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Drivers for successful multimedia services in the emerging communication market

-A study about the trends in the market and the possibilites with IMS in the future

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Abstract

Drivers for successful multimedia services in the emerging communication market

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The communication market is in a change. This changes how people communicate but also the structure of providers in the market. Traditional isolated players start to provide similar sets of services, competition increases and so does the collaboration between different providers. Customers receive more opportunities to choose between when they want to communicate and to use different multimedia services. The development of new technology continues and what kind of services customers will use tomorrow are uncertain.
This study aims to identify the drivers and key success factors in the market for communication services and to find which multimedia services consumers will use in the future. The purpose is then to find out if these services can be provided with IP Multimedia Subsystem (IMS). IMS is a technical architecture with the aim to provide the market with any service, to any device with any access, in a standardized way.
The result from this study is that services that will be present in the market in a close future are services that give customers flexibility and accessibility, anywhere and anytime. This is services that can be provided with IMS. Providers who will succeed in the market are providers that will offer services that give customers flexibility, simplicity and control. This is also services that will reach high customers equity.

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Populärvetenskaplig sammanfattning

I slutet av 1800-talet uppfanns telefonen. Detta var en uppfinning som gjorde det möjligt för människan att ha en röstkonversation i realtid på distans. Hundra år senare fick mobiltelefonen en plats i konsumentens vardag och det blev möjligt att kommunicera oberoende av plats. Kort efteråt blev internet en självklarhet i människans vardag och en ny dörr öppnades för att kommunicera och söka efter information. Idag är det en ny dörr som har öppnats för kommunikation. Detta är en dörr där internet, mobiltelefonin, media och den fasta telefonin integreras med varandra och där tre skilda marknader blir en gemensam multimedia marknad. Förändringen innebär att aktörer som tidigare varit skilda från varandra och som traditionellt agerat utifrån olika affärsmodeller intar samma marknad. Situationen på marknaden idag är att reklamfinansierade tjänster på internet som är den affärsmodell som används av internet aktörer ökar i antalet användare. Telefonoperatörer som använder en affärsmodell där de tar betalt direkt av konsumenten minskar i inkomst per användare. Detta är framförallt för deras kärnverksamhet. Som resultat av dagens situation verkar det som att konsumenten inte längre är villiga att betala för kommunikations tjänster. En annan tolkning av situationen är att reklamfinansierade tjänster erbjuder något mervärde för kunden som bidrar till dess framgång på marknaden.

Syftet med denna studie är att identifiera vad som är nyckeln till framgång på multimedia marknaden idag och bidrar till att vissa tjänster lyckas attrahera många användare. Studien syftar även till att utforska vilka tjänster som kommer bli erbjudna på marknaden i framtiden och om det är möjligt att erbjuda dessa med IP Multimedia subsystem (IMS).

IMS är standardiserad teknik inom telekom med vilken det är möjligt att erbjuda text, röst, bild och video kommunikation mellan olika terminaler såsom dator, telefon, TV etc. Genom att IMS är en standardiserad teknik kan kommunikation ske oberoende av operatör eller nätverk, s.k. interoperabilitet. Tjänster som är baserade med IMS är telefonitjänster, men även multimedia tjänster där det är möjligt med access från datorn likväl som mobilen, TV eller den fasta telefonin.

För att kunna utforska vilka tjänster som kommer att bli erbjudna på marknaden i framtiden har de aktuella aktörernas nuvarande situation på marknaden, dess tjänster och strategier för framtiden spelat en viktig roll. Nyckeln till framgång för aktörerna har undersökts genom studier av konsumenters beteende och värdesättning. Konsumenters preferenser av tjänster idag har undersökts, vilket inkluderar tjänster som innebär kommunikation i form av röst, bild, video eller text. Även vilka tjänster som konsumenter efterfrågar har studerats. Undersökning av aktörernas situation på marknaden och konsumenternas preferenser av tjänster är gjord för att kunna undersöka om det finns ett samband för vilka sorters tjänster som lockar konsumenter och vad som kännetecknar dessa.

Resultatet av studien visar att inom tjänster som bidrar till flexibilitet och ökad nåbarhet för konsumenten kommer att öka i framtiden. Mobiltelefonen kommer få en mer central roll i konsumentens vardag och det kommer ske konkurrens likväl som samarbeten mellan olika aktörer på marknaden. Det kommer att vara mer integration mellan olika tjänster och nyckeln för att erbjuda tjänster som lockar konsumenter, är att erbjuda

tjänster som bidrar till ökad flexibilitet och underlättar vardagen. Detta är tjänster som inte ändrar ett behov, utan enbart tillvägagångssättet som det tillgodoses.

I en marknad där trenden går mot flexibilitet, integration mellan olika tjänster och ökad mobilitet är IMS är teknik som är användbar.

Table of content

1 Introduction

During the last hundred years, there has been a change in how people communicate. Today it is possible to be contacted from almost everywhere, to find information easily and to collaborate globally at low costs. A hundred years ago this was not possible. The Internet and the mobile phone are two technologies that have made this possible and decreased the distance between humans. Today new technologies are knocking on the door. This is technology where the Internet and communication networks are merging and where the Internet, media and communication services can be used independent of location. This changes how people communicate but also the structure of providers in the market. Traditional isolated players start to provide similar sets of services, competition increases and so does the collaboration between different providers. Internet players compete as well as collaborate with telecom operators, while cable providers provide similar services as telecom operators. Different business models intersect, and users are given more communication opportunities to choose between. The result of this change in the market is that customers are more often using free communication opportunities through the Internet while Telecom providers see a decrease in revenue within their core businesses.

To succeed in this communication market, the trend seems to be to provide services that add something more to the user than traditional communication services do. Some years ago, the telecom infrastructure suppliers forecasted this development and decided to develop a technology that could help telecom operators to succeed in the market. (Issaeva 2006, p 8) The technology they developed was IP Multimedia subsystem (IMS). The aim of IMS is to provide the market with any service, to any device with any access, in a standardized way. (Issaeva 2006, s 10) The purpose of IMS is that providers can provide services that customers would like to use in the market. Today, Internet applications attract users, but what about tomorrow? Will IMS be a sustainable technology that providers need to provide services that customers will be using in the future, or is the trend moving in a direction against IMS features? What drives a trend in a certain direction, and why are some applications a success in the market while similar applications get no attention?

1.1 Purpose

This study aims to identify the drivers and key success factors in the market for communication services and to find which multimedia services consumers will use in the future. The purpose is then to find out if these services can be provided with IP Multimedia Subsystem (IMS).

1.2 Delimitations and explication of the purpose

The aim of this study is to analyze the drivers and the key success factors in the market for communication services. Communication services are a wide concept and to make it more concise the research has been limited to some main communication services provided by telecom operators and some popular communication services on the Internet. Popular communication services over the Internet have been selected

according to the number of users, attention in media and their capacity to grow rapidly in number of users. To analyze the drivers and the key success factors for these services, the research has been limited to how these services are provided in the market and its features, with a focus on price, content and combination with other services. These limitations are made in order to compare different services more easily. The services on the Internet have been selected because they are successful, but because of the number of services that exist in the market, there is a risk that some important services have been missed and the same goes for factors for success in the market. Services that have received attention in this study are under the umbrella of multimedia services, which are services that contain a wide area of different communication services. Communication in this case can both be one-to-one and one-to- many. There can also be different types of media for communication such as video, voice, text etc.

The aim of this study is to find which services consumers will be using in the future. Future trends can be influenced by many different factors. In this study the research has been limited into three different aspects:

- Consumers
- Providers
- Technology

These three aspects have been chosen since they are linked to each other. The technology allows providers to create services, and providers make it possible for consumers to use these services.

From a consumer perspective, focus is to find which services consumers like to use and why these services attract users. This research has been limited to services available to use with fixed telephone, mobile telephone or on the Internet. From this perspective, focus is on which services consumers are using today and which services they prefer to use in the future. Future services are mainly limited to mobile and TV services. This limitation creates a risk that some popular services in the future have been missed, but they are chosen since an expansion of services within these two areas is possible with IMS. Consumers have been limited to three types of consumer. These types of consumers have been chosen due to age, lifestyle and economical situation. The aim with a limitation on different types of customers is to get a better understanding of the drivers to use different services in the market.

Focus of providers is limited to telecom providers, cable providers, Internet players and media players. From these four providers the main focus is telecom providers since they are the main target group to provide services running with IMS. Second focus is Internet players. Consumers are using the Internet for communication more than before and Internet services play an important role in many users daily life.

The third aspect in this study is the technology. Since the purpose with this study is to find out if popular services in the future can be provided with IMS, the first approach within technology has been find what kind of possibilities that exist with IMS and how the technology has adopted the technology. The attention has been limited to providers

who have bought IMS from Ericsson, and their view of the IMS. In some cases, third part information has been received about some providers. This is about providers who have not bought IMS. The purpose of this method is to better understand barriers in the market that prevent the expansion of IMS. The choice of providers for this purpose has been made due to the knowledge of interviewed persons. But since the aim with this study is to find out if IMS can be used to provide future services within the multimedia market, attention has also been to non- IMS services. This attention is made to better analyze what kind of services consumers will be using in a close future. Close future is within five years.

Limitations have also been made geographically, to the Western European and the US market. Both of these two markets are mature markets and the people in these markets have multimedia services such as telephony, Internet, mobile phone and TV in their household. Users in these markets have then the presumption to use many different multimedia services.

1.3 Limitations among references

In this study, I have been in contact with sensitive information due to the competition in the market. The information about strategies and services that providers will be launching in the market is not information that providers want to spread to theirs competitors. To be able to get this information, I have, in some cases, not mentioned the name of a provider and I am writing in more general terms than specific about provider thoughts about the future and its strategies. I have also limited the traceability by not writing with whom I have been talking with to get certain information. Therefore, the source for all oral information is written as internal interview and the date for the interview. The later to separate different persons that has been interviewed.

1.4 Disposition

The disposition of this thesis has been divided into three different parts; technology, market and consumer. This is shown in figure 1. This study starts with an introduction and an explanation of the purpose. Section two contains a description of different players in the market. This includes who they are, their current product portfolio and their market strategy. The method in this study is described in section three. To get a better understanding of IMS, section four contains information about IMS, its architecture, features and benefits. Section five describes IMS role in the market. This section contains information about different services launched with IMS and some trends and barriers that exist in the market for providing services running with IMS.

The next step in this study is the trends in the market. To get an understanding of the current situation in the market, section six contains information about trends in the market. These trends are according to telecom provider's result during 2007 and services provided by Internet players that have attracted users rapidly. After is a presentation of different strategies from different providers. The focus is on services they will provide in a close future.

The next focus in this study is the consumers. Section seven contain information about which services consumers are using today, how they are using them and what kind of services they would like to use in the future. To get a better understanding of what influence consumer's choice of products, this information is also presented in this section. In the end of section seven, three different segments of users are presented and what influence them to use different multimedia services.
The study ends with a discussion about the trend in the market, key success factors and if popular services tomorrow can be provided with IMS.

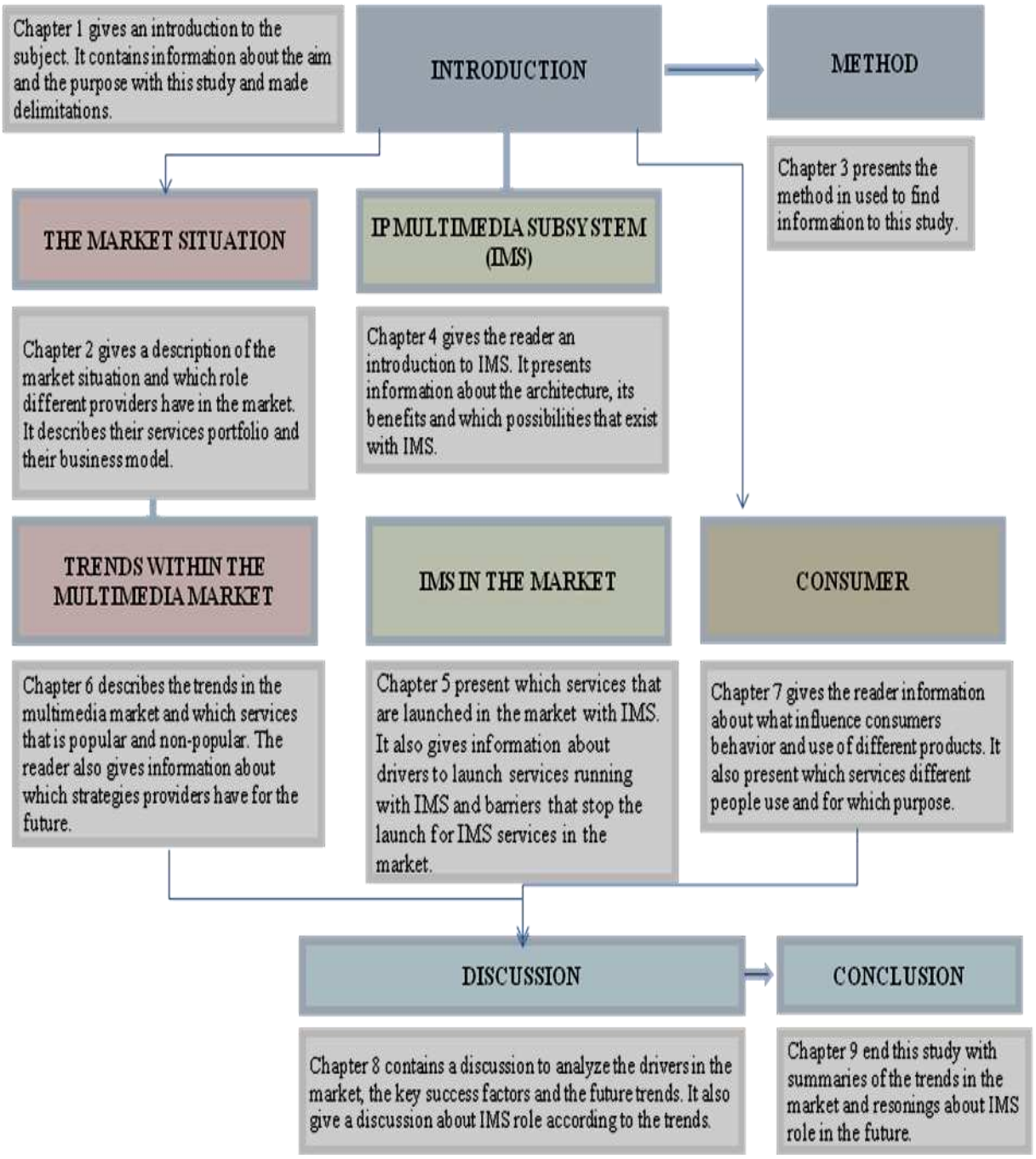


Figure 1- Disposition

2 The market situation

Different kind of players in the multimedia market, their product portfolio and their business model are presented in this section. There is also a description of how different types of players collaborate and compete.

Consumers are today facing a new paradigm. This is a paradigm where providers from different segments start to provide similar sets of services and where different technologies start to be used from the same device. This change increases the competition and the possibility for new partnerships in the market.

Four providers that will influence the future of multimedia services and that are part of this new paradigm are:

- Telecom operators
- Media player
- Internet players
- Cable providers

These four providers are separated into two different segments: distribution providers and content providers.

