EURESCOM mess@ge
Issue 3/2003

ENTERTAINMENT – OPPORTUNITIES FOR TELCOS

Project reports
Mobile Presence

European issues
IST in FP6 before call 2

A bit beyond
Bits against bites

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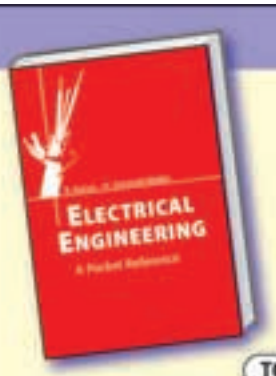

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A Pocket Reference

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Why telcos should take entertainment seriously

Dr. Claudio Carrelli
Eurescom
carrelli@eurescom.de

The relationship between telcos and entertainment has its roots in the pioneer days of the telephone. In the late 19th century, the telephone was used to broadcast operas. Some years ago, people in the telecoms business would have smiled about such ideas. Today, telcos are eager to transmit music, pictures and videos to mobile phones. They know that entertainment is one of the main drivers for data traffic. More entertainment via fixed and mobile lines means more data traffic and more business. However, life is more complex. A number of factors have to be taken into account in this equation.

Limited free time

First, there is the user. Unfortunately, the user's amount of time is limited to 24 hours a day. Subtract the time for sleeping, eating, personal care, commuting, and working, this leaves on average between 4.5 and 6 hours of free time per day, according to a recent Eurostat survey. The Eurostat researchers found out that around 20 to 25 percent of this time is spent on socialising and 40 percent on watching television. There go another 3.5 to 4 hours. This means that the amount of time available for new forms of entertainment is currently limited to 1-2.5 hours. If we add one hour of commuting time, which could be used for mobile entertainment, this would increase the time to 2-3.5 hours per day. This time has to be shared with sports and other hobbies. Is this enough for big business? The market forecasters say 'yes'. Mobile entertainment alone is expected to grow from € 1.5 billion in 2001 to € 15.4 billion in 2005 according to estimates by the Mobile Entertainment Forum and Booz Allen Hamilton.

The pleasant experience of € 1 billion revenues from ringtone sales could favour the view that telcos face a bright future in the growing entertainment market. However, there are other players in the value chain who struggle hard to get the best piece of the cake. There are the content providers, the application developers, other service providers and portal providers.

The importance of Digital Rights Management

What has Eurescom to do with this? As a telco-driven R&D organisation, we are committed to exploring new service technologies and business scenarios in the entertainment sector, from which our member community could profit. However, we know that only co-operation with the other players in the value chain will enable to grow the market to its full potential. There are issues like compatibility of entertainment platforms, which are often seen as a point of competitive differentiation, but which could be also a point for mutually beneficial co-operation. An important issue for advancing the whole entertainment sector is a viable approach to digital rights management (DRM). Without a DRM solution, which satisfies both content providers and users, the market cannot blossom out. Eurescom project OPERA developed an interoperable DRM architecture, which could show the way ahead.

Social aspects of entertainment

However, there is more to entertainment than solving technical issues. There is also a social dimension. Since their market introduction, electronic entertainment services like television and video games have been accused of negative effects on young people. Across-the-board judgements like this certainly don't cover the complex reality. Nonetheless, like any other technologies the new digital entertainment technologies require sensible use. The proper use of these technologies by children and young adults is something to be discussed at home and at school. Allegations that the content of games and videos itself leads to negative effects like loss of reality and violence are more than exaggerated, they are, with very few exceptions, simply wrong. A recent study from the Loyola University of Chicago suggests that even violent online games like Counter-Strike have positive effects on imagination and social behaviour of young adults.

However, entertainment is not only important for adults. All of us need it. Since our ancestors in the stone ages told each other stories sitting around the campfire, entertainment has been an important factor of human life. What has changed are the techniques employed for entertaining ourselves. The wonderful thing about our technologically advanced time is that old and new ways of entertainment exist in parallel. You can go to the theatre or you can sit at your computer playing interactive online games. You can even sit with your friends around a campfire and tell each other stories. It is up to you. Serving the natural need for entertainment is something, telcos have to take seriously. If they do, they will certainly have more fun in the future looking at their profit charts.

Dear readers,

This is probably one of the hottest issues of *Eurescom mess@ge* in a twofold sense. Firstly, the average temperature at our office exceeded 30° C most of the time while we edited this edition, which is quite unusual for Heidelberg. Secondly, the innovative topics we cover are at least as hot as the weather. Especially our cover theme should warm you up for the promising opportunities of entertainment services and applications for the telecoms industry. We succeeded in assembling a collection of insightful articles by R&D and marketing experts, although the press offices of some major telcos preferred not to answer our repeated requests.

The other topics in this issue are at least as hot as the cover theme. 'In focus' features the most southern member of Eurescom, the Cyprus Telecommunications Authority, CYTA. In the 'Project reports' section we present Eurescom projects on 'Mobile presence' and 'NGN service creation'. Under 'European issues' you will find a report about the outcome of the first call in the IST area of the EU Sixth Framework Programme, which includes an outlook on the second call. If you have become a victim of mosquitoes in the last few months, our new 'A bit beyond' article is for you. It presents an innovative method for protecting your skin against nasty bloodsuckers, proving how versatile mobile phones can be.

We hope you will find this issue as interesting as entertaining. Please tell us what you think. Your feedback is important for us, the editors, but also for the authors, who spent a lot of time and sweat giving you exclusive insights in their work.

Some organisational issues:

Please remember to use our fax and online form for updating your address details. It is quite important for us to be informed about your address changes. This will help us deliver the printed issue correctly with the least amount of misdirected mail. The Web form can be used both for address updates and for subscriptions at www.eurescom.de/message/subscribe.asp.

If you are interested in contributing as an author to one of the next issues, please contact us, and we discuss if and how it would fit. Please do not send unsolicited articles but rather an abstract and a biographical note about yourself.

Enjoy the magazine!

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Sn@pshot

The new generation of online game consoles offers added functionality. Just tap dancing still causes minor problems.

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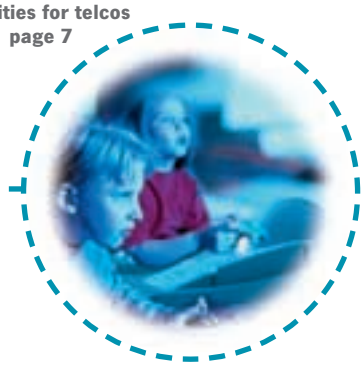

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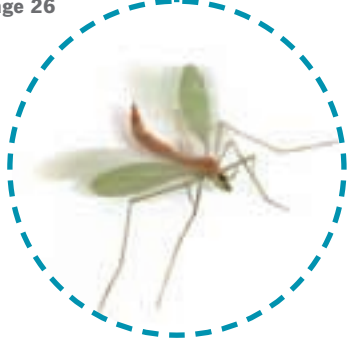

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TEK – search engine for people in developing countries

Researchers at the Massachusetts Institute of Technology (MIT) are developing a search engine specifically designed for people in developing countries. The goal of the project named TEK is to build a low-connectivity search engine for people at the far side of a bad telephone connection. TEK stands for "Time Equals Knowledge".

In many places of the world, there are neither books or journals nor libraries available. To get access to the World Wide Web is, thus, even more important in these areas than in the developed world. But connections are scarce and unreliable. Even if a telecoms network exists, bandwidth is very narrow and fees for Internet access are unaffordable.

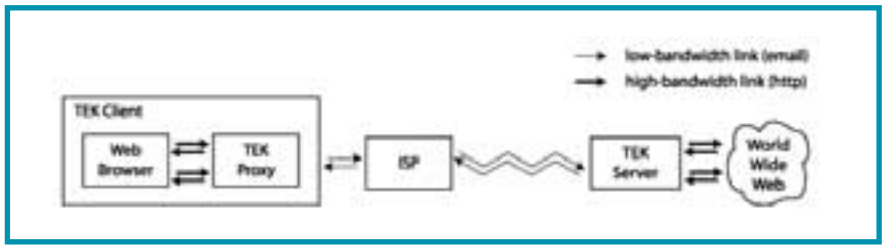
In Malawi, for example, 0.06 percent of the population have access to the Internet. GDP per capita in Malawi is $ 80 per month and Internet fees amount to $ 50 per month. Under conditions like these, searching the Web and downloading the discovered material is no feasible option for the vast majority of people in poor countries.

TEK supports a different model of Web access. "The idea is that developing countries are willing to pay in time for knowledge," explained Professor Saman Amarasinghe of MIT's Laboratory for Computer Science in Boston.

With the TEK search engine, the user e-mails a query to Boston. The TEK server, which is connected to the Internet backbone, searches the Web, locates relevant pages, selects the pages to be sent back, compresses them, and returns them back to the user. Because the search results are returned asynchronously by e-mail, the connectivity charges are lower. Post-processing the search results and selecting which pages to send back reduces the amount of information and addresses the bandwidth problem. The programme keeps a record of all the information sent to avoid wasting bandwidth by re-sending the same Web pages.

