Reporter.com).

In order to describe this market further in a comprehensible way, five mobile content categories have been chosen to represent mobile entertainment. These are music, video, games, gambling, and adult entertainment. In this section, these categories are described and discussed regarding their: definition, current and predicted market size, recent and future developments, popular services and who the most attractive consumers are. Considering the true nature of these markets reside in the future, the focus of this work has not been placed on the effort of judging future market sizes or investigating exactly what the most successful services will be. Without extensive consumer research and real world examples, such efforts about this matter tend to end up as pure speculations. The most relevant information is instead of the kind that contributes to the knowledge of how to create these markets.

4.5.1 Mobile music

The market for mobile music encompass all the different ways that a consumer can experience an entertainment value with music related content by using a mobile device; from ringtones to music files like mp3. Due to the last years' surge in demand for ringtones, mobile music was one of the first mobile entertainment content categories to become recognized as having a promising and reliable potential. The European market size for 2002 is estimated to have been between €200 and €400 million. However, because of the fragmentation of its market and the large amount of

small suppliers, the market size regarding total ringtone sales in Europe is difficult to measure. But one thing is certain; the mobile music market is due to ringtones the largest of all mobile entertainment markets. In a fast moving mobile market, ringtones have now by 2003 begun to look like a product being in a fairly mature phase of its product life cycle.

Within the mobile entertainment value web, the high levels of acquisition and consolidation among the ringtone players are typical for an industry approaching commoditization (Wallage, S., *Remixing Ringtones*, Apr 23 2003, in The Feature). In relation to many other mobile entertainment services, the consumers are highly aware that this service exists and its value proposition is well understood and easily communicated to consumers. In a survey by NOPWorld UK, 46% of UK consumers aged 15-34 years and 67% of the consumers aged 15-17 years stated to ever have purchased a ringtone (*NOP Mobile Content Study*, 2002). At the moment, the mobile music market mainly seems to consist of younger people and this is predicted to be the case also in the near future. In the same survey by NOPWorld UK, 71% of 15-17 year olds stated that they to at least a somewhat likely degree would be using a mobile ringtone service in the future. For the 25-34 year olds, the corresponding figure was 33% (*NOP Mobile Content Study*, 2002). In addition, the survey states that the main channels through which these consumers are reached is print media and Internet sites.

With the use of mobile services around both monophonic and polyphonic ringtones being increasingly widespread, this paves the way for new music services. The evolution of mobile music is now progressing towards new more advanced audio functionality, where ringtones are said to gradually become replaced by ringtunes. One example of a technology development in this area is the Yamaha 16-voice polyphonic MA-2 sound generation chip. It enables consumers to more effectively create their own sounds and provides improved playback capabilities since it can encapsulate several music sequences in a single file having the sequences being played-back in synchronization (http://smaf-yamaha.com/what/index.html, 2003-08-24). Further on, the increasing performance of mobile devices and the integration of mp3 players into these devices are introducing the ability for consumers to listen to parts of, or full length, high quality audio tracks. Mobile operator mmO2 is currently finishing their trials with their music service and digital music player. The music player is branded O2 but manufactured by Siemens. By plugging the mobile device into the music player the user can download music files from for example charts provided by MTV. The first launch will take place in Germany during the autumn of 2003. (Simon Gordon, *Press Relations Manager at mmO2 plc*, 2003-08-20)

Although downloading of large files on mobile networks so far is associated with very high costs, developments such as the ones mentioned in the previous paragraph will enable the music industry to offer and market more of their content through the mobile channel. In addition, the possibility of streaming music in order to listen to selected tracks or Internet radio is another way of distributing mobile music. Another option is of course to buy and download the music files over the wired Internet from sites such as Apple's iTunes (available in the US) and then transfer them to the mobile device. This option is however not considered a part of the mobile entertainment business but should still be considered as important consumption behaviour that is related to this market. Around this behaviour of wired Internet

downloading, mobile entertainment services can be produced. This could for example be information services, marketing and short samples of new tracks from artists that are currently stored in the mobile device.

Listening to music from a mobile device is something many people are familiar with and understand the benefits of. Many people use portable music players, and radios integrated into mobile phones are becoming increasingly common. A survey by RIAA (Recording Industry Association of America) also states that the top reason why consumers listen to music is to make commuting and travelling more enjoyable (Market Watch Vol.1 No1, 2000). This makes the market for mobile music services look promising since it, behaviour-wise, is a rather small step for the user to instead begin consuming music via a networked mobile device. Buying music tracks while mobile would be a new behaviour but relative to several other mobile services this market does not have to rely on an extensive change in consumer behaviour. For example, people today listen to music on mobile devices but they do not usually watch personal video clips in the same manner. In short, people understand the value proposition of listening to music while mobile.

The major players in the music industry have recently been entering the market through distribution deals with mobile operators, independent mobile music portals and device manufacturers. Nokia, for example, has signed a marketing agreement with Warner Music International to deliver music content for its upcoming Nokia 3300 cell phone. The phone, specifically designed with the music market in mind, supports mp3 and AAC compressed audio file format and has a built-in FM stereo (*Nokia signs for mobile music*, Jun 4 2003, in ninemsn). There are many times more mobile phones being sold compared to mp3 players and the integration of mp3 players into mobile phones is therefore a likely trend to continue. This is the case since consumer electronics tend to accumulate onto the devices with highest market penetration (Natsuno, 2003).

There are also new kinds of developments taking place in the business of mobile music distribution. Music industry veteran Ralph Simon, founder of Yourmobile, is working to launch a 'new global mobile entertainment platform' by November/December 2003 that will provide music fans with dedicated artist channels. The platform will offer content ranging from ringtones to messaging, with 30 to 40 products forming the basis of each channel. If this concept proves successful, it could indicate an emerging trend in the development of mobile music, as artist's managers, rather than labels, become more important in developing the mobile brands of artists. (Pearse, J., *Major music acts to offer dedicated mobile channel*, Jul 24 2003, in New Media Age)

The market for mobile music services is initially expected to consist of younger consumers because of their high interest in music, their general tendency to adopt mobile technology faster and their larger familiarity and interest in downloading music and digital music file formats. According to RIAA, young women are the group of people that perceives music as most important indicating this is an important market (Market Watch Vol.1 No1, 2000). The same study also states younger consumers to be the primary adopters of mp3 players. Further on, people under 30 years old are strongly overrepresented when it comes to the habit of downloading

music according to EMI (www.emimusic.com, 2003-08-20). Similarly, a British survey by MORI state that the interest in consuming music by downloading or streaming increases the younger the consumers are (down to age 15) (*Rockin' all over the World Wide Web*, 2001). These young people being most familiar with the behaviour of downloading and streaming music, and also using digital file formats while mobile, is likely to at a large extent embrace mobile music services first. Not only regarding access to new music while mobile, which as stated earlier will be expensive, but also regarding all other services that are able to surround the core product of listening to music.

4.5.2 Mobile video entertainment

What first comes to mind when considering mobile video entertainment, is watching content from traditional media like TV or film, using the mobile network as a medium for downloading or streaming the content. However, it will also become possible for a mobile device to be equipped with the ability to receive digital television broadcasting, something NEC state they are developing for their mobile phones, with the aim of a trial launch for commercial models by 2005 (*NEC to Offer TV-Capable Cellphone Handsets by 2005*, Jul 10 2003, in Reuters). Mobile video also means the possibility of consumers recording their own video content (with the mobile device or a regular digital video camera) and then sending it to each other over mobile networks. In terms of entertainment however, this possibility together with videophone calls is not considered as entertainment in this study.

The possibility of watching mobile video content has just recently been introduced in Europe through mobile operator 3 and has by 2003 very few users. It is therefore difficult to estimate detailed and reliable total market regarding sizes what kinds of mobile video content that will represent promising market potentials and who the consumers will be. According to the more modest predictions made by consultancy companies, the European mobile video market will start generating revenues of over €100 million by at least 2004 and grow significantly during 2005. However, there are indications that mobile video entertainment might not represent a very large part of that market. A survey by TNS concludes that among the mobile phone users across Europe that did express an interest in using 3G applications, they were most interested in using the handsets for videophone purposes (77%) and, of all services, least interested in downloading and viewing video clips (40%) (*Signs that European users are willing to pay a premium for 3G handsets and services – survey findings*, Feb 10 2003, TNS press release).

Whether surveyed consumer interest should be considered key in how the market will develop, or if the focus will be on educating the consumers, remains to be seen. Judging by the activity within this field, the mobile entertainment value web seems to believe the latter must be the case. The popularity of interaction via mobile devices with TV shows, and improvements in the technology necessary to broadcast this content in the form of video streaming are key developments. The mobile operators have therefore been encouraged to offer mobile TV as a service. (Salz, P., *Stay Tuned*, May 15 2003, in The Feature)

There are a lot of mobile video initiatives taking place within the value web and a 'mobile video service infrastructure' is becoming increasingly established. Several

mobile operators such as O2 (Using Oplayo's Oplayer) and Vodafone (using RealNetworks' RealOne Mobile Player) are now by mid 2003 launching consumer trials of its mobile video services. Oplayo claims to have had 150,000 European downloads of their Oplayer since its launch (Anna Bifield, Oplayo, 2003-08-18). Further on, two of Italy's biggest communications companies, RAI and TIM, announced plans in January 2003 to bring their consumers televised broadcasts over their mobile phones (Minto, D., *RAI and TIM close deal where 'technology marries emotions'*, Jan 28 2003, in europemedia.net). Siemens has teamed up with German TV channels, 13th Street and Studio Universal (Dennis, T., *Siemens helps to put TV on mobiles*, May 9 2003, in the inquirer), and Walt Disney Co. is allegedly in early discussions with several wireless companies and handset makers to offer mobile video services under various brand names (*Disney Considers Entering Crowded Wireless Sector*, Jul 28 2003, in SmartMoney.com). Judging by what is available today in terms of entertainment content, mobile operator 3 provides for example sports, music videos, comedy video clips and entertainment news such as celebrity gossip. They are however secretive about what services that are most popular among consumers.

How rapidly the consumers will start using this establishing infrastructure and pick up mobile video entertainment as new consumption behaviour remains to be seen. Generally, the youth is seen as critical for the initial adoption of many mobile services. However, as described in Section 4.4.2, the most likely consumers to first embrace mobile video are the advanced infotainment male consumers between 20 and 39 years old. The correlation that those who buy the more advanced devices so far required for mobile video are the ones most interested in video content seems likely. According to a study by Tampere University of Technology, multimedia services are currently being used by mainly educated 25 to 30 year old men (Poropudas, I., *Multimedia services await breakthrough*, Jul 2 2003, in mobilemonday.net). If these, often young, adult males constitute the early market, the conclusion is that the initially successful content categories will to a large extent be the ones that appeal to this group of consumers. Mobile operator 3's sports content is likely to appeal to this group. 3 UK has offered their customers the ability to view video clips from the Barclaycard Premiership League for free during its first three months (*Free from 3: premiership video clips for three months*, Aug 13 2003, in 3G Newsroom.com).

Some problems still seem to need attention regarding 3's services (Courtney, M., *Hutchison 3G's pioneering 3 service is seeing some inevitable teething problems*, May 12 2003, in IT-Week) and in addition, the streamed image quality over 2.5G networks is another issue where the consumers will have the final say. The many initiatives taken by companies in the ME value web should however be considered as a sign that the market will be able to consume a quite large range of mobile video entertainment content in a near future.

How successful the initial content will be in a longer time perspective is another question. In order to understand this market, it is important to recognize that a significant amount of content used by consumers through mobile devices is likely to be of new formats rather than just short portions of traditional film and TV media content. Several adaptations for mobile conditions need to be made at the same time as new opportunities exist. As stated before, mobile video has recently been introduced with very few consumers using it today. It is therefore difficult to declare

any reliable facts indicating what kinds of mobile video entertainment content that will have market potential.

Although parallels with the consumption of traditional moving picture media could be used to achieve some insight, it is easy for predictions about this matter to end up as pure speculation. Patrick Parodi at PacketVideo believes that 80% of mobile video streaming content types does not yet exist (Wallage, S., *Video Streaming Pre-3G*, May 13 2003, in The Feature). To begin with, the content need to be suitable to be packaged into short clips; there seems to be a general opinion that most mobile video content will need to have a maximum length of about a minute or two. The requirements of high interest, personalized and just-in-time content will be important factors as for a lot of other mobile content. Sports content seem to be regarded as one of the main attractors to the initial mobile video market with mobile operator 3 championing Premier League and Italian Series A football. Adult entertainment is also one of the content categories with high expectations. This specific category is however discussed separately in Section 4.5.5 regarding all of its mobile entertainment aspects. Marcus Bicknell, Sales Strategy Director at Oplayo is convinced that mobile video will be of more 'ladish' and 'pubish' types than serious (www.telecomtv.com, 2003-08-20).

4.5.3 Mobile games

Mobile games can be played in many formats on many devices. The first that come into mind are the embedded mobile phone games such as Snake and the more recent and usually more advanced games based on development and run-time environments such as J2ME, BREW or mophun. There are also several others such as SMS, MMS and WAP based games and also games for the more powerful handheld computers (PDA's) and the new more entertainment oriented devices such as Nintendo's Game Boy Advance and the upcoming N-Gage (Nokia) and b'ngo. Finally, there are cross media gaming where players through for example SMS or J2ME applications can interact with game sessions displayed on TV.

Regarding the games themselves, many are today fairly simple considering the limitations of mobile phones and plenty of them originate from for example the older Amiga and Atari computers. This is not a surprise since developers for these platforms thoroughly had to deal with the challenges of creating entertaining games for systems with similar requirements as today's mobile phones. In spite of providing many games recently developed for mobile phones, one major UK mobile games portal state that the most popular game being purchased is the classic Space Invaders (www.themobilegamer.co.uk, 2003-08-12).

The large majority of surveys and reports points out games as one of the revenue earners of significance by 2003 as well as for the years to come. According to the report *Mobile Content and Entertainment* (2002) by Analysys, games will replace ringtones as the service that drives Western Europe's growth over the next three years. Informa Media Group predicts mobile games globally will generate more than $3.6 billion in revenue in 2006 and Ovum Research expects mobile games to reach $4.4 billion by 2006 (Marek, S., *Building $ into gaming*, May 15 2003, in Wireless Week). Although these are only forecasts that should be interpreted with great care they still

give some indication that the mobile games market might grow considerably in the years to come.

In addition, there are indications that the mobile games market might has begun to take off. Compared to previous years, reports from mobile operators and publishers are now positive. Actual sales figures have mostly come from US mobile operators but they can at least be interpreted as a proof of concept stating consumers actually can become appealed by the mobile operators' portfolios of games. In May 2003, Sprint announced that it had sold "close to two million single and multiplayer games" since its August 2002 launch. In late April 2003, Verizon announced that consumers so far had downloaded 8.5 million mobile entertainment applications. Also in April, game developing service application provider and publisher JAMDAT announced five games selling more than 100,000 copies through Verizon's network so far. In the same month French company In-Fusio announced more than 2 million mobile gamers registered for their service, an increase of 15% since February 2003. (Bellows, M., *A Short History of Wireless Games*, Jun 26 2003, in Mobile Entertainment analyst). It is not uncommon for European mobile operators to now have more than 50 games to offer at their respective portals.

As a consequence to the indications of an emerging market for mobile games, PC and console videogame publishers have now entered this business led by Sega Mobile and THQ Wireless. Electronic Arts, Activision, Microsoft Studios and Atari have licensed their content for mobile games and Japanese videogame companies such as Bandai, Namco, Taito, Dwango and many others have expanded into the European mobile games market (Bellows, M., *A Short History of Wireless Games*, Jun 26 2003, in Mobile Entertainment analyst). Interesting to note however, is that surveys on consumer interest does not in any way point out mobile games as the number one entertainment attraction (*Play Away: The Future of Mobile Entertainment*, 2002).

What is obvious regarding this market is the proliferation of technologies present among the consumers; making the mobile games market a more complex area to study than the markets for PC and Console games. In addition, adding to the complexity when looking at the years to come, it is likely that some of the boundaries between mobile games and these other two game markets will blur. Sony Corp state they will release a powerful hand-held PlayStation console equipped with a wireless network system during the last quarter of 2004 (*Sony Hand-Held PlayStation Offers Wireless Network*, Jul 29 2003, in Reuters). Developments such as these indicate that it might not become uncommon to actually play the same game on a traditional and handheld console, although different aspects of the game might be played on each device.

When taking a more careful look at the mobile games market as of 2003, it is actually consisting of several different markets. This is the case due to the fact that if two consumers cannot reference each other about games because they own two different devices, with each device providing a different range of games, they are not part of the same market. This is the case for all mobile entertainment products but is especially true regarding games, considering the upcoming introductions of different gaming oriented devices. That does not however mean that game developing service application providers and device manufacturers in different 'sub' markets do not

compete with each other since they still compete over the consumers' choice of what market to belong to. But regarding the understanding of the market for most purposes of marketing strategy, this aggregated approach is not relevant. To begin with, the mobile phone games market in itself should be considered a mosaic of sub markets. Many game developing application service providers create their games for only one platform, such as J2ME or BREW, and for only a few of the devices supporting that platform. In addition, there are variations in the J2ME platform on different devices. If a J2ME game for a Nokia model works fine, it does not necessarily mean it will work for a Panasonic. The games for PDA's should also be considered a different market, again a mosaic of different devices and platforms and therefore sub markets. Finally, there are also the niche markets of SMS, WAP and MMS games and the games for locally networked devices such as Nintendo Game Boy Advance.

No attempts regarding device or platform standardization, such as Series 60, argues that this situation will be considerably improved within the next year or two. New different devices are continuously being released, such as 3G phones, and platforms such as BREW and J2ME are likely to coexist and both can even simultaneously reside on the same device. The conclusion is that the aggregated mobile game market is likely to grow, maybe even considerably. It is however important to recognize its' high complexity, especially in the eyes of the consumers.

Turning to the consumers, the role of young people as early adopters of mobile games is widely acknowledged. This demographic, the 'Nintendo generation', has grown up with computer games and video consoles. A study by NOPWorld states that 63% of 15-17 year olds, 43% of 18-24 year olds and 22% of 25-34 year olds stated to have played a game on their mobile phone during the last week (*The UK mobile content market*, 2002). The study indicates that, on average, it is almost three times as usual to be a regular player of mobile games if you are 15-17 years old compared to if you are 25-34 years old. What adds further to this young market segments potential is that the mobile phone penetration is the highest among teens and declines with higher age (*mobileYouth*, 2002). The current mobile games market's potential should therefore be highest among young people.

Further on, among 15-34 year olds, males are twice as interested in non-multiplayer SMS and mobile Internet games compared to their female counterparts (17% vs. 9%), according to the NOPWorld study (*The UK mobile content market*, 2002). This indicates that teenage males, or the in Section 4.4.2 so called pure entertainment consumers, are the most promising target market. Regarding the teenage females, the potential seem to reside in games having more of a sophisticated touch than for example just pure shooting or sports action. A study by the Entertainment Software Association (ESA) in the U.S. reveals that female PC gamers play puzzle/board/card games, action games and learning games most often (*Annual Consumer Survey*, 2001). Males preferred action, sports and driving/racing games in a higher degree. However, according to the NOPWorld study, females are almost equally interested in games if they have multiplayer functions. It is not certain how well PC game preferences can be transferred to mobile conditions but it provides an insight about what people playing games today have in their minds when thinking of entertaining games. Although certain types of games are more suitable for mobile conditions, these preferences could become increasingly applicable as mobile devices evolve into more

capable gaming platforms with increased performance, content visibility and game control.

As more multimedia capabilities and richer experiences enter the games, younger male adults (20-39 years old) are expected to become increasingly attracted as well. If surveyed Finnish consumers are to represent Europe, they are by 2003 more likely to use mobile multimedia services than teenagers (Poropudas, I., *Multimedia services await breakthrough*, Jul 2 2003, in mobilemonday.net). In addition, adult males in a higher degree own PDA's and are therefore already susceptible for more advanced games (*2003 Mobile Lifestyle Survey*, 2003).

So, with several aspects of the mobile game market described, where is this market heading? This question is answered through looking at the consumers increased learning of mobile gaming and the evolution of devices. As consumers play mobile games they will accumulate knowledge about available games, game developer brands and the gaming capabilities of different devices. As a consequence of their learning, they will develop their own tastes about what games they prefer. In addition, a large part of this potential market is assumed to wanting to see more rich and advanced games in the same way as for other gaming platforms, such as PC's and consoles. These two trends together reveal a future where the consumers can be segmented by preferences regarding different types of games and also by what kinds of device capabilities they want. Some consumers will for example prefer smarter and faster games for their phones to prevent boredom, while others will ask for multiplayer games for more advanced devices as a part of a prioritized hobby. Figure 18 illustrates that as the development of device capabilities continues, the mobile gaming market will consist of gradually more advanced games, providing richer gaming experiences and greater possibilities for differentiation. In addition, quite different mobile devices will coexist in the market.

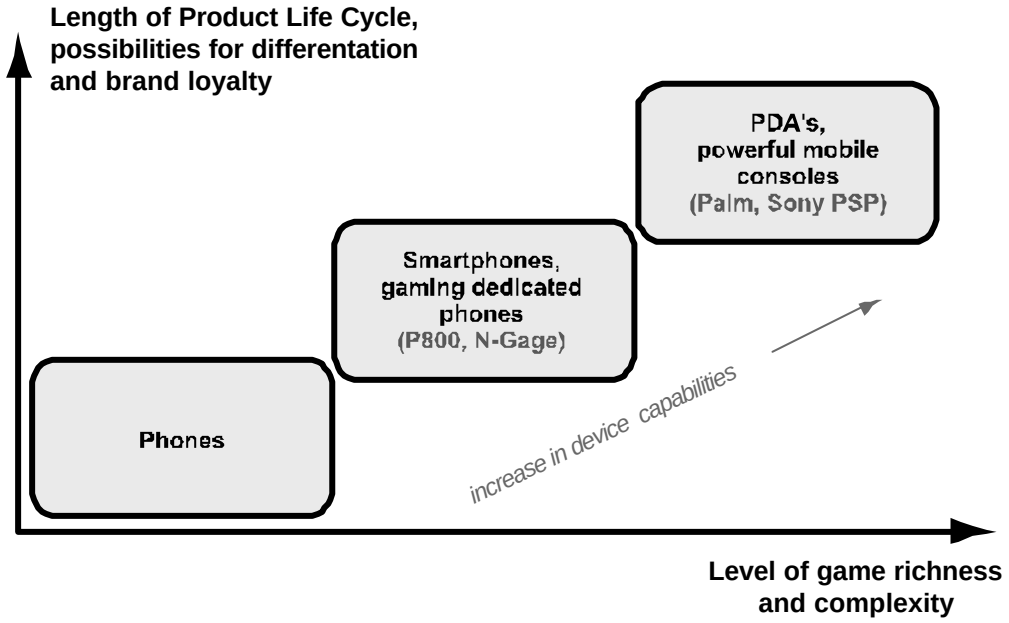

Figure 18: Development of the mobile gaming market in relation to increase in game richness and complexity

More advanced games provide the possibility for game developing service application providers to increase the length of the games' product life cycles, gradually charge consumers more and create loyalty to their brands. This is where the market is heading; the consumers want it and the value web needs it. Compared to the current market, the coming few years will provide a quite different situation for many mobile game developers considering the cut-throat commodity business mobile phone gaming is today. Although traditional game developers will enter the market and increase the competition, companies will receive better opportunities to run sustainable businesses. However, it is a relatively complex market containing different people with different preferences increasingly owning different devices. Game developing service application providers will increasingly have to take this into account and base their strategies on all three aspects of the market; namely people, preferences and devices.

4.5.4 Mobile gambling

Mobile gambling is defined as all mobile entertainment services where the user is able to place a bet consisting of real money. This definition comprises activities such as playing blackjack or poker, participating in lotteries and placing bets on sports games using a mobile device. However, the ability to gamble for money when being mobile is also likely to eventually give rise to several new kinds of activities that only is possible through mobile devices. Therefore, mobile gambling should not only be defined by what traditional gambling or betting services can be transferred to the mobile medium. One example indicating this awakening trend on new gambling services is the possibility for consumers to place bets on the game they are currently watching at a stadium, something that Swedish government owned Svenska Spel started offering their customers in the beginning of 2003. Mobile gambling can be offered through the whole range of technologies available, such as voice, text-based messaging, WAP or HTML interfaces and J2ME applications. More capable devices and networks open up for further possibilities such as the integration of streaming audio and video of live games and races into the gambling services.