Distribution providers are cable providers and telecom providers and content providers are media- and players. This separation has been made due to their traditional business models and service portfolio. The business model for distribution providers is to get revenue from the users of a service while content providers get revenue from advertising. In this new paradigm, these two providers intersect with their business models. The model that will be used in the future is uncertain. In this new paradigm, there is possibility to observe in which direction different providers are moving. For example cable providers and telecom providers start to provide similar set of services while media player prefer collaboration with different providers. Together these providers will shape multimedia services that consumers will be using tomorrow. The relation between different providers and their direction is shown in figure 2.

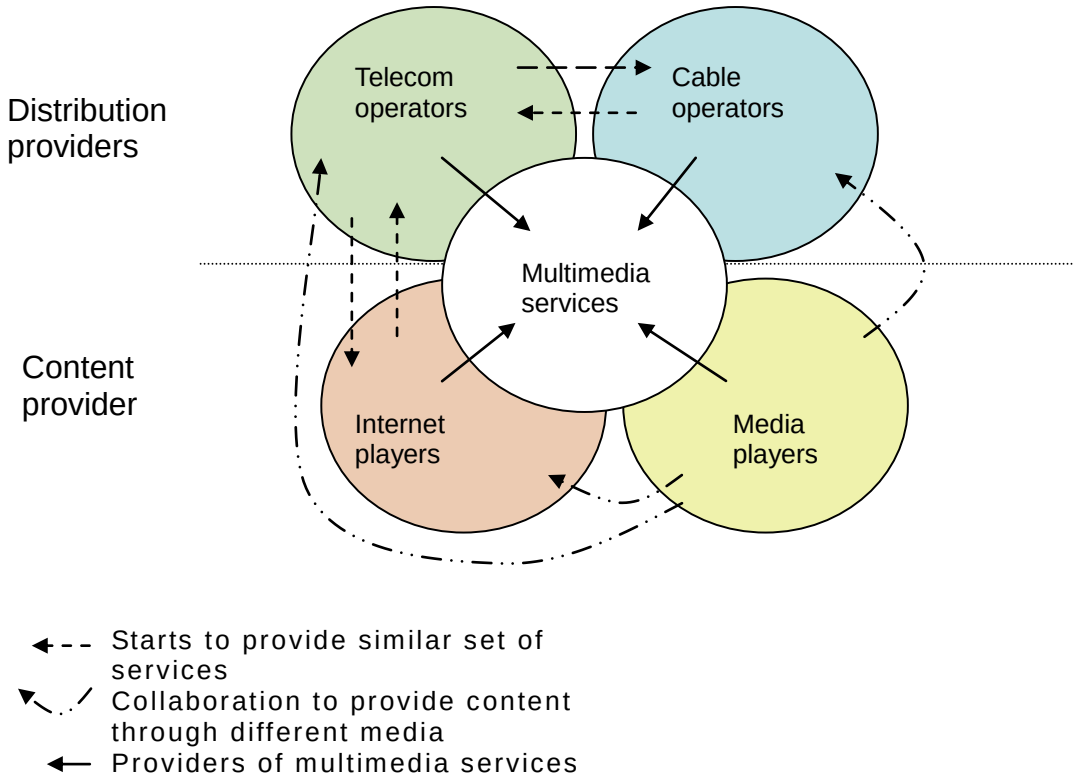


Figure 2- The relation between different providers in the multimedia market. It shows how they collaborate and compete.

2.1 Distribution providers

Distribution providers consist of cable providers and telecom operators, such as ComHem and Telia. Telecom operators have provided different communication services, since they launched the fixed telephony in the end of 18th century. During 1980s, the mobile phone entered the market and was a part of providers' product portfolio. At this time, the mobile phone was installed mainly in a vehicle, but since the battery and phones became smaller, the mobile phone moved out of the vehicle to people's pocket. (Tekniska museet 2008) During the latest 15 years, some telecom providers have also expanded their product portfolio with television and broadband. (Telia 2008) Cable providers entered the market as distributor of television. This was in the beginning of 1980. In the end of the 90s they broaden their portfolio with broadband and today, some of them are also providers of telephony. (ComHem 2008)

Both telecom operators and cable providers have broaden their portfolio and today they are providing similar set of services; fixed telephony, TV and broadband. They are using similar business model where the revenue is from the consumers. Both of them act also mostly in a local market. (Internal interview, 2008-04-10)

2.2 Content providers

Content providers are Internet players and media players, such as Google and BBC. Internet players have their market on the Internet, and they provide services and applications such as Internet search, e-mail, applications for word and pictures, instant messaging services and social communities (Internet and players 2007, p 5, 76-86). Media players provide different content to their customers via different media such as TV, radio, Internet or newspaper. They are selling programs, running commercial TV and radio channels and producing newspapers. (Internal document 2007)

Both Internet players and media players are given mostly of their income from advertising. Some of their content is paid directly by the users. (Application strategy workshop 2008) For both of them, many customers are important, even though they are using different strategies to reach these customers. Media players value the quality as very important and they prefer providing quality content more than spreading their content everywhere (Internal interview, 2008-06-30). Internet players are very likely to have a high number of users or "the right" target of users and they want to make their applications visible everywhere. To spread information about different applications Internet players are using the mouth-to-mouth method or banners on different web pages. (Internal interview, 2008-04-10)

A difference between media players and Internet players are their geographical market. Internet players act in a global market, where their customers can be located almost everywhere in the world. Media players operate mainly in a local market, even thought there exist global players. (Internal interview, 2008-04-10)

3 Method

This section describes the method used in this study to find information. It starts with general terms and continues with more specific information about the method.

3.1 Different types of sources

The approach in this study is from different perspective. To find necessary information both primary sources and secondary sources have been used. Primary sources are original materials or information, such as documentation from an interview. Primary sources are interviews and personal meetings with people who have knowledge suitable for the study. Mainly of the interviews are made by telephone since the locations of the respondents have been in different places in Europe and the US. The structure of the interviews has been semi-structured. Similar questions have been asked to all respondents within the same area such as to people with knowledge about the market situation.
Semi-structured interviews have been used since this method opens up the possibility to ask additional questions while the area of research remains limited. To use semi-structured interviews gives also the possibility to let the respondent talk more independent than what is possible with structured interviews. To let the respondent talk independent increased the respondent's possibility to mention information the respondent found interesting for his/her market. At the same time semi-structured interviews kept the respondent into the information of interest for this study. Semi-structured interviews are a combination between structured and unstructured interviews, which is two other types of interview methods. Structured interviews are when the interview follows a manuscript of questions to ask, while unstructured interviews exist when the interviewer has the interview like an open conversation.

Secondary sources are information that comes from a primary source such as articles in newspaper, books and movie reviews. Secondary sources in this study are books, different reports, internal documents and news written on or in newspapers. Secondary sources have been used to get better information about IMS, about the market and about the users. The choice of secondary sources for this purpose is to complement the primary sources, to get better information about what analytical think about the future and to save time. Information about the users comes from secondary sources. This due to limit of time and the possibility to use already made researches.

3.2 Knowledge about the market

The research about what kind of services different providers will provide in the future, started with a research about the market today. Information about this comes mainly from secondary sources such as news in papers and on web pages, analyzes reports and other reports about the market and its player. Some primary sources are used such as

information on providers' homepage and interviews with employees at Ericsson who have good knowledge about the market.
Information about the market situation today, is from a telecom operators' perspective and their general services portfolio. This is services like fixed telephony, mobile telephony, broadband and TV. This information is from different analyzed reports, other reports and internal interviews at Ericsson. Internal interviews have been used to get deeper information about the market or to complement the collected information. Different reports have been used to get a better perspective of how consumers are thinking when they decide to use different services and to get better knowledge about how analytics forecast the future.

Consumers are spending more time today than some years ago on the Internet. The Internet plays a central role in many humans life and a focus in this study is therefore on popular applications on the Internet. The main source to find these popular applications has been news in newspaper and on Internet. Information has been collected from news written in interesting newspaper during periods of this study. This method has been used to get a perspective of what is happening in the market and which topics journalists write about. Since journalists want to have readers, news that they often mention are probably news that consumers are interested to read about or use. Even reports explaining customer's habits have been of interest to find what kinds of applications those are interesting for this study. Interesting applications are applications with a huge number of users, that are increasing in the market or/and are in the area of IMS. Applications mentioned in this study, are interesting applications that are showing the direction of the trend. Information about these applications is mainly from the web page of the application. This search has been made to get a better insight in how different applications are working, their features and to get future information about the applications. The research is made from a perspective where the conclusion comes from a convergence of information from different sources and where the first sources have decided from where the next source should be collected from.

3.3 Knowledge about consumer's habits and values

Secondary information has been used to find information about customers' habits and behaviour. This information is mainly from Consumer Lab which is a unit at Ericsson AB. Information both from qualitative and quantitative studies made by Consumer Lab. This means that employees at Consumer lab both have interviewed customers as well as made written surveys to find information about customers' behaviour and interest. Information from the research made by Consumer Lab is about different types of services different people are using, what kind of services customers want to use and about the direction of the trend. To better understand why different customers are using different kind of services and how different behaviours are developed, literature written about the subject has been studied. Information from the research and the literature gave information about how customers are making of using different applications and what kind of applications they are using and for which purpose they are using them.

3.4 IMS and technology

The information about IMS is from both written and oral sources. Written information is literature written about the technology, documents and web based information about IMS. The oral information is meetings with persons working at Ericsson with good knowledge about IMS. These two combinations of resources are used to get a better understanding of the technology, and the potential of IMS.

Since the aim of this study is to analyse if attractive multimedia services tomorrow can be provided by IMS, it is valuable to have knowledge about how the market is adopting IMS today. This information is from interviews with persons at Ericsson who are working close to providers in the market. Interviews are due to geographical distance has been made by telephone. Information about IMS is also from documents and other written documentation about the current market and IMS, and from different providers' homepage.

4 IP Multimedia Subsystem

This section has information about IP Multimedia subsystem, its architecture and its benefits. In the end some standardized services are presented and how it is possible to use different services with IMS.

IP Multimedia Subsystem is an architectural framework developed by the third generation partnership project, 3GPP[1], to help telecom operators to expand their product portfolio and to provide attractive multimedia services (Issaeva 2006, p 8). With IMS, it is possible to deliver multimedia services with telecom-grade quality across fixed and mobile access. Providers can use IMS to introduce new applications and to deliver voice, video, text and picture services with good quality to their customer. These services can be combined or used independent and used from different devices (Issaeva 2006, s 8-10). (Introduction to IMS 2007, p 3-4)

IMS is a part of the all-IP network and is based on a packet-switched domain, but it is possible to access to circuit domain which is a key part of the migration to a next generation all-IP networks. The circuit switch network is used for the traditional fixed telephony and the packet-switch network is used for the Internet. The possibility to access to circuit switch network makes it easier for the users to use their traditional voice device to connect to their provider's IMS architecture. This advantage makes it easier for providers to migrate users smoothly and easier for the users to change end device when they want. (Gonzalo & Miguel A. 2006, p 26)

Services that telecom providers can provide with IMS are for example services that combine popular Internet applications with features from the mobile phone. This gives the users the possibility to access to popular services in a standardized way with different devices. One example of one existing service for this feature is Ericsson Multimedia Communication Suite (MCS). With MCS, it is possible to combine voice, video call, sms and mms with chat presence, file transfer and gaming (Badulescu C et al 2008, p 52-53). The MCS combines traditional mobile services with Internet applications and give consumers the possibility to reach popular Internet applications in their mobile phone, and to integrate contact information between different applications.

4.1 Why use IMS?

The vision with IMS is to merge the Internet and the communication world by providing Internet services everywhere and anytime by using telecom technologies. (Issaeva 2006, p 8) Due to the architecture of IMS, providers can easily and smoothly introduce new services to their customers. The architecture of IMS makes it possible for providers to control the traffic flow, to charge and to provide Quality of service (QoS). This means that providers can charge according to different business models and secure a good quality of a session. (Issaeva 2006, p 10)

[1] 3GPP is collaboration between groups of telecommunications associations.

Another important benefit with IMS is the standardized architecture. Standardization makes it possible to use services from different vendors together, since it is established how networks and applications work together (Gonzalo & Miguel A. 2006, p 26). From a consumers' perspective, standardization makes it possible to communicate with friends who are using a different provider as long as they have subscription or devices that support the same kind of services (Carlson 2007, s 3). One example of the difference between standardizes and non-standard services are the possibility to send sms compare to use instant messaging. SMS is a standardized service and it is possible to send sms to friends with a different provider than themselves, but it is not possible to communicate with friend using icq if the other users are using msn since these two instant messaging services are not standardized services. (Internal interview, 2008-07-02)

4.2 How can the architecture achieve the benefits of IMS?

The architecture of IMS consists of a layered horizontal architecture, which enables customers to use different applications regardless of which terminal they are using. (Introduction to IMS 2007, p 9) The architecture supports the possibility to use services with the mobile phone as well as with the computer. (Ericsson IMS and Converge Story 2006, p 17-18)

The architecture consists of three key elements; the session control layer, the access and transportation layer and the application layer. The architecture is shown in figure 3. Each of these layers is explained in more details with focus on their benefits and the purpose of this layer.

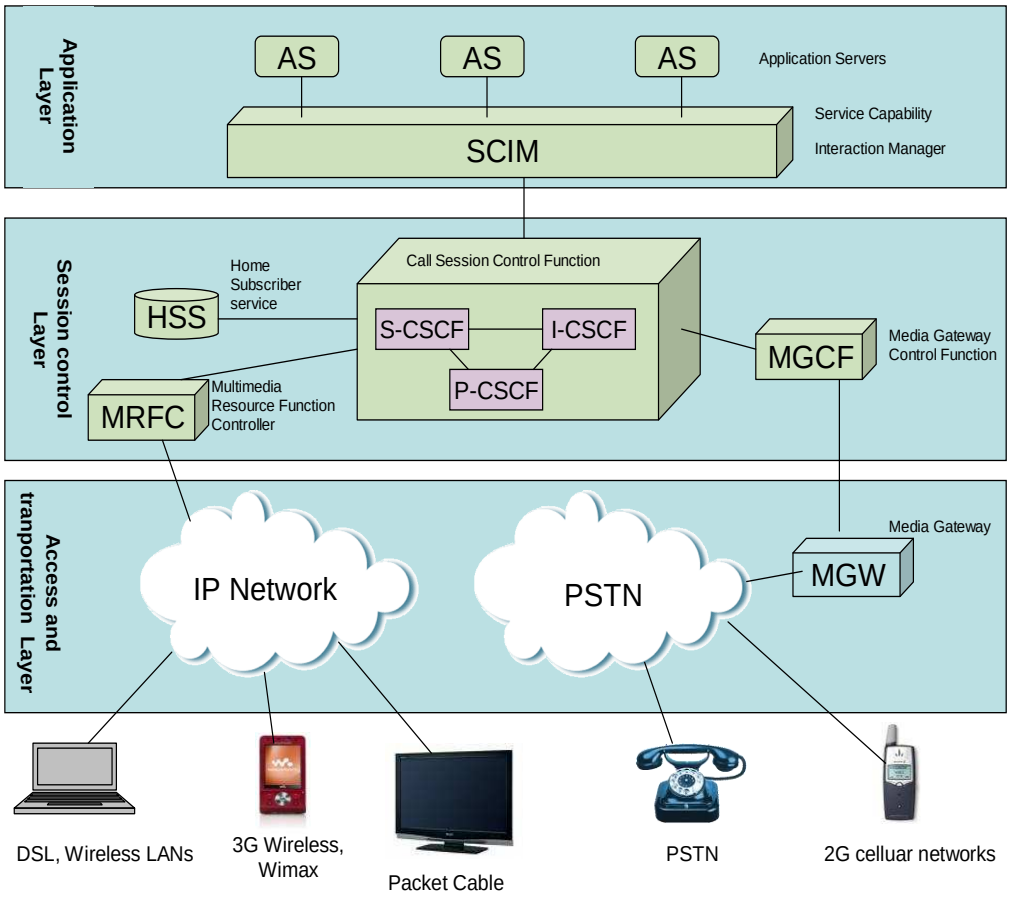


Figure 3- The IMS architecture has three layers. The Applications layer has the applications that can be used with IMS, the Session control layer is the brain of the architecture and the Access and Transport layer has the possibility to connect different networks to IMS.