The search engine is still in its early stages, with a small number of trial users in countries like Malawi, Sri Lanka, Bangladesh, and Mexico. However, the MIT researchers aim to have a beta version ready to be tested in autumn. As soon as the software runs smoothly, they intend to make it freely available to anyone. The research team has realised that the programme is too big for download over a slow Internet connection. Instead they are planning to send CDs to libraries so that people can borrow and install the software on their machines. They are also considering trying to persuade computer sellers in developing countries to pre-install the programme on machines.

Further information:
http://tek.sourceforge.net/



Architecture of the TEK system

Gabriel in duet with Gates

OD2 and Microsoft open European online music store

Microsoft, the company of Bill Gates, and OD2, the digital music company backed by pop star Peter Gabriel, launched a European online music platform in August. The new service is offered through the Internet music stores of Microsoft and Tiscali. It enables consumers to download individual songs in Windows Media Player format without subscription. Users can choose among more than 200,000 tracks by 8,500 artists from the five major labels. Prices per track start at € 0.99. Charles Grimsdale, CEO of OD2, said: "Consumers can now access a vast library of legitimate digital music."

OD2's catalogue includes many French, German, Italian and Spanish artists as well as strong representation from the United Kingdom and the United States. Individual songs and whole albums will be available from artists including Eminem, Christina Aguilera, and Kylie Minogue.

Jonathan Usher, director at Microsoft's Digital Media Division, said: "Consumers can seamlessly search, browse, download, organise and play tracks as well as take their music with them on more than 50 types of portable music devices." Microsoft also claims that music content delivered using Windows Media 9 reached more than 50 million users and took up only half the storage space of MP3.

Microsoft's new pay-as-you-go online music store challenges the success of Apple. Apple's iTunes service sold more than 6.5 million tracks in three months since its launch in the US. It allows users to download tracks at a set price and then copy them to CDs or portable players.

Further information:
www.ondemanddistribution.com
www.microsoft.com/windows/windowsmedia
music.tiscali.co.uk
www.apple.com/itunes

Big fun, big bucks –
telcos and entertainment

The game called 'multimedia entertainment' has entered a new round. With the fast growing market penetration of fast Internet access and the upcoming third generation mobile phones, the playground is ready for widespread online entertainment. Now the bandwidth greed of multimedia games, videos and music can be served properly. The stakes are high: just in the area of mobile games, revenues are estimated to exceed € 3 billion in 2005 according to an Analysys forecast. And this is just a small segment in the online entertainment market. Promising forecasts like this have encouraged telcos to increase their commitment in the entertainment sector.

With 3G handsets at the doorstep to the mass market, entertainment could really become fun for telcos. According to a survey by the Mobile Entertainment Forum and Booz Allen Hamilton, nearly half of Germany's mobile customers (46 percent) listed 'fun' as the main reason for using mobile data services. However, it is rather doubtful if the majority of mobile users will buy 3G handsets primarily for entertainment purposes. The result of a European user survey by TNS Telecoms was that 77 percent rated e-mail and videotelephony as their favoured 3G mobile data services. Downloading music files and video clips only appealed to 40 to 47 percent.

More service offers for mobile gaming might change this attitude. In February, Nokia launched their handheld games platform N-Gage. Mobile operators like T-Mobile, O2, and Vodafone have already established mobile games platforms in 2002. The analysts from Strategy Analytics predict that there will be 100 million mobile gamers by 2006. However, Tim Raby, Head of Games at O2, cautioned telcos against exaggerated enthusiasm. He said that mobile broadband gaming is "no panacea" and added that even with 3G the mobile gaming experience would not exactly going to be high-adventure "shoot-em-ups".

Even if you add mobile betting and other forms of mobile entertainment, it seems that in the foreseeable future broadband entertainment over fixed lines will further dominate. Especially broadcast television still plays a central role in future scenarios for home entertainment. According to recent Eurostat reports consumers in Europe use about 40 percent of their free time to watch television. In various convergence scenarios, TV is seen as an access point for consumers into the world of broadband services including entertainment. However, if we look at the actual development, the convergence of TV, computer and Internet has not taken off. The recent failure of pay TV broadcasting station Premiere and set-top boxes in Germany is an indication for the reluctance of consumers to do more with TV than just passively consume what is on the broadcasted programme channels. Research by the German BAT institute confirms that the majority of users is not interested in interactive entertainment, but would like to lean back and enjoy the show.

Attempts to converge the TV with computing and interactivity via telecommunications went hand in hand with the digitisation of content. Thus, it is not surprising that telcos participated in convergence activities already in the 1990s. In 1991 TCI, US West and AT&T announced a first video-on-demand trial.

The main reason for entertainment services becoming an important issue for telcos has been the rapid growth of the Internet. The time people spend in front of computer screens is starting to outweigh the time people spend watching broadcasted TV. A large part of this time is devoted to entertainment via the Internet.

Since many of the entertainment services require the delivery of large amounts of data to the customer, one of the main obstacles for telecom operators was the limited bandwidth available at the residential customer. Cable TV companies and satellite operators had a clear advantage, because broadcasting was the cheapest and easiest way for delivering large amounts of content. On the other hand, on-demand and interactive services require an individual channel including a back channel for communication with the service provider and this is not an inherent feature of broadcast content delivery. Equipment that supports the services offered by cable and satellite operators had to be upgraded or the services depended on the availability of a phone line. The introduction of DSL and other technologies for fast Internet access in the telecoms networks clearly changed the situation in favour of the telcos who could now offer bandwidth from several hundreds of Kbit/s up to several Mbit/s.

Broadband entertainment

The broadband revolution has enabled a broad range of new entertainment services and the enhancement of already existing ones. An overview by Eurescom project ERNIE is covered in this issue.

Higher bandwidth offered by broadband networks allows users to stream full-length movies and other video and audio content such as sports events or concerts. Many radio stations broadcast on the Internet, allowing you to listen to live broadcasts of music, news reports and chat shows from all over the world. Sites such as www.web-radio.com give directories of radio stations that broadcast on the Internet.

On-line purchase and download of movies is offered by on-line movie services that operate over the Internet. Consumers can view the downloaded movies on their computers or on a TV set through a set-top box. Users have access to a library of movies at their fingertips, and save time by not having to visit a video store.

The success of MP3

The download of MP3 music files from the Internet is probably the most successful online entertainment service of the past few years. The success is due to a complete, easy-to-use service including neat little MP3 players and self-explaining software packages. The download of MP3 music has become so successful that the searchword 'MP3' has even outweighed the searchword 'sex' recently. While there has been much attention given in the press lately to sites that provide free, but illegal music downloads, there are many legitimate sites – such as the iTunes music store – where music can be purchased and copyright is not violated.

Interactive applications

For audio and video applications interactivity can be supported by a navigation function that enables the user to find, choose and select content items and products. To obtain information about charges and other conditions of use is a very basic requirement for most services. Electronic program guides (EPG) can support the user to navigate to content by date, time and content provider. Play control functions enable the user to interact and control the delivery of time-based media such as music and video content, by means of VCR playback commands like Play, Pause, Fast Forward, Rewind etc..

Another very different genre of interactive applications is online games (see report in this issue). Broadband can improve the gamers' experience, but bandwidth alone is not enough. These applications require also low response time for requests and there have been already complaints that DSL is not optimised for this kind of interactive applications. ADSL offers in Germany provide an option called 'Fastpath' that improves response time basically by switching off certain error correction mechanisms that take place between the DSL-modem and the first switching node in the network.

Sensitivity for packet loss applies for interactive applications as well. Packet delays are even more unacceptable, since they would cause a time-shifted reaction of the service to user actions. Large buffers are not a solution, especially for services that support voice conversation.

Another aspect of online gaming that should not be underestimated is the desire for personal communication among gamers. Many games have an integrated chat capability, which is used by the gamers to organize alliances and agree strategies. But the chat functionality is also used for personal communication not directly related to an ongoing gaming session, effectively replacing a telephone call.

Producers of online game consoles, like market leader Sony with their Playstation 2, have understood the users need of being connected. They have started to offer online platforms for the gamer community. However, the current situation is not yet as envisaged by the console producers. Millions of stand-alone devices have been sold, but only very few of them are connected to the telecoms network.

Currently, it is not so easy to play a game via game consoles against other remotely connected players. Even if the technical bits and pieces are available, the complete application is not obvious and easy to use, not to talk of trying to play an online game with game consoles from different producers. Online game console producers seem to be not extremely interested in standardising the online access of their products.

Protection of Intellectual Property

Fulfilling the technical and the user requirements is only half of the success in the entertainment game. To market and deliver the content you first have to have it. This sounds trivial, but as long as content owners are not sure their intellectual property is effectively protected, they are reluctant to deliver. The protection of intellectual property has become a major issue in recent years. Digitisation has provided the user with the capability to reproduce content without loss in quality and give it away for free to friends. In the last few years the music industry has claimed considerable lower revenues and profits due to popular file sharing tools available over the Internet; the most prominent example being Napster.