Since gambling over the wired Internet has become such a success in terms of generating revenue from the Internet compared to many other services, industry analysts and companies within the mobile entertainment value web believe mobile gambling will have the same future. Online betting companies such as Ladbrokes, William Hill, Coral Eurobet, Centrebet and Unibet together have a turnover measured in € billions. If the study from Informa Media Group is to be used as a reference, as it is one the most recent reports, mobile gambling constitute 1.5% of the total online gambling market (including iTV betting and gambling) in Europe as of 2002, and will increase to 4.6% by 2006. The analysts estimations of the European mobile gambling market for 2003 range from € tenths of millions up to € hundreds of millions. According to Robin Bosworth, an analyst at Schema, the mobile gambling market is currently worth an estimated annual $50 million and he believes the market will surge in the coming years (*Europe bets on mobile gambling*, Apr 11 2003, in SiliconValley.com). These market estimations should be considered with care. In addition, it is one thing to reach an early market of high interested consumers, but making the services appeal to a wider market is a more difficult challenge.

There are quite varying figures regarding the number of active European online gamblers. However, they are likely to consist of at least one or a few million, considering Swedish Svenska Spel during 2002 had 130,000 active Internet players for their betting services out of a total Swedish population of 9 million (*Svenska Spel Annual Report 2002*, 2003). There are in addition several more gambling portals being used by Swedish consumers. This situation argues for that there likely is a considerable amount of European consumers who relative to several other mobile entertainment services quite easily would understand the benefits of accessing similar services through mobile devices. In addition, an indication that this type of entertainment might become popular to use on mobile devices is Sony Pictures Digital Networks' statement that the company has grossed more than $1.8 million in sales revenue from its mobile versions of "Wheel of Fortune" and "Jeopardy!" (*SPE going Live! with Vodafone*, Aug 5 2003, in The Hollywood Reporter.com). That consumers seem to appreciate challenging entertainment services like those indicate the potential of mobile gambling.

Judging by the services offered and under introduction, companies in the mobile entertainment value web expect mobile gambling to take off first in sports betting, including horse races and wagering on team matches. Ladbrokes is one of several European bookmakers offering this service through WAP enabled mobile devices. Lotteries, either government-run or private, are another service category that is expected to attract considerable attention. Casino games like blackjack, draw poker, slot machines, craps and roulette, where the player competes against the house, is considering the range of mobile gambling sites expected to become popular as well.

WinwardCasino.com, backed up by technology companies Parlay Entertainment and Phantom Fiber, is a mobile casino that offers 17 mobile gambling services including blackjack, slots and video poker for wagering on PocketPC and Palm PDA's (winwardcasino.com, 2003-08-11). Future enhancements are stated to include new games such as b'ngo, roulette and craps, and support for additional handheld device platforms such as Symbian and J2ME. Another popular and simple mobile gambling service is sweepstakes. To participate in a sweepstake, entrants send a premium SMS text message and then receive a reply revealing their numerical ranking where a certain number means they won.

Government-approved mobile lotteries have recently been introduced in for example the Netherlands and Sweden. These are similar to traditional lotteries where the players compete by dialling in the set of numbers as daily or weekly draws. Siemens has tested 'dynamic betting' on horse racing, ski jumping, soccer and other sports. After placing a bet for about $3, the player instantly receives a message with the new odds, which are updated every second. The player is then invited to bet yet again. (*Europe bets on mobile gambling*, Apr 11 2003, in SiliconValley.com)

The 2002 World Cup in Soccer was an event that was embraced by mobile gambling. O2 Germany provided odds every minute as the games progressed. To bet, users dialled a number associated with each country's team and entered in the amount they wanted to bet. Any winnings or losses were logged into an account the player had set up. (Wallage, S., *A World of Mobile Gamblers*, Feb 11 2003, in The Feature)

Who the mobile gambling consumers will be depends on the type of gambling service offered; a survey could reveal similarities with the user characteristics for wired Internet gambling. A report by Alatto (*Understanding mobile gambling*, 2002) states that consumers with the greatest propensity to gamble on a mobile device is predominantly male, aged 25-39 years old. However, mobile devices might be able to reach a more diverse audience than that considering the widespread popularity of both gambling and mobile devices among different groups of people. The study's results are likely to be valid regarding casino type gambling and sports betting, but gambling services such as lotteries and sweepstakes is expected to attract a variety of early mobile entertainment adopters.

To conclude, mobile gambling has already managed to achieve the attention of consumers in a few cases. Considering gambling is a high engagement interest among many consumers and that there is a considerable wired Internet market for gambling today, there are several factors that support the ME value web's and analysts predictions that mobile gambling will become a significant market.

4.5.5 Mobile adult entertainment

Mobile adult entertainment is pornography and erotica in the mobile device in the form of pictures, sound, video, games and animations. The demand for sex related entertainment has driven consumer adoption and the development of technology for many media. According to consultancy companies analysing the mobile data markets and the adult entertainment industry themselves, this will also be the case for mobile entertainment. Consultancy companies estimate that the global value of the pornography market will be $70bn in 2006, and that $4bn of that could come from mobile services. (Nick, F., *Porn will be 3G's killer app*, Jan 21 2003, in vnunet.com) A report from Strand Consult predicts that adult mobile content will grow to €2.7 billion by the end of 2005 (*How to make money on mobile services*, 2002). This would indicate a mobile adult entertainment market that represents well over 10% of the total value of the mobile data market.

Looking at the consumers, a useful parallel is the wired Internet since the market for mobile adult entertainment is in its infancy and not a lot of information is available about its current consumers. The number of paying subscribers for adult content is in the order of several million in the United States and may be as high as 10 million (Thornburgh & Lin, Ed., 2002). A figure of the same magnitude should be valid for Europe as well, meaning there are millions of Europeans who could perceive mobile adult entertainment as a compelling service. Further on, the majority of these viewers and subscribers are male, though the fraction of female viewers may be growing. On average, a paid subscription generates $20 to $40 per month in revenue. The majority of subscribers cancel within a month, but of those who remain after a month, the typical retention time is approximately 3 to 4 months. The future € millions in mobile adult entertainment revenues are during the first years likely to mainly come from the early market male segment between 20-39 years old described in Section 4.4.2. Teenage males will surely consume adult content as well, but considering legal issues the market for paid adult content is more limited. Revenue models and service offerings might become different from that of the wired Internet, but the purchasing behaviours of the wired Internet consumers just described is likely to have some

similarities considering both cases regard digital content and mainly consumption over digital networks.

There are a few factors when disregarding the service quality itself that might constrain the mobile adult entertainment market. The potential of a mobile device as a medium for adult entertainment might to a degree be limited since it is not definite whether consumers will perceive a mobile device to be sufficiently personal and discrete for viewing adult content. If mobile adult entertainment becomes successful, a prevalence of this content over mobile devices also brings up some serious issues. The policing and regulation of adult content and a need to ensure mobile adult content does not get into the hands of children are such examples. Europe is not a single unit regarding regulation in this area. Each country has its own moral agenda, rules, and forms of regulation. According to Jan Taubert, Germany has the strictest rulings concerning online protection of minors in the European Union. New laws regarding adult content came into force from April 1st 2003 and they are now setting up of a commission for youth media protection. (Stone, M., *Adult Online Europe*, 2003, in Klixxx Magazine)

Further on, some mobile operators have initially expressed a hesitation about providing adult content on their networks and try to be perceived as 'cautious' and concerned regarding this matter. Adult entertainment services in general are by a non-ignorable amount of people considered immoral and the mobile operators' concern about negative publicity might impede the market growth. Several mobile operators will likely not promote adult entertainment as an attractive part of their mobile entertainment portfolio while the general public is 'getting used' to the idea of adult entertainment on mobile devices. Independent portals and to some extent 3G seem to be the exceptions. Mobile operators with extensive 3G investments should be eager to start generating revenues. Sydney Morning Herald writes:

> *"For years it has been a dirty secret that one of the key drivers of new consumer technology is sex, pornography. The need to make 3G technology work - and work fast - is exposing that secret"*
>
> *Phone sex going upwardly mobile,* Mar 26 2002, in Sydney Morning Herald

Turning to services, several major adult entertainment companies are entering the market and some popular services exist. According to Private Media Group, consumers have been able to access their content on 2.5G mobile phones from July 2003 (*Private Media Group Announces Enhanced Content for Mobile Devices*, May 30 2003, Yahoo! Finance press release). They have the opportunity to pay to receive adult content over WAP and GPRS enabled mobile phones through a mechanism with direct charging to their mobile phone bill. Private's most popular content is featured offering photographs, video and accompanying text. The service has initially been launched in the United Kingdom with other countries to be added.

Adult entertainment is also available for mobile operator 3's subscribers since May 2003 through a major deal between Hutchison 3G and Playboy Enterprises (*Playboy on 3*, May 21 2003, in 3G Newsroom.com). The successful German mobile Internet portal Jamba! is launching a mobile video gallery featuring the latest chart music and fun sport clips for €1,49 per play list (Marshall, T., *Oplayo flags streaming jamboree*

with Jamba! deal, May 23 2003, oplayo.com). An extension of the service to be launched soon will contain erotic video clips. Netcollex, the web-wing of UK tabloid newspaper The Daily Sport, provide 'sport content' (adult images) for 2.5G networks where users are charged via a premium rate text service. Their services are available to O2, Vodafone, T-Mobile, and Orange users in the UK. However, since the mobile operators do not wish to create attention about their involvement with such services, they have preferred a hands-off position and it has therefore been left to the Daily Sport to market these premium services. Rob Johnson, CEO at Netcollex, claims that his company now has thousands of users each week spending between £1.50 and £5 on text chats, colour pictures and videos (*Adult services booming on 2G phones*, Jul 2 2003, in 3G Newsroom.com). Finally, Venetian Dreams, an online adult audio content provider, has launched a wireless audio streaming adult entertainment service. This service is an innovative step that shows sound can be the sole medium for other entertainment services than music.

To conclude, a success of mobile adult entertainment services seems likely, considering it has the ability to provide value in very straightforward ways compared to many other mobile entertainment services. In addition, consumers are demonstrably also willing to pay for it in many formats. However, a market of €500 million estimated by Strand Consult (*How to Make Money on Mobile Services*, 2002) for 2003 does not seem like a reliable figure, considering this would mean that 5% of Western Europe's total population would have to pay more than €20 to mobile adult entertainment services during 2003. It is not even sure that many consumers actually use their MMS and WAP capabilities. But the ability of adult entertainment to reach their consumers through multiple channels and media, together with the powerful value offering erotica, have shown to be argues for a relatively large market potential compared to other mobile entertainment services. Considering there is quite a lot happening within this area with dozens of SMS, MMS and WAP adult entertainment portals in Europe by 2003, there are reasons to believe there is a small but established and growing market in Europe. The market might be about to take off and has the possibility of starting to deliver on high expectations for 2004.

4.6 The state of the European ME market

Chapter 2 discussed how the classical product life cycle model introduced in the 1950's had since then been developed by different scholars. Rogers (1962) established an S-shaped curve to illustrate the rate of adoption of innovations and concluded a dependence on the experience from near peers for potential adopters. Moore (2002), focusing on high technology markets, has developed the line of reasoning further by concluding that there are gaps between different customer groups. A gap represents the difficulties associated with selling a high tech product to a new type of customer. There is a particularly big gap between the early adopters (innovators and visionaries) and the pragmatists, which is called the chasm. In order to reach mass market this chasm needs to be crossed. By combining Rogers' (1962) S-curve, the technology adoption life cycle, and Moore's (2002, 1995) concepts of the chasm, a general theoretical model for consumer adoption of high tech products is obtained as shown in Figure 21.

In relation to this model, at what stage of development or consumer adoption does the current European ME market find itself in? The previous sections of this chapter have

discussed different aspects regarding the current state of the European ME market. It has been concluded that the physical networks for delivery of ME services are in operation and ME enabled handsets are starting to achieve an initial foothold among consumers. Still, the consumption of ME services is however low and concentrated to typical early adopter consumer segments. With a GPRS usage penetration rate of around 1% in Western Europe, the mobile data market is clearly in its' infancy.

The actual usage of ME services is somewhat unclear except in the case of ringtones. There have been some truly encouraging statements about the increase in game downloads from mobile operators, but clearly less than 1% and perhaps significantly fewer of all European mobile consumers have actually utilized mobile data services if ringtones and logos are excluded. As such, not even all of the early adopters can be considered to be completely penetrated. Some more mature markets like The Netherlands, Italy and UK may however display higher levels of penetrations. According to a Swedish study by Stelacon, a large part of the people interviewed that had at least once used mobile data services stated they had become discouraged to use them further due to a lack in perceived usage quality or appeal of services (*Avändningen av mobila tjänster*, 2003). This leads us to the conclusion that the European market for ME services as a whole is currently positioned somewhere between the two broken lines in Figure 19.

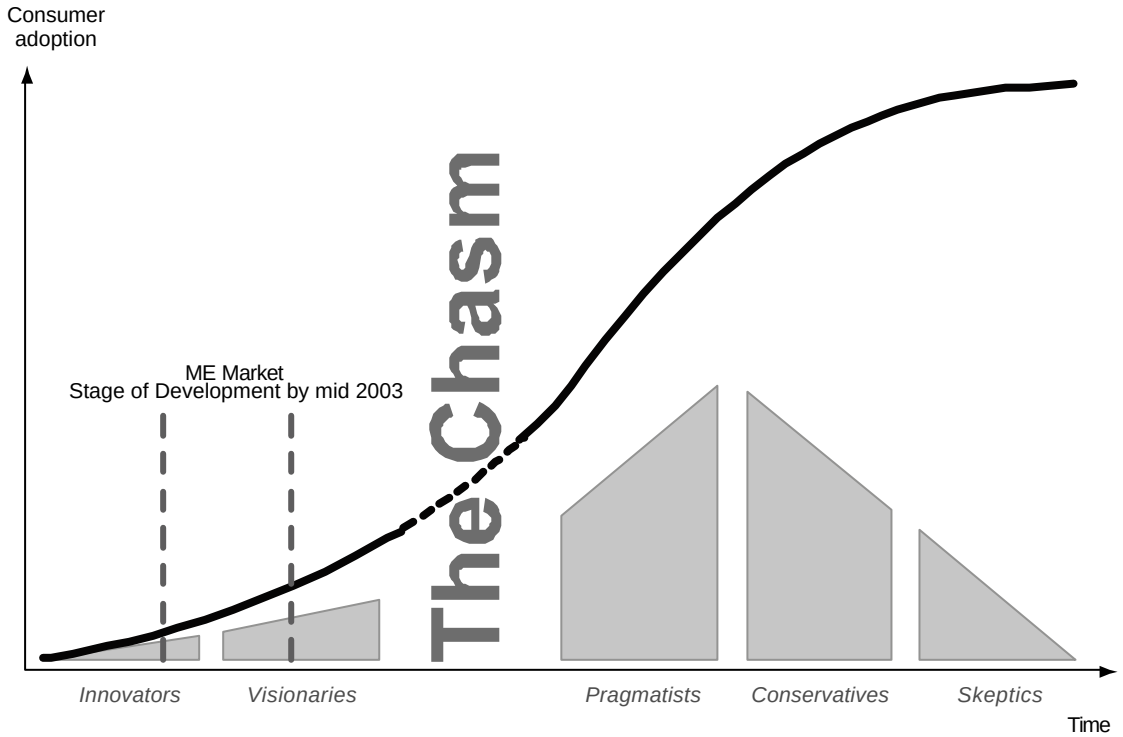

Figure 19: A general model for consumer adoption where the position of the European ME market has been plotted

Different categories of ME services have naturally reached different levels of consumer adoption. Downloading ringtones and playing embedded mobile phone games (i.e. embedded in device at time of purchase) could be considered having reached the other side of the chasm and into the mass market. However, that type of simple entertainment insufficiently represents the large majority of mobile

entertainment. Downloadable mobile games might be well on the way, and mobile gambling, as well as adult entertainment looks promising. However, by mid 2003 the market position shown in Figure 19 is concluded to be a correct illustration of the ME market's stage of development. What this means is that the value web still faces the challenge of attracting people considered as relatively easily convinced early adopters. According to Moore (2002), groups of customers differently prone to adoption also need to be treated differently. The penetration of the mass market will therefore be an additional and different challenge after that. These different groups of mobile entertainment consumers and how the chasm can be crossed will be discussed in Chapter 6.

4.7 Summary and conclusions of market

On the supply side, the European mobile entertainment (ME) market is highly fragmented, a fact caused by several factors. Despite a slightly increased concentration among European mobile operators, the total number of mobile operators is still large, making the mobile network distribution channel fragmented. The fragmentation is also caused by the existence of different mobile device designs and a variety of mobile platforms. A very shifting macro environment across Europe regarding for example languages, degree of economic and technological development underlines this fragmentation. On the demand side, consumers' preferences for ME, despite globalization and increased international exchange, still vary between European countries due to language, culture and local taste. With mobile games to be seen as the foremost exception, the general demand situation across Europe for ME services can best be described as heterogeneous.

Due to what is said above, we suggest that the term "European ME market" can be used to describe the aggregate of demand or sales of mobile entertainment services on the European continent. It should not, however, be used by companies to describe a single isolable object of action. Hence, the European market should not be the subject of a single market strategy. Despite a few exceptions of tendencies to regional homogeneity, we suggest that any company that seeks to supply mobile entertainment services to consumers in Europe should adopt a national market strategy. Such an approach is most suitable as this is where macro factors are uniform, the number of mobile operators are few and where language, culture and taste are rather homogenous for a given market segment. Challenges regarding fragmented supply structure due to different mobile devices, operating systems and platforms will, however, have to be overcome also on a national level.

Due to a shortage of reliable figures on actual consumer spending on ME services across Europe, it is difficult to measure the exact size of the ME market. There are however several indications suggesting that the European market size for ME services, including related revenues from data transfer (such as GPRS), is in the region of €1 billion annually by mid 2003. The future size of the European ME market is, consequently, even more difficult to predict. Market analysts in general have a bad track record in performing reliable market predictions. This is because they have a tendency to overestimate future revenues, particularly for forecasts that stretch long into the future and when current revenues are low. Further, market signals are particularly unreliable in the early stages of the rollout of any important new

technology. The immature European ME market is therefore a very risky subject on which to make market forecasts.

With respect to the difficulty of forecasting an overall future ME market size and the unreliability of forecasts made by market analysts, companies should strive towards making their own predictions and scenario work. These should be adapted to the individual strategic information needs of company and be based on reliable facts at hand. Such facts displayed in this report show that the physical infrastructure for network delivery of ME services are largely in place across Europe regarding GPRS. By the end of 2003, some 10 million European mobile subscribers will own a ME enabled device (a device equipped with capabilities such as colour screens, Java gaming capability and 2.5G/3G). This equals a penetration level of 2-3%. Despite the existence of a large number of GPRS enabled phones and networks, penetration of mobile data services is approximately only 1% in average in Western Europe. The mobile data services' share of the mobile operators' total revenues is by mid 2003 also 1%. Penetration of ME services, other than ringtones and logos, is therefore obviously less than 1% and possibly significantly lower. It should, however, be noted that some countries like the U.K. and Italy are more developed than the European average. Mobile operators in Europe are reluctant to release the figures on actual usage of ME services. This can possibly be interpreted as a sign of weak service uptake and low revenues. Therefore, current ME revenues seem likely to mainly derive from simpler ME services such as ringtones, logos and SMS based entertainment.

The three currently most promising ME consumer segments to target with services are male teenagers, female teenagers and males aged 20-39 years old. Within these three broad segments, the earliest ME adopters have been explored and were, based on the results of service preference, named the pure entertainment consumers, the social entertainment consumers and the advanced infotainment consumers, respectively for each age segment. These smaller groups of people all appear to be high consumers of other forms of technology based entertainment and possess openness towards new mobile devices and services. The social entertainment consumers, belonging to the teenage female segment, appear to be most interested in services that exploit the social aspects of mobile entertainment such as having fun with friends. By contrast, the pure entertainment consumers, belonging to teenage male segment, seem to be most interested in entertaining and challenging services for their own sake. The advanced infotainment consumers have an open attitude towards more costly and advanced devices and services. The latter seem likely to be attracted by services that make their existing entertainment consumption easier or that add a compelling new aspect. A company interested in serving one or all of these segments will have to break the market down further into smaller consumer segments, preferably on a needs based level, which can be analysed and then targeted with appropriate entertainment services and promotional campaigns.

In order to in a more detailed way describe the European ME market, five predefined ME content categories have been described. These categories are mobile music, video, games, gambling, and adult entertainment. The categories have been studied regarding their definition, current and predicted market size, recent and future developments, popular services and who the most promising consumers are.

Ringtones and therefore mobile music is the category with the largest market by mid 2003. However, when disregarding ringtones, the market for mobile music is clearly in its infancy. The mobile games category is quite developed but also a very complex market. Its complexity stems from that the number of platforms and devices games can be played on makes it very fragmented. As device development and consumer learning continues, the service application providers will have greater possibilities for establishing a more sustainable business due to increased possibilities for differentiation and increased product life cycles. Further on, mobile gambling as well as adult entertainment look promising but have very small markets by mid 2003. Finally, mobile video is also a very small market. The market consists of the very small number of 3G users and people having advanced mobile devices.

Common for all these ME content categories are their current or immediate markets to a large extent consist of various constellations of teenagers and males aged 20-39 years old. Currently, the mobile entertainment value web is also investing a lot of effort into all these five content categories. This is an indication that there is a conviction about all of these having a potential to evolve into significant markets. Forecasts made by consultancy companies state the similar potential for each market. Our conclusion is however that these optimistic expectations need to be considered with care. Initial successes make bad extrapolations of market trends and the focus need to be placed on how to develop those markets.

Unlike what seems to be the general belief of many actors in the ME value web, ME services in Europe are not yet on the brink of mass market consumer adoption. The value web still faces the challenge of attracting people considered as relatively easily convinced early adopters. Groups of consumers, differently prone to adoption, also need to be treated differently. The penetration of the mass market will therefore be an additional and different challenge after attracting the early adopter segments.

5. BARRIERS AND DRIVERS

The companies involved with mobile entertainment are currently facing many challenges. Although a few successful services are emerging, the market described in the previous chapter does not develop in a way that enables companies to look at the immediate future with a strong confidence. The value web needs to confront issues such as the diversity of mobile device standards, the creation of compelling services and those services ease of use. In addition, the launch the 3G networks has not gone smoothly and the cost of 3G licences and network deployments are almost creating a desperate need to rapidly develop the market. At the same time there are however well known factors that argue for that mobile entertainment could look forward to an attractive market and industry development. Many initiatives are for example taking place, promising a range of interesting services that might attract the consumers to embrace mobile entertainment. Improved mobile devices are also constantly appearing in stores and faster network transmissions will enable increasingly compelling services.

However, all this taken together creates a complicated picture that needs a careful examination. Otherwise, positive developments might for example become dashed by developments heading in the opposite direction. Having described the current state and trends in the European mobile entertainment (ME) value web in Chapter 3 and the European ME market in Chapter 4, this chapter explicitly describes the barriers and drivers to market and industry development. What are the main challenges that must be dealt with? What are the main drivers of the development that should be supported and leveraged? These are the questions that will be answered in this chapter.

This chapter is divided into six main sections where barriers and drivers related to industry, the media for content delivery (mobile devices and networks) and the market are discussed in turn. In many cases topics brought up in different sections are interrelated. The findings are summarized in the final Section 5.7. The theoretical foundation is based on Porter's (1980) framework as outlined in Section 2.3.

As well as the very nature of the European mobile entertainment value web, the question of barriers and drivers to market and industry development touches several different fields that to an extent are interrelated. In some cases the drivers and barriers in question could seem rather obvious whilst others might be more intangible and difficult to grasp. In addition, some factors affecting the development of mobile entertainment could be thought of as either barriers or drivers depending on its current state of development. For example, a lack of compelling services could be considered as a barrier whilst the increase of compelling services could be considered a driver. Therefore, both barriers and drivers should first of all be considered key issues whose improvements, disregarding their current effects, will promote market and industry development.