4.2.1 The session control layer

The session control layer is the core of IMS. It has all necessary information in order to verify the users' identity, to control sessions and to know which services the users can use. All information about the users is stored in this layer. There are nodes that link all key elements together in the IMS architecture. (Introduction to IMS 2007, p 12) This layer is responsible for the control of SIP[2] request and messages within the IMS architecture between the transport, the control and the application planes (Nadine & Stuart 2008, p 6).

One essential node in the session control layer is the Call Session control function (CSCF). This node is the heart of IMS. There is three different kinds of CSCF; Proxy-CSCF (P-CSCF), Interrogating-CSCF (I-CSCF) and serving-CSCF (S-CSCF). Together

[2] Session initiation protocol (SIP) is a signaling protocol for Internet conferencing, telephony, presence and instant messaging.

they are controlling the session, securing routing message and monitoring the session. These features enable operators to have a strict control over IP addresses and QoS over the SIP flows entering the IP multimedia bearer network. (Gonzalo & Miguel A. 2004, p 31-33)

The node that controls a session and that is a central node of the signaling plane, is the S-CSCF. The S-CSCF controls, registers and inspects messages sent in the network. This node makes it possible to use different business models since the S-CSCF registers what type of sessions the users are using and during how long time the session goes on. The S-CSCF keeps also users away from using services they are not authorized to use. With this control of the users and their sessions, providers can use different business models to charge their customers such as flat rate, time based charging, service based charging[3], and QoS based charging or any other type of charging. IMS does not mandate any particular business model, instead the provider can charges in a way they think is the most appropriate. (Gonzalo & Miguel A. 2006, p 7)

The P-CSCF is the first point and the entrance from the terminal to the network. Its tasks are to authenticates the users and assert the identity of the users to the rest of the nodes in the network. The P-CSCF also authorizes media plane resources and manages Quality of Service (QoS) over the media plane. These features enable the users to get the necessary bandwidth capacity in order to use a certain media with good quality since the P-CSCF secures and regulates a necessary bandwidth. This is for example that media that contains voice will have a higher priority than media with only text. This since voice is more sensitive to delays. Apart from which media the users are using, the quality of a session is determined by factors like the maximum bandwidth based on the users' subscription or the current state of the network. To guarantee that the users get what they are paying for, the operators can control the quality a user receives and differentiate certain groups of customers from others. (Gonzalo & Miguel A. 2006, p 25)

The node that ensures that the information reaches the right destination is the I-CSCF. This node retrieves users' location information and routes the SIP request to the appropriate destination. To be able to know the right destination, the I-CSCF is sending the SIP request to the S-CSCF that has downloaded the user profile. (Introduction to IMS 2007, p 13) The user profile is downloaded from the Home Subscriber Server (HSS). Without this server, HSS, the CSCF would not have the necessary information about the users and be not able to perform their tasks. HSS is a database with all necessary information about the users in order to verify the users' identity. It has user information such as location information, security information, user profile information and information about which services the users are subscribed to use. (Gonzalo & Miguel A. 2006, p 30)

To provide different media resources in the network, it is necessary to have a node that controls these functions. The node for this is the Media resource function control

[3] Flat rate charging is when customers are paying a fixed fee and can use a service unlimited. Services based charging is when customers pay according to which service they use. Time based charging id for example when paying per minute of use of a service.

(MRFC). The MRFC controls all resources that are necessary for different media related functions such as play, record, collect digits and audio/video mixing. This makes it possible to play announcement, mix media streams, transcode between different codecs[4], obtain statistic and do any sort of media analysis. (Introduction to IMS 2007, p 15)

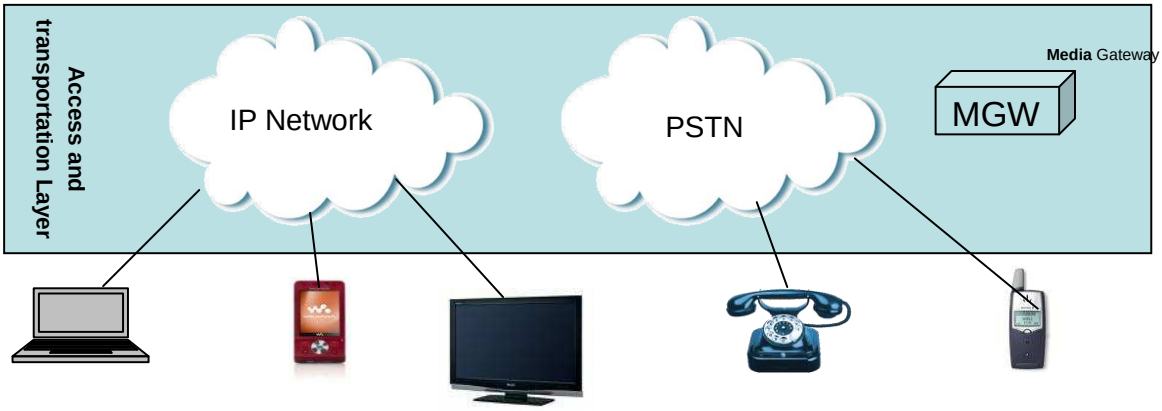


Figure 4 - To access and transport layer can different devices be connected such as mobile phone, fixed telephony, TV and computer. The description under each device shows which network in used to connect to the access and transport layer.

4.2.2 The access and transportation layer

One benefit with IMS is the possibility to communicate with different devices and to use different media to communicate from different network. It is possible to communicate with voice, video and text. The part of the architecture that makes it possible is the access and transportation layer. The access and transportation layer handles data transport and routes media traffic between end users and servers. It also translates various types of access networks and protocols to common IP-based media and signal packets required for the IMS core- This feature makes it possible to access different devices from different networks. The translation is made by different nodes due to from which network the users' access. The Media Gateway (MGW) is a node that makes it possible to access from non-IP networks such as PSTN[5] or 2 G cellular circuit-switched networks. The MGW translates the media content to make it understandable for the core of IMS understands. The media gateway is controlled by the Media Gateway Control Function (MGCF), which is situated in the session layer. (Introduction to IMS 2007, p 16)

It is possible to connect to the IMS network with Public Switched Telephone network (PSTN), wireless LANs, Digital Subscriber Line (DSL), Packet Cable/IPCableCom networks, Wimax, 2G cellular networks and 3G wireless. This means that it is possible to connect to the network with fixed telephony, from computers, TV and mobile phones. The support of different networks makes it possible for consumers to continue using

[4] Codecs include coding and decoding transformations of data or signal streams
[5] Public Switched Telephone network (PSTN) is the network in used to communicate with traditional fixed telephony

traditional fixed telephony while providers gradually move subscribers to IP network. (Issaeva 2006, p 8)

4.2.3 The application layer

Benefits of using IMS for multimedia services are its flexibility, easy way to introduce new services rapidly and to combine new services with existing services. These benefits are possible thanks to the application layer in the architecture and its connection to underlying layers. (Introduction to IMS 2007, p 3, 7, 9)

The application layer consists of two key components:

- The Service Capability Interaction Manager (SCIM)
- The Application Server (AS).

These components are shown in figure 5. AS is a SIP entity that hosts and executes IP Multimedia services. SCIM orchestrates service delivery among applications servers and keeps track of which services are working with which devices such as traditional fixed telephones cannot receive video. The relation between SCIM and AS is that AS makes it possible to add new services easily while the SCIM controls that the service is used with the right device. (Gregory 2007, p 15-16)

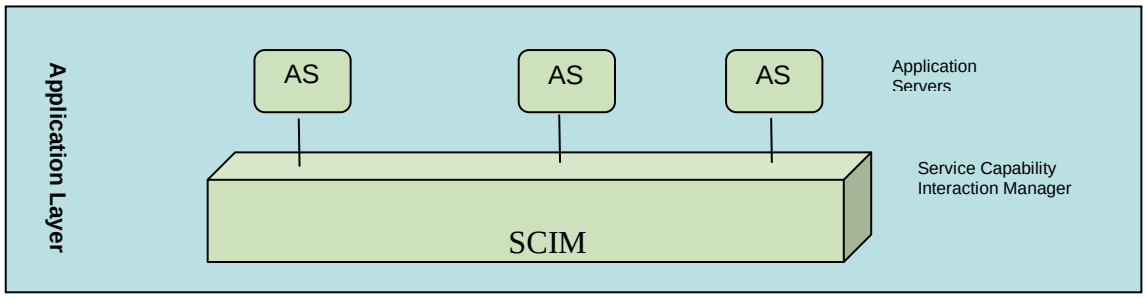


Figure 5 - The application layer has two key components; the application server and the service capability interaction manager. New applications are added to the application server while the SCIM keep in track which devices that works with different applications.

The architecture of IMS makes it possible to integrate new services with underlying layer and to provide a systematic way to establish service creation environments that simplify the design of IMS applications. (Ericsson IMS and Convergence Story 2006, p 13) These features make it possible for operators to use services developed by third parties, combine them, and to integrate them with services they already have and to provide easily the users with a new service (Gonzalo & Miguel A. 2004, p 8). Example of one service is to combine a traditional voice mail with a third party developed text-to-speech service. Together they create a voice version of incoming text messages for blind users (Gonzalo & Miguel A. 2006, p 7).

4.2.4 Standardization

Services running with IMS can be both standardized and non-standardized services. Standardized services play an important role to secure interconnect agreements between different providers and to make it possible for the users to communicate with different services with friends regardless of which vendor they are using. (Introduction to IMS 2007, p 8) Today, there are five different standardized applications for IMS. These applications are messaging, video share, push to talk, Multimedia telephony (MMTel) and presence. Providers can use these applications as they are, combine them with each other or to use them together with third part's applications. (Carlson 2007, s 8-11) To standardize applications is not a common method. Apart from the IMS standardized applications, there exist three standardized services within telecom which are voice, sms and mms (internal interview, 2008-07-01).

The standardized services that are developed with IMS are following:

"Multimedia Telephony" is an IP-based multimedia application which enables services like real-time voice, video and text communication, file transferring and sharing of multimedia. Multimedia telephony combines traditional telephony with multimedia services. This application targets both the residential and the business market. (Ericsson IMS Multimedia telephony, 2005) One of the major benefits with this application are the capability to add and drop media during a session, which means that it is possible to start with a chat, add a voice conversations and transfer a file without ending the session. (Ericsson IMS 2006, p 10, 14)

"IMS Push to Talk" is an application that resembles a walkie-talkie. With Push to talk consumers can communicate one-to-one one or many people at the same time. (Ericsson IMS 2006, p 10) Push to talk complements existing services and is positioned between sms and voice services. It can be used when a user wants to contact many people at the same time or it can be included in the development of games. (Ericsson IMS push to talk, 2005)

"IMS Presence" is an application that allows a user to be informed about the attainability, availability and desire to communicate. The presence service presents the status of other users. . This information is presented to a list of authorized watchers decided by the user. (Gonzalo & Miguel A. 2006, p 323) **(**Ericsson IMS presence**,** group and data management, 2005)

"IMS messaging" is an application where it is possible to send different kinds of multimedia message to other users. The messages can be a text, picture, video or a file. IMS messaging makes it possible for other IMS services to integrate with the messaging function, for example by sending a message to a group with a combination with IMS push-to-talk. (Ericsson IMS 2006, p 11)

The benefit of using some of the five developed standardized applications for IMS is the possibility for the consumer to communicate with friends who have a different provider than themselves. If both icq and msn were developed from the same standardized application, users of icq would be able to communicate with users of msn. This is not

the case today since icq and msn are developed by different vendors. Services running with IMS today are either standard or non-standard services.

5 How has the market adopted IMS

This section contains information about different kind of services running with IMS in the market today. Information about drivers for launching these services and the barriers which are blocking a launch of more services running with IMS are also presented in this section.

5.1 Launched services in the market

The world's first IMS solution in live commercial traffic was in Spain June 2005. It was an IMS multimedia telephone which included residential IP Telephony[6] and an enterprise telephony which was IP Centrex[7] and incorporation of PBX switches (Ericsson IMS References 2007, p 24). These services replaced their previous technique for similar services and the drivers to launch these services running with IMS, was to provide cheaper services and to reduce costs by transmitting voice and data in the same network. (Internal interview, 2008-04-08)

In the US, the first IMS solution was a fixed mobile converged enterprise solution, where one phone number enables simultaneous ringing in both the fixed phone and the mobile phone. This service was launched in the enterprise market. It was launched since the actual operator was interested to integrate the mobile phone in the PBX- (Internal interview, 2008-04-08)

The most common IMS services that have been launched during the last three years in Europe and the US, are IP Centrex for enterprise users and IP telephony in the residential market.
Second place of launched services running with IMS are different converge services such as services where it is possible to communicate between PC, mobile phone and fixed telephony with different features. One example of this is A1 from Mobilcom Austria, which became rapidly a popular service. It started as a test version in October 2006 by Mobile Austria Group and was in commercial in the beginning of 2007. (Mobilkom Austria Group; IMS service benchmark 2008) A1 is a PC soft client that combines classic the mobile telephony with the Internet telephony which is shown in figure 6. This service makes it possible to have a voice conversation between different PC, mobile phones or fixed telephony. The users can also choose if they want to answer incoming phone calls with the PC or with the mobile phone, and they can also import outlook contacts with a presence function that indicates which contacts are currently online. A1 also includes features like instant messaging, sms, mms, video and conference calls. (Mobilkom Austria 2007)

[6] IP Telephony is a fixed telephony where the users connect use IP based network instead of circuit switch which is used for traditional fixed telephony
[7] IP Centrex is a PBX that is located in the network instead of placed in a fixed location.

Source: Mobilkom Austria Group; IMS service benchmark 2008

Figure 6 – A1 is a soft client which it is possible to voice, video and conference calls. With A1 it is possible to communicate with other PCs, fixed telephones and mobile phones. It also includes instant messaging features.

A1 is one example of a converge service that is launched with IMS. According to strategies from different operators more services like this will be present in the market. Other launched services in the market running with IMS are shown in appendix 1. Appendix 1 does not contain all services running with IMS, instead it shows examples of different services that consumers can find in the market today. There is also information about which application providers are using to launch these services and where they are launched and when. The aim of this list is to present an overview of different services in the market, and in which direction the trend is moving.