Today technology exists that can protect the usage of the content, namely Digital Rights Management (DRM). With DRM technology the content is encrypted and the user can acquire a license to play. Different business models and licensing schemes are possible. For example the user can be granted to view a movie once, or be granted to view a movie multiple times within one month etc. The Extensible Rights Markup Language (XRML) is a general-purpose, XML-based specification grammar for expressing rights and conditions associated with digital content, services, or any digital resource (www.xrml.org).

Nevertheless due to the late evolution of standards in this area the market for DRM is fragmented today and there are many proprietary solutions, which is a hindering factor for a faster take-up of on-demand and streaming content services. Eurescom project OPERA has identified this obstacle and is working on the definition and prototypical implementation of an open DRM architecture (see article in this issue). This architecture provides a common way of handling licenses, by integrating existing DRM technologies and frameworks. It is open in the sense that future DRM technologies can also be integrated.

Who wins?

Entertainment can be a very exciting and rewarding game for telcos. However, it is not yet clear, who will profit most in the value chain: the content providers, like Vivendi Universal, Bertelsmann, and AOL Time Warner; the platform providers, like Microsoft, Sony (also a content provider); the broadcasters, like Murdoch, AOL Time Warner, Vivendi Universal, and the cable TV operators; or will it be the telecoms network operators? This seems to be an open question. The statement that 'content is king' has been controversially discussed without conclusive result. Maybe 'network is king', who knows? As US comedian Jerry Seinfeld once said: "There is no such thing as fun for the whole family." On the other hand, the entertainment market may be big enough to guarantee fun for most members of the family.

Entertainment and new interactive services via DSL

Eurescom project ERNIE

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T-Systems
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DSL technology offers the capacity needed for delivery of broadband entertainment services thus opening market opportunities that are becoming very attractive for telecom operators. Cable and satellite operators currently dominate this market, so that broadband services delivered over DSL have to provide an added value to the customer in order to be successful.

Residential broadband is being rapidly deployed in Europe. While in December 2001 only about 4 million connections were available, the DSL Forum reported over 11 million in March 2003. Western Europe was the fastest growing region in broadband DSL subscribers in the fourth quarter of 2002. Residential broadband will penetrate 20 percent of total European households by 2006, reaching between 25 and 30 percent in some markets. ADSL accounts for the majority of subscriptions and is expected to enjoy a far steeper growth than cable modem services. According to the DSL forum the value of the residential broadband access market will rise from 1.2 billion € in 2001 to 11.3 billion € by 2006.

Having these figures in mind, as well as the desire for a separation of cable operations from telecom operations the Eurescom project on 'Entertainment and new interactive services via DSL – ERNIE' (P1201) is studying the feasibility of provisioning broadband residential services such as video on-demand and interactive TV services via IP-based networks. The project chose a user-centric approach focussing on acceptability and quality aspects compared to traditional DVB-based or analogue TV services. Based on a collection and assessment of customer requirements, as well as an assessment of available technologies, the project is developing a showcase demonstrator to prove

the feasibility of delivering broadband services to the residential customer.

Despite an increase of Internet usage, the TV set is the most ubiquitous household device and will remain the mass-market medium for home entertainment as the 'lean backward' medium. Customers are highly interested in advanced residential entertainment services and the acceptance of such services is positive in general.

Service portfolio and customer requirements

Regarding services the project defined a service portfolio, derived from the expectations and requirements of residential customers. The main services identified in the area of entertainment and interactive services over DSL are consolidated in table 1:

Services of importance for the concept and design of the demonstrator
■ Live Streaming
Video
Music
■ On-demand services
Video
Music
Games/Applications
■ Near-on-Demand services
Time-shifted TV / PVR (Personal Video Recorder)
■ Interactive Services
Video
Games
Voting
Betting
Training
■ E-commerce
■ Communication
Video Telephony
Video Conferencing
■ Hosting
■ Navigation/Electronic Program Guide
■ Personalised Information Services

Table 1

Regarding content the market analysis showed that there is a general expectation of a broad spectrum of quality content. More specifically customers ask for:

- News
- Movies / TV
- Sport
- Entertainment
- Music

Regarding usability aspects the main expectations relate to flexible and seamless access to the services. More specifically customers ask for:

- Time flexible access to content and services
- An easy to use and self-explaining system with navigation and electronic programme guide
- Permanent disposal of the service
- Short access times to the service
- Personalisation of the service
- Technical quality comparable to VHS and TV
- Security (for transactions)
- Reliability
- Interoperability with other technical equipment

Finally transparency of prices, tariffs and discounts is an important customer requirement.

Target user groups and service packages

Potential target and user groups of the possible entertainment and new interactive services that can be offered via DSL have been identified following two different approaches; (1) the socio-demographic approach, i.e. considering gender, age, income, education level, occupation etc., and (2) the 'soft facts' approach, i.e. considering disposable time, lifestyle, usage rate and attitude towards TV, Internet and interactive services. The second approach better describes users' attitude toward different topics of interest. Consolidating available data, the possible target groups can be classified according to figure 1.

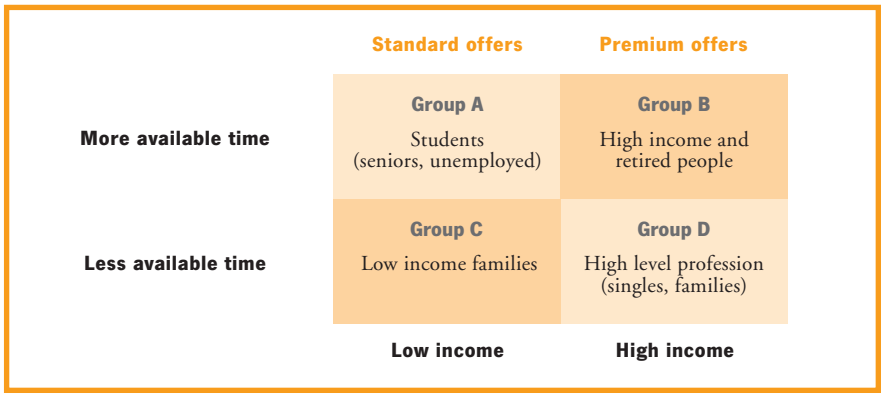

Figure 1: ERNIE target groups

Offers will have to be flexible enough to provide for a wide variety of users. There is no single adoption model; so different packages need to be tailored for the different customers, matching their needs, also within the groups. In general standard offers are suitably for groups A and C which represent more or less the mass market, whereas premium offers refer to groups B and D.

The bundling of services (data, voice, video) via a unified platform (ADSL) would be the first critical consumer requirement. The possible service packages (see table 2) for home users are based on the target groups, their needs and requirements. All the packages could include as a basic service a fast Internet access and voice over IP.

ERNIE services

One of the objectives of the project ERNIE is to develop an overall system concept that can be implemented by a demonstrator offering services from the identified service portfolio. The following list of services have been analysed from the functional and technical perspective and are being integrated in the demonstrator considering the different user requirements.

Live streaming

From the end-user's point of view live video streaming is very similar to TV broadcasting – in contrast to on-demand streaming. The same content is distributed simultaneously to a large audience of users and there is no possibility for the end user to modify the playback of the video like using a video recorder for fast forward, rewind, pause etc. Like in classical broadcast scenarios, the only thing he can do is to choose between different channels or to switch on or off the 'video channel' on his client device.

Live video streaming can be seen as a modified replacement of conventional television where the Internet replaces the transmission channel. Therefore some general requirements for live video streaming can be derived by combining the advantages of conventional television and those of the Internet and by avoiding their disadvantages.

From television the user is used to zap through the channels. To provide the user the same experience, the delay introduced by encoding/decoding algorithms as well as by streaming buffers should be as short as possible. A total delay of some seconds or more will not be accepted by the end users.

On-demand services

The term 'on-demand services' subsumes a number of very interesting service opportunities ranging from video or music on-demand, interactive games, interactive news TV, over video conferencing, distance learning, up to catalogue browsing and e-shopping. In order to use on-demand services, customers can normally use their PC or their TV connected to an additional set-top box.

The essence of video on demand (VoD) is that users can view the offered content at any time they like. Interactive video on demand (iVoD) is an enhanced, updated version of the VoD service where viewers watching the videos may use functionalities similar to those of the video recorders (forward, rewind, pause, slow). An iVoD system consists of three main components:

Packages	Premium Services	Target Group
Package A	■ Near Video on Demand – Movies – Sports – News – Kids – Adults ■ Gaming ■ Music on Demand	■ Target group A (Students, unemployed) ■ Target group C (Low income families)
Package B	■ TV / Video on Demand – Movies – Sports – Kids – Adult – News – Documentaries – Wildlife – Nature ■ Music on Demand	■ Target group B (High income and retired people) ■ Target group D (High level profession of singles and families)
Package C	■ Video on Demand – Movies – Sports – Kids – Adult – News – Documentaries – Wildlife – Nature ■ Music on Demand ■ Communication – Video / multimedia conferencing – Unified messaging – Chatting ■ E-learning ■ Interactive e-shopping – Shopping – Banking – Traveling ■ Information ■ Security	■ Target group D (High level profession of singles and families)
Package D	■ Gaming	■ All target groups
Package E	■ TV	■ Target group B (High income and retired people) ■ Target group D (High level profession of singles and families)

Table 2: Targeted service bundling

the set-top box or PC at the customer side, the distribution network and the server at the provider side. All iVoD connections require bi-directional communication between the user and the service provider. Movies are stored on special devices and delivered by video-servers. A system of an appropriate design must be able to manage several hundreds or even thousands of requests simultaneously; furthermore quality of service in the individual users view may not deteriorate with an increasing number of clients and streams.