In this chapter, barriers are defined as limits or problems that are constraining industry and/or market development. Drivers are factors whose effects are, through for example the creation of incentives or pressures, facilitating industry and/or market development. Market and industry development can take many shapes. Regarding the

market, development for the purposes of this document is ultimately about market growth, either by an increase in the number of consumers using mobile entertainment or in the rate or value of its purchase among the consumers. Industry development is defined as a development that ultimately leads to more able companies that can deliver better services at a lower cost. Therefore, barriers and drivers to market and industry development will for this study need to be factors that in the end either constrain or facilitate this market growth or emergence of better services at a lower cost.

5.1 Industry trends

This section discusses what forces and current situations within the value web for mobile entertainment that today are influencing its development as either barriers or drivers. As stated above, this is mainly an analysis that considers the mobile entertainment value web as a single unit and therefore not providing a detailed analysis of each of the industry sectors within it.

The structure of the European mobile entertainment value web and the interrelationships between the different sectors are complex. The mobile entertainment value web is still immature and could be described as a fluid space where new actors are entering the market at the same time as others go bankrupt and drop out of business. There are ongoing processes of horizontal and vertical integration which seems likely to go on as different actors in different parts of the value web try to increase their economic control and reduce transaction costs. If parts of the European mobile entertainment value web initially were driven by the venture capital going in to the vast number of start up companies, it now appears to be driven to a greater extent by the larger actors within the value web. A major driving force of industry development is of course product innovation (Porter, 1980). Within the mobile entertainment value web there are numerous areas where product innovation is able to play an important role for its development. Product innovation can expand the market through new types of entertainment services, create opportunities for new product differentiation and improve development costs. This aspect of industry development is in detail described from a consumer perspective in Section 5.4.

5.1.1 Reduction strategic of uncertainty

The European mobile entertainment value web can be considered to share the characteristics of an emerging industry. According to Porter (1980), such industries suffer from strategic uncertainty about issues such as the potential size of the market, optimal product configurations, the nature of consumers, how they best can be reached and whether technological issues can be overcome. This appears to be the situation in the ME value web. There is, and have been, a lot of experimentation with different strategies, a proliferation of technological and software standards and a constant flow of very different market size predictions and statements of ways to make money. The reduction of such uncertainties is an important factor explaining what actually drives the ME value web's development on an aggregated level.

When a more accurate and widespread body of knowledge gradually is established, the value web develops further through the abandonment of poor mobile entertainment strategies and the adoption of successful ones. For example, Vodafone Live! shows a clear resemblance to Japanese i-mode or J-Sky, and demonstrates that

lessons have been learnt since the failure of early WAP services (Brydon, A., *New research shows Vodafone live! set to exceed conservative growth targets*, February 2003, in Sound Partners). In turn, their initial success has now resulted in a situation where other European mobile operators such as TeliaSonera with their service Telia Go adopt similar strategies (*Telia kopierar Vodafone Live!*, Jun 3 2003, in mobil). These examples are signs of industry development. Another type of uncertainty reduction is the establishment of technological standards which allow companies to improve development costs and leave behind issues about supporting several or 'the right' standards. Examples here are the mobile operating system Symbian and the emerging mobile device standard Series 60, which enable service providers to reach a larger market through one standard. This aspect of industry development is described separately in more detail in Section 5.1.4.

The reduction of uncertainty touches all aspects of business within the European ME value web and there is still much to gain by learning from successes and failures around the globe. However, it also means that new companies gradually become more attracted to enter the value web. These new entrants are often larger actors with generally lower or different risk profiles. In the early days of the video game industry, the entrance of large established players was a force leading to that industry's development. Today, we can see that actors of this kind are entering the ME value web in the form of for example new MVNO's, mobile device manufacturers and also media companies willing to provide their entertainment content through the mobile channel. This contributes to development of the ME value web, but for some companies it also means an increase in competition since they will no longer be able to rely on uncertainty alone to protect them from rivals or potential entrants. To conclude, the reduction of strategic uncertainty within the European value web enables it to develop further through the adoption of proven and more successful strategies, the adherence to agreed standards, an attraction of new entrants, which are able to provide additional value to consumers and an increase in competition.

5.1.2 Innovation in marketing

Innovation in how to market mobile entertainment services is here considered to be an important driver for market and industry development. Breakthroughs in the use of advertising media, new marketing themes or channels and so forth, is a way to reach new customers and raise product differentiation and reduce price sensitivity (Porter, 1980).

There are several examples of marketing innovations within the ME value web today. Using advertising in print media as a way to provide ringtones, logos and pictures etc. have shown to be a successful strategy. By mid 2003, print media is now one of the major ways to provide this content. Further on, MTV's launch as an MVNO is an interesting case where existing consumer relationships and marketing channels are used to attract consumers to mobile entertainment. UK based Eposs is launching Fonedaddy, the first retail consumer brand for mobile entertainment products. Their products will, according to them, be offered through both retail stores and also vending machines. The Fonedaddy range will for example include a catalogue of ringtones, logos, celebrity picture messaging and Java games from providers such as Gameloft and Digital Bridges (*Eposs Fonedaddy in move to expand retail market for mobile games content*, May 30 2003, in pressbox.co.uk). Finally, Sony Music Mobile

Products Group is teaming with Sony Ericsson to integrate music and ringtones into mobile devices (*Sony Ericsson Leverages Company Content*, Jan 10 2003, in Wireless Week).

Like the mentioned examples, new innovative approaches in how to reach consumers leads to market and industry development. The current problems with low consumer adoption of mobile entertainment also implies that for many companies within the value web, the strategy of reaching consumers will be more important than the introduction of innovative products.

5.1.3 Horizontal and vertical integration

In Chapter 3, the ongoing cross-sector movements within the European ME value web showed how the three most dominating industry sectors of mobile operators, device manufacturers and to an extent content providers, increased their economic control through vertical integration. Mobile operators increase their economic control of the value web by taking on multiple roles such as portals, where for example Vizzavi now is a part of Vodafone Live! and Genie now is absorbed by O2 and renamed O2 online (*Future Mobile Entertainment Scenarios*, 2003). Device manufacturers are expanding their presence in the value web to portals and enabling technologies where for example companies like Ericsson, Nokia and Motorola expanded into the operating system market when they established Symbian in 1998 (Li & Whalley, 2002). Further, the content providers have been stated by our respondents as likely to move downstream in their value chains. This was also noted in the case study of the value chains of Private's service "Private Stars" and the mobile game "Who Wants to be a Millionaire?", in Appendix 1. Also, the often smaller companies in the 'middle' of the value web are undergoing vertical integration. The Mobile Entertainment Forum (MEF) white paper *Future Mobile Entertainment Scenarios* (2003) also concludes that a future scenario where one of these three sectors, mobile operators, device manufacturers and content providers, dominates the mobile entertainment value web seems likely. In addition to the vertical integration, Chapter 3 also showed a process of horizontal integration, or consolidation, among all players, for example in the future possibly leading to the emergence of five to six pan-European mobile operators dominating the market.

What effects could this consolidation and vertical integration process then have for the development of the mobile entertainment value web? On the issue of consolidation, several of our respondents have made statements such as:

> "*There are too many companies trying to be the first in a new niche, and there is no way the operators will be able to work with that many players.*"
> Thomas Lindgren, Founder and CEO of Gamefederation, 2003-02-19

It seems reasonable that a smaller number of larger and more stable actors within each industry sector would slightly decrease complexity and uncertainty within the value web and as such reduce transaction costs. The consolidation process, that we predict will go on for some years, is according to Porter (1980) and Buzzell & Gale (1987) derived from companies' attempts to become more efficient and effective through capitalizing on economies of scale. This development seems inevitable. Concerning the often small companies acting as service providers, a consolidation for such

reasons is likely to lead to more competent companies with the ability to deliver more complete solutions at lower cost. Further on, the industry trend of vertical integration was in Chapter 3 also stated to be a result of many companies' attempts to reduce the current problems with undeveloped supply and distribution channels. The reduction of such problems leads to industry development.

To conclude, the trends of vertical and horizontal integration are for several reasons acting as a driver of the development of the mobile entertainment value web. In addition this process also holds the opportunity to reduce the problems presented in the section below.

5.1.4 Lack of product and technological standardization

Regarding the European mobile entertainment value web there is today an abundance of competing standards and platforms on many different levels; from hardware to operating systems and content delivery platforms. Different platforms on mobile devices have spurred competition about the platform of choice, with client-side execution environments such as Sun's Java 2 Micro Edition (J2ME) and Qualcomm's BREW, together with operating systems such as Palm OS, Symbian OS and the recently introduced Microsoft Smartphone, Windows Mobile 2003 and PocketPC.

When the amount of mobile users and variations in handset models constantly increases, a common platform technology is to be preferred both from a service provider and consumer perspective (*Future Mobile Entertainment Scenarios*, 2003). One of the foremost examples of standardization initiatives is Series 60. It is a customizable platform designed to be a common base among mobile devices from the different device manufacturers who choose to implement it. The benefit is that service application providers are able to develop a single Series 60 compatible version of their service which then will work for all devices supporting this platform. Series 60 is built on top of Symbian OS and introduces for example standardization regarding screen size, input methods and sets of APIs and UI libraries. Device manufacturers such as Nokia, Motorola, Panasonic, Siemens, Sendo and Samsung now support Series 60. (*Series 60 Platform*, White Paper, 2002)

The research survey *The Adoption of High-End Phones: Platforms and Industry Politics* (2002) from Shosteck Group states that an obstacle to pervasive interoperability amongst current competitors is that operating systems are not required to implement client-side execution environments such as J2ME. This is one of the explanations for a proliferation of standards. In 2002, the Open Mobile Alliance (OMA) was formed to stabilize the need for a uniform and interoperable mobile platform using components which allows user-acceptable, commercially deployable services that supports a profitable value chain using digital rights management, WAP 2.0, MMS, user authentication and location positioning. With OMA taking a political role in the platform standardization process, larger companies such as Nokia and Microsoft will benefit, as the cost for building an OMA-verified platform is very high. The Shosteck Group states that Nokia spends $1.62 billion from their research and development budget on software development each year, and given Microsoft's recent research budget of totally $5 billion (*Microsoft wants to lead technology march*, 21 Nov 2002, in ZDNet Australia), few competitors seem likely stand up to these key vendors.

Nokia, the current dominant player in the industry, is faced with many challenges, including, in the distance, the threat of Microsoft and the SmartPhone/Windows Mobile/PocketPC platforms. This potential platform fragmentation might be prevented by Nokia, by creating a standardized platform through their Series 60. In addition to this, the emergence of the OMA in June 20002, aimed to create a level playing field in the battle of what is the industry standard with regards to many different forms of technical implementations and interoperability, such as location, gaming etc. The real winners, in this case, will be the mobile operators (together with key platform vendors), since they are independent of what platform technology standard comes out of the OMA, and will reap the reward of profit generation. In the case of the enabling software technology providers themselves, the fierce competition might spur the development of better software, which would lead to optimal platforms that use the hardware to a maximum. With highly optimized operating systems and execution environments, performance and user interfaces are improved, which in the end results in better mobile entertainment services. Platform standards like Series 60 and alliances such as OMA facilitate the goals of a uniform environment and improve communication and interaction between services and games, which is believed to be necessary for services in mobile entertainment.

A lack of product and technological standardization is often natural symptoms for a new industry, but do nonetheless impose problems on the ability to in the end successfully reach a larger market. The inability to agree on such standards impedes cost improvements and creates barriers to the supply of complementary products (i.e. mobile entertainment services) (Porter, 1980). For example, the operating system on the users' mobile device decides what type of content and services that can be executed and sent over the wireless networks. The multiplicity of standards is especially affecting the companies that want to develop and provide mobile entertainment content since to begin with it limits their ability to reduce development costs. During the past few years many companies that wanted to develop content first had to develop their own platforms and many companies were therefore 'reinventing the wheel', something that still occurs today, although to a lesser extent.

Today, the risks are instead more about spending resources on developing and licensing services for platforms whose future and nature of actual users might be uncertain. If different mobile devices use different operating systems, have their own user interfaces and use different underlying platforms for the management of certain types of applications, the consumers will be divided into different groups, a situation which can be called a platform segmentation of the market. These segments of consumers will not be able to share certain types of content and use the same services if content- and service providers have not developed their products to be compatible with different platform standards. Therefore, this situation with a multiplicity of standards is not only a barrier that affects development costs and limits the number of services for each platform. It also leads to a situation where companies can't purely concentrate on providing quality content, and in addition, it negatively affects market development and the reach of a critical mass that is so important for an industry to achieve in order for a mass market to develop.

5.1.5 Diversity of wireless networking standards

With mobile data services becoming more and more relevant as a complement to mobile voice services, the demand for faster data transfers on enhanced mobile networks is increasing. With such great need for more bandwidth and cell capacity, the current systems are now heading into the new generation of mobile networks, 3G.

The third generation of wireless networks is in fact more fragmented than it sounds. From the standardization bodies that represented 2G (GSM, CMDA and TDMA), two new technology families, UMTS and CDMA2000, which both led towards higher user data rates, were formed. Since the transition from 2G to 3G is currently taking longer time than originally expected, a future-proof solution has to be implemented by the mobile operators in order to keep up the profitability of the 2G systems when gradually moving towards 3G (Evans, 2001). This has been carried out in two different ways, depending on the previous, dominating network infrastructure installation on 2G. In Europe, where 2G is controlled with GSM networks, the migration to 3G has made a stopover in 2.5G with GPRS, where data transmission standards like EDGE and GERAN may be introduced before 3G reaches the mass market and gets standardized, with UMTS technologies based on Wide-CDMA (W-CDMA). Countries using the competing wireless network CDMA, like the US, Korea and Japan, will follow a similar way before reaching their definition of 3G, CDMA2000. With 2G CDMA networks based on CDMAone, these countries will experience 2.5G by using CDMA IS95b, a solution that can be compared to GPRS. The different network standard bodies from 2G to 3G are visualized in Figure 20.

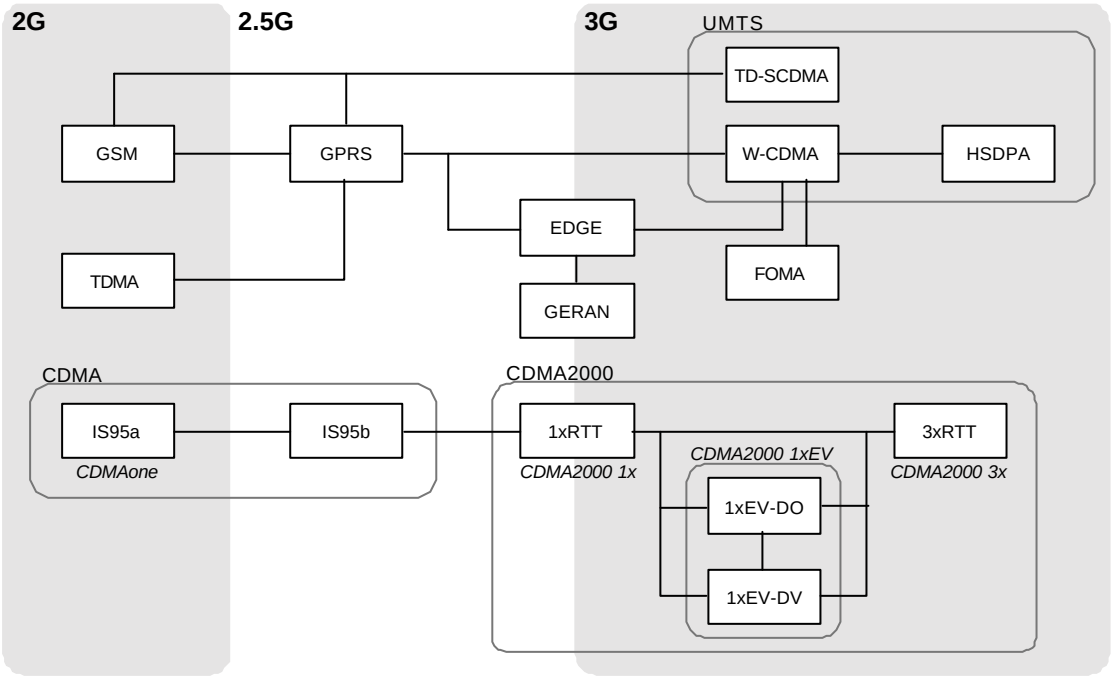

Figure 20: Migration of standards towards 3G

Where to draw the lines between the different generations of mobile networks, especially the recent standards, is determined by the International Mobile Telecommunications 2000 (IMT-2000), the ITU (International Telecommunication

Union) globally coordinated definition of 3G, which covers key issues such as frequency spectrum use and technical standards (http://www.itu.int, 2003-04-22).

Even if CDMA or CDMA2000 are not used in Europe, this network competition using different standardization bodies will result in a slow and deliberated evolution, where decisions and resolutions instead of technological issues prevent the development and expansion of new wireless networks. An example of this is the patent licensing issue surrounding Qualcomm's wireless intellectual property, regarding what 3G technology to be standardized in Europe and who to build it. Qualcomm owns core elements of the technology used in W-CDMA and expects royalty revenue for this wireless technology in Europe, which cause implications for service infrastructure providers such as Ericsson and Nokia, making them unable to manufacture W-CDMA terminals of their own (*Nokia Support for Royalties Fails to Win over Critics,* May 20 2002, in Telephony Online).

The migration to 3G in Europe partly depends on the mobile operators' current position and specific situation. Having GSM networks installed all over Europe, it is likely for mobile operators' to upgrade their existing 2G networks using W-CDMA, which is built on GSM structures and improves the speed and capacity by increasing the carrier bandwidth in a slightly different band. Along this upgrade, standards like EDGE, also built on GSM/GPRS infrastructure, will be an understandable choice in the movement towards true 3G. Spectrum awards and the requirement of 3G licenses and regulations also decide the possible choices of wireless networks to choose from within a specific country. (*Taking the Right Path Towards 3G*, 2002)

Different mobile communication techniques have been used since the beginning of the first generation and its ramification in later generations follows a normal evolution pattern. Why consolidate two working modulation techniques from different network standards? People all around the world do communicate with each other, and looking at this problem from a wider perspective, a technology merge might be the best solution, although realizing it is time consuming and expensive. To regulate the current situation, when having different standards geographically in both network and mobile device technology, IMT-2000 established a global collaboration to allow a seamless service evolution from the various mobile standards around the world by working between ITU/Operators Harmonization Group (OHG) and 3G partnerships 3GPP/3GPP2, shown in Figure 21 (*What is IMT-2000: ITU presentation on International Mobile Telecommunication 2000 Systems*, 2000, in IMT-2000).

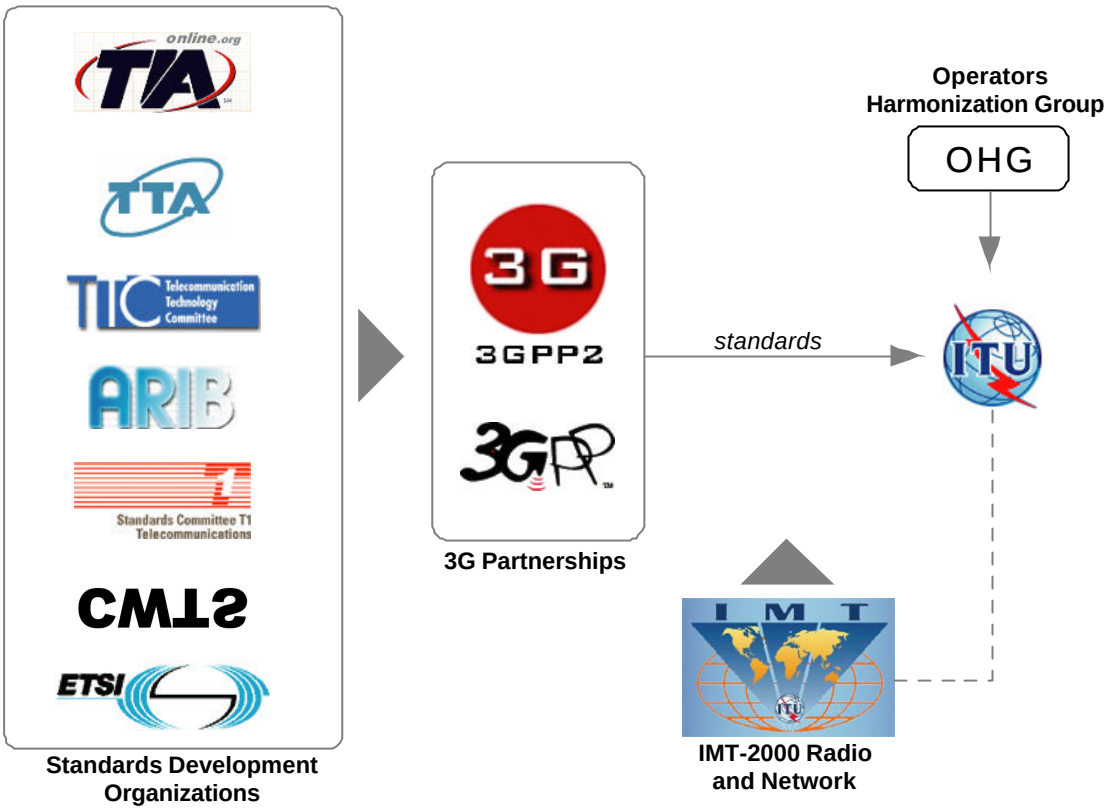

Figure 21: IMT-2000 global communication

3G technology standards are predicted to be split up in different geographical regions. In Europe, operators will use UMTS infrastructure, built upon earlier GSM technology. EDGE standards are built on a combination of GSM and TDMA systems, which are widely spread in Europe and the US respectively. This gives the GSM/EDGE/UMTS approach another benefit, namely global roaming. With an extensive coverage of GSM/EDGE/UMTS technology, the opportunities of delivering powerful economies of scale will increase, resulting in lowered management and network build-out costs, which mean reduced prices in hardware for end users (*Comparison of W-CDMA and cdma2000*, 2002).

Using various standardization bodies has its disadvantages, such as decelerated development in wireless network technology, increased network costs and complications with global roaming. To ease the complications with different modulation techniques, network standards, 3G license- and spectrum awards, drivers like 3G partnerships and Standards Development Organizations are settled to coordinate and improve the technology development. Regarding ME, services might tend to develop in a slower pace when different network standards form a barrier to the development of wireless networks. If different modulation techniques and networks are to be used in different geographical regions, such as for example a simultaneous use of GPRS and UMTS, technical roaming barriers can prevent users from accessing entertainment services or communicate with each other.

5.2 Mobile operators

Mobile operators are a particularly critical part of the value web, due to their control over the consumer base, direct billing relationship, ongoing network deployment and

the will to act as portals. Their situation related to barriers and drivers is therefore discussed separately in this section.

5.2.1 Mobile operator dominance

As concluded in Section 3.3.3, mobile operators are the group of players most notably dominating the ME value web. In Future Mobile Entertainment Scenarios (2003), several barriers to industry development related to vertical integration and domination by individual industry sectors are brought up. If the mobile operators were to completely dominate the value web it is stated that:

"Operators also may, in the flush of their power, ignore consumer desires and the content-development expertise of entertainment companies. This arrogance will sow the seeds for consumer apathy toward mobile entertainment services and undermine the potential of the industry"
Future Mobile Entertainment Scenarios (2003) p. 9

Our interviewees have stated similar opinions:

"Operators have traditionally shown that they have a poor understanding of how to grow an audience as opposed to growing subscribers"
Ralph Simon, founder of Yourmobile/Moviso, executive chairman Digital Express, Chairman of MEF Americas Group, 2003-02-19

"*They* [mobile operators] *are supposed to be providing connectivity, not creativity."*
Esther Dyson, Chairman of EDventure Holdings, 2003-06-10

Mobile operators have, among most of our respondents, also been deemed as "conservative" and therefore acting as barriers to industry development.

"Slow management processes inside the operators is a barrier hindering the development of the European mobile entertainment industry"
Kevin Bradshaw, Founder & former CEO of Digital Bridges and partner at MTGP, 2003-02-20

It does indeed seem possible that dominating mobile operators could turn out to be a barrier to the development of the mobile entertainment value web since entertainment content is far from their core competence. This might have resulted in insufficiently composed service offers and ineffective marketing, two aspects described further on. It can of course be said that mobile operators with big financial resources and large customer bases are well equipped to lead the drive towards consumer adoption of mobile entertainment. One example in the European context is the Vodafone Live! portal which provides users with picture messages, games, ringtones, animations, and other services. As of March 2003, Vodafone Live! has gained over 1 million subscribers across Europe in less than five months (*One million Vodafone Live! customers*, Mar 26 2003, Vodafone press release). The launch of Vodafone Live! and the marketing campaign around it appears to have, at least partially, started to make consumers aware of mobile entertainment, something that the other (smaller) actors in the ME value web appears to have failed with so far.