5.2 Drivers to launch services running with IMS

During the first year with IMS commercial in the market, more services were launched in the enterprise market than in the residential market. The main reasons were related to QoS, costs and security. In general, enterprises need to be more aware of the QoS and the security of services they are using than residential users. A failure in QoS and safety can lead to high economical failure. The cost in this case can be both related to lack in security where confidential information reaches external individuals as well as calls drop. On the other hand, economical costs are the reason why more services are launched in the enterprise market than in the residential market. Because of the number of users, huge costs savings can be made by changing to IMS. This can be in time as well as in direct costs, and this can make a great impact on total cost of communication. (Internal interviews 2008-04-08)

Today, it is possible to observe an increased number of IMS services in the residential market.

Launched services in the enterprise market impact the residential market after some years. (Internal interview, 2008-03-25) At the same time, operators get inspiration from the residential market to launch services in the enterprise market. The use of instant messaging is one example of this. Instant messaging is more frequent in the residential market while operators are launching similar services in the enterprise market. (Internal interview, 2008-03-19) The direction of trends in the market is not constant. To get an overview of the trends in the market and what kind of services consumers will use in the future, the focus in this study is the residential market. This due to a slow start of IMS services in the residential market that leaves a potential for the future and the direction of the trends where providers get inspiration from users in the residential market to launch services in the enterprise market.

5.3 Business model for services running with IMS

A business model used by many providers for their IMS services in the residential market is a fixed fee. Customers are paying a monthly fixed fee and can use a service as much as they want without extra costs. Sometimes there exist some limits such as free calls between users having the same subscription but it costs to call to friends using a different provider. With services like A1, the customers for free PC-to-PC but they need to pay when they are calling to fixed- and mobile phones. (Ericsson IMS references 2007)

To attract customers to use different services, providers are using different promotions. A1 which increased their number of subscribers with 1000 users the first day gave new registration 200 free minutes to call to all fixed and mobile networks. After this, the user pays a monthly fee 3, 9 euro and can call for free between PC to PC. (Mobilkom Austria Group; IMS service benchmark 2008). Other methods are to give free terminals when signing a subscription or to use the service for free during a limited period. (Ericsson IMS references 2007) One example of free calls with limitation is Wilhelm tel in Germany. They charge for calls to traditional fixed telephony while it was possible to call for free to l other users of their VoIP solution (Trends in IMS services deployments 2008, p 10). Another example is Mobistar Belgium. With Mobistar Belgium, the users are paying a monthly fee, 48 euro, and then they can use this service unlimitedly. (Trends in IMS services deployments 2008, p 9).

5.4 Drivers and barriers for IMS

The main drivers for investing in IMS are to save costs, to increase income or to solve a problem. Other drivers are to provide a new service and to prevent migration of customers to rivals. Providers that have changed their traditional fixed telephony to the IP Telephony, the drivers have been to enhance multimedia services in a future step, to lower the cost of providing fixed telephony and the possibility to provide cheaper services for their customers (Internal interview, 2008-04-21)(Ericsson IMS references 2007). According to these drivers, economical reasons are the main driver to launch IMS services. To invest in IMS costs money, but after the investment IMS opens up for cost savings. With one network, providers can lower operation costs and deliver services that can be reused for multiple applications. (Ericsson IMS and Converge Story 2006, s 17-18). The horizontal architecture of IMS enables operators to eliminate traditional

vertical network architecture of overlapping functionality for charging, routing and provisioning. Operators who want to increase their product portfolio with new services can re-use previous work and they do not need a huge effort with IMS compare to previous technology which is based on vertical architecture. This can save costs for the providers. (Introduction to IMS 2007, p 9)

Many providers have future services in their mind when they are investing in IMS but according to which services that are launched in the market, the market has not yet adopted the full potential with IMS. With IMS, it is possible to launch more innovative services than what is done. This is services that combine standardized communications like voice, messaging with own innovations and third party applications and services (Carlson 2007, s 8). Some services like this are launched in the market, but there exist some barriers to overcome before more will be launched.

Barriers that operators face with IMS are that they do not know how to handle IMS, they are uncertain about the future and they are in a situation where they cut costs instead of investing. Pursuant to the increased competition within the telecom market, some operators focus is lowering and cutting cost and therefore they do not want to invest in IMS. (Internal interview, 2008-04-21) They are in a situation where investments are not a priority. To change this priority they need more prove of how IMS can give them return on investment and help them to cut costs. Operators are uncertain about the future and not sure about how IMS can help them to succeed. . (Internal interview, 2008-04-14) Therefore, some operators request for more inspirations and examples to better know how they can handle IMS. They also request for help to better provide attractive end user applications. (Internal interview, 2008-04-21)

Other barriers are faced by the organization. Traditional operators have separate organizations for fixed and mobile networks. IMS drives a change to one converged structure. Current structure of a telecom's organization does not support a converge structure that include cooperation within the organization and with different partners to be able to create new fancy applications. Working together with partners to develop innovative content based services can be necessary for telecom operators since they are traditionally not content providers. This way of working is not familiar for all operators and therefore a barrier to overcome before they can provide applications that customers want to use and that generate revenue. (Internal interview 2008-04-08) (Internal interview 2008-04-21)

One problem mentioned in both Europe and the US is the lack of terminals that can handle services running with IMS. This is not for traditional services such as voice communication; instead there is a lack of clients in the mobile phone which makes it possible to use different services running with IMS. The possibility to use different services are probably coming in a near future but does not exist in all mobile phones today. (Internal interview, 2008-03-19). The result is that operators wait to launch services they have in their mind due to an uncertainty whether their customers can use them due to lack of terminals who can handle different services in the market. (Internal interview, 2008-04-07, 2008-03-19, 2008-04-21) From an innovation perspective, these barriers are mainly a question of time. In general a user changes their mobile phone

every three years and new phones have a better ability to run more advanced services (Global research platform- Infocom module Global 2007). The lack of infrastructure and the high speed Internet connection are other barriers in the implementation (Internal interview, 2008-04-21) In Europe the expansion of broadband is moving fast but still this is a block in the expansion of IMS solutions (Internal interview, 2008-03-25). At the same time the existence of the traditional fixed telephony network makes it difficult to get IMS to the mass market if operators have in their mind. Some operators do not want to replace traditional fixed network since this is a cheap solution for them. (Internal interview, 2008-04-21)

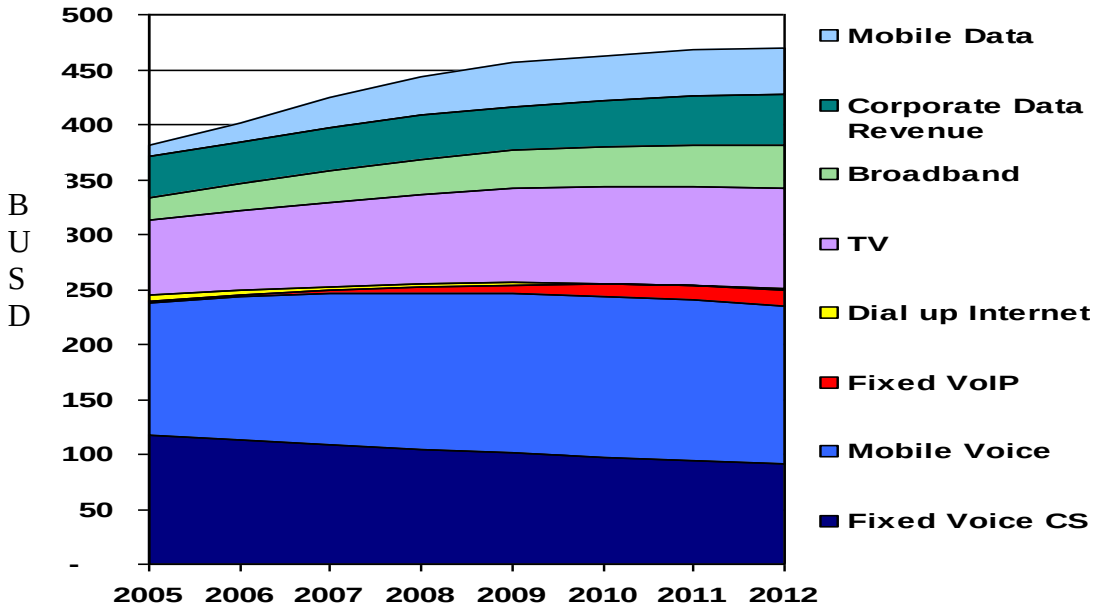
Another barrier that providers are facing with IMS is the return on investment and which business models they should use. Traditionally, operators are used to get charge from their consumers according to how much they are using. The trend is today moving to a flat fee system where customers are paying a fixed fee every month and they can use a service almost unlimited. The result of this trend in business model is that providers get less pay for a service compare to previous model. With IMS some providers are therefore afraid of losing more revenue. At the same time, free communication applications on the Internet such as Skype are increasing in number of users and they manage to get revenue thanks to advertising. The business model of Internet players are mainly advertising and some operators have this model in their mind, but they are not sure about how to handle it. (Internal interview, 2008-04-21), (Internal interview, 2008-03-19)

6 Trends within the multimedia market

This section describes the market situation. It contains information about different services consumers like to use, which services they do not use so much anymore and what kind of services providers makes revenue from. Services that are presented are provided by distributors as well as content providers.

6.1 The market

The competition in the multimedia market is increasing because of the increased number of providers who provide similar sets of services. According to which services that have been growing in the number of users during the last three years, the winners are players who provide free services on the Internet. A forecast made by the Yankee group for the US market shows that the revenue from voice communication like fixed telephony and mobile voice are decreasing while providers who put their focus on mobile data, corporate data and broadband are increasing their revenue. This change is shown in figure 7. (Internal interview, 2008-07-04 (Market overview, 2008))



Source: Yankee group (Market overview (2008), Ericsson AB)

Figure 7 - A forecast made by Yankee group shows the revenue for some services until 2012 in billion US dollar. Growing in revenue is the mobile data, corporate data, broadband and TV. Declining is the fixed telephony and mobile voice.

The result of some telecom operators in Western Europe and the US during 2007, show the reality of the forecast. In average, the telecom operators declined in their revenue for fixed telephony during 2007. Operators who have mobile data, TV and IP telephony in their product portfolio, they have growth in their number of users within these services. (Banks & Giles 2008, p 2, 8-12)

6.2 How does the market look among the distributors' providers?

The European market consists of many different telecom operators. Most of them operate in a local market such as one country or a region. There are some bigger telecom operators who operate in different markets such as France Telecom and Vodafone. The US market is the opposite of the European market and is dominated by some few telecom operators such as Verizon, following by AT&T and Sprint Nextel. Together, these three players have 54 % of the market. Otherwise, the market consists of some small telecom operators. (Market overview, 2008) Apart from the telecom operators, the cable providers play an important role in the distribution market mainly in the US. Cable providers' core business is television, but three years ago, they entered the telecom market and started to provide also the fixed telephony. Within the fixed telephony, cable providers are an important competitor. (Internal interview, 2008-07-04)

6.2.1 Services increasing in the market during 2007

The three services where telecom operators in general growth in the number of subscribers during 2007 were:

- IP Telephony
- TV
- Mobile data

From these three services, the growth of TV and IP telephony were a result of attracting customers from different providers or from similar services. Mainly of the users of IP telephony have been users of traditional fixed telephony, and the growing number of TV users, it is a result of attracting customers from their previous provider. To attract customers within TV and IP Telephony, the providers are using mainly two different methods: bundle services together or adding content value to their offering. (Banks & Giles 2008)

To get more customers by bundle different services together as a whole packet is a success in both Europe and the US. One example is the French operator Neuf Cegetel. This operator bundle IPTV together with fixed telephony and broadband. The result was a growth in their number of subscribers within TV with 100-150 %, during 2007. (Banks & Giles 2008, p 10) A different example is the international French operator, France Telecom, who increased their number of subscribers within both TV as IP telephony with around 100 %, during 2007. Their success is due to a combination of bundle different services together and their acquisition of French first League football rights, which seems to be a content their customers like. (Banks & Giles 2008, p 8-10)

In the US, cable providers bundle the TV and the IP telephony to one packet. This attracted voice customers from their traditional providers to cable providers. Since cable providers entered the voice market, the usage of IP Telephony increased and the success factor behind this growth seems to be bundle different services such as TV and telephony in one packet. (Banks & Giles 2008, p 10)

The third service growing in the market for telecom operators are the mobile data. From a user's perspective, mobile data gives the possibility to access the Internet everywhere

by using the mobile phone. The infrastructure for this service is still in framing and only some providers offer this service, but for providers who offer this service the result are positive. Their revenue increased during 2007 within mobile data. Moreover, access to the Internet independent of location is attracting customers. One example is Tele2 in Sweden, who increased their revenue with 8 % within mobile data during 2007. Figure 11 shows the growth in revenue for Tele 2 year 2006-2007 in comparison to the growth in the number of subscribers. (Banks & Giles 2008, p 14)

6.2.2 Declining of revenue from fixed telephony

The revenue from traditional fixed telephony declined in the market during 2007 and 2006. During 2007, the average decline in revenue from fixed telephony was 8 % and during 2006 it was 4, 6 %. (Banks & Giles 2008, p 6)

The explanation to this result seems to be four main reasons:

- More people have changed their traditional fixed telephony to IP telephony
- The costs of using fixed telephony have declined during the last years
- The number of mobile phone users have increased since the beginning of 2000 century
- The costs of using the mobile phone have declined.