Delayed TV / Personal Video Recorder

In interactive real time feed applications, viewers can not only watch live broadcasts, but also control the playback (pause, rewind, fast forward) of the live feed up to the current point in time. There are two versions: 'Delayed TV', which is fully operator controlled and Personal Video Recorder (PVR), which is viewer controlled.

Delayed TV is defined as the capturing and storing of live streaming on the video server for a later play-back. The choice of specific channels and programmes is controlled by a scheduling mechanism that is linked to the electronic program guide (EPG) and is under the control of the operator. A PVR enables the viewer to locate and specify a programme from an EPG that will be casted in the future for recording. The PVR functionality can be implemented by allocating hard disk memory, usually on the set-top box.

Video telephony

The idea of video telephony is just as old as telephony itself. The term video telephony describes full-duplex, real-time audio-visual, electronic person-to-person communication using visual and audio connections. Current price evolution of basic multimedia equipment that can be attached to a PC has supplied most PCs with video telephony capabilities. Together with a DSL based Internet connection the customer can easily be offered video telephony services.

Navigation and electronic program guide

The navigation and the electronic program guide (EPG) provide the user with an interface to the system. It must be easy to understand and use and should provide all expected functionality to use the available services. The design and 'look and feel' are as critical for successful services as the content itself.

The design of presentation pages for the TV is different from the design for a PC. Pages for the TV requires disciplined design in order to provide the user with a comforting visual experience. The user generally sits more than 2 metres away from the TV screen. This means that anything on the screen needs to be bold and large enough to be seen from a distance. For the same reason, the screen should be free from clutter with limited text and visual objects. The choice of colours has a great impact on the presentation quality, e.g. high contrast display may result in image distortion. Also pages should be designed to fit within a single screen to avoid scrolling. The menu must support personalisation and secure access.

Conclusion

The competition to win the consumer market is rising among the different service providers (telecoms network operators, cable and satellite companies). Telecom operators have not yet enough experience in offering and delivering interactive TV and entertainment services. If telecom operators will take a share in this emerging business area they need to develop maturity in this business sectors.

The technology for delivering interactive broadband services is becoming available and prices are dropping. Set-top box technology enables today services like the Internet, messaging, entertainment on demand, etc. on the TV set. Bringing more interactive services into the home will help increase revenues and gain customer loyalty. There is a high potential in offering new interactive broadband services for residential customers via DSL connections. For successful rollout and considering the future penetration of DSL subscribers, the telecom operators have to gather the user requirements (both end-users and content provider) and develop the market perspectives by introducing suitable business models for broadband entertainment services over DSL.

More information can be found at **www.eurescom.de/Public/Projects/P1200-series/P1201/**

Open DRM architecture

Eurescom project OPERA

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New electronic distribution channels for content, offer new service types for customers and provide new business opportunities for content providers. However the acceptance of these new distribution channels depends on robust mechanisms to protect the interests of the various stakeholders in the value chain. These mechanisms are known as Digital Rights Management (DRM). DRM must fulfil a number of requirements in order to meet the needs of the stakeholders in the industry and keep up with the expectations of the customers. This paper describes an open DRM architecture, which supports interoperability of DRM technologies.

Digital rights management refers to the control and protection of digital intellectual property, including documents, images, video and audio. DRM limits what a user can do with the content he bought. To date, several proprietary DRM systems are on the market, and so far nobody can safely predict, which of them will become a standard. This situation has already led to some products on the market, addressing the DRM interoperability issue. DRM frameworks are used to 'translate' between different DRM systems by:

- A common interface for content packaging, i.e. encryption and specification of usage rules for different DRM systems.
- The possibility for a user to choose between different media players i.e. to watch a video with the Microsoft or Real player.

As a compromise, common DRM frameworks only synchronise the content between different DRM systems and operate the underlying DRM systems in parallel, to give the user the opportunity to play the content with the media player of choice. Consequently, they do not add any functionality to the underlying DRM systems and still have the same restrictions as the underlying DRM systems.

The Eurescom project OPERA (P1207) is specifying and prototyping an open DRM architecture, enabling the interoperability between different DRM systems. The OPERA architecture adds two additional capabilities to common DRM frameworks:

- The usage license is independent of the underlying DRM system.
- The usage license is bound to a user instead of, as is common with existing solutions, to a device.

OPERA directly integrates major DRM systems and uses already available DRM frameworks. On top of these technologies the OPERA license management system supports the following concepts:

- Secure authentication of the user over a telecom provider network (SIM card or phone number). Authentication is additionally possible over other authorisation services, e.g. Liberty or Passport.
- The usage rules are built upon a license model, which every DRM system can handle. The 'play-once' license is assumed to be the lowest common denominator for each DRM system.

This means that the system distinguishes between licensees of the underlying DRM systems and 'OPERA licenses'. While the OPERA licenses support several usage rules, OPERA itself needs only a 'play-once' license from the underlying DRM systems. The advantages of this approach are:

- Independent license management, which facilitates the content import for content providers.
- Support for a wide range of usage rules, even though they are not available on the target DRM system.
- Automated license recovery for every connected DRM system even though the DRM system itself is not able to recover licenses.
- Secure storage of the valuable licenses and content for the user.
- Independence from the end user device.

The OPERA-Portal

OPERA system overview

The open DRM architecture aims at standardised interfaces and processes so that interoperability of DRM systems can be achieved. In addition to the focus being on interoperability, the OPERA system also ensures that several usage scenarios are supported by the system in spite of the fact that each underlying DRM system may not support all the usage scenarios. The goal is to achieve a user-based content registration system, which integrates the major DRM systems and frameworks.