Still, the track record of mobile operators' inability to harness entertainment products, as described by our respondents and given that the core competence of mobile operators is closer to data distribution than managing a media channel, it seems more likely that dominating mobile operators could turn out to be more of a barrier than a driver to the development of the ME value web and market.

5.2.2 ARPU and 3G license fees

Many of the interviewees have stated that the mobile operators' need for maintaining the current levels of ARPU (Average Revenue Per User) is an important driver of mobile entertainment. In several European countries the mobile operators' revenue growth from mobile voice has started to decrease since the market is getting closer to saturation. The result has been an increase in the competition for subscribers, with dropping prices and voice ARPU as a result. This situation has created a need for operators to continuously replace dropping voice ARPU with other revenue sources. Therefore the operators now turn to mobile data services to drive ARPU growth.

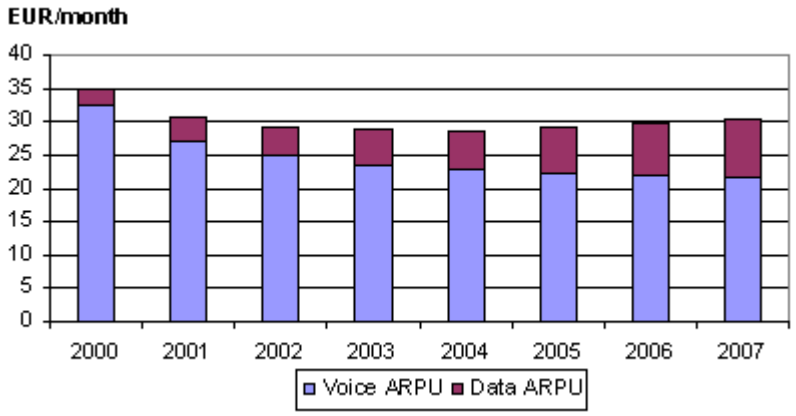

Chart 3: Development of mobile ARPU split by revenue source (Mobile data services: latest developments and market prospects, 2002)

As can be seen in Chart 3, voice ARPU is predicted to gradually decline, and during 2004 the total ARPU will stop declining as revenues from other sources increase. A report released on March 26 2003 from consultant company Analysys confirms the predictions made in Idate's survey. ARPU for European mobile operators is said to finally have stopped declining, due to increased revenue from non-voice services that now constitutes 12% of total revenues. (*Western European Mobile Forecasts and Analysis 2003–2008*, 2003).

Most European countries have distributed their 3G licences through auctions. According to Ure (2003), more than €100 billion was spent by operators on acquiring 3G licences across Europe. Most auctions took place before the crash on telecom stocks in 2000/2001, when exaggerated predictions resulted in what Ure (2003) deems as "the mobile license fiasco".

The governments that distributed the 3G licenses through auctions to the highest bidders have been criticized for seizing the opportunity to get an extra income to the state budget rather than ensuring the development of a healthy and profitable business

within their respective nations. Whether the governments that set up the auctions or the companies that put the exaggerated bids are to blame for the occurred, the fact that the lion's part of the €100 billion investments has gone up in smoke remains. On the question of what are the drivers to the development of ME in Europe, Phil Terrett, Founder and CEO of The Third Stage, former CEO of Cybiko (2003-01-21) stated

"The need for operators to pay back the 3G-licences."

This could well be the case and in addition to the debt problems the 3G licence fees have led to, a major survey by SECOR Consulting from April 2003 on worldwide credit and debt management of the global telecommunications industry concludes that the launch of 3G itself will also lead to debt issues. The survey, reflecting the views of major mobile operators, states that 100% of the respondents believed that the launch of 3G would lead to even greater credit and debt problems. (*Global Communications Industry Credit and Debt Management Survey*, 2003) The main reasons for this are said to be pricing complexities, billing errors, disagreements with service providers, coverage problems and the fact that higher consumer charges will result in larger bills, inevitably leading to larger debts for the already troubled mobile operators. Today, opinions are even being raised about mobile operator 3's ability to survive. For example, market researchers Enders Analysis predict that 3 UK may not survive past 2006 (*News not looking good for 3*, May 19 2003, in 3G Newsroom).

The dropping ARPU for voice services together with the extensive financial resources spent on the 3G licences and the arising debt problems following the launch of the 3G networks seem to have created a desperate need for new and profitable revenue sources. Mobile entertainment is a potentially important substitute to voice revenues and could help mobile operators in getting return on investments on 3G licences. As such, the 3G licence fees paid and the decreasing ARPU on voice services could be thought of as an important driver of mobile entertainment.

However, mobile operators' sometimes desperate need for cash flow appears to have resulted in a somewhat short-term thinking on their behalf. This short term thinking and the implications of it is discussed in the following section.

5.2.3 Revenue sharing models

As concluded in Section 3.3.6.2, revenue sharing appears to be a generally accepted revenue model within the ME value web. It has the advantage that it creates explicit incentives for all parties to contribute to the value creation process. However, mobile operators are presently taking advantage of both their gatekeeper position regarding the billing and strong bargaining power towards the rest of the value web due to their relative size and existing consumer relations. This has resulted in unfavourable revenue sharing agreements for the third-party companies. These companies claim this situation will be unsustainable, or as stated by two interviewees

"It (mobile entertainment) *is no different from any other industry where retail distribution generally accounts for 30%. If one player in the value chain takes a disproportionate amount of the revenue it won't work out."*
Brian Greasly, CEO Digital bridges, 2003-02-20

"They [mobile operators] *are not being very sensitive to the vulnerability of the ecology. If it is not win-win, and the small companies disappear you loose the talent and the source of content."*
David C. Traub, former Executive Producer for New Media at EMI and co-founder of Cloud 9 Interactive, 2003-06-05

A major industry survey published in the beginning of 2003 by Arthur D. Little and Exane also discusses this topic. According to them, attractive revenue sharing terms for service- and content providers, is absolutely crucial and one of the single most important factors for the success of mobile entertainment. (*GPRS/UMTS in Europe is back on the road, but who has the map?,* Feb 26 2003, in Pressbox.co.uk) While revenue sharing agreements in themselves can create explicit incentives that will drive the development of the European ME value web, 'unfair' revenue sharing terms seem more likely to lead to the opposite. The current state of the revenue sharing agreements could be a threat to the very existence of many strategic networks within the mobile entertainment value web. This could be the case since the primary pre-requisite for the existence of strategic networks, according to Jarillo (1988), is that the value created within the strategic network has to be rather equally distributed between the involved parties.

While statements made by e.g. content providers and service application providers should be regarded as opinions from concerned parties, it still seems clear that revenue sharing agreements do not reflect the risk taken and the effort put in by the third party companies. This is therefore presently a barrier to the development of the European ME value web since it constrain that part of the value web to develop in a for them desirable way.

The fact that mobile operators strive towards maximizing their profits by utilizing their strong bargaining power towards other players though seems highly reasonable from a shareholder value perspective. However, the mobile operators' need for cash flow appears to have resulted in a somewhat short-term thinking on their behalf. As stated by e.g. Jones (1995) and Campbell & Yeung (1991) from a stakeholder value perspective, short-term profitability does not always go hand in hand with long-term ditto. To consider the interests of other stakeholders than the shareholder, such as suppliers and customers, could therefore often turn out to be the most profitable strategy in the long run, also for the shareholders. This is also strongly emphasized by the strategist behind DoCoMo's successful i-mode service

"Whatever the alliance, we strongly believe that it should be a winning proposition for our business partners. A business model in which a new business only benefited DoCoMo is one that no one would agree to participate in."
Takeshi Natsuno in *i-mode strategy* p.69 (2003)

A similar view and a recognition of this issue has also been expressed by one mobile operator interviewed for this study

"The difference between us and the Japanese is that they have not been as short-sighted."
Östen Mäkitalo, Senior Vice President Mobile Business, TeliaSonera, 2003-07-22

The interviews made show that it is obvious that the third party suppliers do not consider the current revenue sharing agreements as a winning proposition for them.

Finally, one respondent also highlighted another problem with the present revenue sharing agreements within the ME value web.

"Money coming in to the value chain tends to get stuck in each part of the chain. Due to this, companies upstream the value chains don't control their own destiny. If they have a rough month, there is no way that they can get cash flows quickly. This is a problem for the industry and to me immediate mediation settlements are necessary."
Phil Terrett, Founder and CEO of The Third Stage, former CEO of Cybiko, 2003-01-21

In our case study of the value chain of "Who wants to be a millionaire?", the content owner Celador also made the remark that one of the disadvantages with the revenue sharing model was that revenue gets stuck in different parts of the value chain and that this makes forecasting difficult. This could potentially become a big problem of sub-optimization within the value web. If, for example, mobile operators delay the revenue sharing it could result in some of their smaller suppliers of mobile entertainment content dropping out of business, and also make planning and forecasting for companies in the beginning of the value creation process more difficult. This is obviously also a potential threat towards primarily the smaller companies within the value web as this could jeopardize their very existence.

To conclude, as mobile operators seem more likely to gain than loose from the existence of vital third party suppliers driving the European ME value web, they should strive towards taking those suppliers needs in form of more favourable revenue sharing agreements and faster revenue distribution seriously and avoid short-term thinking. The current problematic financial situation for many European mobile operators described in Section 5.2.2 does not alter this conclusion, rather it emphasizes the need for mobile operators to increase their revenues through large and prospering service provider industry sectors.

5.2.4 Billing possibilities

One inherent advantage of ME services is the mobile operators' possibility to rather easily bill the consumers in different ways. While e-commerce and purchase of services on the Internet requires the use of credit cards, payments for mobile services can simply be charged for on the consumers' telephone bill.

"E-commerce is very interesting but at the end of the day you have to rely on credit cards and mobile business has billing built into it."
Adam Comiskey, Director of EMEA, THQ Wireless, 2003-02-20

As such it has a great advantage over the Internet and constitutes a great opportunity for fixed Internet content providers to finally get revenues for the value of their content (Ahonen & Barrett, 2002). The possibility to bill even for low value services such as downloading a Java game or listen to a song seem to be able to attract content providers into mobile entertainment. Record companies such as Warner Musicgroup and Sony, with bad experiences from piracy and difficulties in making people pay for

content on the Internet, have therefore started to show interest in the mobile media channel (Ralph Simon, founder of Yourmobile/Moviso, executive chairman Digital Express, Chairman of MEF Americas Group, 2003-02-19).

A report released from Jupiter MMXI states that by 2006, consumers in Europe will spend €3.3 billion for content on their mobile phones, compared to just €1.7 billion on their PC's. (*Paid Content More Successful on Mobile than on the PC*, Apr 17 2003, in Daily Research News) Even though it is difficult to verify these figures, and that "content" is a wider term than pure mobile entertainment content, it still gives an indication of the advantage of the mobile media channel over the Internet when it comes to generating revenues due to the billing opportunities. The *UCLA Internet Report- Surveying the Digital Future* (2003) also concludes that concerns about credit card security on the Internet remained as high as ever. Overall, 92% of the survey's respondents expressed some concern about the security of their credit card information if they would ever buy online. As such, billing for services without the use of credit card constitutes a competitive advantage for the European ME value web.

The built in billing possibilities can hence be regarded as an important driver of the mobile entertainment value web since it attracts new entrants that are willing to contribute to market development.

5.3 Other industry aspects

5.3.1 Payment services

It is not expected that mobile operator billing will be the only way, or possibly most effective in the long run, to handle the difficultly predictable mass of financial transactions that a wireless Internet access have the potential to give rise to. Today, mobile operators, payment card companies, financial institutions and device manufacturers cooperate about the development of additional payment services.

Mobile payment environments are still uncommon among consumers in Europe, but several surveys state that their use could come to grow rapidly in the years to come. Visa International and Boston Consulting forecasts in a survey that electronic (and mobile) commerce will grow from $38 billion in 2002 to $128 billion in 2004 (*Enabling Secure, Interoperable, and User-friendly Mobile Payments*, White Paper, 2002). International marketing consulting company Frost and Sullivan expects mobile payments to reach $25 billion in 2006 (*Mobile payments to reach USD 25 billion in 2006*, Mar 25 2002, in Mobile CommerceNet). Regardless of what the actual amount of transactions will be, these figures reveal an important trend also for mobile entertainment. Some consumers seem likely to adopt mobile payment services and its development is needed to enable some further developments of the ME market. For example, micro payments can be used to pay anonymously for minor mobile content such as game or video downloads, a situation that would give independent service providers increased opportunities to make a business out of the mass of content that not will be included as part of the mobile operators' offering.

Even though mobile payment is expected to play an important role for the development of the mobile entertainment value web, it will be required for the

payment service providers, banks and mobile operators to offer a comfortable, easy to use, secure and interoperable user environment. A study made by Forrester Research shows that the surveyed consumers believe credit card security (52%) and a fear of 'klunky' user experience (35%) to be the largest obstacles for the adoption of mobile payment services, concerns that need to be addressed by actors in the ME value web. Security and privacy issues are most important for mobile users and therefore payment services need to address these concerns to succeed, as 65% of the mobile users do not feel safe to send personal and confidential information over wireless networks, according to Forrester. (*Enabling Secure, Interoperable, and User-friendly Mobile Payments*, White Paper, 2002) There are also a number of technical barriers to the emergence of these payment environments. An interoperable and secure mobile payment service is required for successful services in terms of usefulness, confidentiality, data integrity and user authentication. But today, different network standards, incompatible mobile platforms and handset devices prevent the current payment technologies to be developed rapidly. (*Enabling Secure, Interoperable, and User-friendly Mobile Payments*, White Paper, 2002)

The implementation of mobile payment services is an important driver for the emergence of numerous mobile entertainment services. Payment services stand for ways to charge the mobile consumer other than the mobile operator based billing method by using intermediaries such as today's existing credit card companies. As consumers increasingly start using mobile services including entertainment, this option will become more relevant and will arise as an important driver and necessary requirement in order for many entertainment services to provide a compelling and convenient offer to the consumers.

5.3.2 Involvement from global media companies

Emerging industries are often dependent upon external companies for growth, according to Porter (1980). In the case of the European ME value web, the global media companies appear to play this role. Although content providers are included as an industry sector in the ME value web, the degree of involvement from the largest companies seem to be moderately low however increasing. According to *Future Mobile Entertainment Scenarios* (2003), more active and involved content providers will shift the focus towards content brands and away from the device and the transport medium. It is also important that this happens considering the core competence and business focus of global media companies lies closer to consumer understanding, brands and entertainment compared to the traditional mobile operators and device manufacturers. This is seen as a situation that would contribute to market development since targeted and familiarly branded mobile entertainment services would improve the consumers' understanding about what mobile entertainment can do for them. Until recently this has unfortunately not been the case considering the often technologically focused marketing that has been done by the mobile operators and device manufacturers, a problematic situation which is described in more detail in Section 5.5.2. Global media companies such as AOL Time Warner and Disney, possessing the entertainment related know how and financial resources with turnover figures measured in €10 billions (*Mobile Multimedia Study*, 2002), could supply an important knowledge and financial injection that would drive the development of the mobile entertainment market and value web.

Major names such as Disney, Sony Corporation, EDGE Games, Eidos Interactive, Sega, THQ, The EMI Group, BMG, Universal, Viacom International and others are now entering the ME value web, as well as licensing brands, titles and artists for use in mobile entertainment services (*The State of Mobile Entertainment*, 2002). But at the moment there are not a lot of branded content available. One of the reasons why these companies hesitate about supplying their branded content is, according to David C. Traub (2003-06-05) that they do not want to undermine the value of their assets. Göran Sander expresses a similar opinion:

"One reason that the development is going a bit slow is that content owners (brands) are afraid of destroying their relations to their existing customers, if they were to deliver poor quality content in the mobile channel."
Göran Sander, Director of business development, Synergenix, 2003-02-21

Thus, the global media companies do not yet fully trust the mobile format as a medium that is able to guarantee a successful user experience. A low quality user experience could compromise the perceived image of a brand that the owner might have spent years on building. Therefore, as device and network performance improves and the number of mobile entertainment consumers as well as revenues grows, mobile devices will be increasingly trusted as a channel for the large media companies to use. Further on, another aspect needed to be in place in order to encourage major media companies to make branded content available is the establishment of security and digital rights management solutions.

5.3.3 Security and digital rights management

Issues of security and digital rights management (DRM) will have an essential role to play in order for entertainment content companies to be willing to provide several types of mobile entertainment, but also, for the consumers to be willing to use these services. If entertainment services are lacking in security, consumers will presumably feel uncomfortable using them, leaving the services unexploited and unprofitable. A lack of DRM mean content providers would be missing out on revenues because of illegal access of copyrighted and protected content.

With an increasing amount of consumers using mobile data services and applications on through mobile browsing, security issues are becoming more important for the value web and mobile users. From a survey made by Internet Week in December 2000, 77% of 101 business and IT managers claimed security to be the highest feature of wireless Internet concerns, listed on top of issues such as lack of reliable standards, inadequate bandwidth and high costs of technology (*The M-Business Evolution - Drivers and Barriers to Adoption*, Aug 14 2002, in Developer.com). Security issues arise with both user management and network technology. As advanced mobile technology is used outside closed doors, with highly personalized content available on the consumer devices, security in terms of theft protection is important. An early solution to this was to lock the software with PIN-codes and IMEI (International Mobile Equipment Identity) numbers. The hardware could also be locked by using an additional security code activated by the mobile operator if the user reported their mobile phone stolen, making the hardware functional with the default SIM card only. These early forms of mobile security did not mean any greater improvements, as PIN codes and IMEI numbers easily could be changed or hacked by anyone using a laptop

or PC (*How to hack your mobile phone*, May 3 2002, in BBC News). To improve the security for mobile users even more, new techniques for handset authentication such as fingerprint, iris and retina scan, face print and voice print recognition applications are already being developed by companies such as HP, Cyber Sign Europe and Schlumberger (http://www.cybersign.com, http://www.hp.com, http://www.slb.com, 2003-05-12). This development of increased mobile device security acts as a driver for mobile entertainment since its improvement will make consumers more able to trust their devices with a wider and more personal range of services.

Further on, according to Iannella (2001), DRM poses one of the greatest challenges for content providers in the digital age because of extensive breaches of copyright law due to the ease with which digital content can be copied and transmitted. In order to stop the wave of illegal and unauthorized access to services, DRM technology has been developed. The purpose of this technology is to enable the secure delivery of information to mobile terminals so that the rights of content creators and providers are protected. Open Mobile Alliance (OMA) has, accordingly, taken the first step towards protection of copyright of the music, video and console-quality games by developing a new open standard for copyright protection on mobile devices. According to OMA's DRM standardization initiative, *Digital Rights Management Version 1.0* (2002), DRM stands for the means to control the usage of the media object once it has been downloaded. The scope of OMA "Digital Rights Management" is to

"enable the controlled consumption of digital media objects by allowing content providers to express usage rights, e.g., the ability to preview DRM content, to prevent downloaded DRM content from being illegally forwarded (copied) to other users, and to enable super distribution of DRM content."

OMA Digital Rights Management Version 1.0 (2002) p.4

In OMA *Digital Rights Management Version 1.0* (2002), it is stated that the reason for their DRM initiative is due to the urgency to deploy a standardized solution. Several of our interviewees have also stressed the importance of Digital Rights Management:

"…it will be opportunities for privacy and these kinds of things. And this is why the industry needs to get this [DRM] *in place, for the content industry to have more confidence and this is happening at the moment when they introduce this first versions of DRM"*

Graham Thomas, VP Strategic Marketing & Content, Cash-U, 2003-02-18

In *Future Mobile Entertainment Scenarios* (2003) it is also stated that DRM will be an important driver of mobile entertainment. The main reason to why DRM is so important to the development of mobile entertainment value web and market is that without the intellectual property protection that DRM provides, content providers seem likely to be reluctant to push content through the mobile media channel.

"As the strength of content protection grows, the value of content available to the mobile entertainment industry will increase."

Future Mobile Entertainment Scenarios (2003) p.6

Iannella (2001) also states that solutions to intellectual property protection issues will result in large amounts of new content to be made available in safe, open and trusted environments.

5.3.4 Trade associations and standard bodies

Apart from the co-operations, within and in adjacent areas of the ME value web, done on the pure technical side such as the Internet Engineering Task Force (IETF) and the 3rd Generation Partnership Project (3GPP), there are two main organizations of high importance to the mobile entertainment value web. These are the Open Mobile Alliance (OMA) and the Mobile Entertainment Forum (MEF).

Mobile Entertainment Forum (MEF), a consortium of almost 40 companies and organizations, is the only trade association solely focused on mobile entertainment. MEF states that it is representing all participants in the mobile entertainment value chain, however the members are currently primarily entertainment creators and enablers. (http://www.mobileentertainmentforum.org, 2003-04-28)

As different standardization bodies absorbed into one the Open Mobile Alliance (OMA), formed in June 2002 after several months of discussions among the leading companies in the mobile industry, is the largest and most influential standard body. The goal of the Open Mobile Alliance is:

"to grow the market for the entire mobile industry by removing the barriers to global user adoption and by ensuring seamless application interoperability while allowing businesses to compete through innovation and differentiation"
OMA, http://www.openmobilealliance.org, 2003-04-28

These organizations have the potential to act as important drivers of the development of the mobile-, and hence the mobile entertainment, value web and market as this is the very objective of these organizations. The question, however, is how much the MEF and OMA are able to accomplish. Many of our respondents have expressed doubts on the possibility of these trade organizations to take actions that fulfils their goals

"My feeling generally is that the tendency is that it will be talking shows"
Phil Terrett, Founder and CEO of The Third Stage, former CEO of Cybiko, 2003-01-21

Even if the industry representatives that have been interviewed in the scope of this study are underestimating the need for and the power of trade organizations and standard bodies, the fact that many of them express these types of views is most definitely a problem to these organizations. As such, this type of scepticism towards the usefulness and power of these organizations also seem likely to be able to turn into a self-fulfilling prophecy.

Some of our respondents have also primarily questioned whether MEF possess the ability to influence the development given their relatively small size and the fact that the most powerful actors, the mobile operators, have not yet been participating (with the exception of Telefónica Móviles España). The question might be justified. Even though the initiatives and objectives of MEF are promising, the accumulated size of

the participating companies could seem tiny in comparison with the size of the entire value web. However, MEF has only existed for a little over two years, in a still very immature and fluid value web, and seem likely to be able to expand and could in the future become more influential. Two indications of this are that during the last year MEF has shown a growth of 40% in industry membership, and in April 2003 two key actors within the mobile sphere, Vodafone and Siemens Mobile, became full members of the MEF consortium (*MEF membership adds Vodafone and Siemens*, Apr 25 2003, in MEF).

OMA on the other hand has been deemed by some of our respondents as very powerful due to their size and the fact that all major mobile operators are participating. However, OMA has also been stated by some of our interviewees as containing too many powerful actors with different agendas to be able to achieve any real results.

"They all say that they are going for standardizations but all of them are acting against standardization."
Yann Mondon, Head of Corporate Communications, In-Fusio, 2003-02-20

Our conclusion is that, despite that a small trade association such as the MEF has to struggle for more influence and a large standard bodies like OMA has some difficulties in creating a convergence of different actors' agendas, these organizations are drivers of the development of the mobile entertainment value web. Especially the MEF's importance seems likely to increase as it grows in strength and size and mobile entertainment revenues increase.

5.4 Mobile devices and networks

The innovations in mobile device and network technology are important aspects of market and industry development. Product innovation is as Porter (1980) states an important process that can widen the market and hence promote industry growth. In addition, innovation can enhance product differentiation but it may also bring problems related to for example rapid product introduction and challenges with marketing that need to be overcome.

Device capabilities and data transfer speeds sets the limits for what types of entertainment services that can be offered by the value web and also what services that will be considered to be compelling by the consumers. However, new devices and networks need to be adopted by the consumers before the improvements generate any real value for the ME value web. In this section the factors acting as barriers and drivers in relation to these issues are discussed.

5.4.1 Development of the mobile device

A key element in mobile entertainment is of course the mobile device. The device sets boundaries for what the end users can and cannot do and therefore also for what range of mobile entertainment services the value web is able to provide. Device improvements and the additions of new features have the opportunity to increase industry and market development. New or improved functionality can attract consumers to use new services and can make existing mobile entertainment services more appealing. There are for example a considerable interest regarding what new

gaming devices, such as Nokia's N-Gage, will do for the possibilities of providing new types of mobile games to the consumers, or in other words how these new devices will contribute to market and industry development.