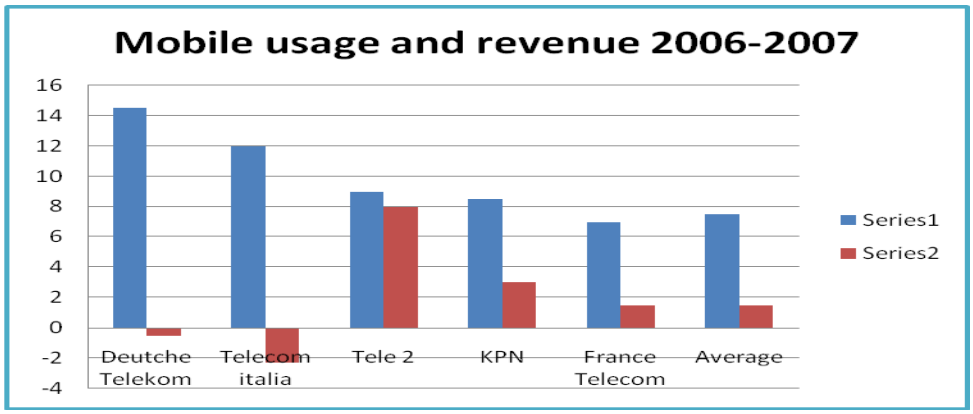
The growth of fast Internet connection also impacts the usage of fixed telephony, since it is possible to communicate on the Internet. (Internal interview, 2008-07-04)

From a consumer perspective, the difference between using a traditional fixed telephony in comparison to use IP telephony is almost nothing. Consumers are in general not interested in which technology they are using, they are more interested in that the technology is working. One secret to attract the same amount of customer loosing within traditional fixed telephony to IP telephony is seamless migration. One example of this is the different between France Telecom and KPN.- The France Telecom managed to attract almost the same amount of customers to their IP telephony as they were declining with their traditional fixed telephony, while KPN lost 1,22 million fixed line subscriber during 2007 and they only managed to gain 334 000 subscribers to their IP telephony. The explanation for this gap is mainly KPNs problem with their technology in the beginning, while the France telecom managed to smoothly move their customers to IP telephony. (Banks & Giles 2008, p 6)

6.2.3 Mobile phone have reached saturation level

Since the beginning of the 21st century, mobile operators have growth in their number of subscribers of mobile phones. In some cases they have managed to double-digit their growth in the number of subscriber (Banks & Giles 2008, p 13) However, his growth is not so fast anymore since the growths of mobile subscribers have reached a saturation level. Today, the ability to attract new customers and to growth are mainly by attracting customers from other providers. The providers who managed to attract new subscribers, managed to do it due to their expense in revenue. Both the Deutsche telecom and the Telecom Italy managed to growth in their number of subscriber during 2007. This was with almost double percentage than the average in Europe, but at the same time they fell

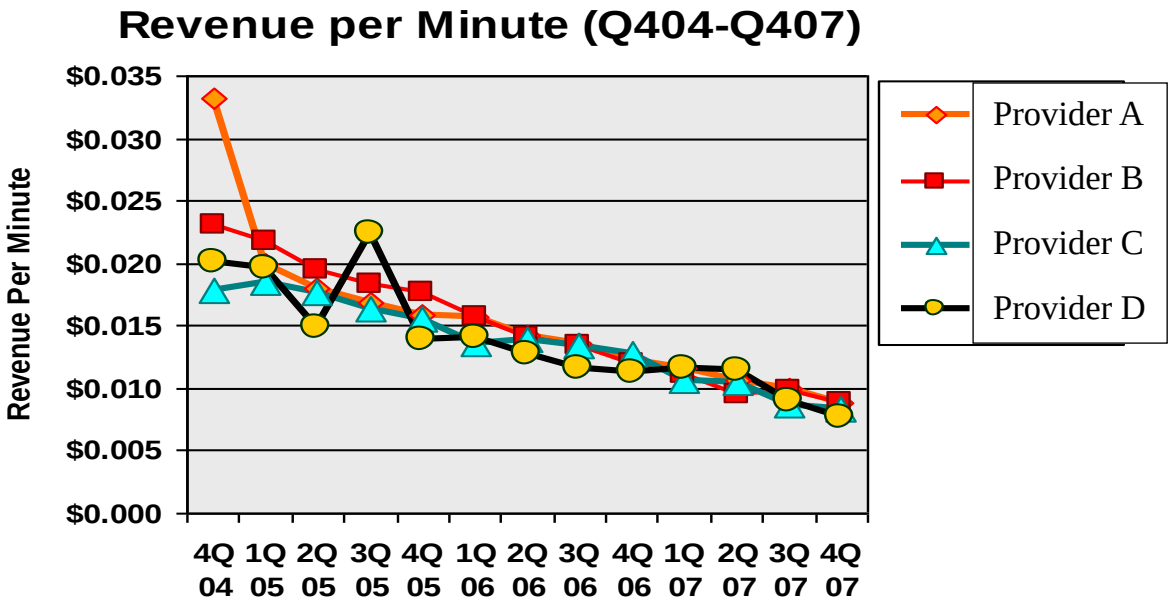
in revenue due to their need to compromise in price to attract customers (Banks & Giles 2008, p 13-14). The difference between revenue and the number of subscribers for Deutsche telecom and Telecom Italy is shown in figure 8. According to the Deutsche telecom the price is an important factor in customers' choice of operator. This is also one reason to why it is cheaper to call today compare to some years ago. The competition has forced providers to lower their price and the difference between using the traditional fixed telephony and the mobile telephone is less today then some years ago (internal interview, 2008-07-04).



Source: Banks & Giles 2008

Figure 8 - Series 1 represent the growth in mobile subscriber while Series 2 shows the change in revenue 2006-2007. The figure shows the difference between revenue and increased number of subscriber. Most equal seems to be for Tele2, mainly due to their revenue from mobile data.

The figure above is the European providers, but the same phenomena exist in the US. The price decreases; the revenue per user decreases while the number of minutes per users. One example of this is from figure 9 where the average revenue per user is 8 % less in the end of 2007 compare to 2006. During the same period, provider D increased their number of users with 9 %, which signals that the revenue per user decreased. (Khan 2008) The trend with less revenue per user has developed during the last years. Among the four major telecom providers in the US, the revenue per minute of use in the end of 2007 is 1/3 of the revenue per minute in the end of 2004. (Market overview, 2008)



Source: Market overview (2008), Ericsson AB

Figure 9- The revenue per minute of use among the major telecom operators in the US has decreased between 2004 and 2007. In the end of 2004 the revenue per minute was in average $0,024 while the revenue per minute in the end of 2007 was around $0, 08.

6.2.4 Broadband expansion

During the last years, the broadband adoption in the US has steady growth. Today, 55 % of the Americans have a high-speed Internet connection at home, while 33 % have a high-speed Internet connection at home during 2005. At the same time, consumers pay 4 % less for their Internet connection today than during year 2005. (Horrigan 2008, p 2) In Europe, in average 55 % of the population has fast Internet connection at home, even though there us a big different between different countries. In Sweden , 84 % of the population has fast Internet connection at home while only 35 % in Italy. (Global research platform- Infocom module Global 2007) The Internet opens up for more communication channels and the usage of Internet impact the fixed telephony (Internal interview, 2008-07-04).

6.3 The market situation for content providers

The content providers operate mainly on a global market. Their channel to the market is on the Internet. This makes it possible for them to reach many people quickly. To reach more customers they are dependent on the global Internet expansion. (Global research platform- Infocom module Global 2007, p 20). The development on the Internet is that popular Internet applications reach millions of users within some years and communication services such as instant messaging, PC-VoIP and social communities are growing radically in the number of users. (Fogg et al 2008).

6.3.1 Services growing on the Internet

Services growing on the Internet are mainly free to use and consumers can start to use these services by signing in on a website or by downloading software from the Internet (Internal document 2007). Instant messaging is a real time based communication method over the Internet. With instant messaging there is possibility to communicate with friends from a contact list where the users have added their friends. This contact list shows the status of friends such as, if they are online/offline/busy etc. From the beginning, instant messaging was used for text communication but today, many of them have features that make it possible to have a video or voice conversation. (Windows live messenger 2008) The most popular instant messaging service worldwide today is msn, the msn was launched in 1999 and had 294 million users in the end of 2007 (Google 2008). Apart from real-time conversation, msn provides features such as sharing files, playing games, sending sms, showing which music the users are listening to and to change the background and profile after the users own preferences (Windows live messenger 2008). Worldwide there exist many different instant messaging services and some of the most popular services are AIM, ICQ, Yahoo!, Google talk and Jabber. In common for all these services are the possibility to have a conversation with friends using the same instant messenger, but not between users of different instant messaging. (Internet player's overview 2008, p 7-8)

During 2007, one of the fastest growing instant messaging services was Meebo. Meebo increased their number of users with 330 % during 2007. (Eldon 2008) Meebo is an instant messaging service where there is possibility to integrate users to the same buddy list from some of the major instant messaging services. This feature opens up the possibility to keep in touch with friends using different instant messaging services. Meebo was launched in 2005 and in March 2008, Meebo had 30 million users. (Meebo 2008)

The most popular PC-VoIP application is Skype (Google 2008). Skype was launched in 2003 and in June 2007, Skype had 220 million registered users. Skype is a peer-to-peer Internet telephony network which has experienced rapid growth in the number of user of their free and paid services (Internal document 2007). The speed of growth is 175 000 customer a day. With Skype users can o make free voice calls to other Skype users and the traditional telephony and the mobile phones for a fee. The main attraction with Skype is the possibility to make cheap or free international calls and the growth of broadband is their key to their rapid growth worldwide. (Banks & Gilles 2007, p 2) Apart from making voice communication, Skype has features like the major instant messaging services (Banks & Gilles 2007, p 3).

Social communities are not new phenomena but during the last year, the popularity of social networks has growth. Year 1995, classmates.com creates, which is a social network with focus on reconnecting friends from school. Today, this community has about 40 million members. Two of the major social communities today are MySpace and Facebook. The Facebook was found in 2004 and during 2007the Facebook growth with almost 270 % worldwide (Social networks and Consumer generated Content 2007, p 9). Today, Facebook has more than 130 million active users and it is the 4th most trafficked website in the world (Facebook 2008). The main reason users to use social

networks are to stay in touch with friends, closed followed by the need to peek into others people's life, which satisfy the curiosity inherent in all human beings without too much effort. The first reason why people are joining a network is by suggestion of a friend. To make social network growing word of mouth is a key catalyst. (Mobile youth 2007, p 8) Joining a social network is also a way to share information among friends and to be updated among friends. The success of social networks is that it is unlike in real life, it is free and it requires little effort to receive and to use. (Mobile youth 2007, p 8)

To use the Internet as a communication channel for msn, Skype and facebook have growth during the last years and also the possibility to share media and information global. One popular website for this purpose is YouTube, which is the fastest growing website in the history of Internet. You Tube makes it possible for the users to upload, view and share video clips. An average day, 100 million video streams are viewed at YouTube. The majority of the 100 most popular videos are created by consumers. (Internal document 2007) One other popular website to share files and especially photography's is flickr. Flickr was found in 2004. During 2006, this website increased their number of registered users with more than 100%. During 2006, this web site had 3 million registered users and 7 million users in 2007. (Internal document 2007)

People have since the beginning of their existence Shared information, experiences and happenings in the life. Today, users are doing the same but with different methods than for thousands years ago. The expansion of the Internet has made it possible to share media easily and to spread quickly information globally. (Internal interview, 2008-06-05)

6.4 Strategies among different players

Among the Internet players there are two major trends:

I. To offer Internet applications in the mobile
II. To integrate different possibilities to communicate

The trend of popular Internet applications in the mobile phone has already started. The biggest Internet players, Yahoo, Google, msn and AOL, have today partnership with operators. Mainly of their partnerships are within mobile search but instant messaging is growing slightly. (Internet player's overview 2008, p 7-8) At the same time, there exists instant messaging which users can download to their mobile phone regardless of which operator they are using. One example of this is Nimbuzz. The Nimbuzz is a free application with the possibility to use the major instant messaging services such as msn, icq, AOL etc. Nimbuzz was founded in 2006 and had year 2008, 5 million connected people. (Nimbuzz 2008)

Yahoo launched a search service designed for mobile devices in 2007, and during Q2 2008 they launched a new mobile service, Yahoo oneConnect. Yahoo OneConnect is a service where there exist possibility to integrate contact lists from the mobile phone, instant messaging and social networks to one contact list. In this list, there is possibility to see contact information, online availability, recent messages and latest activity. With

persons from a personal contact list, users can communicate through different devices such as instant messaging, e-mail and sms. It is also possible to access to different instant messaging services like AOL, MSN, Yahoo messenger and Google Talk. (Yahoo! Inc., 2008) Google is also moving in a direction to mobile applications. Their strategy is to provide different applications in the mobile market such as search, Gmail, Google talk, You Tube and Google maps (Google 2008). They also want to integrate different communication possibilities and they acquired Grand Central community during 2007. With GrandCentral users can integrate all of their existing phone numbers and voice mailboxes to one account. Instead of having different phone numbers, the users will have one phone number that can be set to ring to all, some or none of the users' phones. (Grandcentral 2008)

Both My Space and Facebook launched their first mobile application in the end of 2006, beginning of 2007, and even smaller online social networks are looking at the mobile market. According to My Space and Facebook's strategy the numbers of users are growing in the mobile market. The strategy for MySpace is to be available on deck with every major operator and within five years half of MySpace traffic expects to be from the mobile devices. (Krzykowski 2008) Facebook's strategy is to grow their user base, and they launched a platform for operators that are designed to make Facebook work better in portable devices. The first operator using Facebook for mobile operator's platform is Vodafone in the UK and Germany. Soon they will expand to Greece, Italy, Spain, Ireland and Portugal. (Kirk 2008)

6.4.1 Trends and strategies among the operators

The strategy in the market among telecom operators are to:

- Be the only vendor and bundle different services together
- To provide new communications solutions
- To converge mobile and fixed communication

The Telecom operators' strategies are to bundle different services together. With this strategy the same provider provides Internet, telephony and TV, or new communications solutions like instant messaging. The main reasons behind these strategies are to keep their positions in the market and to keep their customers (Internal interview, 2008-03-25, Internal interview 2008-04-21).

The strategy of one of the leading telecommunication operators in the Europe with a market in different European countries is to be an integrated operator. Their offer is a bundle offer with convergence of fixed, mobile and Internet network. They started with this offer for four years ago, and their strategy is to seamless change the core architecture to IMS. (Internal interview, 2008-03-25) Their further strategy is to bundle IP TV in this bundle offer. They are also planning to introduce IMS with mobile services and to converge "everything" to an end-user. The time frame for this later strategy is about 10-15 years. (Internal interview, 2008-03-25)

While Internet players plan to introduce more applications in the mobile market, operators receive inspiration from customer's behavior on the Internet. In the south of Europe, telecom operators plan to launch different kinds of messaging services similar

to msn, Skype etc. (Internal interview, 2008-04-21) In northern Europe, the strategy is to provide the same services as young people are using on the Internet and to make them available in their mobile phone. Applications they are looking at are different communities. (Internal interview, 2008-03-19)

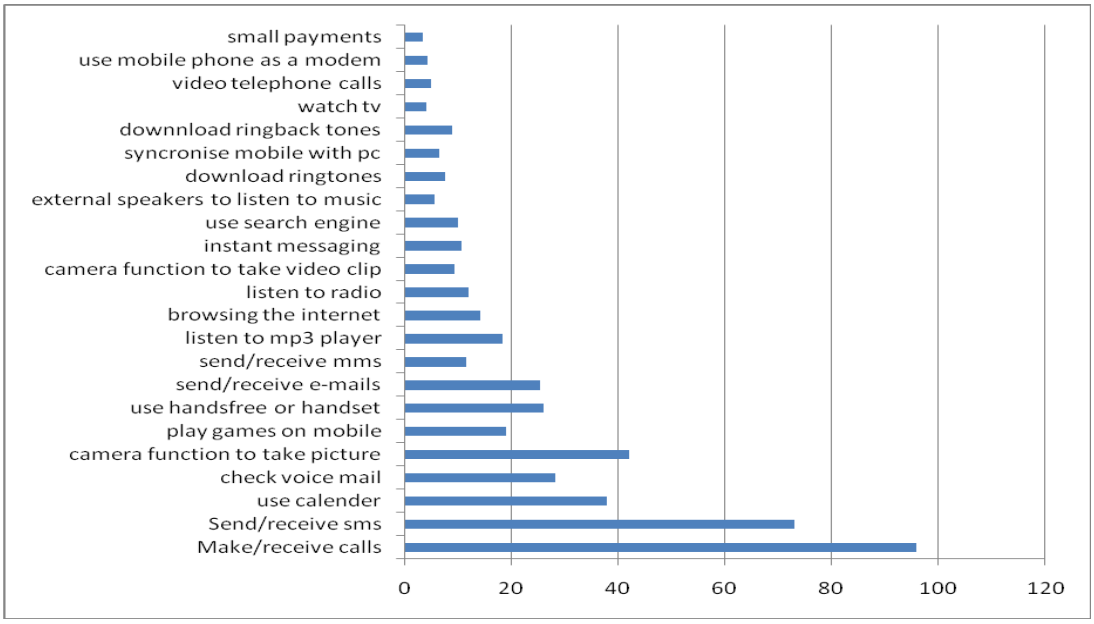
In the US, operators are talking about fixed-mobile convergence, where it is possible to have only one number. They are also looking closer to the possibility to use different communications solutions regardless of which access the users have. The media and the cable providers are mainly talking about providing different communication solutions. (Internal interview, 2008-04-07)

7 The consumer

This section has information about what kind of services consumers are using today, why they are using different products and a presentation of three different kinds of consumers: in touch organiser, Experiencers and mainstream youth.