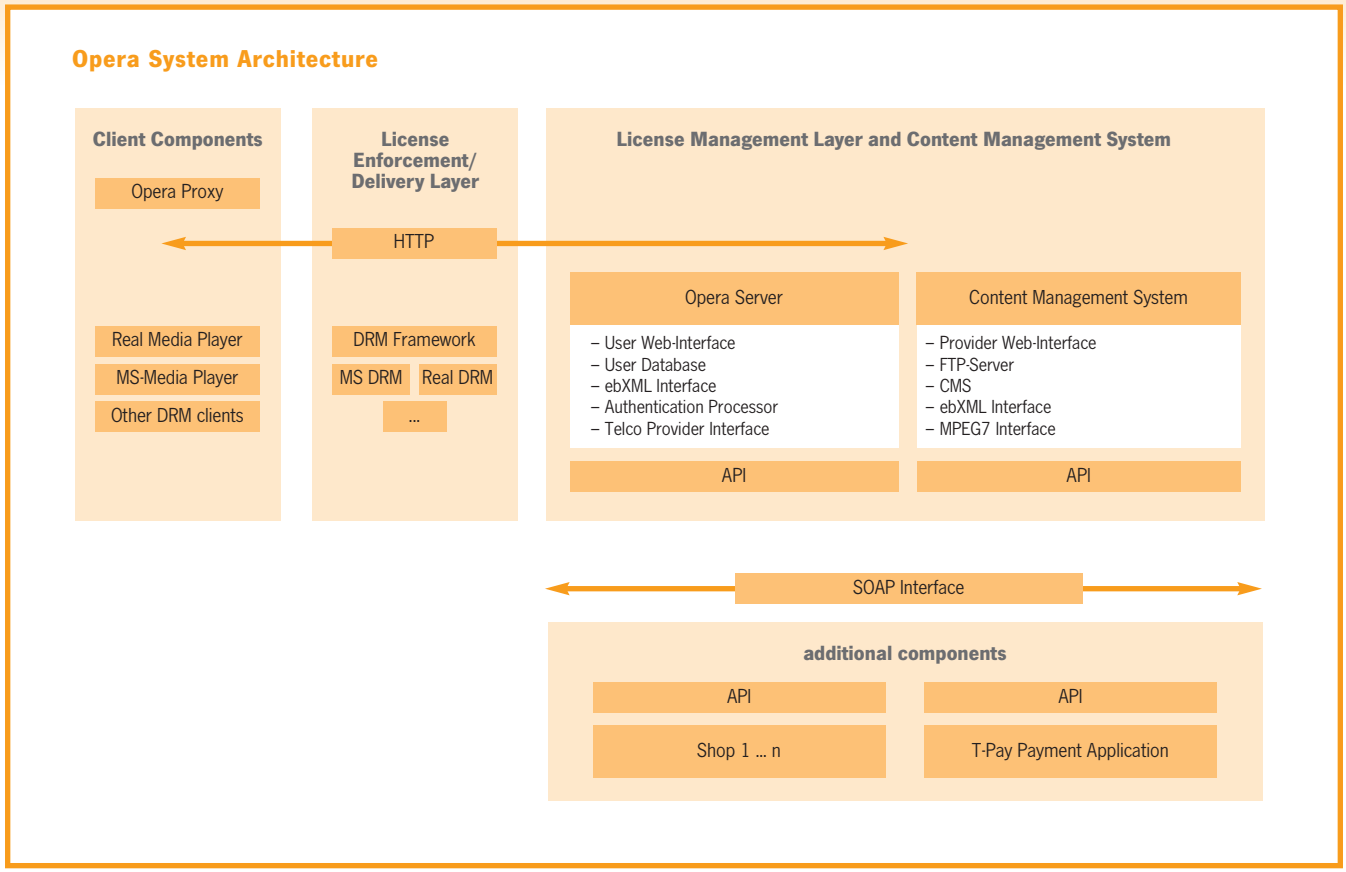

Figure 1: System overview

OPERA uses available technologies and adds its own license management system on top of them. The OPERA license management system – referred to as the OPERA server – is able to assign content to a user, who is registered in the system, and manage a range of usage rules. The OPERA server can provide any level of complex business model independent of the usage models supported by the underlying DRM systems.

The main components of the system are depicted in figure 1.

Client components

- The Opera Proxy is responsible for connecting the user to the Opera server and adds the users authentication information to the incoming license request from the Player. This component is a core OPERA component.
- The player or viewer application allows users to consume the content they bought. This component depends on the particular DRM system used. This component is a third party component on which the OPERA system depends.

Server components

- The license management layer (OPERA server) is responsible for the management of the rights the users have obtained. These are described through an OPERA license and are stored in a database on a per-user basis. This component is a core OPERA component.
- The license delivery layer is responsible for delivering the licenses of the underlying proprietary DRM-systems to the user's device. Examples for such systems are DMDfusion and the DWS (Digital World Services) system. This component is a third party component that the OPERA system depends on.
- The enforcement layer is realized by one of the proprietary DRM-systems available on the market. It is called enforcement layer because these systems enforce the compliance to the license agreement by using mechanisms like encryption. This component is a third-party component on which the OPERA system depends.
- The content management layer represents the content utility interface and a media asset management system. For the OPERA system the focus is on the additional possibility to specify usage rules in the OPERA server. This component is not part of the OPERA system but is needed for a running system.

Additional components

- The shop application is used to buy content over a web-based application. The OPERA management layer also uses the shop to verify that the user who requests the license really bought a license for the content. This component is not part of the OPERA system but is needed for a running system.
- The payment application is often part of the shop application but may also be a separate application, e.g. T-Pay or FirstGate. This component is not part of the OPERA system but is needed for a running system.
- The content delivery system should support both download and streaming capability. This component is not depicted in figure 1.

Conclusions

The OPERA architecture describes a system that enables interoperable digital rights management. The OPERA server and OPERA proxy mediate between multiple available DRM systems. The value of the architecture to service providers and network operators is that the components of the architecture have well defined and open interfaces. Hence, DRM system information and usage information is accessible to these service providers and operators. This is a significant departure from the current state where such information is not easily accessible. The OPERA architecture also provides a roadmap for the integration of different DRM systems. This could also facilitate the integration of emerging DRM solutions based on open standards into the OPERA system.

More information about the project can be found at:
www.eurescom.de/public/projects/P1200-series/p1207/

Mobile entertainment – "A huge market"

Interview with Rann Smorodinsky and Steffen Leistner from the Mobile Entertainment Forum

Steffen Leistner and Rann Smorodinsky

Market forecasters have predicted a boom in mobile entertainment. Eurescom mess@ge asked two experts who should know, if this will come true and what the challenges and opportunities are. Dr. Rann Smorodinsky is chairman and co-founder of the Mobile Entertainment Forum (MEF) and co-founder of Cash-U Mobile Technologies. Dr. Steffen Leistner is vice president at Booz Allen Hamilton and head of the MEF's Commercial Task Force.

What is the market size and growth potential of mobile entertainment?
Smorodinsky: Mobile entertainment is a huge market. Depending on which market forecast you consult, the estimates are in the range of 5 billion to 11 billion dollars until 2005-2007. Since I entered this business in early 2000, the market has grown by 10,000 percent up to now. Entertainment has evolved from TV, the computer and Internet to mobile handsets. Mobile entertainment has the advantage that it is very pervasive.

The pervasive success of ringtones has obviously contributed to the recent excitement. The latest report suggests that the downloadable ringtone market will double to US$4 billion by 2008.

What are the main drivers of mobile entertainment?
Smorodinsky: The main drivers are the amazing availability and connectivity of mobile devices. Everyone has a mobile phone, and people have it with them and are connected 60 to 70 percent of the daytime. With your mobile handset you are part of one big family. You can use it for multiplayer games like 'Dungeons and Dragons', but also for offline games like 'Tetris'. You can then post your highest 'Tetris' score via mobile. Chatting alongside the game and meeting others is also an important factor.

Which factors could impede the growth of mobile entertainment?
Smorodinsky: A main issue here is that two completely different industries, the network operator and the media industry, have to co-operate. Entertainment people and operators sometimes look down on each other and often don't speak the same language. There is a wide cultural gap. If a game producer talks to a telecoms engineer, they might have a completely different notion of what, for example, 'publishing' means. The 4Mobile Entertainment Forum tries to bridge this gap between the two cultures. We have defined a common terminology, which is documented in a glossary of mobile entertainment terms.

There are also technological obstacles: Digital Rights Management, download compatibility, super-distribution protections, lack of standardisation, and different colour schemes. For one mobile application, a developer may have to design 20 different versions.

What is the relationship between fixed-line and mobile entertainment?
Smorodinsky: It is incorrect to perceive them as substitutes. I see a positive correlation between them.
Leistner: The technology discussion, mainly driven by operators or technology providers over the last couple of years, led to an overall confusion of end customers. Operators felt the customer reluctance to deal with underlying technologies very well and are shifting their message away from putting technologies first to putting application and the consumer experience first. This also means that in the future it will become more and more irrelevant which technology is behind your application: fixed like ADSL or fibre, mobile like GPRS or UMTS, semi mobile like Wi-Fi. New devices, different pricing models – this all leads to a scenario to best meet the customer need and create a great experience or just fun.

How will mobile entertainment develop in comparison to other forms of entertainment, like home entertainment?
Leistner: Clearly nobody will carry a 50-inch flat screen with a surround system to get the home entertainment experience at any place, even if the mobile technology would provide this option. Main drivers behind this new area of mobile entertainment are increased mobility of people and the emergence of applications and devices as the technology becomes more and more standard and widely available. So it is a new world and still in its infancy compared to, for example, home entertainment and therefore offering a much greater growth potential.

Who in the value chain will be the winner(s) in the mobile entertainment market?
Leistner: We developed within the MEF commercial task force a comprehensive value chain, identified most critical questions and developed most likely scenarios. Currently, it is hard to predict the one specific winner. We don't believe that there will be only one single winner because of the overall complexity to make mobile entertainment work: content companies, application developers, technology providers, device manufactures and operators have to cooperate to make it happen. The main driving forces are currently large mobile operators, leading device manufacturers, and application developers.

How frequently do you use yourself mobile devices for entertainment?
Smorodinsky: I don't use mobile devices for entertainment myself, but I am a big believer in mobile entertainment. Sober analysis has shown me that this is a big business. I love to watch my three kids play; they are four to nine years old. They like to play Java games on their mobile handsets. They even play on their mobile at home, though they could use the computer. Research shows that users in general play on their mobile phones most of the time from 5 to 7 p.m., when most of them are at home.

The interview was conducted by Milon Gupta.

Further information is available at **www.mobileentertainmentforum.org**

Online console gaming is here

Will telcos and ISPs be players?

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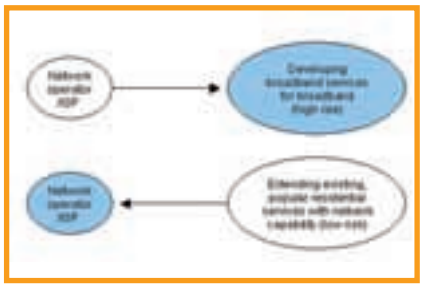
In less than six months, more than 350,000 people signed up for Microsoft's online console gaming product Xbox Live. Over one million games are played via Xbox Live every week. However, Microsoft is not alone. During the first half of 2003, the other major console vendors, Sony (Playstation2) and Nintendo (GameCube), have launched online capability to their consoles.

It should be noted that console games differ from PC games both with respect to higher CPU usage and bandwidth consumption.

So far, telcos and ISPs have not made their mark in the world of online console gaming, and it is about time we ask ourselves what business opportunities exist and what roles we can take on in this accelerating and exiting market.