"N-Gage could be thought of as an important driver. When Nokia made this initiative with the N-Gage, it drew the attention to the industry."
Rann Smorodinsky, MEF chairperson & VP and founder of Cash-U, 2003-02-18

In the book *i-mode Strategy* (2003), Takeshi Natsuno states that the decisive features for consumers choosing mobile devices have shifted from lightness and compactness to content visibility and ease of use because of the new non-voice device capabilities. Together with new functionality (e.g. cameras and music-players) and device performance, these four aspects of the mobile device is used to explain what is acting as barriers or drivers to market development.

5.4.1.1 Content visibility

Larger and colour capable screens, with higher pixel resolution means that mobile entertainment content to begin with becomes more compelling to the user. In other words, the consumer value of many mobile entertainment services will increase with the improvement of content visibility. It also lowers the barrier for what types of content that can be provided in a mobile format. For example, the success of MMS and many games depend on the penetration of mobile devices with improved content visibility. This development will therefore enable companies to deliver higher valued services to the consumers, and potential content providers will see increasing opportunities to provide their services in the way they believe is required. Content visibility will therefore act as a driver of market development.

The quest for developing improved screens for mobile devices will likely for a long time be a prioritized goal for manufacturers, although the current lack of standardization of screen sizes, pixel resolutions and colour palettes prevent companies within the value web from delivering standardized services to a wider range of consumers. Another issue arise from the fact that the better the screens become, the more processing power and battery life is required. Colour screens on today's PDA:s have a short stand-by battery life and hybrid PDA/Communicators have even shorter (*Communicators, Smartphones, And The Shape Of Things To Come*, Mar 10 2003, in InformationWeek). This means that a mobile device running different entertainment services and voice communication simultaneously will have a lifetime of only a couple of hours, making recharging necessary far too frequently, which is an obstruction for 'mobility'. Although a variety of research is currently being made on batteries and battery life (Dahlin, N., *Poröst kisel kan bli bränslecell för mobilen*, Feb 26 2003, in NyTeknik) and also lower screen energy consumption (Mason, J., *OLEDS get ready to light up the market for flexible screens*, Aug 29, 2002, in Small Times), this problem is currently constraining improvements in content visibility.

5.4.1.2 Ease of use

An important issue for consumer adoption of mobile entertainment services is the ease of use at both device and application levels. The importance of ease of use has created

a niche for companies like service infrastructure provider SmartTrust, which state ease of use to be a primary barrier to mass market entertainment services, as mobile consumers are confused with complex manual device configurations and service access (*Ease-of-use remains the primary barrier to mass market mobile data services*, May 21 2003, in 3G Newsroom.com). Yann Mondon states that:

> *"The more clicks you have, the more customers you loose"*
> Yann Mondon, Head of Corporate Communications, In-Fusio, 2003-02-20

This gives a clear picture of how consumers relate to mobile services and how ease of use settles the level of attractiveness within a certain service. This statement probably gives an explanation to the failure of WAP services in Europe as well.

SmartTrust further claims that the uptake of new entertainment services in several European regions will continue to be lower than expected, mainly due to the poor user experience, which most likely is a result of lack in service operability. Several service content and delivery channels already exist and are available for consumers, but the ease of use is not always there. (*Ease-of-use remains the primary barrier to mass market mobile data services*, May 21 2003, in 3G Newsroom.com). With mobile entertainment services competing against more mature content channels such as the Internet, ease of use is one of the most important elements that will play a conclusive role to service adoption. If a service is inconvenient and hard to access, mobile consumers will probably exploit it using other content channels if available.

To prevent issues regarding ease of use from blocking the consumer adoption of ME services, several improvements in hardware and software must be accomplished. Except for content, service access need to be optimized too, regarding speed and operability. If a mobile chat service is confusing to access and requires too many clicks to initialize, the user might go for the Internet chat instead. This means that European mobile service portals like for example Vodafone Live!, i-mode and Telia Go need simplified and easy-to-access configurations and services for consumers to start using them frequently. One way of doing this is for mobile operators and service providers to remotely install and configure their customers' phones, depending on type of service and device model, which allow them to access new services without having to interfere with any technical adjustments. Having done this, mobile entertainment might see some positive changes in growth, as a result of improved user experience.

In addition to using remote access configurations, handset configurations could be completed on location, when traded in retail by the manufacturer or the mobile operator. This would enable phone settings and initial network services to work from day one, allowing an improved user-friendliness that might result in an increased consumer adoption of ME services. An example of this was implemented in Sweden by TeliaSonera in June 2003. When consumers purchased a smartphone from Qtek using Microsoft's Windows Pocket PC Phone Edition operating system, all configurations were set at the retail store, including MMS, GPRS, e-mail and Telia Go (*TeliaSonera first to launch Windows Smartphone services in Sweden*, May 26 2003, TeliaSonera press release).

Another enabler to improved consumer accessibility of ME services is the creation of SIM browsers, an application that allows services to be presented as menu icons on the handset operating system. This type of application prevents the need for consumers to reconfigure their handsets or type in service short codes for different mobile services and is a constructive step to enhanced operability and facilitates ease of use.

Of great significance for user adoption of mobile services is also the actual design of user interfaces, phones and accessories. Complicated and counter intuitive user interfaces constrain the ease of service usage and might even discourage consumers from mobile entertainment. The need to access the right service version compatible with a particular device might also be perceived as a hassle for the consumer. In addition, the many different devices also give the consumers a hard time regarding device choice and usage. Examples are the design of N-Gage for mobile gaming, the keyboard of Nokia's 6800 for extended chat opportunities, the pen of SonyEricsson's P800 for enhanced writing and drawing capabilities, and also the touch screen of Motorola's A920 for increased and simplified interface manoeuvring. All these variations, regardless of how easy it is for the value web to limit, are factors that can confuse and discourage consumers as well.

5.4.1.3 New functionality

The new functionality that each new device brings opens up opportunities for new services to be created, hence giving the parties in the value web the possibilities of extending their value offering towards the consumers as a whole. With the construction of 3G wireless networks, more advanced technology accessories can be implemented inside the handset. This expansion to mobile technology has been studied since the beginning of 2.5G, when the phone ceased to be a device used for voice communication only.

When data services such as MMS were introduced in the 2.5G networks, mini-sized cameras capable of taking low quality images were released as an extension or a built-in module to the handset devices. Immediately, new services could be created or recreated, such as enhanced chats with picture messaging. The camera accessory opened up for new possibilities within mobile entertainment, as consumers could bring in not only text strings but also coloured images to their communication. Recently, several services using a mobile camera have been developed. In Sapio's Photostore (http://www.photostore.se, 2003-06-11), consumers use a web society to share mobile photo albums with friends and Siemens Mobile is doing research on games using augmented reality, where the camera recordings are used to create an environment surrounding the virtual game objects (*Cebit 2003*, Mar 12 2003, Siemens Mobile press release). With augmented reality, a virtual pointing device can be created by filming the users' movements of a real pen, as the phone camera recognizes any movement made by the pen and transmits this data to the colour display. This research done by Siemens Mobile and also Nokia could be used as an alternative navigation tool to several mobile entertainment services such as chat or games for example.

Entertainment services include not only visual content, but acoustic elements as well. The development of embedded music players on mobile devices, capable of playing

digital music files such as mp3's, is growing and several smartphones use this function. Recently shaped MVNO MTV offers hit list music, news and chat to their subscribers via SIM browser menus (*MTV to set up mobile phone network*, Jun 10 2003, in Cellular Online), a service that may completely replace current trends within ringtone downloading.

Another interesting element which has increasingly been added to mobile devices is Bluetooth, a short rage communication device that will open up for a group of new applications within ME and extend the role of using traditional mobile data services (*Bluetooth as a 3G Enabler*, 2002).

The mobile device has turned into a multimedia terminal in case of new functionality and appearance and can contain even more features than described above. Multifunction mobile phones are referred to as smartphones and can most often be seen as a complete multimedia centre capable of taking pictures, playing games and music and assist the users' personal administrative work. What smartphones implies for mobile entertainment is overwhelmingly significant, since it is capable of performing several sophisticated types of entertainment services in the same piece of device. New devices such as N-Gage offers an enhanced gaming experience because of its new functionalities such as superior graphics and interaction, its mobile network and Bluetooth gaming opportunities, and its handheld console-shaped design (http://www.n-gage.com, 2003-06-12).

What types of entertainment accessories that will become successful is yet to be decided by a mass market acceptance, but service providers and manufacturers are currently exploring this area and develop all kinds of different features that can be seen as fulfilments to mobile entertainment. For example, Nokia has been adding FM radio to some models for a couple of years (http://www.nokia.com, 2003-06-12), as a substitution to the interactive downloading services of ringtones and hit list music. If an FM receiver can be thought of as mobile entertainment or not can be discussed, but consumers might listen to radio instead of using mobile music services, which will affect the revenue for that kind of services. The same applies to video services within the new 3G networks. Video is seen as one of the greatest driver of 3G, where consumers not only will be able to communicate via video-calls, but use several entertainment services containing different types of streaming video, such as watching movie trailers or football highlights. Samsung is currently developing SCH-X820, a smartphone that will include a TV-tuner that uses signals from TV stations instead of downloading streamed video from wireless networks (*Samsung Electronics Releases Mobile Phone with Color TV Function*, Jun 9 2003, Samsung press release). This type of new functionality on a mobile device is a fierce competitor to all 3G and GPRS video services and might benefit only the device manufacturer and the local TV stations if consumers choose to watch regular TV only.

5.4.1.4 Device performance

The backbone to all ME services is built upon the performance of the mobile device, which needs to process data, graphics and sound at usable rates. Many new mobile phones are not capable of handling all the types of services available, such as playing music and video. Also, the graphics produced by these mass market phones still have some steps to go in their development before becoming real competitors to similar

entertainment devices such as the Game Boy Advance. As for the other above mentioned aspects of the devices, performance also plays an important role for what kind of services the value web is able to provide. Increased performance generates market development through the ability to provide new and improved services. Although not yet every mobile phone has the true capacity of running advanced games, mobile gaming on phones will soon become as good as similar handheld consoles. With the power of Nokia's N-Gage and the accelerated games on all new SonyEricsson devices, using the mophum platform engine that outputs enhanced graphics and sound, mobile gaming might be able to answer up to the consumers' wants and needs (Letham, G., *The N-Gage Global Launch... forget gaming, this is mobile gaming!*, Feb 6 2003, in Wireless Developer Network).

In addition to processing performance, memory capacity has become an important issue as entertainment services and features require a greater amount of storage capacity. More often, multimedia enabled phones include memory slots, making it possible for consumers to collect their photo albums or music tracks directly on the phone. Also, as mobile gaming and its services get improved, more memory will be used for downloading content such as new games, levels or add-ons.

5.4.2 Penetration of mobile devices

According to figures from the GSM Association, there were 787 million GSM subscribers across the globe at the end of 2002. During late 2003 or early 2004, it is forecasted that global GSM subscribers will exceed 1 billion (*GSM to pass one billion mark within the year*, Jan 16 2003, in Telkom Internet). The penetration of mobile devices in Europe is high and has increased significantly over the last years. According to statistics from the International Telecommunication Union, ITU (April, 2003), the average European mobile penetration rate per 100 inhabitants is just over 50, while most western European countries have around 75, with Iceland, Finland, Italy and Sweden peaking at around 90. Between 1995 and 2002 the compound annual growth rate (CAGR) of mobile subscribers has been a staggering 49.5% in average in Europe.

While a high penetration of GSM or 2G enabled devices is clearly an important condition that paves the way for consumers taking the next step into mobile data services, most forms of mobile entertainment call for more capable devices with the kind of features outlined in Section 5.4.1. It is difficult to say anything definite about whether it mainly is the availability of appealing mobile entertainment services that drives the consumer upgrade to new devices or if it is the upgrade to new devices that drives the use of mobile entertainment services. Consumers might for example, without any intent to use data services, buy a ME enabled device just because they enjoy the polyphonic ringtones and the colour screen. But one aspect is certain, once the consumer has a ME enabled device, she will be more susceptible to service promotions and generally be more apt to start consuming mobile entertainment. Therefore, the matter of penetration of and consumer upgrade to ME enabled devices is a crucial issue that will act as a driver for the market development as a whole.

Looking at the market in Southeast Asia, in just one year, the Korean mobile operators managed to get 25% of their total subscriber base to buy new 2.5G phones, in addition, more than half of those have chosen the even more expensive mobile

phones with colour screens. (*The 2.5G and 3G Wireless Market in South Korea*, Sep 4 2002, in 3G) This could indicate that the consumer upgrade of mobile devices does not necessarily have to take a long time. The consumer survey *MMS: An end user perspective* (2003) conducted by HPI research group suggests a significant demand for ME enabled devices worldwide. The European demand, in the survey represented by the UK, Germany and Finland, is said to be slightly lower than in the US, Singapore and Japan, but still on a high level. On average, more than 30% of the European consumers (aged 16-45) expressed that they definitely want to own a ME enabled device and an additional 30% states that they are "interested". Still, there is a difference between the desires to purchase an item and to actually conduct the purchase, and the situation in Europe appears to be different from the Korean. Even though new mobile phones are built with seemingly appealing new features such as large colour screens appropriate for gaming, taking photos and new entertainment services, the upgrade of these new devices amongst consumers appears to be slow. Our research points to three fundamental areas whose current situation constrain the consumer upgrade to ME enabled devices.

5.4.2.1 High device prices

MMS: An end user perspective (2003) states that the consumers' expectations about prices of devices (and services) being high has resulted in a reluctance to purchase ME enabled mobile devices. The report *MMS and SMS: Multimedia Strategies for Mobile Messaging* (2002) mentions the additional factor that the slower than expected upgrade also depends on the consumers waiting for their mobile operators' device subsidy agreements to expire.

The price of the device has been emphasized by many of our respondents as an important barrier.

> "*Before the real consumption starts, you have to lower the* [handset] *price to about €100 with prepaid cards.*"
>
> Johan Lenander, former CEO of Picofun and board member of Aspiro, 2003-02-20

Fredrik Berglund, Tele2 Sweden, addresses the need for cheap camera phones and states that €160 is a maximum price for a low-end multifunctional mobile phone (Karlberg, L.A., *Kameratelefonerna måste under 1.500 kronor*, Mar 3 2003, in NyTeknik). In May 2003, the cheapest colour screen mobile handsets equipped with a camera, MMS and GPRS (Nokia 3510i, Sony Ericsson T300, Panasonic GD67) are sold for €240-290 (http://se.pricerunner.com, 2003-05-10), which appears to be too expensive for targeted mass market users in the lower age classes. Nokia's dedicated gaming phone N-Gage that will be released in October 2003 is expected to have a retail price of $299 with a similar price in euros for the EU countries. (*NGage Pricing Announced*, May 13 2003, in Mobile Entertainment Analyst) The N-Gage has the opportunity to open up for a new range of mobile entertainment services, but when compared with the offline competitor GameBoy Advance SP, that is currently sold at around €125 in Europe (http://uk.pricerunner.com, 2003-05-19), the question arises if the price really will be perceived as attractive.

The report *How to make money on mobile services* (2002) from Strand Consult argues that a quite simple solution to the dilemma of expensive mobile devices would be an increase in the availability of low end, low cost colour mobile devices in Europe (*Low End Colour Wireless Phones Could Break Ice for the 2.5G and 3G*, Mar 7 2003, in 3G). Regarding 3G, 3 in UK seem to have recognized this problem as well. They are reportedly considering dropping their device prices further since consumers have failed to be won over by their high-speed services (*More cuts for 3*, May 16 2003, in 3G Newsroom.com).

The conclusion is that the actors in the value web need to give the consumers better economical incentives in order for the upgrade of new mobile devices to improve. As long as this situation does not improve, the pricing should be considered a barrier to the penetration of ME enabled devices. The pricing is especially important as long as the consumers do not feel convinced about the additional value in terms of services they will achieve by buying a more expensive mobile device.

5.4.2.2 Perceived benefits

According to Porter (1980), the consumers need to be convinced that the risks of purchasing a new product are rationally borne given the potential benefits. There are easily realized benefits with new mobile devices such as colour screens, polyphonic ringtones and smart user interfaces such as chat boards, but as it looks today, there seem to be scepticism about whether the value for the consumers really motivates the additional price that has to be paid. Regardless of whether there really are enough compelling content available today in order to achieve a sufficient consumer interest, several things point to the fact that the marketing of the benefits of buying a new device have not been successful enough. The study *MMS and SMS: Multimedia Strategies for Mobile Messaging* (2002) states that consumers lack the motivation for using MMS as a result of vague information from the mobile operator side. The Strand Consult report even claims that some mobile operators still do not have their 2.5G rollout strategy in place, which accounts for the lack of sensible marketing around the launch of new mobile phones and that the majority of the European mobile consumers still have no idea as to why they should want to upgrade to a ME enabled device (*Low End Colour Wireless Phones Could Break Ice for the 2.5G and 3G*, Mar 7 2003, in 3G). In addition, *MMS: An end user perspective* (2003) concludes that consumers express a concern about getting a ME enabled device before others. If the user for example is unable to send MMS to his friends or play the same games as they are, the perceived benefits are much lower. What this implies is that the amount of consumers owning a ME enabled device has not yet a reached the critical mass that is needed in order for the device upgrades to start growing in considerable numbers.

To conclude, several issues points to the fact that a large proportion of the consumers do not see enough benefits with upgrading to a ME enabled device. As a consequence there will be no motivation to pay a higher price or to spend time on getting accustomed to using a more advanced device. The actors within the ME value web has not managed to turn their offering into something that is considered as a 'must have', and as long as the consumers are not clear about the potential benefits, this barrier will constrain the market to develop further.

5.4.2.3 Behavioural aspects of the consumers

A barrier to the upgrade of ME enabled devices is what Porter (1980) calls the perceived likelihood of obsolescence. The rate of mobile device upgrade may be impeded by the fact that consumers perceive that coming handsets will significantly make currently available handsets obsolete. What is the reason to buy a 2.5G handset if the equivalent 3G devices are much 'cooler' and will have an affordable price within a year? The consumers might wait for the pace of technological progress and possibly also cost reductions of handsets to slow down before they make a purchase decision of buying a new ME enabled device. The same phenomenon has according to Porter (1980) been present for digital watches and electronic calculators. There is no study found on the actual importance of this barrier regarding mobile devices, but considering the fast pace of new device releases, it is likely to be an existing factor influencing consumers purchasing behaviour.

There is also another aspect coming from the rapid release of new mobile device functionality. As new device features are introduced, these devices may confront many consumers with a new user experience that requires time and patience to learn. So far, there is no sufficient mobile data culture established that would support an easy transition into consumers having ME enabled devices (*MMS and SMS: Multimedia Strategies for Mobile Messaging*, 2002). According to Porter (1980), significant product change may even nullify the consumers' experience. New devices have new user interfaces in terms of both operating systems and for example keypads and additional functionality may be perceived as confusing and demanding to learn. For the large part of the potential market that is not among the early adopters, this may have an impact on their purchasing behaviour. These consumers might choose to stick to the 'older' devices because they are deterred by the challenges they will have to face by buying a new device. According to several of our respondents this seems to be the case.

"A major barrier is the existence of large numbers of handsets that are not capable of handling newer forms of mobile entertainment"
Ralph Simon, founder of Yourmobile/Moviso, executive chairman Digital Express, Chairman of MEF Americas Group, 2003-02-19

Although limiting consumer choice does not seem like a viable strategy, the fact that this is seen as a problem indicate together with the other findings that many consumers do not currently see the step to using ME enabled devices as unproblematic, even if the financial costs and perceived benefits involved would improve.

5.4.3 Network development

With over twenty years since the start of 1G and the wireless mobile communication, the third generation multinational cellular network is starting to become established in Europe. 3G has already been launched in the UK, Italy, Sweden, Denmark and Austria by 3 and will be announced in several other European countries. During 2003 and 2004, more than thirty mobile operators have planned to commercially launch their 3G networks with UMTS services in Europe (*UMTS to Mobilize the Data World*, 2003). At the same time the 2.5G networks using GPRS have been established across Europe and are waiting for a mass market adoption of data services.

The driving force for market and industry development regarding networks are the possibilities of generating value by introducing new and improved multimedia- and entertainment services due to the packet based and higher speed data transfers that can be provided. These more capable networks enable great improvements for applications within areas such as location-based services, multimedia messaging, full-motion video, image transmission, gaming and music (*UMTS to Mobilize the Data World*, 2003). The deployment of 3G has the potential to become the most powerful driver regarding mobile entertainment services since it might be the technology that is able to answer up to the pressure of creating the next killer application that is seen as a 'must have' for consumers (*Mobile commerce set for boom for Next Generation Networks*, Oct 9 2001, in 3G Newsroom). However, the establishment of these networks is and has not been a rapid and straightforward process. The discussion below explains from a consumer perspective what factors that are acting as barriers to the important development of better networks.

5.4.4 Network coverage and usability

Although 3G was said to be launched over European regions in 2002, delays in building the networks and the 3G licensing issues previously described (Section 5.2.2) have prevented the objectives to be achieved in time. The effect is lower than expected 3G contributions to market development. A factor constraining the speed of the 3G deployment is the mobile operators' concern to ensure the consumers' usage experience of the networks is not endangered. Vodafone D2 and T-Mobile, who together have about 80% of the German market, now appear less certain regarding their stated 3G launch dates than they were earlier due to the need of resolving teething problems (*D2 and T-Mobile not sure on launch date*, May 29 2003, in 3G Newsroom.com).

It is not only the delays in expansion of the UMTS cellular networks to other countries and the 3G licensing costs that constrain the development of the mobile entertainment market. Although already launched in several countries, the coverage of UMTS in those countries is far from satisfying in the eyes of many consumers. UK mobile operator 3 claims that their 3G network has more than 80% of geographic coverage, but this is only true for voice and picture communication. Two of the most important features of 3G services, video calls and high-speed Internet, possess spectacularly smaller regions of coverage, with coverage mainly in the larger cities as shown in Figure 22.

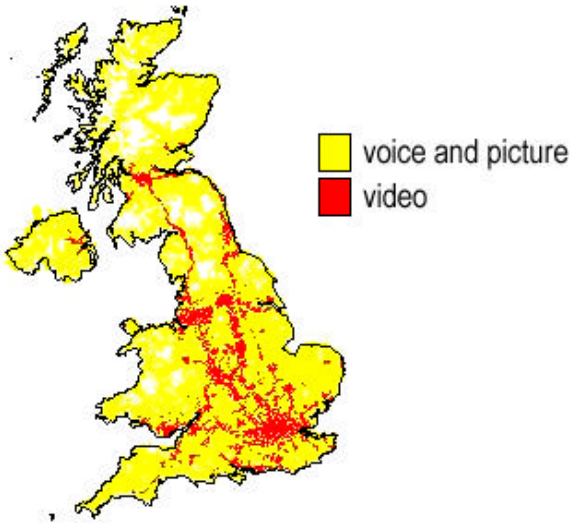

Figure 22: 3G coverage in UK for operator 3.
(http://www.three.co.uk/three/coverage/coverageChecker.do, 2003-04-24)

In Italy, where 3 also has launched their 3G networks, the coverage is nearly the same as in the UK, with 50% population coverage at the opening day and between 50-80% in Q1 of 2003, according to Canning Fok, managing director at Hutchison Whampoa (*Hutchison 3G on target for launch*, in Connectel). A solution to the delays in 3G coverage is a mobile operator agreement accepting roaming between UMTS and GSM networks. As 3 only operates within 3G, consumers in Italy can roam onto the GSM network of Telecom Italia Mobile SpA to keep voice communication (but not GPRS) accessible. (Blau, J., *H3G Italy announces new mobile broadband fees*, Nov 27 2002, in IDG.net).

3G has outstanding multimedia opportunities well-suited for various mobile entertainment services and the strong forces behind its development can be symbolized by Li Ka-shing's, executive director and chairman of Hutchison, plans to spend $16.7 billion on 3G in Europe by 2005 (Ngai, R., Leung, A., *Hutchison says 3G wireless will suffer call problems*, Jul 29 2002, Reuters.com). But considering the, on a pan European level, yet undeveloped and unused 3G networks, the GPRS networks' capabilities is the most critical aspect regarding what currently is driving or constraining the mobile entertainment market development. An important issue here is the upgrade of the GPRS network speeds.