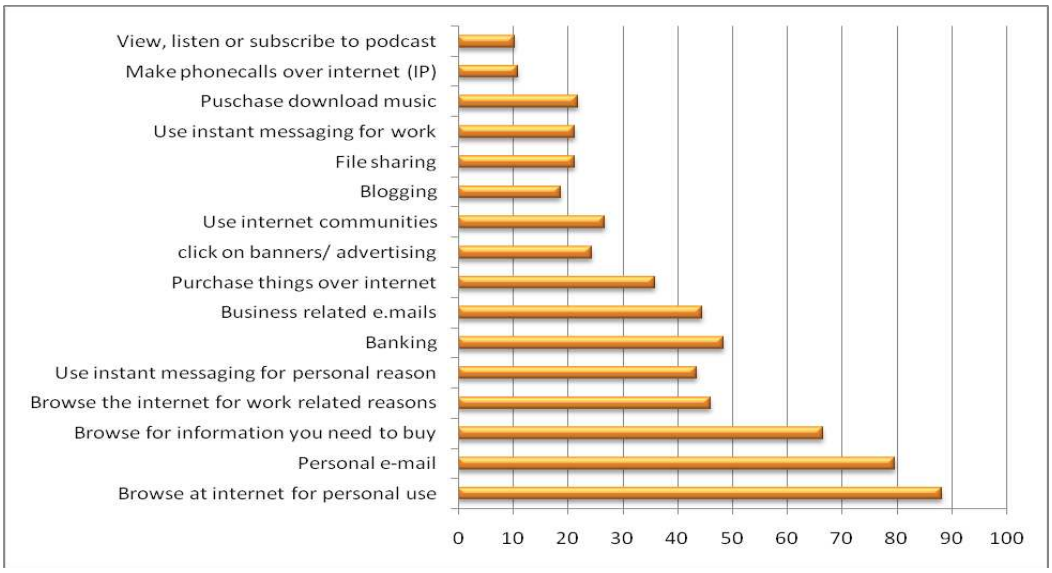
7.1 Popular services among customers

The average consumer in Western Europe and the US own a mobile phone, have a fixed phone, a TV and an Internet connection at home (Global research platform- Infocom module Global 2007, p 30). The mobile phone is used mainly to make phone calls and to send sms. Apart from these two most common functions, consumers are using the calendar function, taking pictures and listening to voice mail. Which services consumer use in their mobile phone is shown in figure 10. Consumers use the Internet mainly to browse for information, to send e-mails and to browse for information about things they want to buy. Other popular services that consumers use are instant messaging; bank services and purchase things over the Internet. Services users use on the Internet is shown in figure 11. (Global research platform- Infocom module Global 2007, p 30)



Source: Ericsson ConsumerLab Global Infocom Study (October 2007)

Figure 10 – The mobile phone is mostly used to make a phone call followed by sending/receiving sms. To use video when making phone calls or to watch television are only used by a small percent of the population.



Source: Ericsson ConsumerLab Global Infocom Study (October 2007)

Figure 11 – Two things that mostly of the users are doing on the Internet is to browse for information or to send e-mail. Making phone calls is only used by 10 % of the respondents.

7.2 Services that interest consumers

According to the research made by consumer lab, there is no service that one majority of the asked consumers' request. The mobile services that mostly consumers are interested in are position services like GPS and an automatic phone backup. Other services that consumers seem to be interested in are to share pictures, to send e-mail and to have current availability. Services customers want to use in their mobile phone are features they can do on the Internet today. Figure 12 shows which mobile services consumers are interested to use. Media services consumers are interesting in are to watch TV shows at any time, rather than only during scheduling broadcasted 49 %. 36 % of the persons included in the research where interested in a service where the identity of a person who is making an incoming phone call is displayed on the TV screen during viewing. (Global research platform- Infocom module Global 2007, p 120, 59)

Mobile Services	% interested
Positioning service like GPS	17,67
Automatic Mobile phone backup service	14,73
Sharing a picture	13,02
Multimedia/ picture messaging	12,03
e-mail	11,79
current availability	10,56
tickets in your mobile phone	9,6
access to home computer	10,02
Sharing a live video	9,6
Information search	8,79
credit card service	8,01
store/save material on the network	8,46
video clips	7,86
mobile TV	7,41
instant product service	6,75
access blogs/communities	4,05

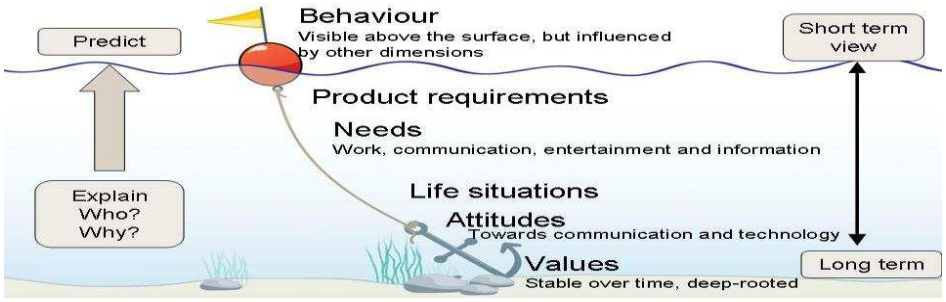
Source: Global research platform- Infocom module Global 2007

Figure 12 - Among the people included in the research made by consumer lab, almost 18 percent were interested in a GPS service in the mobile phone. Other popular services are an automatic phone backup, to share pictures and to send e-mail.

7.3 Consumers behaviour and need for different services

Today, users can choose between many different technologies when they want to contact different people, want to search for information or take part of media content. The mobile phone and the Internet are some of the innovations that have changed peoples' behavior. Before the industrialism, people needed to be located at the same place to have a real time communication. Today, it is possible to be located almost everywhere to have a real time conversation. (Thulin 2002, p 11) Technology has changed consumers' behavior, but not necessary users' values and needs in their life, only the way they perform them (internal interview, 2008-06-26).

People' behaviors are influenced by different dimensions. Values, attitudes as well as people's life situation influence people's behavior, needs and product requirements. According to the Ericsson Group global consumer segmentation (2007), peoples' values are stable over a long time and they are deep-rooted in a person's life, while the behavior is changeable. Internet users are today performing things in a different way than some years ago, but their attitudes and their values are the same. One example of this is the success of instant messaging where the chat feature is like a combination between sending an e-mail and making a phone call, since a user of instant messaging can get a text conversation in real time. With instant messaging, users are not changing a need only their behavior to have a real time conversation. Figure 13 shows how different aspects influence peoples' behavior and how different aspects are rooted in peoples' life. (The Ericsson Group global consumer segmentation 2007, p 4)



Source: The Ericsson group global consumer segmentation, 2007

Figure 13 - Peoples' behavior are influenced by different factors. A person's value is stable over time and deep rooted, while a person's product requirement is less rooted in a person's life and easier to change.

Persons' life situation characteristic of a persons' age, economical circumstances, lifestyle and personality (Kotler 2003, p 190) Dependent on the life situation, needs and interest of buying different products are different. Maslow's hierarchy of needs sought to explain why people are driven by particular needs at different times. Dependent on the life situation different persons are interested in different things.

Figure 14- Maslow's theory

Maslow's theory, see figure 14, explains that people first fill their most necessary needs before they are interested in the next level. The lowest level in his hierarchy of needs is. When this is met, humans can concentrate their need to a second level. Since people are on different levels in this hierarchy of needs, various products will suit their life. (Kotler 2003, p 196) The same is with what kind of technology they need and are interested to pay for. A person with a bad economical situation would probably search for different products than a person with a good economical situation.

7.4 Different segments

In the market there exist many different customers with different life situations, attitudes and values. Different customers have different needs and to understand how this influences their product requirements, three different kinds of customers are presented in more detail. The choice of this three segment of customer is from the Ericsson Group

Global Consumer segmentation model that consists of eight different segments of customer; pioneer youth, mainstream youth, Careerists, Experiencers, Mainstream Materialist, In touch organizer, Basic Phoners and Family Phoners.

The three segments that are presented are:

- In touch organizer
- Experiencers
- Mainstream Youth.

These three segments are selected since they represent people who seem to be a target for services running on IMS. "Experiencers" are people between 25-55 years old, they have family, and they want to be the first who are using new products. This segment is interesting since they like to use new technologies and they have a good economical situation. "In touch organizers" are also people with families, age 30-69 years old but in comparison to the "Experiencers" this segment is not interested in having the latest technology. This difference makes this segment interesting the usage of technology is dependent on attitudes and not only life situation and need. Their usage can also show different services can reach the mass market or if they are only a trend that is gone about some years. "Mainstream Youth" are between 15-24 years old, they have low income and important in their life is their friends. This segment is seen as the future usage of technology. Globally are "In touch Organisers" 15 % of the population, "Experiencers" 13 % of the population and the "Mainstream Youth" are 9 % of the population. (Global Segment Descriptions 2007, p 28-29, 34-35, 40-41)

7.4.1 In touch Organiser

"In touch Organisers" is people between 30-69 years old. Their life situation is to be married, to have children and most of them have a high school education. Their lifestyle is to work, to be with their family and to take care of their household. They have an active life where they are involved in different kinds of activities besides their work like the local community, sports activities etc. (Global Segment Descriptions 2007, p 40-41)

"In touch Organisers" values their family as more important than their career. Their friends have also a high priority in their life. Their attitude towards communication and technology is that they do not find new features direct by themselves. They are more early followers than early adopters. Before they start to use a new service they need someone else to explain the technology and its advantage for them. They are more average technology users than experts. (Global Segment Descriptions 2007, p 40-41)

Needs in an "In touch Organisers'" life is to be reachable wherever they are and to keep-up to date with news and headlines. Their needs of technology are to be in contact with different people, to be reachable and to be updated. Their priority is quality and price instead of design and brand when they are buying new products. Their aim is to not have the most technological advanced products or to make impression. (Global Segment Descriptions 2007, p 40-41)

7.4.2 Mainstream Youth

"Mainstream Youth" are people between 15-24 years old. Their life situation is to be single and they are often living at home with their parents. One majority of them is students but some of them are working, around 10 % of them are unemployed. Their lifestyle is to spend time with friends, music, sports, computer games and Internet messaging. (Global Segment Descriptions 2007, p 28-29)

The important in their life is to have fun, to be with friends and to be popular amongst peers. The family is less important in comparison to the other two segments. Their attitude to new technology is that they like to keep up with trends, but it is not necessary to have the most technological advanced products or to have product that is up to date. "Mainstream Youth" are young people who are not the most experimental users of the new technology instead more early followers than early adopters. (Global Segment Descriptions 2007, p 28-29)

Needs in their life is to always be able to contact people and to be contacted. Friends are important in their life and they are using technology to share their life with friends. They are heavy users of technology and especially mobile phones and instant messaging. They like to share music, ring tones and pictures with their friends. "Mainstream Youth" are not a high-income segment and therefore the price is more important than the design/brand when they are buying new products. They are more interested in free of charge than the quality and the reliability (Enriched Communication 2008, p 25).

7.4.3 Experiencers

The "Experiencers" are people between 25-55 years old. Their life situation is to be married, to have children and to have a high school education. They have an average good household income and they are interested in new experiences. Spending time with family, holidays and sports are important in their life. (Global Segment Descriptions 2007, p 34-35)

Values in their life are their family, wealth and status. "Experiencers" want to keep ahead of the masses, to go to places first of all, and see things first and to buy things first of all. They are looking for the most technological advanced products available in the market and they want products that are at least up to date as those as its friends use. They like to have products that make a good impression on other people. (Global Segment Descriptions 2007, p 34-35)

Their need of new products, apart from making impression, is to be reachable. They enjoy the challenge of complicated technologies and they like to experiment to find new ways of using them. They are aware of which brand they are using and the features are more important than the price when buying new products. In comparison to the two other segments, "Experiencers" have a higher rate of changing products. (Global Segment Descriptions 2007, p 34-35)

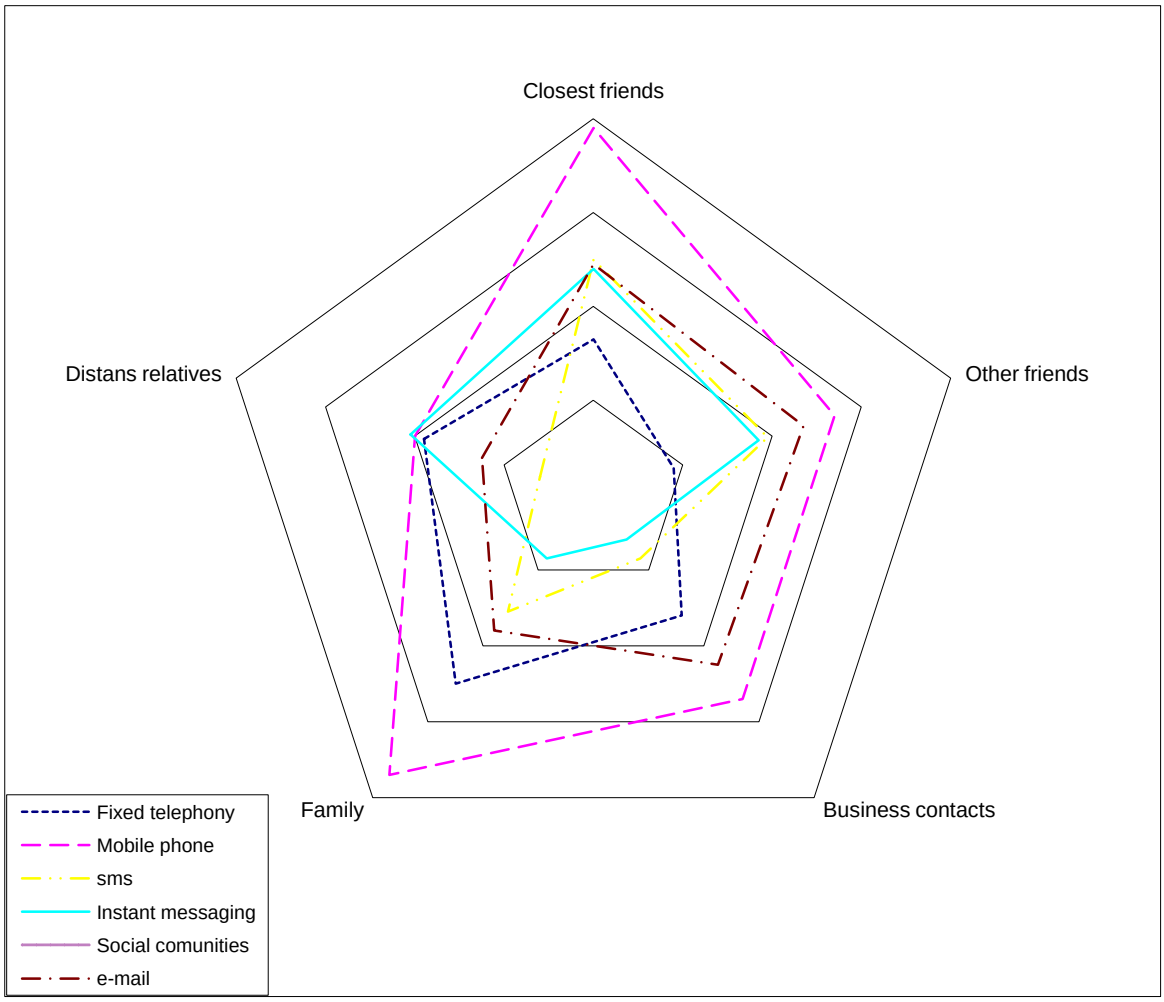
7.5 Different services in use, between the three segments