The Japanese market research company Global Information Inc. estimates that the global online games market will represent 3.2 billion US Dollars and 113 million users in 2005. Although they expect PC online gaming to continue growing strongly, "the main driver of the market will come from console online gaming, which will bring masses of new users to online gaming and will rely on lucrative business models."



Alternative strategies in broadband service development

A different service development approach

Online console gaming is an excellent example of how one can bridge the gap between a purely technology-driven development, and more user-focused service evolution. The strategy is different from the traditional development of completely new services often based on technology, rather than user acceptance and usability. The two different strategies are shown in the figure.

Telecom vendors seem to have adopted a 'wait-and-see' strategy towards online console gaming. Partly so, because of the more general recession within the industry, but maybe just as much because the development model of these new services has 'by-passed' the telecoms industry and reduced it to a mere carrier.

Business opportunities and roles

The telecoms industry has previously had a central role in many online services. However, it has hitherto failed to make its mark in the world of online console gaming. Whether or not this is part of an explicit strategy, the fact remains that by adopting such a position the short-term result will be that telcos will loose out on substantial, potential revenues. On the longer term the result might be that telcos find themselves more than one lap behind in the race for developing profitable, online services for a larger general public.

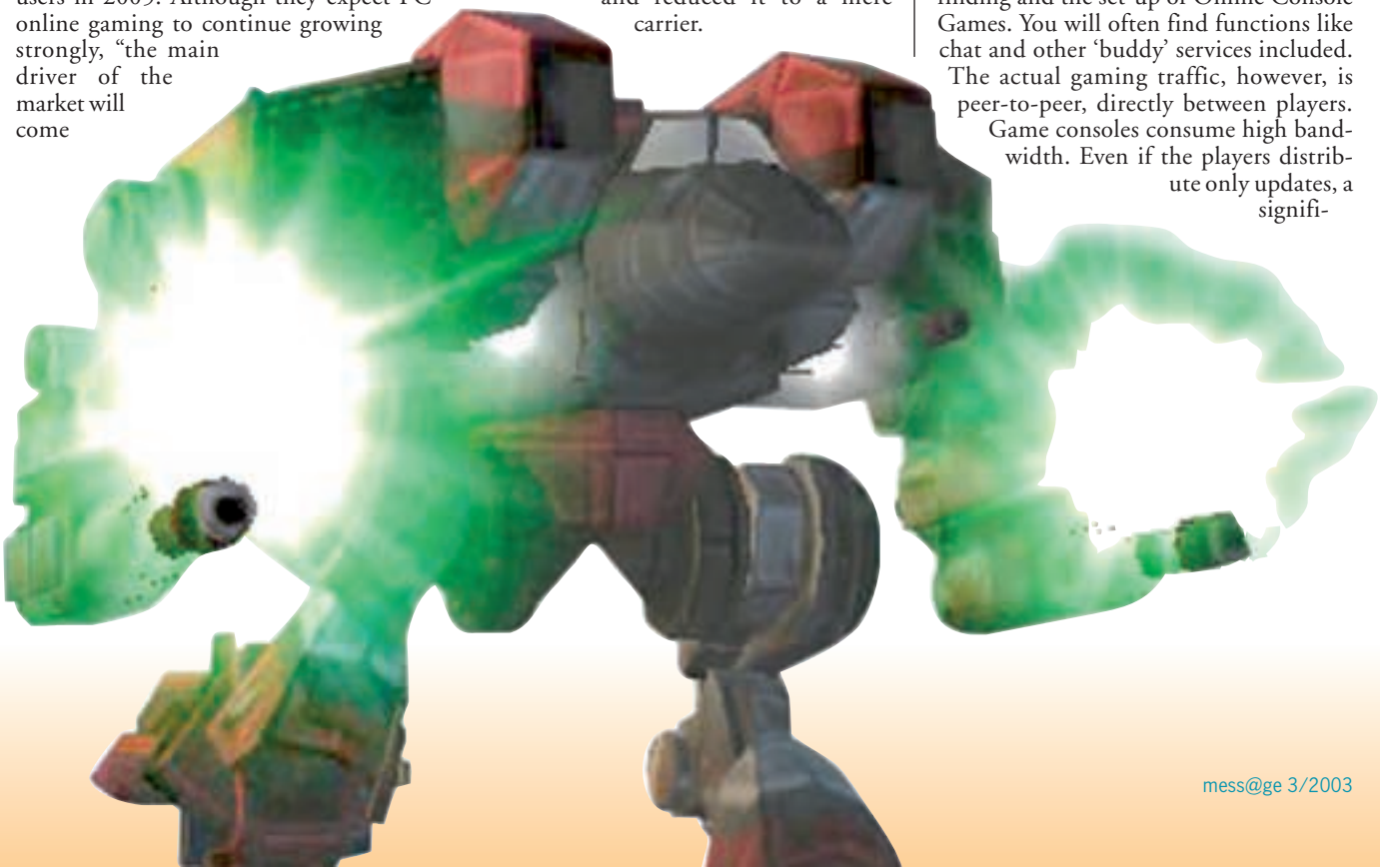
There are several roles for telcos to play in the market of online console gaming. Which one to opt for depends on both the willingness to invest, the adopted profile of risk-taking, and how online console gaming relates to each company's product portfolio or strategic ambition. Examples of roles can be:

- Telcos acting as 'conveyor belts', i.e. as mere carriers.
- Telcos defining online console gaming as an important marked segment.
- Telc's acting as GSP (Gaming Service Provider).

Network impact from online console gaming

From our initial experiments with Online Console Gaming, some basic facts can be stated.

Most of these applications are based on a central server to provide for registration, finding and the set-up of Online Console Games. You will often find functions like chat and other 'buddy' services included. The actual gaming traffic, however, is peer-to-peer, directly between players. Game consoles consume high bandwidth. Even if the players distribute only updates, a signifi-



cant amount of data needs to be distributed between the players. Our initial study concludes that the following parameters are important in online console gaming:

- Delay, usually referred to as ping times or 'lag'.
- Bandwith capacity.

Both of these parameters are crucial, and are influenced by network architecture, possibility for local routing and symmetry in the xDSL-products.

Conclusion

We believe that more research is needed in this field in order to address important questions like:

- How can online console gaming represent new business and revenue opportunities for traditional network operators both at pan-European and national level?
- What roles can and should telcos/ISPs take in this new market?
- How will online console gaming affect both edge and core networks and their design?
- Can online gaming consoles represent an alternative way to provide TV-users with other popular Internet based services like messaging and VoIP?

These are major questions, which should be explored in further studies. What makes this field so interesting is that online console gaming represents just the first of many new bandwidth-consuming, peer-to-peer-based applications and interactive services entering our networks.

Further information:
Global Information Inc.
www.gii.co.jp

Online gaming: Koreans know how to play

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In South Korea, online gaming is practically a national pastime. The most popular game, Lineage, is a massive multiplayer online role-playing game (MMORPG) that allows thousands of players to fight, chat, and trade with each other in a fantasy world. Nearly two million people (4 percent of the total population) play the game each month, sometimes with as many as 120,000 people playing at the same time. South Korean telecommunications providers have benefited from the popularity of gaming because it has spurred broadband adoption and helped the country achieve the highest broadband penetration rate in the world (over 70 percent of all households). Likewise, NC Soft, the developer of Lineage, posted over U.S. $100 million in domestic sales last year.

Online gaming in the U.S., by comparison, is still not in the premiere league. Most Internet subscribers never play online games (see figure 1), and those that do typically play simple card and trivia games that are available for free. Games that generate recurring revenues appeal only to a niche market. For example, the most popular MMORPG in the U.S., Sony's Everquest, has only 500,000 total subscribers, despite being offered in a substantially larger consumer market than South Korea. The industry has tried to break out of this niche through high-profile games based on Star Wars and The SIMs, a popular computer game. To date,

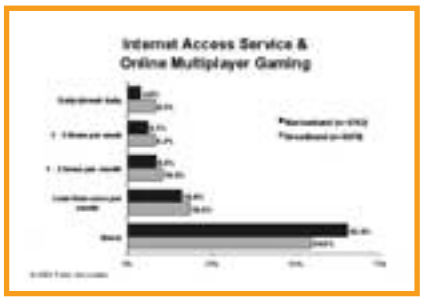

Figure 1: Internet access service and online multiplayer gaming in the USA

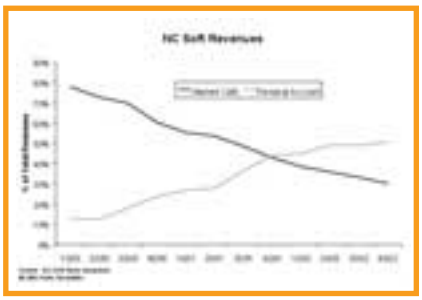

Figure 2: NC Soft revenues 2000–2002

however, it has not succeeded. The SIMs Online has only 100,000 paying subscribers, while Star Wars Galaxies was quietly launched last month.