Currently, different mobile operators provide very different data transfer speeds. A comparison between three of the main mobile operators in Sweden revealed that the speed in one mobile operator's network can be as low as half of other mobile operator's (*Telia bäst i Sverige*, May 28 2003, in mobil). Another barrier for the consumer use of the new network capabilities is the problems with MMS roaming agreements between mobile operators. MMS was introduced in Sweden in late 2002, but not until the 15th of April 2003, consumers using different mobile operators were capable of sending MMS messages to each other (Karlberg, L.A., *Nu är alla mms-näten i gång*, Apr 15 2003, in NyTeknik). During this period, when mobile operators also spent a lot on marketing the service, MMS messages were sent for free, but a mixture of slow handset upgrades together with the poor communication capabilities

resulted in weak curiosity and willingness to use it. Problems of this kind slow the important development towards a critical mass that in turn will fuel further market development. Juniper Research states that there is a need for mobile operators in Europe to speed up the implementation of cross-network MMS and roaming facilities in order to allow the market to reach the necessary critical mass of enabled users (*MMS Market & Technologies*, 2002).

To conclude, the launch of 3G in Europe is taking a longer time than initially estimated. Complications such as mobile operators regretting their 3G licenses, delays in launching the wireless networks to the public and spotty coverage in countries like UK and Italy, where 3G already is commenced, form constant threats against the glorified future of 3G. But the challenges of the development of 3G is in a short-term perspective not considered to be the most important source for barriers and drivers to market development. There has not even yet been any mass market adoption of the 2.5G data services and it is therefore their capacity and performance that will concern the large majority of consumers. GPRS enabled GSM networks also have an important role to play as the use of services such as MMS that they provide gradually increases consumers' understanding and interest about 3G. Here, there are still several important issues that need to be dealt with. Network speeds and cross network roaming need to improve in order for the value web as a whole to be able present a trustworthy and compelling offer towards the consumers.

5.5 Consumer learning and adoption of ME services

The consumers' increased learning about mobile entertainment services is an essential factor that enables the market to develop further. Through repeated purchasing, consumers will accumulate knowledge about the products, their use, and the characteristics of competing brands. This kind of learning usually leads to increased consumption and a demand for more sophisticated products and hence leads to market development (Porter, 1980). The progress and therefore influence of this driver depends on how important the consumers perceive mobile entertainment to be and how skilled and apt they are about using mobile devices and services. The youth segment can generally be considered to be more apt about the use than other consumer segments. This driver will therefore contribute to a faster industry development among the companies targeting this segment. As a consequence the youth segment and the services they use will act as a driver for the whole value web because of this segment's more sophisticated demand. However, this cycle of use, learning and new demand is today impeded at several stages, especially regarding the issue of getting the consumers to enter this cycle for the first time due to a lack of consumer interest. The different issues described in this section are considered to be the most important barriers to the consumer learning and adoption of mobile entertainment services.

On an actor-specific level, different actors have of course performed differently regarding these barriers as stated by Forrester analyst M. de Lussanet:

"At present, i-mode [in Europe] *gets the services right and the marketing wrong and is struggling to sign up new customers. However, the customers that do sign up rave about the service and translate their enthusiasm into revenues: 83 per cent of existing customers are satisfied with the service, and i-mode users spend on average € 7 more*

than other users. By contrast, Vodafone Live! puts a great message on top of weak services. While Vodafone Live! outsold i-mode five to one in countries where the two compete over Christmas, unsatisfied users of pure content services will abandon them when free trial periods run out."

Forrester analyst M. de Lussanet quoted in Leyden J, *Content is king for 3G. But what content?*, April 1 2003

Important to remark here is that these barriers do not fully explain why there have not been any sudden mass market adoption of mobile entertainment. Human behaviour does not change overnight and consumers suddenly do not start using a multiplicity of new services at once, especially not when it is about making people to start using entertainment in a completely new way, that is, through a mobile device. Although many market trends might argue that mobile entertainment is something that fit with the general trend of peoples' increasingly mobile lifestyles, this is important; the previous years of hype, over enthusiasm and also ignorance about what is required for people to start using mobile entertainment services seem to have come from this false belief of overnight behavioural change. If the mobile entertainment value web does not succeed in creating and marketing an offer that is seen as a 'must have' among a large proportion of the consumers, the adoption of mobile entertainment services will definitely be a very gradual process and the described barriers in this section should be seen through this perspective.

5.5.1 Consumer confusion

The mobile entertainment market development is likely beset by confusion among the consumers. According to Porter (1980), consumer confusion is derived from the presence of a multiplicity of product approaches, technological variations and conflicting claims and counterclaims by competitors. This phenomenon is symptomatic for amongst others a lack of standardization and general technical agreement by industry participants.

Regarding the mobile entertainment value web, it is easy to see that this is the case. To the consumers, there are a whole range of handsets with different functionality, technologies and competing platform standards. In addition, the large amount of mobile operators and the different portals make the consumer face a range of different pricing structures; for the devices, their usage costs and for the range of different billing models for the services they provide. The problems of unclear consumer billing has been described in Section 3.3.6.1. It is for example in certain cases difficult for consumers who want to download a Java game to actually know how much they are paying since there are both a download fee and a data transfer fee. The widespread promotional offers and subsidized devices across Europe blur the picture for consumers even more. It is also believed that many consumers, uninterested in technical terminology, have a difficult time judging whether for example €9 per megabyte of data transfer is a good or a bad deal. Such confusion can limit industry sales by raising the new buyers' perceived risk of spending money on new handsets and mobile entertainment services.

5.5.2 Ineffective marketing

The marketing task for the value web is about getting consumers to buy a new kind of product, which is ME enabled devices and their associated services. According to Porter (1980), the consumers need to be informed about the basic nature and functions of this product and be persuaded that it actually can perform these functions. Practically all of our respondents have emphasized that the marketing of mobile devices and services in general have been extremely focused on technology and that this has been a barrier to the development of the mobile entertainment market. Both the direct marketing through advertisement and indirect marketing through news reporting about what is happening within the ME value web, have often tended to focus on description of the technology. Instead of describing the various possibilities that the technology offers such as sending pictures, betting on soccer games and locating the nearest restaurant, the focus has been on technical terms and issues such as EMS, MMS, GPRS, WAP, JAVA and UMTS.

"My satellite TV provider does not tell me how clever their satellite TV network is…"
Brian Greasly, CEO Digital bridges, 2003-02-20

Even though a smaller market segment of technology enthusiasts might appreciate this in order to be able to wallow in technology and technological terms, most consumers seem likely to be more interested in what the technology can do for them. In the same way as consumers are more interested in how a microwave oven can help them cook food rather than being told about what Hertz the oven runs on, they want to be informed on what the mobile technology can offer them regarding entertainment, not technical specifications.

"…end-users are more interested in what they might be able to do with the new technology and new applications than in the technology in itself. Most users do not understand technical terms like GPRS and UMTS, but simply want to know what type of services they can access – in other words, how much fun they will have once they buy their telephones."
Katsumi Ihara, President SonyEricsson, (quoted in Ericsson's internal magazine Contact, no1, 2002.)

But why has there been so much focus on technology? As described previously in Section 3.3.3, mobile operators and device manufacturers are and have been very dominating in the ME value web. The organizations within these two industry sectors are per se focused on technology as this is where their core competence lie, and as such it seems like a reasonable explanation that it is the dominance of mobile operators and device manufacturers that are likely to have led to a technology focus in the interaction with the consumers.

"The biggest barrier by far is customer education. The carriers and the handset manufactures really need to educate the consumer far clearer and in more tangible ways to just what they can do in terms of mobile entertainment."
Ralph Simon, founder of Yourmobile/Moviso, executive chairman Digital Express, Chairman of MEF Americas Group, 2003-02-19

In a major industry survey, it is stressed that mobile operators must focus on helping handset distributors to educate users (*GPRS/UMTS in Europe is back on the road, but who has the map?*, Feb 26 2003, in Pressbox.co.uk). This would probably be one step in the right direction for increasing consumer learning. The question is, however, if the mobile operators are able to achieve this, given that their own marketing campaigns have yet failed to accomplish this. In addition, concerns should be raised whether the actors in the value web have approached the consumers in the right way considering all mobile services (data and voice) has been turned into a single offer. Takeshi Natsuno (*i-mode Strategy*, 2003) argues that when the new data transfer capability simply is a part of the basic mobile phone service or comes with an optional service, a large proportion of the subscribers will never use that service. Considering the Japanese success, this is another aspect that is able to raise the question about whether the European marketing approach has been appropriate. In Japan, i-mode is a special offer the consumers have to sign up and pay a certain premium for, which seems to have been a more suitable way to creating consumer interest and building a mobile data community.

5.5.3 Pricing of services

One important issue is of course whether the current overall pricing level of the services (premium downloads) and their use (data packet pricing) is either constraining or encouraging consumer adoption. Our research has not found any decisive arguments supporting one of the two cases and the mobile operators seem to be in a phase of currently testing different pricing levels. One study regarding voice charges states that here is no clear trend regarding the evolution of mobile phone charges across Europe, but competition seems limited (*Mobile Phone Survey*, 2003). Although mobile data is a different subject a correlation could exist. Further on, the study also states that there have been decreases in some EU member states but it is not the case across Europe at large.

Regarding specific cases, MMS messages and GPRS usage for example, is offered free of charge for introductory periods and 3 UK has recently made significant price cuts because of concerns about lack of consumer adoption (*3 UK announces two highly competitive pricing options*, Jun 6 2003, in 3G Newsroom.com). In addition, Vodafone Live! is actually considered to have under-priced several of their services, facing revenue problems as a consequence (Brydon, A., *New research shows Vodafone live! set to exceed conservative growth targets*, February 2003, in Sound Partners). However, as will be discussed in Section 6.1.3, some consumer segments are more price sensitive than others and this must be reflected in the market strategy of any company that seeks to supply European consumers with ME services.

To conclude, the pricing of mobile entertainment services is difficult to analyse on an aggregated level and may be fast changing. The mobile operators seem to be willing to adjust their pricing levels in order to encourage consumer adoption and the current pricing levels should therefore not be given too much attention as a significant barrier or driver other than for shorter periods of time. However, non-compelling services will always be perceived as too expensive, and this is seen as of more importance as a barrier to consumer adoption and use of services.

5.5.4 Lack of compelling content

In order for any significant consumer adoption of mobile entertainment to take place, the content provided to begin with need to be compelling enough in order to motivate the significant investment that a ME enabled mobile device withholds. Secondly, the content also needs to motivate the effort of getting into a new user experience and finally to be worth the cost of using the services. Otherwise the results will be low consumer interest, low use and an inability to achieve any profitable pricing levels for the services. Considering the slow adoption rate of GPRS use, a lot points to the fact that current content does not provide this motivation for the consumers. There seems to be an overall lack of compelling content (*The State of Mobile Entertainment*, 2002) and although the European i-mode relative to others has performed well regarding this, DoCoMo's president still actually attributes the slow adoption rate of consumers to the lack of compelling content (*Content is King*, Feb 25 2003, in Gonkulator.com).

There are a variety of conditions that is seen to have contributed to this problem. To begin with, the mobile operators' unfavourable revenue sharing deals are seen as constraining the service application providers' ability and motivation to spend the resources that is needed to develop the required amount of attractive content on their own. In addition they seem to have a lack of feedback about what the consumers really want.

> *"Information regarding the customer is currently being hidden to third-parties by the operators. Hence, third-parties don't know about their customers."*
> Phillipe Bornstein, Corporate VP Marketing & Development, Netsize, 2003-02-19

An increased establishment of digital rights management solutions would also contribute to the improvement of this situation as previously described in Section 5.3.3. Strand Consult's report *How to make money on mobile services* (2002) states that without a strong DRM system that has been implemented across all mobile operators, several types of content will not be offered by the content owners (*MMS Wireless Will Lack Real Content*, Apr 7 2003, in 3G).

Further on, Takeshi Natsuno sees the choice of using compact HTML instead of WAP as one of the winning strategies for i-mode since the use of this 'defacto' standard created low barriers to entry for content providers (*i-mode Strategy*, 2003). The use of WAP forces service providers to put in more work and resources when providing content through the mobile channel. This fact, although not of decisive importance, deserves to be mentioned as a factor that has contributed to the current situation.

Finally, the various device standards making existing entertainment services to run on specific phones only, is also a problem that forces content developers to create several versions of their service in order to reach all consumers. This is something they often choose not to do, a problem described in Section 5.1.4. The result is less content for the consumers. In addition, if the consumers are not able to share content and use the same services when having different mobile devices, the perceived benefits of using these services will decrease and it will take a longer time to reach a critical mass of users since they are divided up by devices and platform standards.

To conclude, there are signs that indicate a current lack of compelling mobile entertainment content. This fact partly explains the low consumer adoption and should be seen as an important barrier for market development. What would improve this situation are better financial incentives towards content providers, who also need to have better information about their end users. These users need to be reached through fewer device standards and stronger DRM solutions.

5.5.5 Perceived quality of services

The quality of mobile services is crucial to consumer adoption. With today's newly built networks, abundance of newly established firms, need for standards and technological uncertainty, there are several factors that act against the possibilities of creating a user experience that are perceived as having good quality. There have been no studies found regarding the actual or perceived quality of today's mobile entertainment services but it is still seen as an essential issue that could become an important barrier.

A lack of quality, even if initial or caused by only a few firms, can negatively affect the image of the entire industry (Porter, 1980). In addition, regarding the mobile entertainment value web, a lack in network performance can even affect the *quality* of the entire industry. Operator 3's rapid rollout in for example the UK has brought problems regarding quality. The use of their services is reported having connection failures, poor coverage, weak content, frequently dropped calls and slow transmissions (Courtney, M., *Hutchison 3G's pioneering 3 service is seeing some inevitable teething problems*, in IT-Week). Rival operator Orange has even accused Hutchinson owned 3 of *"giving 3G technology a bad name*" (Dixon, G. *Hutchison's mobiles give 3G technology a bad name*, Aug 3 2003, in Scotland on Sunday).

These kinds of problems, unless solved quickly, might become entrenched in the minds of the consumers in the same way as the technical difficulties with WAP during its first years of hype probably still are. The result is scepticism about the benefits of spending money on mobile entertainment services.

5.6 Services acting as drivers for the adoption of mobile entertainment

There are existing and upcoming services or service categories that are, or likely will be, driving the adoption of mobile entertainment. Some of these were described in Section 4.5 and will now be investigated from a driving perspective. The reasons why they act as drivers stem from the fact that their advantages are easily communicated and their content type is easily transformed into a compelling mobile format, therefore giving the consumers a first important introduction to aspects of mobile entertainment. Their effects on consumers are increased awareness, learning and a good user experience that eventually also leads to a generally increased and more sophisticated demand for mobile entertainment and more capable mobile devices. These driving services are not only mobile entertainment services, since all types of services that encourage the use of mobile data also generally in the end facilitate the adoption of mobile entertainment, especially at this early stage of market development.

5.6.1 Ringtones and logos

As described in Section 4.5.1, regarding mobile music, ringtones but also logos have been the primary content drivers until recently. Downloadable ringtones have contributed to significantly more awareness development and point-of-sale adoption than other mobile entertainment services. According to a survey among direct and indirect salespeople there is relative to ringtones a modest interest and adoption of digital imaging, downloadable games, and many other value-added services while ringtones were among the most asked-about and purchased value-added services at the point of sale (*Ringtones Rule Retail Point of Sale*, Apr 4 2003, in Mobile Entertainment Analyst). Through this service the consumers for the first time are introduced to the concept of downloading content and having graphics of their particular taste on their mobile devices. The success of ringtones and logos have to an important extent proven the initial potential for mobile content and enables service providers to extend their offering of new entertainment services. The large demand for ringtones and logos have also acted as an important incentive for device manufacturers to use better and larger mobile screens as well as more advanced ringtone functionality as competitive means. Thus, ringtones and logos have been and are an important driver that paves the way for further market development.

5.6.2 Games

Games have always been an important driver for the use of new technology and electronic entertainment. They played a crucial role for the consumer adoption of the home PC and have constantly been driving the development of new user interfaces and user experiences. Section 4.5.3 described mobile games as one of the upcoming revenue earners of significance.

"Although the mobile gaming market cannot yet be compared with the PC and console gaming market, the possibilities of playing advanced colour-graphic games both locally and networked, on your mobile phone, is driving the mobile market enormously"

World Mobile Gaming Markets, 2002

In addition to attracting and introducing consumers to more advanced forms of mobile entertainment services, the belief in the market potential of games is what encourages device manufacturers to spend considerable resources on pushing the boundaries for device capabilities and compelling user interfaces. Multi player gaming also push the boundaries for how the mobile networks may be used and opens up opportunities for innovation among companies developing enabling technologies and software.

5.6.3 Adult entertainment

The demand for adult related entertainment has driven consumer adoption and the development of technology for many media. According to the investigation made in Section 4.5.5, both market analysts and the adult entertainment industry themselves believe this will also be the case for mobile entertainment; the market might be about to take off and has the possibility of starting to deliver on high expectations for 2004. According to Charles Prast, chief executive of Private Media Group, adult entertainment will be the main driver of third generation mobile services demand. He also states that adult services usually account for a considerable amount of traffic in new technologies. That has been the case for video, the Internet and DVD and will

very likely be the case also for mobile entertainment. (Farrell, N., *Porn will be 3G's killer app*, Jan 21 2003, in vnunet.com) The ability of adult entertainment to provide value is very straight forward compared to many other mobile entertainment services and consumers are demonstrably willing to pay for it in many formats. Hence, it will act as a driver for the early market of mobile entertainment.

5.6.4 MMS

What has been one of the key drivers in European mobile data services since the launch of 2.5G and colour screen mobile handsets are the possibilities of sending Multimedia Messaging Service (MMS) messages.

> *"Mobile developers are pushing new technologies on the market. What they are pushing all over Europe is picture messaging. That's a driver."*
> Phillipe Bornstein, Corporate VP Marketing & Development, Netsize, 2003-02-19

MMS captures the advantage of the SMS revenue model and offers an enhanced and familiar service to the consumers. Instead of sending 160 characters with an SMS, MMS messages can also include animated images, photos and sounds. Building on the familiar SMS user experience, this easily communicated incremental improvement will introduce consumers to the advantages of ME enabled mobile devices. In addition, MMS provides a simple but powerful medium for content providers to reach consumers. Although MMS is not expected to reach the amount of SMS messages sent, its expected popularity seem likely to pave the way to new profits for wireless companies when the penetration of ME enabled devices.

5.6.5 Location-based entertainment services

As a result of the heavy development and competition taking place in the telecommunication industry today, mobile operators continuously try to find new ground-breaking solutions to create the killer application and increase profits. A solution is to deliver highly personalized services and one way of doing this is to base various mobile entertainment services on location. Unlike the previously described driving services the technology for relatively accurate geographic positioning does not seem to become very widespread in a near future. However, its powerful ability to merge mobile data communications with geographic positions is such a powerful combination for the emergence of new services that it deserves to be considered in relation the mobile entertainment market development.

To be able to use location-based services, a positioning system has to be available to the mobile device, such as the widely recognized Global Positioning System. The position can on the other hand be determined by using network based positioning, which uses a triangulation of the radio signal from the different cells that connects with the mobile phone. No additional hardware or accessories are needed to perform this task, but the positioning might not be too geographically precise, although 3G will be more accurate than 2G because of the higher number of network cells. (*Location-based Services*, 2002, in MobileIN.com) Other technology necessary for location-based services are Geographic Information Systems (GIS) for generating maps and terrain and a location management function to connect the mobile user position with the GIS data.

With these technologies available, highly personalized and high-valued location-based entertainment services on the 2.5G and 3G handsets could be created. These could very much be the core of the next killer application and drive the wireless market into new, unexplored areas of generating revenues. With LBS in mobile entertainment, chat- and dating applications and also portals could be segmented into regions of interest, where users could communicate with interesting people on a local level. Online multiplayer games would be extended if location-based information was added. For example, wireless users could find and play with gamers in the same regions as themselves, or companies could limit or specify a certain B2C entertainment service to specific cities or districts.

Important are also all kinds of infotainment services that could use wireless positioning. This means not only simple applications which for example send you an SMS with a recommendation of the best restaurants in the city you are in, but also more advanced services that tie infotainment and entertainment together. Examples are location-based chat boards, forums, quizzes etc, where you physically have to be at some specific place to either trigger a function in the application or to use the service. The potential of streaming movie trailers to your mobile handset when you get close to the cinemas or getting essential information when you stand in the queue to a nightclub are also examples of location-based entertainment suited for mobility. Payment methods and the economic control of entertainment services could also be used based on location. (Kauranne, T., *High Revenue Mobile Services Based on Location Messaging*, 2002, in Telecommunications Development Asia-Pacific). Mentioned as one of the most interesting drivers for the next generation of mobile entertainment, the possibilities for location-based services are many since the ability of offering entertainment services based on location opens up opportunities for a whole new range of ways to provide value to the consumer.

5.6.6 Mobile browsing

In Europe, mobile data services were introduced by WAP 1.0, a protocol that succeeded in generating quite widespread device deployment but failed in attracting consumers. The idea of trying to fit Internet applications and services through a circuit-switched environment with long connection times resulted in a poor consumer base.

By mid 2003 an increasing amount of mobile devices with larger colour screens are in the hands of consumers. This, together with the GPRS enabled networks and devices make WAP a much more compelling experience. In addition, WAP 2.0 is becoming increasingly wide spread, a protocol enabling for example coloured graphical user interfaces, new interface functionality and optimized data transfer. As mobile browsing is a benefit with advantages that are easily communicated to the consumers that are used to the Internet, it is regarded as a driving service. As such, it can drive handset sales and create an increased awareness of mobile data services in general, including entertainment services.

Instead of creating custom-made mobile services developed for certain portals or handsets, web browsers could be used to access the same content as being offered on the fixed Internet. A large proportion of Europeans are familiar with the benefits of using the World Wide Web relative to mobile content, and would understand the

value proposition of accessing some of that vast amount of content while mobile, if a quality user experience would be ensured. New browser technology developed for mobile devices have been introduced, such as the web browser Opera available for SonyEricsson's P800 and Nokia's Series 60 phones. Another important technology that drives the possibilities of wireless web access is IPv6, the next generation Internet Protocol that enables mobile data services by allowing a secure, always-on technology which provides a large address space for the potentially very large number of various kinds of mobile devices. (*IPv6 - The Next Generation Internet Protocol*, White Paper, Jun 17 1999, in California Software Labs)

There will most likely be two different ways of approaching Internet 'wherever you are' in addition to WAP, when mobile data services reach mass market. It could be done through a mobile operator controlled customer service such as Vodafone Live! or through using data services on a mobile handset to access the Internet wirelessly from a web browser, preferably using IPv6. A driving element for consumers would be the availability of accessing the huge amount of information and services the Internet already has to offer and the integration of fixed Internet onto mobile handsets, allowing the workspace to become mobile. When accessed on a mobile handset, Internet design issues result in various drawbacks. For example, services created for a home computer environment would not fit on a mobile screen, given their lower resolution. This is a problem that can be solved technically, but if services are created for the fixed Internet only, there will be a lack of services using the benefits of mobility, such as positioning to give an example.

Mobile browsing could also jeopardize profitability in mobile entertainment for service providers and mobile operators, because of the decreased possibilities in controlling the entertainment service consumption, thus they would pay the mobile operator for downloaded or uploaded data only. Nevertheless, wireless access to the World Wide Web constitutes a service consumers understand and therefore seems likely to be able to attract consumers.

5.7 Summary and conclusions of barriers and drivers

There are a range of factors that currently are acting as either barriers or drivers to the development of the mobile entertainment value web and market. These are summarized in Table 6.