Between the three segments, there are differences between how much they are using different services and which services they are using. “Mainstream Youth” are the segment who is the main user of instant messaging and social communities, followed by “Experiencers”. “Experiencers” are the group whom most often share files, browse on the Internet for things they want to buy and make voice calls on the Internet. They are also the segment who use instant messaging and e-mails mostly in their mobile phone and sending mms. “In touch organizer” is the group who use less features among the three segments. Their preference of communication technologies are traditional usage of technology such as calls with the fixed telephony and the mobile phone. (Global Segment Descriptions 2007, p 28, 34, 40)

7.5.1 How consumers are using different services

To communicate with different people, consumers are using different methods dependent on with whom they have a conversation, and where they are located. According to a research made by Consumer Lab, people are mainly using their fixed phone when they are at home and they want to contact friends, family or colleges. Outside the home, the mobile phone is often used. The usage of their mobile phone and their fixed telephone are mainly to talk with family members, business colleges, distance relatives and with their closest friends. (Global research platform- Infocom module Global 2007, p 37-38)

The sms are used mainly for sending sms to friends followed by family members and e-mails to friends and business contacts. The instant messaging and the chat conversation are used mainly to contact friends followed by distance relatives, while social communities are used mainly in contact with friends. (Enriched Communication 2008, p 26) This means that it is rare that people send sms to business contacts and e-mails to family members. It is also rare that they use instant messaging and social communities to communicate with business contacts and family member, even thought users are using instant messaging to communicate with distance relatives. See figure 15 which shows which application people use to communicate with different people



Source: Made by myself due to information from Global research platform- Infocom module Global 2007

Figure 15- This figure shows how different people use different services to communicate with different people. The mobile phone seems to be the device people use to talk with most people, even though the main target group is their closest friends and family.

Consumers are using different devices to communicate with different people, it seems like some devices are suitable for different purpose or that users form them to be used for different purpose. But the reason can also be dependent on who is the main user of different devices.

The instant messaging is according to figure 15 used mainly between friends, and the same with social communities. The main users of these services are mainstream youth. Important in their life is to be in contact with friends and they are using technology to share life with friend. The combination of the main user and the target communication group for these services seems to be related to each other. “In touch organiser” is basic users of different technology. Technology for them is more a tool to organize their and their family members’ life. “In touch organiser” use their mobile phone to call, to send

sms and sometimes as a camera. Other services in their mobile phone are not important for them. Other communications methods are by e-mail or their fixed telephony. According to "In touch Organisers' lifestyle, they are probably using these devices to contact family members or business colleagues. According to figure 15, the main method is to be in contact with family members by the mobile phone, followed by fixed telephone, e-mail and sms. With business contacts are the main method the mobile phone followed by e-mails and fixed telephony. Both family members and business contacts are people that "in touch organiser" contact daily. This signals that there is a correlation between who the users of these devices are and who they are in contact with.

"Experiencers" have similar life situation as the "in touch organiser", but their usage of technology is not the same. It is rare that "in touch organiser" use new features while "Experiencers" are the main group to send e-mail and to us instant messaging in their mobile phone which are new features. According to Maslow's theory of needs are people driven by particular needs at different times in their life. How depends on their life situation today. The life situation between "in touch organiser" and "Experiencers" is similar so their needs of different technologies should be the same, but according to what kind of technologies they prefer to use, this is not the case.

Differences between "in touch organisers" and "Experiencers" are their values and their attitudes. In "Experiencers" life, status and to make impression are important. This is not the case for "in touch organiser". This different seems to be the secret to why people with similar life situation use different products Drivers in the market and the reason to why people are using different products seems to be a combination between life situation, attitudes and values.

7.6 Why are consumers using different products?

Humans choice of using different products depends on their needs, life situation, attitudes and values, but it is also dependent on which value a product will give in relation to its costs.. Values can be both emotionally as functionally and costs can be money, time, energy or psychological factors. (Kotler 2003, p 60) The Distributors providers managed to attract customer by bundle different services together, what they did was to give the customer more value by bundle services together then sell them separate. From a consumer's perspective, it is easier to call one provider instead of three to get TV, broadband and telephony. If the price is lower to get three services together than separate, bundle services together lower the price as well as the time and the energy. The value this product gives can thereby be lower since the costs decreased by bundle services together. This seems to be the secret behind the success of attracting consumer by bundle services together. But it is not obvious that this method attract all people. The relation between the values and the costs are individual and therefore not the same for all kinds of people. The value of getting a new product in the market is a high value for the "Experiencers", while a low price increases the value of using a new product for the "Mainstream Youth". There is this difference since "Mainstream youth" and "Experiencers" have different economical situation and attitudes to new technology. This relation can also explain how "in touch organizer" use technology. "In touch organizer" is basic users of e-mail, mobile phone and fixed telephone, these are

technologies they do not need to offer so much energy to use. E-mail can be seen as a development of letter, where the energy to send e-mails instead of a letter is low if the users have availability to a computer with Internet connection. The value it brings is time and functionality. It is faster to deliver an e-mail than a letter, and from where the user can check their in-box is more flexible with e-mails than with letters. The same comparison can be made with the mobile phone, which is a mobile opportunity to talk with friends in a telephone.

The mobile phone and the e-mail are technologies that have growth during the last ten years. Theirs growth are due to that users have continue to use these technologies. According to Kotler (2003) continued usage depends on if the technology reaches high customer equity and if customers are satisfied. High customer equity is based s' value of their usage in relation to their expenditure. Factors to decide these are based on quality, price and convenience. However, value equity is individual for different industries and products such as an airline passenger might define quality as seat width while a hotel guest might define quality as room size. (Kotler 2003, p 76)

One example of customers' equity is the criteria for voice quality. Customers expect better voice quality for services they need to pay for than for free services. Skype provide users with free calls and the expectations of Skype's quality are lower than for fixed telephony which costs more to use. With Skype it is a possible to observe how the price of using a service influences the usage. Skype is used more often for international calls than national calls. Reasons seem to be that customer equity is high for using Skype compare to the costs of using other methods to call international, but not enough high to call national. According to Kotler (2003) who argue that decisions about using different products are always made by customer's equity and satisfaction. Unsatisfied customers do not continue using a product if they are not satisfied with it. A mid satisfied customer does not have any problem to change product, but they can also continue to use it. The satisfied customers will more likely to continue using a product and to spread information about the product to its friends in a positive way. (Kotler 2003, p 61-62) Many Internet players are not using traditional advertising to spread information about their technology, positive month-to-month information is thereby very important for them to succeed. The increased usage of social communities and instant messaging are thereby a result of satisfied customers who are talking with friends about their services in a positive way.

Instant messaging and social communities are two services used mainly among "mainstream youth". "Experiencers" are the main users of instant messaging and e-mail in the mobile phone, while instant messaging is not a popular service among "in touch organisers"-Why "Experiencers" are the main users of instant messaging in the mobile phone and not mainstream youth, who in general are the main users of instant messaging has economical reasons. Mainstream youth are the target segment of instant messaging in their mobile phone since their values in their life is to always be available, and they are users of both mobile phone and instant messaging. According to Kotler (2003) the choice of products are also dependent on which value a product give in relation to its costs. "Mainstream Youth" are not a high-income segment and therefore is the price important in their choice of using new products. "Experiencers" who are the

main users of these applications have an income. Brand and to have the latest technology are for them more important than the price. To use instant messaging on the Internet is free, except from the price of using the Internet. To use IM in the mobile phone costs. One example is from Telia where the users of instant messenger are paying 39 kr/month to use this service and if they do not have free usage of Internet, these costs are added (Telia 2008-07-04). To use this application for free attracts "Mainstream Youth", while "Experiencers" who have a higher income, the value of using instant messaging in the mobile phone is higher than the price. Another interesting aspect about using instant messaging is the low usage of this application among "in touch organisers". "In touch organisers" life situation is similar as "Experiencers", who are using this application. Difference here is not a need more in value and interest of using new technology. This is also the reason why "in touch organiser" is not main users of e-mail in their mobile phone. To check e-mail in the mobile phone requires a mobile phone that supports this feature. "Experiencers" change their mobile phone more often than "in touch organiser" which can be one reason to why they are using this service and not "in touch organiser". Another reason can be the mature of technology, where "in touch organiser" will be users of e-mail in their mobile phone within some years.

8 Discussion

8.1 Trends from a provider's perspective

The trend is moving toward integration, collaboration and flexibility which are shown in figure 16. In the future, different providers will be collaborating and different applications will be integrated with each other. . Consumers will be using similar applications from different devices and will have the possibility to decide which media they want to use to communicate and to share experiences. The strategy of Internet players is to provide popular Internet applications in the mobile phone and to integrate features from different devices. Telecom providers will continue to expand their product portfolio and to bundle services together for the market. Telecom providers are already today providing popular applications and due to this trend, this development is ongoing. Media providers are distributing their content into different devices and applications. Cable providers continue to expand their product portfolio with communication services.

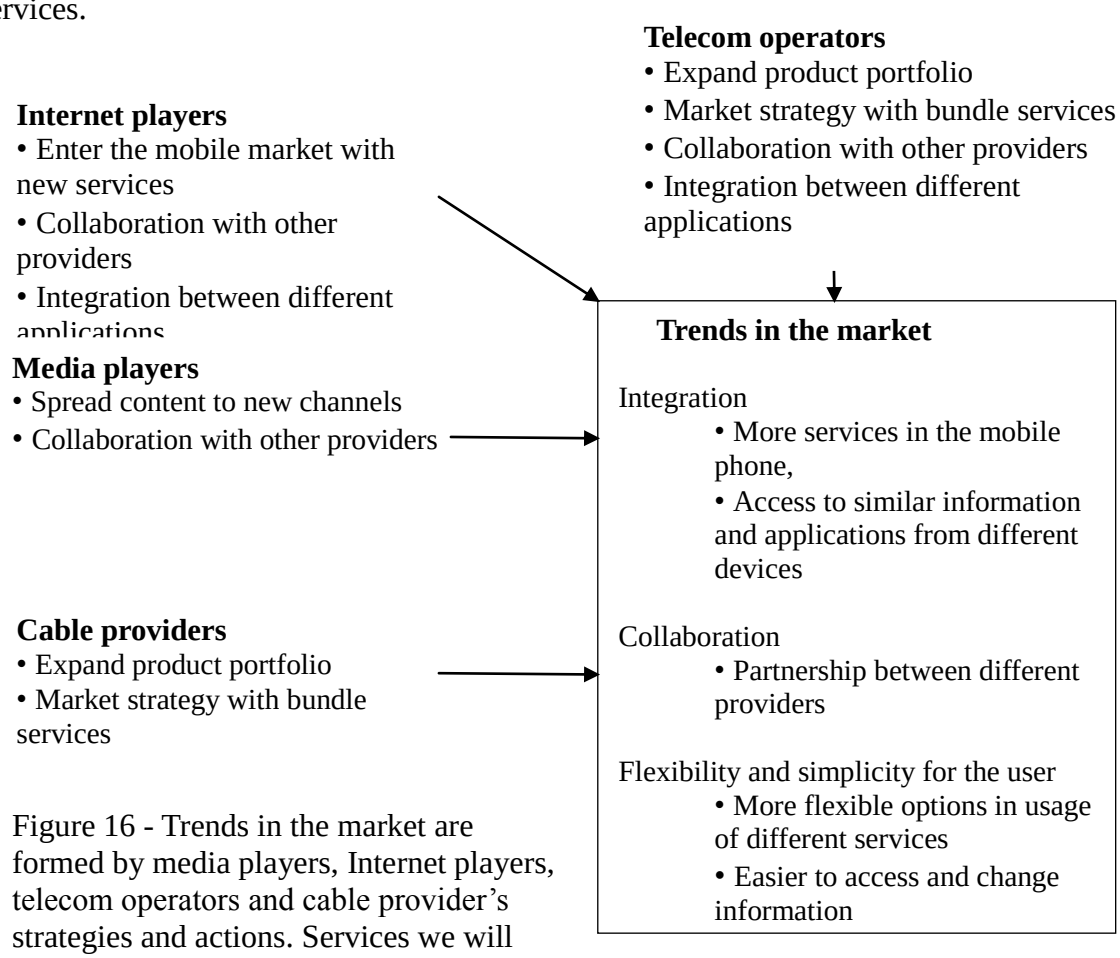


Figure 16 - Trends in the market are formed by media players, Internet players, telecom operators and cable provider's strategies and actions. Services we will observe in the future include collaboration, integration and flexibility.

The strategy of Telecom providers and Internet players requires more collaboration between them. Internet players know how to provide popular applications and want to expand their channels to the market by providing these applications to users of mobile phones. The telecom providers' asset is their mobile user and they want to expand their portfolio with popular applications. Collaboration between different providers has already started. There exists partnership between the biggest Internet players and some operators, and consumers can use msn in the mobile phone as well as Skype if they have a subscription with a provider that supports these applications. One the other hand, it is not necessary with a partnership to make it possible for users to get different types of IM and Skype in their mobile phone. Nimbuzz is one example of this which attracted 5 million users independent of which vendor they used. The number of users of Nimbuzz signals that Internet applications in the mobile phone are attracting customers. The direction of the trend signals more partnerships between different providers but it could also be a sign of less control for the telecom operator about which applications their customers are using. If s download applications on their own like Nimbuzz, the providers lose their control over which applications the users are using with their mobile phone and also the possibility to get paid the usage of them. If Telecom operators collaborate with Internet players or develop their own applications they have better control over their customers. The trend is to have more application in the mobile phone and better availability for the user, but how depends on the providers´ strategy to satisfy their users.

The strategy for media players is to distribute their content into more channels. This requires collaboration with other providers. Which providers will work together depends on which channel they want to use to spread their content. Media content is used to attract users. France Telecom managed to increase their number of users within television by offering interesting media content. Since France Telecom succeeds with this strategy, other providers are trying the same to attract users. The strategy of the media players is thereby dependent on others providers strategy to increase the number of people who are taking part of their content.