The symbiosis between the business of gaming and the business of broadband adoption in South Korea has served to accelerate consumer demand for both services. Game developers such as NC Soft offer Internet cafés unlimited access to a list of gaming titles for a price of $30-$50 per PC. The cafés, in turn, charge players just a few dollars per hour to play. This arrangement makes online gaming very inexpensive for first-time players. Should these players become habitual gamers, they can purchase their own account for around $25 per month. Broadband service providers ultimately benefit as well, because gamers, now addicted to the high-speed experience found in Internet cafés, often want a broadband connection at home.

Luring subscribers via Internet cafés has been central to NC Soft's success, and its revenue base has steadily shifted as a result (see figure 2). Conversely, the inability of online gaming to break into the mainstream market in the U.S. reflects a uniquely American revenue model. In the U.S., gamers are first required to purchase software for roughly $50 but then charged a lower monthly fee for the online gaming service ($10-$15). Therefore, a first-time taste of a new MMORPG in the U.S. is around $65, as opposed to $1-$2 in Korea. Gaming software is free in Korea.

The success of online gaming in South Korea highlights the potential for profitable partnerships between broadband access providers and game developers. Providing online games at public Internet points such as PC cafés, video-game arcades, and Wi-Fi hot spots can generate access revenues for telcos and gaming revenues for developers. Likewise, a low-cost introduction to broadband and online gaming encourages long-term adoption of both. Broadband service providers and game developers alike should therefore take a close look at the South Korean model and consider its international potential to develop gaming and broadband markets.

Cyprus Telecommunications Authority

A telecommunications hub in the Eastern Mediterranean region

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The Cyprus Telecommunications Authority (CYTA) is established by Cyprus law as a corporate body responsible for the provision of telecommunications facilities, both nationally and internationally. CYTA has made substantial investments in the past few years towards upgrading its telecommunications network and providing a number of new advanced services to meet the ever-increasing market demand, particularly from the commercial community.

Taking advantage of the island's geographical position, CYTA has developed an impressive satellite earth station infrastructure and an extensive submarine fibre optic cable network, which connects Cyprus with the neighbouring countries of Greece, Israel, Syria, Lebanon, Egypt, and through them with the rest of the world. This makes Cyprus a telecommunications hub in the Eastern Mediterranean area.

CYTA is firmly committed to providing its customers with a complete portfolio of market-driven telecommunications services, using state-of-the-art technology and proven products, covering the whole spectrum of customer needs for both voice and data communications, fixed and mobile. Our aim is to become a customer-friendly organisation and to promote our operations as people-oriented. We want to establish Cyprus as an excellent telecommunications hub, attracting international business interest and having a substantial regional outreach.

An international perspective

Today, CYTA is on a dynamic course. The abolition of its monopoly status, the liberalisation of the market and the banning of cross-subsidies are imminent. These changes will lead to losses in market share and revenue. Consequently, CYTA has an obligation to find alternative sources of income by offering new products and becoming active in new markets. At the same time, we must create the conditions that will enable us to maintain as much as possible of our current customer base. All of these factors create the need for alliances and partnerships, both locally and abroad, in order to achieve economies of scale as well as enhance our know-how and competencies.

This is why, on the international level, CYTA's research strategy aims at developing partnerships which will enable the development of value added services including the provision of enriched content, distance learning, tele-medicine and e-commerce. The knowledge, skills and qualification of CYTA's staff have enabled the acquisition and development of competence in such broad domains as Intelligent Networks, Access Networks, Multimedia and IP Solutions, Mobile Networks and Services, Network Management, IT Systems and Software Engineering as well as Broadband and Entertainment services.

Our vision is to transform CYTA into the most competitive enterprise in Cyprus. Our goal is to provide impeccable services to the Cypriot customer, continue to provide the country with a modern electronic communications infrastructure which will enable Cyprus to become a prosperous Information and Knowledge Society in an acutely competitive, globalised environment and to be viewed as a model business in our sector both inside and outside Cyprus. Thus, CYTA aims at making a substantial contribution to the creation of a modern, European Cyprus.

Research and development

CYTA's activities in the field of research have grown through the utilisation of ongoing collaborations as well as the participation in new research programmes. More specifically, CYTA is involved in projects of the 5th and 6th Framework Programme of the European Union in the area of Information Society Technologies (IST), Eurescom and the Cyprus Research Foundation.

R&D activities at European level

CYTA has successfully participated in the following projects of the 5th Framework Programme:

1. e-MINDER – Electronic Commerce Leveraging Network for Developing European Regions

This project targets to leverage less developed countries in e-commerce activities. Its aim is to bridge the gap between the more and the least developed European regions and to provide citizens and SMEs with the required services and support to implement their e-commerce related activities. This will be achieved through extensive training of people and the creation of a European Network of Leveraging Centres within the three partner regions Spain, Cyprus, and Poland.

2. MB-Net: A Network of Excellence in mobile business applications and services

The objective of this Network of Excellence is to systematically investigate the future of mBusiness by identifying research

CYTA's Headquarters – Nicosia, CYPRUS

challenges, formulating policy recommendations and providing strategic roadmaps on a 5-year horizon. This is done through a robust methodological approach pursued by an independent discursive forum consisting of industry and research leaders that collectively represent excellence in mBusiness across Europe.

CYTA has also been a member of the European research program COST (European Cooperation in the field of Scientific and Technical Research) and was represented in the technical committee on telecommunications for many years.

R&D activities at national level

CYTA has a close collaboration with the Cyprus Research Foundation, which is responsible for the development and funding of research programmes in Cyprus, University of Cyprus and other research institutions. CYTA financed and supported through the provision of telecommunication services and infrastructure numerous research projects at national level. Examples are the development of tele-medicine applications like the implementation of a telematic system for the needs of cancer patients and the utilisation of GPRS in the transmission/reception of X-ray images and video in emergency orthopaedics cases.

CYTA is also an active, founding member of the Cyprus Research Academic Network, which supports the creation and management of a network for the provision of high quality services, aiming at the promotion, development and support of research and academic activities in Cyprus.

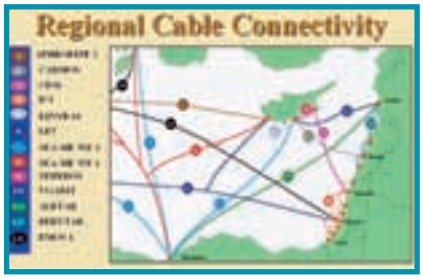
CYTA and Eurescom

CYTA has participated continuously and actively in Eurescom's R&D projects. In December 2003, CYTA will complete five years of successful membership. During this time CYTA has participated in numerous projects covering a lot of different areas.

In 1998, CYTA participated in its first Eurescom project, which was 'BOBAN – Building and Operating Broadband Access Networks'. The aim of the project was the extensive research of the technology required for the development of future broadband services. As a result, today CYTA offers a new service called i-choice, which enables its customers to connect to CYTA's broadband data network, employing DSL technology. The DSL technology created a unique opportunity to maximise the utilisation of our copper infrastructure and enable broadband service delivery.

After BOBAN, CYTA took part in 'FREEHANDS – Fibre and Radio Enhanced IntEgration in Heterogeneous Access Networks for Delivery of broadband Services', in order to examine the incorporation of wireless broadband access technology in the architecture of access network. It aimed for the provision of all kinds of broadband services through a wide variety of access media. In the same year, CYTA studied also the techno-economic viability of mobile internet services, through IP via 'FIT-MIP – First steps towards UMTS: Mobile IP Services. A European Testbed'.

In the following year, CYTA participated in another three projects of strategic importance. The first project was 'eMporio – Mobile Electronic Commerce' which



The submarine optical fibre cable network in the Eastern Mediterranean basin connects Cyprus with neighbouring countries and international networks.

Satellite telecommunications network.

dealt with the development of mobile commerce services. The second one was 'SALTAMONTES – Selected Quality of Services Provision in a Multi Protocol Label Switching/Differentiated Services Internet'. The goal of the project was to study and evaluate issues related to QoS, implemented by the Differentiated Services approach and Multi Protocol Label Switching (MPLS). The project focused on the migration concept of IP networks towards the use of MPLS, MPLS based enhanced IP services, and MPLS interoperability. The third project was 'SCORPION – Scalable Optical IP Transport Networks'. The project dealt with optical IP transmission networks. The aim of the project was to study the combination of IP and GMPLS (Generalised Multi-Protocol Label Switching) functionality with the emerging Optical Network (OTN).

Currently CYTA is working in 'ERNIE – Entertainment and new interactive services via DSL' and 'CENTS – Cost-Effective migration to FTTx-Networks for Tomorrow's Services'. ERNIE aims at the development of entertainment services, like interactive TV through IP networks by using the DSL access network while the main objective of CENTS is to help operators to further develop their access network into Next Generation Optical Access Networks.

Apart from its participation in Eurescom projects, CYTA assisted in the revision of recent project results by providing its experienced personnel to review the following projects: 'Distribution and configuration support for distributed PNO applications', 'ICE-Commerce' (Framework for Interoperable and Customised E-Commerce Solutions), 'Always on – heterogeneous services – everywhere and on any kind of material', 'Next Generation Networks: The services offering standpoint', and 'Next-Gen open Service Solutions over IP (N-GOSSIP)'.