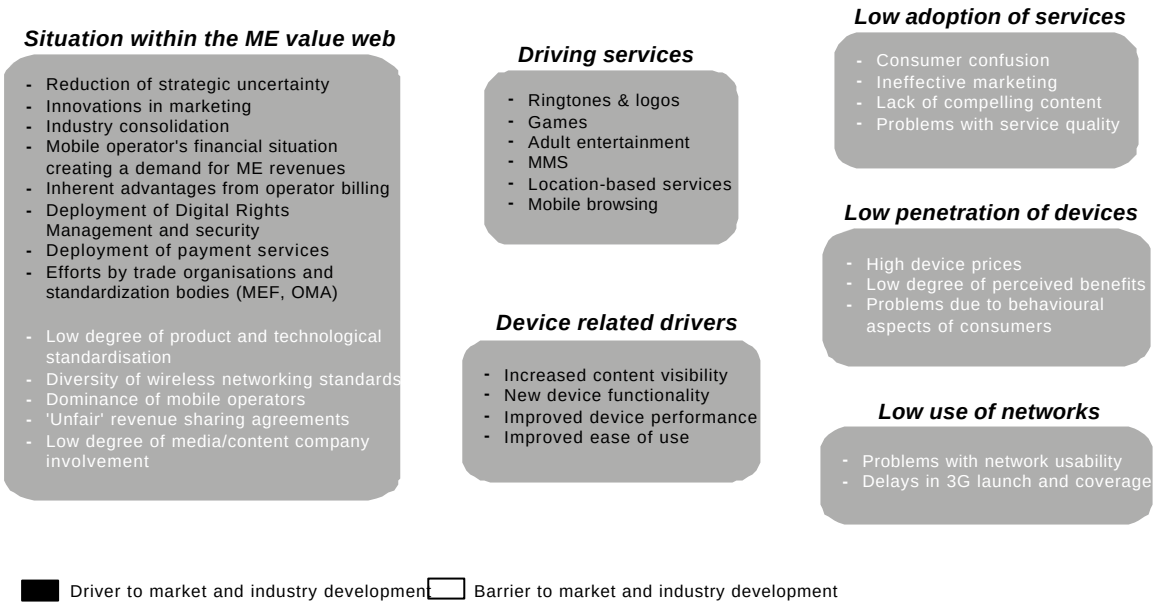

Table 6: Summary of drivers and barriers to market and industry development

Regarding the barriers, several of them stem from the fact that the ME value web still is immature and that the business of providing mobile entertainment services is new and relatively unexplored. Necessary actors, such as many global media companies, have not yet in a full scale entered the value web to contribute with their existing consumer relations and competence about how to compose and profile consumer services. At the same time, many actors are trying to establish their technologies as standards, which have created a low degree of product and technological standardization and a diversity of networking standards. This situation has resulted in problems for companies developing and providing the mobile entertainment services since the consumers have been divided into what is called a platform segmentation of the market. Further on, the existing networks' consumer usability needs to be improved and there are delays in the launch and coverage of the 3G networks. The mobile operators' dominant position in the value web is also considered to be a barrier because of their lacking knowledge about entertainment services and that they in addition are forcing 'unfair' and unconstructive revenue deals upon service- and content providers.

The reasons for the currently low adoption of mobile entertainment services are to a large extent explained by the above described situation in the value web. Most noticeably, mobile entertainment service providers do not receive the proper incentives and capabilities to develop high quality content. The mobile operators are taking on the unfamiliar role of marketing entertainment services, and together with their and the device manufacturers' focus on technology, this has resulted in vague information to the consumers about what mobile entertainment can accomplish. Therefore, consumer adoption has been impeded by the market development barriers of consumer confusion, ineffective marketing, a lack of compelling content and problems with service quality. These barriers have resulted in a situation where consumers do not see the benefits of buying mobile entertainment enabled devices. However, there are also barriers to the penetration of these devices due to high device prices and the existence of behavioural aspects of the consumers regarding the

reluctance of starting to use a new kind of device and their perceived likelihood of obsolescence resulting from the rapid device introduction.

In spite of the problems that exist with consumer adoption of mobile entertainment, there are important services that act or will act as drivers for the adoption of many other services. The driving potential these services possess stem from the fact that their advantages are easily communicated to the consumers and that their content type is easily transformed into a compelling mobile format. These services are ringtones and logos, games, adult entertainment, MMS, location-based services and mobile browsing.

Regarding the situation in the ME value web, the drivers are related to the forces that enable the value web to mature into a state where companies' increased capabilities are able to be exploited through proven and newly discovered mobile entertainment business strategies. The value web is currently in a process of vertical and horizontal integration, which will create more able companies. The process of strategic uncertainty reduction within the value web is also seen as an important driver that will spur competition and enable companies to adopt strategies that have proven to be successful. Innovations in marketing is another driving process that continuously will make significant contributions to market and industry development, since new channels for mobile entertainment can increase the consumers' willingness to use it.

Further on, when effectively deployed by the value web, payment services, device security and digital rights management solutions will create additional ways to generate revenues and ensure that both consumers and important content companies will trust the mobile channel as a successful medium. The mobile operators' need for a data transmission based compensation for declining voice ARPU and the need to achieve a return on their significant 3G license fees and network investments are also important factors that put the focus on and act as a driver of mobile entertainment. Efforts made by trade organizations and standardization bodies to reduce the problems with lack of standardization are a force that can play an important role for the improvement of technology development and the creation of a lesser platform segmentation of the market. Finally, improvements and innovations in device and network technology also drive development through their ability to improve and expand the value that the ME value web is able to offer the market. From the consumers' perspective, these technological improvements lie in the areas of increased content visibility and network speed, new device functionality, improved device performance and ease of use.

6. INDUSTRY AND MARKET DEVELOPMENT – A CONCLUDING DISCUSSION

Chapter 3 described the state and trends within the European mobile entertainment (ME) value web and Chapter 4 described the European ME market. Chapter 5 identified and described the barriers and drivers to industry and market development. Based upon the analysis and conclusions made, this chapter explicitly discusses how the mobile entertainment value web and market can be further developed.

One of the major challenges is considered to be how to make the European mass market embrace mobile entertainment. What do individual companies within the ME value web need to do and what industry wide areas for improvement exist? These two questions are answered in this chapter. The reasoning developed by Moore (2002) regarding high tech markets can here assist in taking this analysis a step further.

6.1 Crossing the chasm

As described in Section 2.2.3, Moore (2002) states that customers can be divided by their inclination to adopt new technologies. The innovators, or technologists, adopt a new technology first and the sceptics last, if at all. Between these groups there are gaps representing the difficulties associated with selling a high tech product to a new type of customer. The gaps exist because each group has different requirements and therefore only to a small extent reference each other. There is a particularly big gap between the early adopters (innovators and visionaries) and the pragmatists, which is called the chasm. In order to reach mass market this chasm needs to be crossed.

Section 4.6 concluded that the mobile entertainment market by mid 2003 has reached the stage of development indicated by the broken lines in Figure 23. Thus, the market is still in an early phase and the challenge to conquer the mass market lies in the future. This section investigates each group of adopters in relation to mobile entertainment. This is done in order to reveal the implications for how companies in the ME value web should approach the task of developing the market.

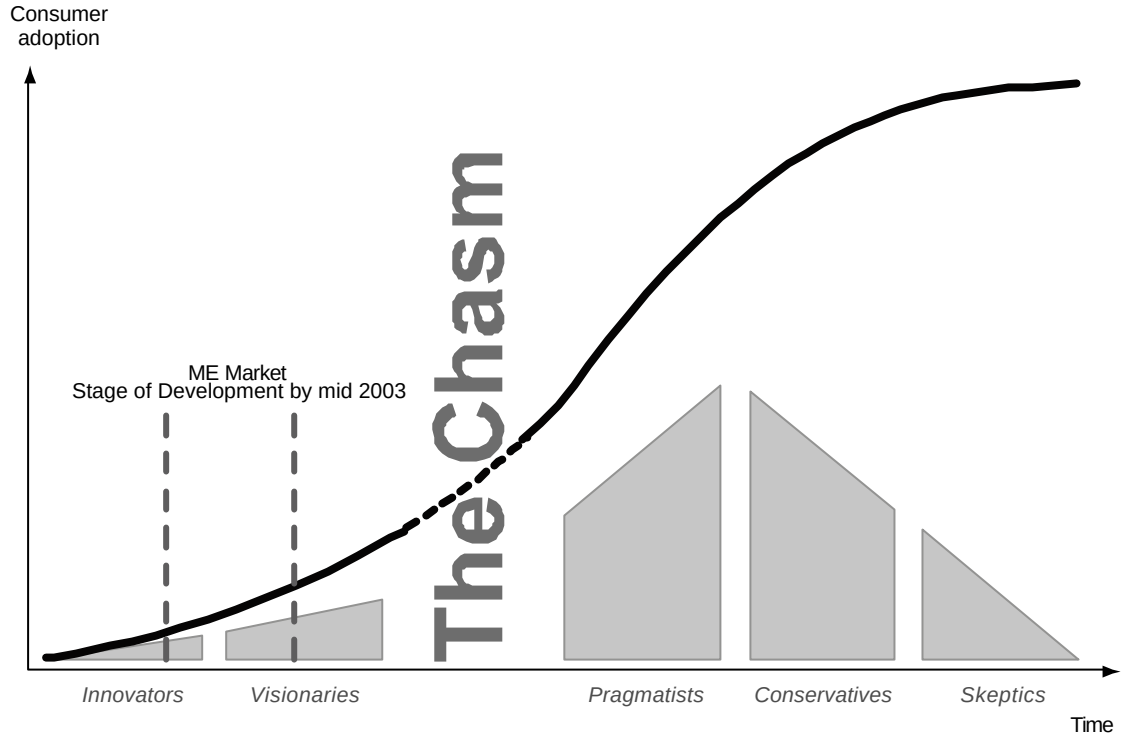

Figure 23: European ME market stage of development by mid 2003

6.1.1 The innovators

The innovators, or technologists as defined by Moore (2002), are in terms of mobile entertainment the very small group of consumers that first adopted mobile data and mobile entertainment. They are the group most clearly interested in the new technology around ME. To these people, technology is a central interest in their lives and they partly purchase simply for the pleasure of exploring the properties of a new technology. For example they might purchase and download a mobile game for its own sake without necessarily being passionate about that type of content.

The technologists should to a large extent be considered to have been won over to mobile entertainment; there is up to a 1% mobile data penetration among consumers, the technologists are very few and mobile entertainment is an important component of the mobile data market. Acquiring these minority consumers has obviously been one important, but nevertheless not a very difficult, step to take compared to the challenges that still lie ahead. Their acceptance of mobile entertainment has been a key achievement since their endorsement of a new technology reassures other potential consumers that the concept of mobile entertainment technically works. However, the factors behind this success are in no way a sufficient proof of concept for the visionaries nor the mass market, especially regarding entertainment content.

6.1.2 The visionaries

The visionaries, unlike the innovators, are usually no technologists. They are however early new technology adopters who easily can imagine, understand and appreciate the benefits of the services that stem from a new technology. A visionary interested in gambling will surely appreciate the current possibility to place bets on a football game with his or her mobile device in order to experience the thrill and convenience of gambling while comfortably seated at the live event. However, are the companies

acting on the European ME market currently fulfilling the needs of the visionaries? Not fully, appears to be the answer to this question. The reasons why are discussed below.

A first step to get the market to the brink of the chasm involves winning over the visionaries. Their use of mobile entertainment content will provide important experiences to the value web that enable the development towards an offer that is compelling to the mass market. These are also the consumers that supply the first noticeable and very welcome ME revenues. As stated above, this group has however not readily been penetrated. In addition to the low figures of mobile data usage presented, there are currently not all that many ME services that can be translated into something the visionaries feel can hold the promise of a breakthrough in their ability to consume entertainment services. According to Moore (2002), this kind of breakthrough feeling is needed in order for the visionaries to embrace the new product, in this case the concept of mobile entertainment.

As concluded in Section 5.5.4, a lack of compelling content prevails. Surely there are a few services that are able to entice some visionaries, such as new mobile games, the mobile gambling service mentioned in the previous section and the 3G possibilities to watch video sports clips. But many of these services have just recently entered the markets in only a few Western European countries. Therefore, their introduction cannot be interpreted as a readily penetration of the visionaries. As a consequence, the ongoing market development is not about the struggle to cross the chasm. Most services currently being offered and easily available on the ME market by mid 2003 do not constitute an attractive enough value proposition to the visionaries. The value proposition is still mainly comprised of rather simple games, background images and low-resolution adult entertainment pictures.

There are however many promising ME services that are stated to be on trials or under launch. Examples are O2's upcoming mobile music service as well as mobile 'scratchies' from Norskespill and Tivoli-no. Another interesting development to be introduced during fall 2003 is the dedicated mobile gaming devices N-Gage and b'ngo, which promise richer gaming experiences and multiplayer gaming. Such mobile entertainment should indeed be compelling to visionaries and could come to help the actors in the ME value web to conquer this part of the market. It is therefore of outmost importance that a continued development of services, that are compelling and innovative in the eyes of the visionaries, takes place ahead. If so, it seems likely that with continued product development and marketing, the majority of the visionaries could come to be won over to the ME market.

With many interesting, innovative and seemingly compelling services being launched during the second half of 2003, it seems highly possible that this could take place rather soon. A firm market grip of the visionaries could well be achieved by early 2004. It can, however, due to the fragmenting market factors discussed in Section 4.2, be expected to occur a different development in different countries where more developed markets such as UK and Italy will be in the forefront, while Eastern European countries seem likely to be lagging significantly behind.

With the first national ME markets possibly reaching the brink of the chasm by early 2004, the time is ripe for the major challenge of attracting the non-technological and non-visionary market of the pragmatists. It is by making these more pragmatic consumers into users of ME services that the ME market has the opportunity of crossing the chasm. This challenge and what measures that will have to be taken in order to overcome it are discussed in the subsequent section.

6.1.3 Crossing the chasm

According to Moore (2002), buyers of new technology and related services show a dependence on the experience of near peers. Therefore, innovators reference each other, as do visionaries and pragmatists and so on. Buyers in different groups can to a small extent reference each other, such as visionaries taking references from innovators to see that the product actually works. Regarding the visionaries and the pragmatists, however, the gap between the two groups is said to constitute a chasm. In other words, the pragmatist usually does not get excited or interested about mobile services for the same reasons as the visionary do. The pragmatists worry about stability, dependability and reliability; they want to use the technology if it provides clearly understood benefits but do not want to be victimized by breakdowns.

The pragmatists share some of the innovators' ability to relate to new technology since they are the part of the mass market that is most open to new technology, but they are driven by a stronger sense of practicality. As such, they recognize the fact that new technologies sometimes are nothing more than fashion crazes. Many of them do probably remember 'something called WAP', a technology that attracted a lot of attention but which they dismissed. The 'failure' of WAP a few years ago still likely shapes their attitude towards mobile data services. This attitude towards new technology leads them to attain a 'wait and see' approach before they buy in themselves. Are intensively marketed and bundled ME content offerings, from for example Vodafone Live!, yet another difficult to comprehend 'WAP-thing' to pragmatist mobile consumers? So far, most likely. The paragraphs below discuss the three main obstacles that constitute the chasm in the European ME market. These are discontinuity, service quality and price.

By contrast to visionaries, the pragmatists are looking to minimize the discontinuity with the old ways. They want an evolution of gradual improvements, not a revolution by major breakthroughs. This means they are more prone to adopt mobile entertainment if it acts as an extension and improvement to their existing entertainment consumption. This is the way for the ME value web to lure the pragmatists into mobile entertainment, not by telling how fantastic it is to be able to do completely new things through their mobiles. Well known brands will for these consumers play an important role as a bridge to mobile entertainment consumption. By extending an existing entertainment concept, such as Big Brother, to also include 'Big Brother mobile games' or 'latest developments' mobile video clips' for example, the development will be perceived as more gradual, especially since the mobile offering can appropriately be marketed in the TV media in relation to the show.

Furthermore, the pragmatists are not interested in debugging the product on behalf of the seller. They are expecting a properly functioning product from the start, and if it gives them troubles they will have much shorter patience compared to the early

adopters. This requires that ME services need to come with a good technical quality, reliability and ease of use. As concluded in Section 5.5.5, erratic service quality is one potential barrier that must be overcome. A pragmatic consumer for the first time trying outa ME service can surely refrain from consuming ME services in the future if she is subject to technical malfunctions. Interrupted downloads, software bugs, complicated user interfaces, billing errors etc must therefore be almost completely avoided if the pragmatists are to become ME consumers.

Last but not least, unlike visionaries, pragmatists display a price sensitivity that must be taken into consideration. Will a potential pragmatic ME consumer be willing to pay a €7 premium price, plus an additional €0.5 download cost for a relatively simple mobile game? Not likely. This is not to say the current pricing of services and data transfer is inadequate, but eventually when mainstream consumers are the primary target the price sensitivity of pragmatists must be reflected in the market strategy. The fact that the visionaries currently may be prepared to pay the prices for ME services should not be interpreted as a sign that pragmatists eventually will do this.

According to Moore (2002), it is not enough to know the requirements of the pragmatists in order to efficiently cross the chasm. It is equally important to narrowly define and carefully select a few groups among these customers. When this is done, they should then be targeted with an offering suiting those particular groups. Regarding mobile entertainment, the characteristics of the three most attractive mass market consumer segments to target were identified in Section 4.4. These were male and female teenagers and also younger male adults (20-39 years old). In order to successfully cross the chasm, these broadly defined segments, accordingly, need to be broken down further in order to know more specifically who to attract first. Here, the issues of culture and geographic location also become relevant. Section 4.2.4 concludes that a pan-European market strategy is not advisable. Instead, a national market strategy should be pursued in order to answer up to diverse requirements, preferences and in order to be able to target somewhat homogenous consumer segments. The important point is that an offering must be strong and specifically tailored to these more narrowly defined groups of people. Hence, it is less effective to bundle and market entertainment services that generally suit for example young European males. The bundle of services needs to suit a specific smaller group among these young males. That kind of approach might require patience when new revenue streams are eagerly awaited, but according to Moore (2002), it is worth the effort.

In Section 4.4.2, a number of characteristics of the people who might belong to these more narrowly defined groups were explored. They were labelled the social ME consumers, the pure ME consumers and the advanced mobile infotainment consumers. These people appear to be consuming many other forms of entertainment, are relatively interested in mobile technology and prepared to spend money on mobile services. Companies within the ME value web would likely benefit from further investigating these groups of people in order to classify them further and then produce and market tailored services upon those findings. Winning these people over to mobile entertainment would result in a secure foothold in the mass market, which then can be expanded in the same manner to other parts of the pragmatist consumer market group.

6.2 Challenges for the ME value web

When considering the value web as a whole, a few industry wide issues need to be solved. In the introduction to this document, it was stated that the mobile entertainment value web and market need to 'get off the ground' and that this seems to be justified and important, since many of today's stakeholders put the trust in mobile entertainment to generate the needed return on the considerable investments that have been made. Considering the current state of the ME value web and market and also the barriers and drivers that have been identified, the ways of how to move away from this situation comes down to three fundamental areas of improvement.

To begin with and as explored in the previous section, the companies within the value web simply have to do things right towards the consumers and learn from successes and mistakes. The consumers need to be communicated to in ways they can relate to in order to understand the benefits of purchasing and taking advantage of the more advanced and relatively expensive mobile devices. What is crucial is that this at the same time needs to be backed up by true value and a quality user experience that is able to motivate why the consumers should be spending money on buying these devices and have the energy to start the new behaviour of consuming mobile entertainment. Most consumers want to discover new things they can do that give them an incremental improvement, but they do not want to feel like a test bed for fledgling technologies at the same time. In addition, new ways of reaching the consumers, which have stronger connections to the consumers' existing entertainment consumption, still need to be explored.

Companies within the value web need to strive towards cooperation and the creation of a win-win environment for all industry sectors and also towards outside companies in order to tie them into the mobile entertainment business. It seems like the device manufacturers and mobile operators do not pay enough attention to ensure new technologies are rapidly and sufficiently capitalized. This part of the value web need to stimulate the initial establishment of a critical mass of consumers, which then will show the way for other important companies to further exploit the new technologies. This would create a better performing value web with increasing revenues, which is what is necessary in order to attract the large media/content companies to fully enter the value web and further spur the market growth. Mobile operators and device manufacturers therefore need to facilitate a flourishing content and service provider industry sector, especially since these companies ultimately are the ones the entire value web relies upon for the needed service revenues. In this, 'unfair' revenue sharing deals and various platform segmentation of the market should be considered as problematic. In addition, credibility should be given to standardization initiatives such as Symbian's Series 60 and trade associations and standardization bodies such as the MEF and OMA in order for them to be able to play a more important role.

Finally, the mobile entertainment value web needs to continue the innovation, development and deployment of new technology that can be exploited for the improvement and expansion of value for mobile entertainment. This could be the way to finally make the consumers interested, as long as this is done from a consumer perspective and not technology for its own sake. The future looks promising in this regard, with interesting new devices having additional functionality and improved

user interfaces and eventually, appealing 3G networks, security- and DRM solutions will support a trustworthy use for both consumers and content providers.

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8. ABBREVIATIONS USED

1G:	First Generation of Wireless Networks
2G:	Second Generation of Wireless Networks
2.5G:	2.5 Generation of Wireless Networks, with packed-based transmission
3G:	Third Generation of Wireless Networks
3GPP:	The 3rd Generation Partnership Project
3GPP2:	The 3rd Generation Partnership Project 2
ARPU:	Average Revenue Per User
API:	Application Programming Interface
AVI:	Audio Video Interleaved (Video format)
B2B:	Business-to-Business
B2C:	Business-to-Consumer
Bluetooth:	Open specification for seamless wireless short-range communications of data and voice between both mobile and stationary devices
BREW:	Binary Runtime Environment for Wireless (Mobile Platform execution environment)
BT:	Bluetooth
C2C:	Consumer-to-Consumer
CAGR:	Compound Annual Growth Rate
CDMA:	Code Division Multiple Access
cdmaOne:	Code Division Multiple Access One
CDMA2000:	Code Division Multiple Access 2000, 3G Technology
DRM:	Digital Rights Management
EC:	The European Commission
EDGE:	Enhanced Data rates for GSM Evolution
EMS:	Enhanced Messaging Service
EPOC:	Deprecated term. Refer to Symbian OS
ETSI:	European Telecommunications Standards Institute
FireWire:	IEEE 1394 Interface in laptops and other electronic devices
GBA:	Game Boy Advance
GDP:	Gross Domestic Product
GERAN:	GSM/EDGE Radio Access Network
GIS:	Geographic Information Systems
GPRS:	General Packet Radio Service
GPS:	Global Positioning System
GSM:	Global System for Mobile communication
HSCSD:	High Speed Circuit Switched Data
HSDPA:	High Speed Downlink Packet Access
HTML:	Hyper Text Markup Language
IETF:	Internet Engineering Task Force
IMEI:	International Mobile Equipment Identity
IP:	Internet Protocol
IPv4:	Internet Protocol version 4
IPv6:	Internet Protocol version 6
IMT-2000:	International Mobile Telecommunications 2000

ISP:	Internet Service Provider
ITU:	International Telecommunication Union
iPAQ:	PDA from Compaq
IT:	Information Technology
iTV:	Interactive Television
J2ME:	JAVA 2 Micro Edition. Object-oriented language and virtual machine for wireless handsets (execution environment)
JAVA:	Industry standard object-oriented language and virtual machine
LBS:	Location Based Services
LIF:	Location Interoperability Forum
Linux:	Operating system, Open source
ME:	Mobile Entertainment
MEF:	Mobile Entertainment Forum
MGIF:	Mobile Games Interoperability Forum
MMS:	Multimedia Messaging Service
MNC:	Multinational Corporation
MP3:	MPEG-1 Layer 3 (Digital audio format)
MPEG:	Moving Pictures Expert Group (video format)
MVNO:	Mobile Virtual Network Operator
NMT:	Nordic Mobile Telephony
OHG:	Operators Harmonization Group
OMA:	Open Mobile Alliance
OS:	Operating System
Palm:	PDA from Palm
PCMCIA:	Personal Computer Memory Card International Association
PDA:	Personal Digital Assistant (portable computer)
PEST:	Political, Economical, Sociocultural, Technological
PIN:	Personal Identity Number
Pocket PC:	Pocket Portable Computer
Series 60:	Symbian platform standardization
SIM:	Subscriber Identity Module
SMS:	Short Messaging Service
Symbian OS:	Symbian Mobile Operating System
TDMA:	Time Division Multiple Access
UI:	User Interface
UMTS:	Universal Mobile Telecommunications System, 3G technology
WAP:	Wireless Application Protocol
WASP:	Wireless Application Service Providers
WCDMA:	Wideband Code Division Multiple Access
WLAN:	Wireless Local Area Network
WWW:	World Wide Web
XHTML:	Extensible Hyper Text Markup Language

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10. APPENDIX 1: CASE STUDY OF TWO ME VALUE CHAINS

In order to increase the understanding of the value-creation taking place in the mobile entertainment value web, to investigate what business and revenue models that are being used and to give a real world example of how the process of delivering mobile entertainment content to the consumer really could look like, a case study has been made in which two value chains on the ME market have been studied.