The result of the collaboration between different providers, where the strategy is to provide content and applications through more channels, are for the user increased flexibility and availability. The trend is in a direction to portable device with many different features. One example of such a portable device is the mobile phone. The trend is a mobile phone with features like a phone, computer and TV. Instead of using a computer for popular applications, searching for information or sending e-mails, consumers are using their mobile phone. This development increases the flexibility and the possibility to access information from everywhere. The strategy among the providers is to give access to information, content and applications everywhere. However, if they succeed, depends on different factors such as the interface of the devices and the price for using different services. According to Kotler (2003) users tend to make s based on what value a service gives in relation to its costs. If the mobile phone has an interface the user perceives as difficult to use, the value of using a service in the mobile phone is worth less. The same is true for the price. If the price for using a service in the mobile phone is much higher than usage of a similar service on a computer at home, to attract customers using these mobile services providers have to

find a balance where the value of using this service from the mobile phone is higher than the energy and time it takes to use this service more cheaply at home. Distributors and content providers are today using different business models. Content providers provide mainly free services paid through advertising. As a result, it is important for them to increase their number of users rapidly, and after to get revenue from this service through advertisements. The business model for telecom operators is to get paid by the users. The trend where Internet applications enter the mobile market is also a step where different business models enter the same market. Different customers prefer different business models and, to succeed, flexibility for the consumer is an alternative. To increase usage, fixed payment or for free are two proven methods. One example is popular applications on the Internet and the usage of Internet. Comparison with this can be made to the previous model to use dial-up Internet from the computer in the end of the 90s, where the users were paying per minute of use, and the minutes of usage of Internet increased when a fixed fee was implemented.

One different trend is integration between different types of services. This trend increases simplicity and the control for the customers. Integration is between different contact lists as well as between other features. Instead of customers have many different contact lists such as one for the mobile phone, one other for the mailbox and a third one for instant messaging, they will have one single contact list. This single contact list can be reached from the mobile phone, the mailbox and from instant messaging. With an integrated contact list, customers only need to update their contact information from one place and this information is available for all the other applications and devices. From a customer perspective, this will save time and ease their life. This integrated development increases also the control for the customers. Together with an integrated status- and calender function, customers can show how they can be contacted and when.

The control for the customers also increases with the strategy of Google. Their strategy is to provide one number to the users. With one number the users can decide which device they want to use to answer a phone call. The sender only needs to remember one number. Compare to today, the control will change from the sender to the receiver. Instead of the sender decide how to contact a person, the receiver decide how they want to be contacted.

From a telecom provider’s perspective, the trend is moving in a direction to more services available in the market. Their strategy is to bundle different services together and increase their product portfolio. Services that increase in the market today are the mobile data, the IP telephony and the TV. These are services that are not traditionally included in telecom operators' product portfolio, but services that attract consumers and increase providers’ revenue. Cable providers and Telecom providers have during the last years followed each other with their product portfolio. This trend seems to continue in the future. The trend from a cable provider’s perspective is to provide similar services as telecom operators with some exceptions. One example is that cable providers have not access to users of mobile phone, and they have more focus on fixed services than mobile services.

8.2 Trends from a consumer's perspective

The strategies of different providers´ are in a direction to integration of different services and where a portable device like the mobile phone will be like a computer, phone and personal assistant, seems to attract consumers. According to the research made by Consumer lab, the mobile phones are today not only a device used for conversations; it is also a device where the users have their calendar, they store information and store pictures. Consumers are interested in bringing on device instead of bringing one calendar, one camera and one mobile phone

According to which services customers want to use on their mobile phone, a GPS is their first choice on the list. Customers want to integrate more features to their mobile phone. Other services customers are interested in are; an automatic phone backup service, a service to share pictures easily, a presence function and service to get access to their home computer from their mobile phone. Their choice of n automatic phone backup service shows that consumers store more and more important information in their mobile phone that they do not want to lose. They want to have access to their home computer from their mobile phone which signals that consumers want to have the possibility to reach necessary information and documents independent of location. The presence feature and the possibility to share pictures are features that are today available with different Internet applications. Customers interest of this kind of services, signals that customers are interested in using Internet applications in their mobile phone. The result of the research made by Consumer lab, shows that customers are interested to use services that increases their flexibility and their availability.

Among the services customers are using today, there exist different patterns of how they select to use different services. Services that have reached the mass market are services that have replaced a need consumers have. This is something they already use but in a different way. One example is that consumers are today sending e-mail while they before were sending more letters. This does not mean that all e-mail correspondents are replacement of letter, this means that the methods of written communication are changed. The same comparison can be made with other popular services such as IM, social communities and Skype. In common for all these three applications; they are easy to start to use, they are free to use and they fulfill a human need of be in contact with friends.

One other example is YouTube, which is the fastest growing website in the history of the Internet. YouTube fulfills a need to communicate and to share experience with peers. At the same time, YouTube give the users the possibility to take part of video clips whenever theywant. According to a research made by Consumer lab, customers are interested in taking part of TV broadcast when they want. The success of YouTube is because of this service fulfill a need among the customers to share experience and to take part of events in a flexible manner.
During the last years, free applications have growth in the number of users while the revenue from traditional communication methods has decreased. This development signals that customers do not want to pay for services. The same hint comes from some providers' financial result, where providers who managed to attract customers to their mobile offer managed to it by lower the price. Since almost all users have a limited

amount of money, it is not so strange that users are searching for cheap alternatives to communicate. According to Kotler's perspective, where the relation between value and the cost are essential in users´ decision to use a product, there are more factors than the price included in a decision. Factors such as time, energy and functionality influence the price consumers want to pay to get a certain value. These factors are also individual and dependent on peoples' economical situation, their attitudes, their needs and their life situation. Comparison can be made between "Experiencers", "In touch organizer" and "Mainstream youth" which have different preferences on what they consider as important in their choice of using different products. One example is that "In touch organizer" makes a decision to use a product to save time."Mainstream youth "makes a decision to save money while the functionality and the brand are important for the "Experiencers". If a provider should reach all this segments of customers, flexibility is important and different options for the users are important. One example is that "Mainstream youth" prefers advertisement and a free service, while "Experiencers" with a different economical situation prefers to pay to get rid of advertisement.

As a result from customers' preferences on different services, providers who want to succeed in the market tomorrow, should provide services that give customers flexibility, simplicity, services include integration and services that ease an existing need.

The key success factors in the future multimedia market is following:

- Flexibility
  - In business modell
  - In customers usage of different services
  - To access and to use of a service
- Simplicity
  - Easy to use a service
  - Easy to start to use a service
- Integration
  - The possibility to access the same information from different devices and applications
  - Usage of the same kind of service from different devices
- Replacement
  - Services that change the way users perform a need they already have

8.3 Future multimedia services

Providers, consumers and the technology shape the trends in the market. The trends are that customers will have more features included in one portable device, such as a mobile phone. They will be able to use popular Internet applications independent of their location, to access to necessary information from almost everywhere and to share easily experience and features among friends. The market will also be more consumers instead of providers. Consumers will be able to decide on their own when they want to watch a TV show and how they want to answer their phone calls. To provide services that will attract many different types of customers, flexibility is important.

The trend is moving in a direction to more integration between different services, more collaboration between different types of providers and increased availability for the consumers. To provide and to use these services, it requires a technology with it is possible to run these kinds of services. Today, there exist different types of technologies for this purpose and with different qualifications. Which technology that will be used to provide future services out of scope for this study and depends on many different factors. One technology that is a candidate for future multimedia services is IMS and the purpose of this study is to find if IMS can be used to provide multimedia services that consumers will use in the future.

Important in this case is to always give more value than what it cost to use a feature, both in time, functionality and effort as money.

8.4 Can IMS be used for future multimedia services?

The aim with IMS is to provide access, anytime from anywhere, to all services, current and future, that Internet provide. The trend in the market is moving toward this direction, where consumers will be able to use popular Internet applications in their mobile phone and be able to use different types of services independent of location. A portable device, such as a mobile phone, will be more important in consumers' life. From this portable device consumers can store more information than what is possible with their mobile phone today, and they can access to necessary information from their home computer in their mobile phone. Among the providers, collaboration is a trend to be able to provide different kinds of services. This is services that combine features from different types of services and which consumers can use different kind of devices to use.

The direction of the trend is moving in a direction where IMS is a possible technology. The architecture of IMS consists of a layered horizontal architecture where consumers can reach the same information from different devices such as their computer, their mobile phone and their TV. This means that the architecture support the possibility to use the same service with the mobile phone as well as the computer. The architecture also supports the possibility to combine different services with each other, and to introduce easily new services. With IMS providers can use services developed by third parties, combine them with services they have developed on their own and then provide new fancy services to their customers.

Collaboration between different providers and combination of different types of services, also include that different business models intersects. Different types of consumers prefer different kinds of business models. One example is the three different segments presented in this study. The “Mainstream youth”, the “In touch organizers” and the “Experiencers” have different economical situation, different values, different attitudes and requirements. One alternative to target different types of segments are flexibility.

One technology that supports different types of business models for different types of services are IMS. The node that makes this possible is the S-CSCF. S-CSCF controls a session, it registrar and inspects messages sent within the network and it can therefore registrar what types of sessions in use and during how long time. This feature opens up the possibility for the provider to give the user different options of payment. This can be content based charging, time charging, application based charging as well as payment by a third parts. The architecture of IMS also makes it possible for the providers to control the traffic flow and to provide Quality of service (QoS). The QoS, secure a good quality of the service, which is a competitive advantage for some providers. One example is for providers who want to compete against some free services on the Internet such which do not support QoS.

The architecture of IMS supports services that are moving in a direction of the trend. But compare to what kind of services that are launched with IMS today, there seems to a step IMS has reached its potential. Services that are launched mainly with IMS are services like IP Centrex and business trucking for the enterprise market and VoIP for the residential market. These are services that can be launched with other technologies than IMS, and services where an investment in IMS is not necessary. During the last years, services like A1, IP Phone Pro and Turbo call have been launched with IMS. These services are more likely services where IMS starts to move in a direction of its purpose. IMS has the potential to provide services customers will use in the future, but if this will be true depends on providers' ability to provide services where IMS reach its potential. This is services that fulfill the aim with IMS; to provide access, anytime from anywhere, to all services, current and future, that Internet provide.

9 To be successful in the market

The result from this study is that a successful provider in the multimedia market of tomorrow should offer services that give the customers flexibility, simplicity and control. This provider should offer services where the users do not need to change their needs only, the way they perform them. This is needs in consumers' life which depends on their current life situation, their attitudes and their values, where different services help them to perform their current needs. Services customers will start to use are services that resemble services they are using today. But to change will give them a higher value than the costs of continue using the service they already have. The costs can be time, money and psychological factors.
Services that will be present in the market in a close future are services that give customers flexibility and accessibility, anywhere and anytime. A central role in this development is a portable device. Example of a portable device is the mobile phone, but it can also be a computer that is easy to bring everywhere. The development of this portable device is toward integration of different kinds of services. A portable device such as mobile phone will be used as a phone, a GPS, a calendar and as a camera. With this device users can access to information on the Internet and they can use popular Internet applications. Contact information stored in different services, such as instant messaging, e-mail accounts and mobile phones, will be integrated with each other. Updates made in one contact list will automatically be made in the other services. Presence will be a common service, and the respondents in a conversation will have more opportunities to decide and to show how they will be contacted. The trend in the market is moving toward more control for the users, and in a direction where the users will have a portable device that is a mix between a mobile phone, a laptop, a camera and a personal assistant.

Services that combine different services together and that give user's access to them from different devices, require collaboration between different providers or between different organizations within a company. This collaboration will be a change for the consumers as well as for the providers. To keep and to attract customers in this change, flexibility for the users are necessary. Different types of customers prefer different services and different business models, and to attract a broad target group, the key to succeed is to suit services to the users' preferences.

IMS is a technology with the possibility to provide flexible options for the consumers. It is an architectural framework developed by the third generation partnership project, 3GPP[8], with the possibility to provide services that follow the direction of the trend in the market. But if this will happen and when, depends on the providers' ability to take care of IMS features. The aim of IMS is to provide the market with any service, to any device with any access, in a standardized way. From a providers' perspective there are still some barriers to overcome before there will be a sufficient number of services running with IMS in the market. This is barriers related to costs, organizations, inexperience and uncertain about the future. Before more services will be launched in

[8] 3GPP is collaboration between groups of telecommunications associations.

the market running on IMS, providers need to overcome their barriers. From a consumer's perspective, before they will use IMS services in their daily life, they need to find values in using these services.

The trends in the market are in a direction to increased flexibility, control and availability for the users. IMS can be used to provide these kinds of services, but if providers will succeed with services running on IMS, depends on their ability to provide services customers want to use, services that reach high customers equity and services that customers find useful.

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Appendix 1

Country	IMS Application	Launched service	When
Spain	IMS Common system[i]	Residential IP Telephony, teleworking from home and enterprise telephony with IP Centrex and incorporation of PBX switches	2005
Denmark	Residential IP Telephony and IP Centrex	IP Telephony and IP Centrex for small-medium enterprises	2006
Estonia	Residential IP Telephony and IP Centrex	VoIP, presence, instant messaging for residential users. IP Centrex for small and medium enterprises	2006
USA	IMS Common System	Fixed-mobile converged enterprise solution where one phone number enables simultaneous ringing in both desktop and mobile phone, and one converged voice mail system. Targeting medium-to-large sized business	2006
Austria	IMS Common System	Integration of PC and mobile phone, and features like instant messaging, presence, video and conference calls	
Belgium	Residential IP Telephony	Residential IP Telephony, service bundle with broadband connection via Livebox	2007
Croatia	Residential IP Telephony	IP Telephony from PC Soft client with enables free calls between computers and 200 free sms and 200 minutes free calls to any network	2007
Germany	Residential IP Telephony	Residential IP Telephony	2007
Italy	IMS Common System, Video share	Turbo call which enables to share a live video stream, a photo or a file while being in a call, and a service for distributing news feeds to mobile phones	2007
Netherlands	Business truncking[ii], Connecting PBX switches to IMS	Business truncking	2007
Portugal	Residential IP Telephony and IP Centrex	IP Telephony and business truncking for enterprise market. Optimums TAG	2007
Spain	IMS Common System	Video call service between fixed phones, 3 G mobile phones and the TV via set top box	2007
Germany	Residential IP Telephony	IP Phone Pro which is a service for both residential and enterprise market. Enables to communicate PC to PC, or PC to mobile. Include features like chat, presence, video calls and voice.	2008
Greece	Residential IP Telephony	IP Telephony for residential users and enterprise service for small-medium business	2008
Norway	Residential IP Telephony	Converged services to residential and business users such as IP Telephony, IP Centrex, Push to talk, video sharing etc.	2008
Sweden	Residential IP Telephony and IP Centrex	Converged multimedia services with focus on fixed and mobile IP Centrex to enterprise	2008

[i] IMS Common system is the infrastructure for introducing IMS applications. It can include all functional components that give the user a high-end solution or it can be an entry-level solution with just some mandatory functions.

[ii] Business truncking is an application that makes it possible to communicate from a company's PBX to other telephones outside the company, and within the IMS architecture take care of the possibility to connect different networks to the access layer. In comparison to earlier solutions of this phenomenon it is cheaper for the provider with business trucking.