The value chains selected for this case study, from the vast number of value chains and value networks that constitute the European mobile entertainment value web, are those of the mobile game "Who wants to be a millionaire?" and that of Private Media Groups premium SMS chat-service "Private Stars". This case study does not contain any information on actual costs in various parts of the value chain, and some of the revenue figures are estimates, as most of the companies interviewed in this case study stated that this information was classified. Nevertheless, an understanding of the value creation and revenue distribution has been obtained from the empirical data acquired. The description and analysis of business models used within the value chains are based upon the theoretical model established in Section 2.1.3.

10.1 Private Stars

Adult content has been very successful on the Internet. According to Research Company Jupiter (2002), adult sites are the only type of online business that generates significant income from paid content. Out of a total of €252 million spent on Internet content by Western Europeans in 2001, 70% was spent on adult content. Given this fact, it is easy to see why adult content providers are interested in exploring mobile entertainment opportunities.

At the end of 2002, Barcelona-based and NASDAQ listed company Private Media Group launched an SMS-based mobile service in the UK called Private Stars, which enabled consumers to receive personalized adult themed text messages allegedly from Private's most popular erotic stars. The service offers sixteen stars to choose from, announced in their internal magazines, film and TV as well as promoted on their online portal privatestars.com and in several external mass media magazines. To access the service, the consumer sends a text message containing the name of the Private star to a specific number to receive four messages containing erotic chat lines and a unique code to access their online portal, where high quality pictures, SMS content and videos of the featured stars are offered. This access code is valid during a period of six logins and for further access to their online portal, the consumers need to use Private Stars again to get a new access code. The mobile service offers reverse-billed micro-payments via premium SMS to charge their customers £1.50 for each SMS, a total of £6.00 for the whole service.

Interviews have been made with the following persons in order to understand the companies' position and their business models in the Private Stars value chain:

- David Jarvis, Director of Wireless, Private Media Group
- Katie Hollier, Product marketing, Wireless Information Network (WIN)

- Christian Friden, Business Developer, Minick

10.1.1 Overview of the value chain

The value chain of Private Stars is shown in the Figure 24, where inbound text messages from consumers are delivered via local mobile operators to the SMS gateway maintained by the service infrastructure providers, who store relevant information regarding the service and the user. The content management- and marketing platform handles the specific service content and returns the information back to the SMS gateway, where four premium text messages are sent at £1.50 each from the mobile operator to the consumer using a reverse-billed micro-payment that ends up on the consumers mobile phone invoice.

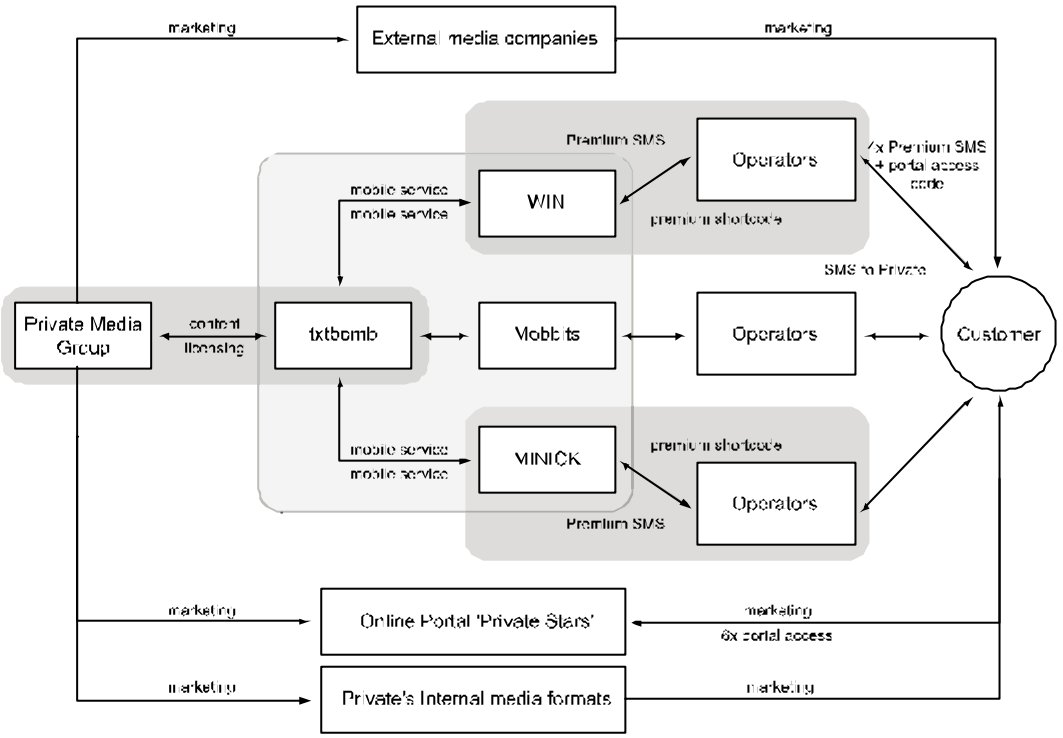

Figure 24: The Private Stars value chain

Following the value chain of Private Stars, Private Media Group as a content provider supplies the chain with a product idea and product content such as pictures and text. This branded content is totally owned by the creators, in this case Private Media Group. Nevertheless, as Private has no infrastructure and competence regarding how to make this branded service mobilized, they need a mobile platform to deliver their service on, a service infrastructure provider to sort out the interactions of the consumers and the service content, and a mobile network to deliver the service.

To mobilize the content and to be able to deliver a mobile service, Private has a partnership with a UK service application provider called Txtbomb, by licensing their intelligent SMS content management and marketing platform called TxtTag, a system which integrates with a local SMS gateway shortcode, activates relevant inbound keywords contained within a message and assigns integrated and complex return path SMS content formats containing the requested content and maintaining user state back

to the consumer via the mobile operators. As Txtbomb only offers a mobile content system for Private's services, they need to sign an agreement with a service infrastructure provider in each territory, who already has interoperating relationships with several (virtual) mobile operators, to deliver premium text messages via shared SMS gateways. Currently, Mobbits (www.mobbits.com, 2003-07-31) with WIN (www.winplc.com, 2003-07-31) and MINICK (www.minick.net, 2003-07-31) are the service infrastructure providers working together with Txtbomb to deliver Private's mobile SMS service. However, the revenues of this value chain are shared between the mobile operators, Private and the service infrastructure providers only, as TxtTag is a licensed software platform with fixed fees paid monthly by the infrastructure providers. The relations between the industry sectors involved in Private Stars are shown in Figure 25, illustrating how the value chain can be adapted to the value web model.

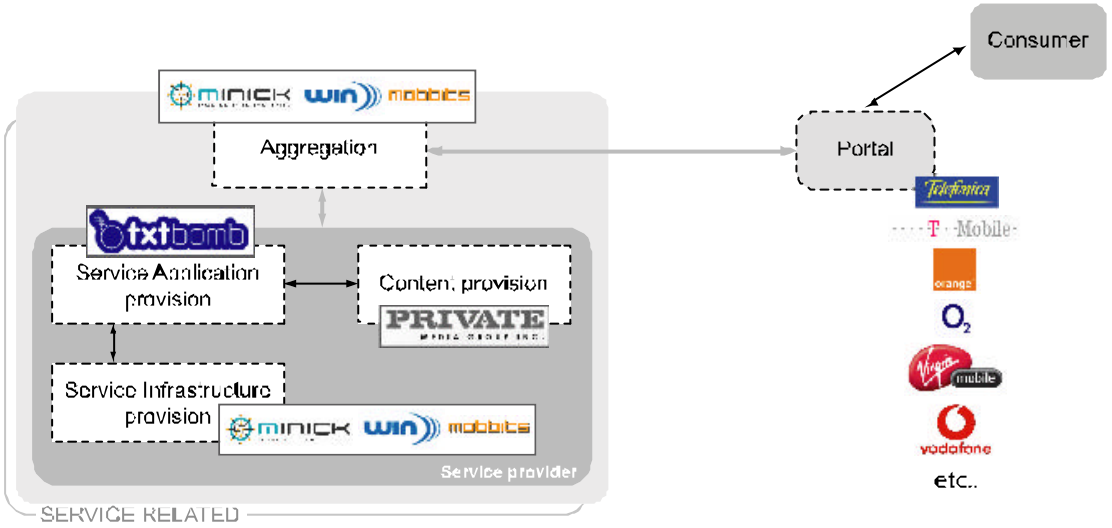

Figure 25: The Private Stars value chain adapted to the value web

According to Private Media Group, Private Stars is now available in Spain, Netherlands, Germany and the UK, where the service initially was launched, and soon in the United States. Private has no direct connection to the mobile operator, but the service infrastructure providers WIN, MINICK and Mobbits work as intermediaries between Private and the market by having partnerships with operators all over Europe, such as Vodafone, T-Mobile, Virgin Mobile, Orange, O2 and Telefonica (http://www.minick.net/operators.html, http://www.winplc.com, 2003-02-27, Katie Hollier (WIN), 2003-02-19).

10.1.2 Economic control

From the interviews undertaken with the representative of Private Media Group, it can be seen that media companies like Private, that are craving to get into the mobile industry by offering their multimedia services through mobile devices, rapidly want to gain more control of the service value chain by creating stronger relationships to the marketing companies by offering favourable revenue sharing models. They are also playing to the mobile operators by allowing them to run the service, pay for the marketing, and to use revenue models proposed by the media company (such as in this case Private), which means that mobile operators get more control over the whole

service scenario, and earn a larger profit since the revenue sharing becomes more strict in comparison with having several mobile service providers in the value chain. On the other hand, looking into current mobile entertainment services in several European countries, it can clearly be seen that companies in the value chain, except the mobile operators, are unsatisfied regarding the revenue sharing, which indicates that they already are running mobile services using far too advantageous sharing models.

One possibility to expand in the value chain, for a content provider in the mobile entertainment industry like Private Media Group, is to take service infrastructure and content technology in-house, adding aggregation, mobile technology and creativity to the company. The question is if it becomes profitable to build up content platforms and to run network gateways in-house instead of licensing required applications and mobile infrastructure technology? For Private to bring mobility in-house, the ME services have to be as profitable as similar Private services have been on the Internet and on DVD. From the interviews with Private, they truly believe in mobile services for their kind of content, now when hardware make large screen colour displays and fast transmissions possible, although the mobile entertainment is a relatively new and unexplored area for them.

Studying the value chain from a service infrastructure provider's perspective, according to WIN and MINICK, it is very important for them to have a close partnership with both the content provider and the service application provider, to prevent mobile operators from controlling the service regarding revenue sharing and content structures, and content providers from developing mobile services in-house. While this was stated during the interview of Katie Hollier at WIN (2003-02-19) it must be added that neither WIN nor Private declared a direct relationship to each other, meaning that Txtbomb in this case worked as a facilitator between them.

Another benefit service providers obtain from having close relationships with big media companies and non-mobile related content providers is that they earn a great deal of revenues by using or selling external, well-known brands, which sometimes is the main cause for the success of an entertainment service. As the service provider rarely has the responsibility for public relations and marketing of a certain mobile entertainment service, they have to rely on the portal or the retail sector, in most cases occupied by traditional mobile operators, content providers and marketing companies, on making a profitable business. The worst case scenario for a service provider is if the content providers and large media companies like Private start expanding their business by becoming more experienced in how to mobilize branded content and by signing direct deals with mobile operators, which will leave service infrastructure- and application supplying companies out of the value chain. According to WIN, a direct relationship between content providers and mobile operators is not advisable, as the latter probably will decrease innovation and stop creativity, as their core competence lies far away from mobile entertainment. In such partnerships, the content provider would fall in a much weaker position, as mobile operators then easily could constrict revenue sharing models, as the value chain becomes far less complex.

10.1.3 Strategic Networks

Companies involved in the value chain of Private Stars are not included in any sort of strategic networks influencing the direct value creation regarding this particular service. However, Private Media Group has several types of agreements with media companies involved in TV, magazines and film, regarding marketing of their products and services, which indirectly affects generated revenue streams. With Private having strategic partnerships with several important media companies, the marketing of Private's services such as Private Stars would primarily and preferably become purely a part of mobile service revenue sharing (David Jarvis, *Director of Wireless, Private Media Group*, 2003-02-19).

It seems like a reasonable assumption to make that the value chain of Private Stars still is so immature that there simply has not yet been any time for the companies involved in the value creation process to form any strategic networks.

WIN emphasize the importance of companies working closely together to form a stronger relationship towards the dominant parties, such as the mobile operator in this case. However, as the companies within the value chain seem to have little awareness of the other actors, such as the content provider, no strategic network exists.

10.1.4 Revenue models

From a consumer perspective, the text message activating the service is sent free of charge via the local operator, although a micro-payment arise when the service sends feedback to the consumer. This fee gets registered by the mobile operator using a reverse-billing model and is added to the consumer's telephone bill, which normally has to be paid monthly or quarterly. Each time this service is accessed, the mobile operator collects £6.00 and keeps around 30-40% of this due to revenue sharing models in cooperation with the service provider, in this case the service infrastructure provider who gets a share which is about 10%, according to WIN. Private and Txtbomb collects about 60% of the total revenues according to Private, although additional sharing for licensing and marketing costs might have to be included, decreasing this amount further more. Understanding the accurate shares of revenue between the companies involved in delivering Private Stars is difficult for an outsider, as unclear percentage of shares and closed business agreements apparently made the interviewees hold back vital information.

10.2 Who Wants to be a Millionaire?

The mobile game "Who Wants to be a Millionaire?" (WWTBAM) is based on the television show with the same name, a show that is aired in over ninety countries with close to one billion viewers. (http://www.springtoys.com/products/games/millionaire, 2003-02-26) As in the television show, the player has to answer fifteen general questions with four possible answers. By choosing the right answer the player progresses up to the next money level until reaching one million in virtual points, a score which is used to pick winners each week. To use the service, the consumer sends an SMS using a short code to a number held by the service provider. The service offers over two thousand specially written questions, which are sent over SMS, MMS, WAP, i-mode or J2ME. When the player decides to answer each

question, a fee of 12-20p is charged, depending on the agreement between the mobile operator and the service aggregator.

To gather data and information about this case study, interviews have been done with the following persons in order to understand the position of the companies in the WWTBAM value chain and their business models:

- Bruce Vandenberg, Head of Interactive Media, Celador International
- Nonna Lamponen, Sales Director, Codetoys
- Anonymous, Head of Content**,** major European Operator (anonymity requested).

10.2.1 Overview of the value chain

The global rights to the show are owned by the independent UK production company Celador International and are licensed in over one hundred countries with over 130 consumer products (http://www.celador.co.uk/international.html, 2003-02-26). The licensee and content provider of the mobile game version WWTBAM is the Finnish company Codetoys, who except from delivering the content and the technical integration also provide technical solution support to run the game, hence acting as a full service provider in the value web. (*Motorola Announces Investment in Codeonline,* Motorola press release, Feb 19 2002)

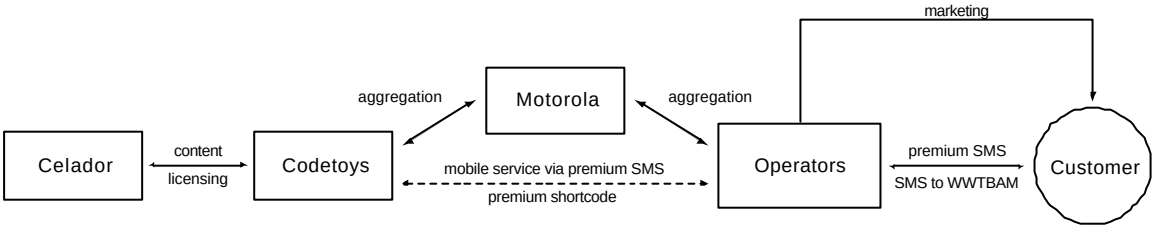

Figure 26: Value chain for the mobile game "Who Wants to be a Millionaire?"

The mobile version of WWTBAM, whose value chain is illustrated in Figure 26, was launched in the Republic of Ireland in February 2001. In a press release by Mobileway, Valérie Schenowitz, Celador International's Commercial and Marketing Manager for Wireless states that

"since its launch in the Republic of Ireland two years ago the wireless version of 'Who Wants To Be A Millionaire?' has grown to be the most widely played mobile game on the planet and is currently deployed to 250 million subscribers across thirty-five operators in twenty-five countries"

(*Celador international, mobileway & MIG further increase your chances of becoming a millionaire,* Feb 25 2003, in mobileway.com).

When the game was released in February 2001, Codetoys formed a strategic partnership with Motorola, who aggregates and distributes the game in several European countries, by establishing a relationship with a number of various portal related industry sectors, including companies like Orange, Vodafone, Virgin mobile

and Telstra. With Motorola working as an aggregator, collecting many different mobile services from service application- and content providers, they are able to offer the portals a wide range of products. As Motorola also develops mobile devices, they have the possibility of controlling what type of mobile entertainment services the consumer gets on the devices at time of purchase, and also where and to whom these will be released. A service application provider who works closely with a content provider to produce only a couple of mobile services might not be of any interest to the portals offering the products to the market.

Motorola's strategy within this value chain is to bring well-known brands, such as WWTBAM, to the mobile device, to be able to create new mobile games and brands together with service application providers. This results in aggregated content being provided to mobile operators and portals, which brings value-added mobile services to the market.

The role of the portal in the value web is to ensure the delivery of the game. In this case the portals are managed by mobile operators and the games are delivered over their wireless networks to their subscribers.

How the value chain of WWTBAM is applied to the value web model is shown in Figure 27,

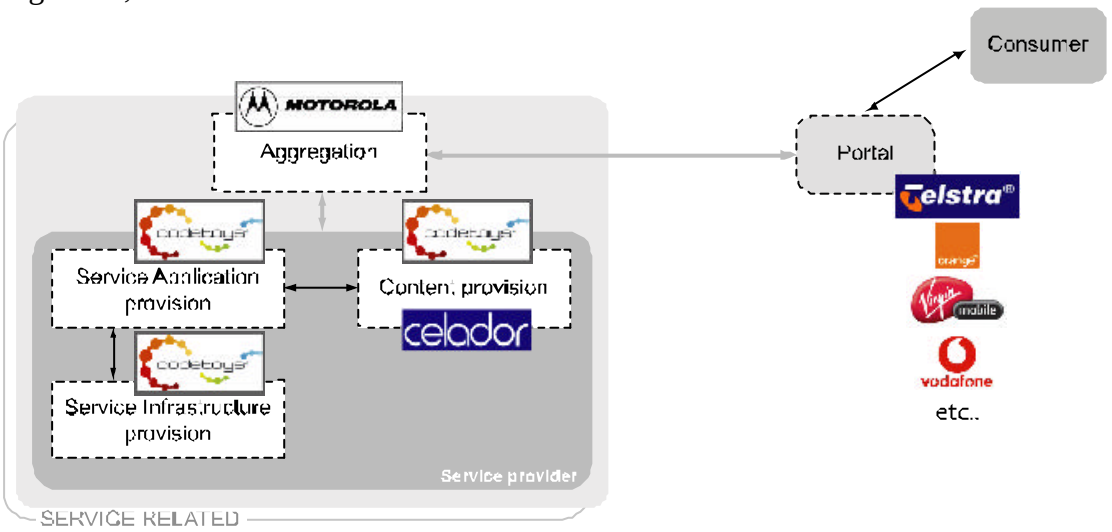

Figure 27: Value chain for "Who Wants to be a Millionaire?" adapted to the ME value web

10.2.2 Economic control

Celador International operates as a separate profit centre specifically focused on interactivity. Bruce Vandenberg believes that competitors, if not already horizontally integrated, have plans to do so, although this is not an alternative for Celador, as they are small enough to continue having clear lines of communication between units.

According to sales director Nonna Lamponen, Codetoys are looking into the possibilities of horizontally integrating the company as this can result in different revenue potentials. They are especially looking for certain industry sectors and markets relevant for their own products and capabilities and as Codetoys already

cover most parts of the value web in the service related block, they do not have any plans for upstream or downstream expansion. The company wants to maintain as much as possible of its standard as a full service provider, but consider outsourcing certain activities when it makes economical sense. If specific skills are needed, it can be quite expensive to keep the activity in-house.

10.2.3 Strategic networks

According to Bruce Vandenberg, Celador is a part of a strategic network and most of their products utilize the assets of a number of companies and they recognize the value brought to the table by each through revenue share deals. They operate on too many different platforms to work closely with and to be heavily dependent on one single hub firm.

Codetoys are involved in strategic networks such as close co-operation with Celador and revenue sharing deals with their partners in the WWTBAM value chain. A revenue sharing model is used in operator business on SMS and likewise with their partners. Celador, who is the rights holder of WWTBAM, has very tight brand control regarding the usage of their services, which involves a need for strong relationships within the service providers and between the aggregator but also with their customers. In general, for any branded product, the hub is always the company that own the brand and this is primarily because they are in total control as to what can or cannot be done with the particular property.

The mobile operator involves strategic networks in order to deliver their products to the market. They strive towards collaboration through the directory model, where companies plug into the directory by running and hosting their own services and producing the user interface to the mobile operators' specification. The appearance to the consumer is seamless although they may have fifty partners working together.

Celador appears to be the hub firm for the first stages in value creation process but interestingly, they do not seem to recognize themselves in this position. At the end of the value chain, the mobile operator acts as the hub firm through their directory model, acting on the portal industry sector towards to market.

10.2.4 Revenue models

In order to get revenue streams from delivered services and products, Celador use license deals containing revenue shares as their main agreement structure. In the majority of cases they require minimum guarantees against their forecast revenue share. The main advantages they see with this revenue model are the simplicity of creating a win-win situation and to accurately value the cost benefit of working with various partners. The model is also relatively transparent and therefore helps stabilize the relationship as all parties have incentives to make it a success. The disadvantage with this model is the uncertainty for revenues to be guaranteed to progress, meaning forecasting can be complicated. To overcome this, Celador always try to use a hybrid revenue model to ensure guaranteed revenues from various business activities whilst making certain not to become victims of their own success by participating in a revenue share of the back as well.

Codetoys also uses revenue sharing models and according to Nonna Lamponen, the main advantage with this model is that you share the risk as well as the success, which bring the companies closer together. The disadvantage is that revenues are not always shared in a fair way, as the companies doing most parts do not always get enough revenue shares.

The mobile operators use a revenue sharing model based on what the consumer pays. According to them, the advantage is that they do not incur any technical development costs nor do they take risks. If the content does not sell they do not pay. If it does, then the partner gets, according to the interviewed mobile operator, a generous share.

11. APPENDIX 2: INTERVIEW GUIDE

1. What is your full name and job-title?

2. Can we use your and/or your companies name in our report or do you/your company want to be anonymous?

3. What do you consider to be the main difference between m-commerce business models and e-commerce business models? (what is the main difference in the business logics of m-commerce and e-commerce)

4. Are venture capitalists in general sceptical towards startup companies within ME? How does this effect the industry development?

5. Do you believe we will see companies moving upstream or downstream in the mobile entertainment value chain? What industry sectors are likely to be more powerful in the future?

6. What do you consider to be the drivers that drive the development of the European ME industry?

7. What do you consider to be the barriers hindering the development of the European ME industry?

8. Many industry representatives we have talked to have deemed mobile operators as conservative and 'greedy' and hence a barrier to the development. Do you concur to this description?

9. What role should mobile operators play in the ME value web? (Only be transporters of data? Do all the consumer billing? Also deal with entertainment content?

10. Would the ME and mobile data industry as a whole benefit from a small number of pan-European operators (due to current problems with cross-border roaming etc)?

11. Many industry representatives have stated that there has been an exaggerated technical focus towards consumers that have resulted in consumer confusion. Is this still the case? Who has the primary responsibility to teach the consumers?

12. Do you believe the most recent forecasts made on the market size of the ME market in general are too high, too low or adequate?

13. What is your opinion on the ability of analysts within mobile data to make reliable predictions?

14. Do you believe that forcing "consumer lock-in" tactics will be used by many players in the ME industry?

15. What lessons do you think that European companies can learn from the success with i-mode in Japan?

16. How do you suggest revenues from the end-consumer should be distributed within the ME value web to the benefit of the industry as a whole?

17. Do you consider the ME market as a pan-European market or as a fragmented market with several national markets? How do you predict the development for the future?

18. Any additional opinions?