Conclusion

CYTA's R&D work in the field of communications and applications during the last five years shows quite clearly the great emphasis given to collaborative research work and its resulting advantages. No single company can achieve comparable high quality results by conducting research alone, even if the money invested equals the sum of collaborative work. It is the exchange of experiences and information as well as the creation of an international network of experts, which has an outstanding value. With this spirit, CYTA seeks the opportunity for collaborative work in research programmes that are of common interest to the potential partners. In this respect, CYTA looks forward to Eurescom's further initiatives, especially those for the 6th Framework Programme of the European Union, which will serve as an opportunity to enter into this kind of collaboration and utilise the accumulated knowledge and experience in future research activities.

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XML Web Services for the telecom market

Eurescom workshop discussed the business opportunities for telcos

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The Eurescom workshop "XML Web Services for the telecom market" took place at the Eurescom Conference Centre in Heidelberg from 24-25 June 2003. It attracted 70 attendees, who represented network operators, manufacturers, software vendors, solution providers, and academia. In an exhibition area, several vendors and network operators were showing their latest developments and trial results.

The objective of the workshop was to explore and discuss the potential of XML Web Services for telecommunications and to show example applications implemented in experiments and trials.

Web Services is currently one of the hottest issues in the software industry. This is not surprising, because Web Services have the potential to repeat the success of the Internet. In the world of Web Services, one software application can dynamically discover a number of others over the Internet, and by using their compound functionality a new service can be created.

In a keynote, IONA's chief corporate scientist Seán Baker gave an example scenario for a global telco: "One customer service application involves 32 different applications, partly custom built and partly built by third-parties. There are 4 different types of middleware employed on 4 hardware platforms, using the programming languages Java, C and C++." Baker explained that for the interworking of the service components Web Services could help by providing a technology-neutral format for messages, which appears to be accepted by most vendors.

Thomas Hoppe of T-Systems presented an analysis of telcos' business models for Web Services, summarising results from Eurescom project P1209. They include brokerage of Web Services, the provisioning of content services including content integration from different sources, and finally the provision of supporting infrastructural services for Web Service providers, including security, authentication, billing and payment services. Hoppe also concluded that a market for commercial Web Services is currently not visible yet, which is also due to the still immature state of the technology. He explained that a market survey done by Cap Gemini Ernst & Young in 2002 revealed that 83 percent of the respondents expect that the needed standards will be available within 2 to 4 years. However, other presentations showed that Web Services are already beginning to be applied in areas like Parlay for the access to telecoms networks, or for secure authentication in the Liberty Alliance framework.

The results of the technical experiments in P1209 were summarised by Dave Milham of BT Exact. He said that the interoperability of the used products was generally good in spite of some compatibility issues around data format and types. This shows that the basic Web Service specifications are mature, but what is still missing are unified orchestration and process definition specifications. Sune Jakobsson of Telenor explained that also security is still a big concern when using Web Services, as they are not detected and filtered by any traditional firewall. There is work going on in various approaches to overcome this issue, e.g. with XML signature, XML encryption or Public Key encryption.

In a presentation about Web Services in mobile telecommunications, Andreas Fasbender of Ericsson explained that the media industry starts to discover the mobile channel. In this context, network operators could become a service layer provider for content providers, offering services like, for example, sales & distribution, charging, presence & location or content adaptation. Under the title "Leveraging the 'C' in 'ICT' through XML Web Services" Marc Jadoul from Alcatel presented a local transport application. A prototype had already been implemented in the city of Bordeaux. Through this application a local transport company offers their customers information on how to get from their current location to their destination, showing the way to the nearest bus stop including a timetable and fare all on the customers mobile phone. For building this application Web Services were used to integrate functional components at the involved bus company, telco, bank, and geographic data provider.

Thomas Hoppe: "A market for commercial Web Services is currently not visible yet."

Marc Jadoul presenting a Local Transport Information application implemented with Web Services

For this presentation, Marc Jadoul received the 'Best speaker' award. The other presentations, however, were also highly rated: The workshop participants expressed their great satisfaction with the quality of the workshop via feedback forms and personal feedback.

For those who missed the event, there is a CD available with audio/video streams and pdf files of the workshop presentations. Details are available at **www.eurescom.de/XML-WebServices**.

Contextualised Mobile Presence

Making the customers visible

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Presence management (PM) technologies allow users to be continuously visible to their friends and colleagues. PM has enabled hugely successful Internet applications, such as instant messaging (IM) and buddy lists, with tens of millions of users. During the last two years PM has gradually made its way into the mobility world, with the potential of becoming a killer application also in this market sector.

Eurescom project P1204 Mobile Presence aimed at exploring the potential benefits that PM technologies promise to mobile telecom operators and their customers. The main results of the project are functional prototypes demonstrating novel ways of utilizing PM in form of advanced mobile telecom services. These prototypes are built on top of an experimental platform for mobile presence, also developed in the course of the project. P1204 is in addition charting a number of new business models for PM-related services.

Advancing the state of presence services

Presence services are very often associated with conventional "buddy list" applications, which provide access to online friends and the possibility to instantly communicate with them. In the marketplace we can witness the emergence of literally hundreds of buddy list applications with numerous features. A goal for P1204 Mobile Presence was to demonstrate the utility of PM technologies in varied scenarios, not necessarily limited to buddy lists. Although buddy lists are important and successful applications, we believe they do not appropriately demonstrate the profound value of presence as a ubiquitous and integrated network service.

A challenge for the project was therefore to find a suited scenario to focus our development work. The chosen scenario was that of a distributed project group consisting of knowledge workers, similar to a Eurescom project group. We chose this scenario because it demonstrates the value of presence in a broader sense of support for long-term collaboration. The scenario was also very familiar to us, and we could easily use ourselves as test persons. The chosen scenario puts emphasis on advanced modes of goal-oriented collaboration including communication, shared production of project material, and fine-grained coordination of actions based on real-time presence information.

Mobile Presence prototype

The developed prototype is in some aspects similar to a conventional buddy list, with features for defining and maintaining a list of buddies and instant communication. However, a number of important differences distinguish our prototype from commercially available products:

- **Contextualized presence:** A problem with conventional buddy lists is that you can be either online or offline. There are no means to tell others in what context you are working when you are online so that your friends or colleagues can decide whether they want to disturb you. Mobile Presence platform allows you to indicate to others what you are working with. In Figure 1, users Kati and Bill indicate that they are working on a project called "TaskForce".
- **Advanced collaboration support:** In addition to providing access to people and their online status, the P1204 Mobile Presence prototype allows users to share content in form of files and documents. Figure 2 shows a file archive in our prototype. Users can upload files to common areas and classify these files according to what subject or project they belong to. The uploaded files can then be shared among a predefined group of users. The application notifies the users when others upload files or modify existing files.
- **Mobility:** The developed prototype is available with full functionality on Pocket PC platform and Windows laptops, and with limited functionality on Sony-Ericsson P800 phones (see Figure 3). The prototype has been tested in WLAN and GPRS networks. All versions have integrated functionality for detecting and visualizing user location through GSM or manual positioning. In this respect, the prototype demonstrates how advanced mobile presence-enabled services might look like in the future.

Figure 1: Indication of current work: users Kati and Bill indicate that they are working on a project called "TaskForce"

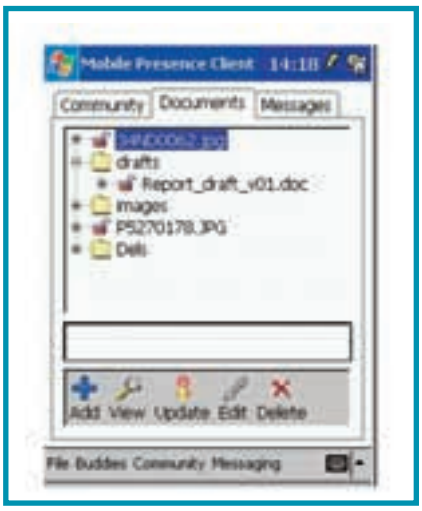

Figure 2: File archive in the P1204 prototype

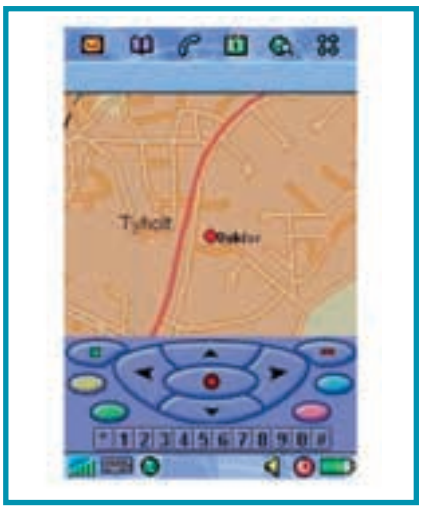

Figure 3: Visualisation of a mobile presence on a Sony-Ericsson P800 mobile phone

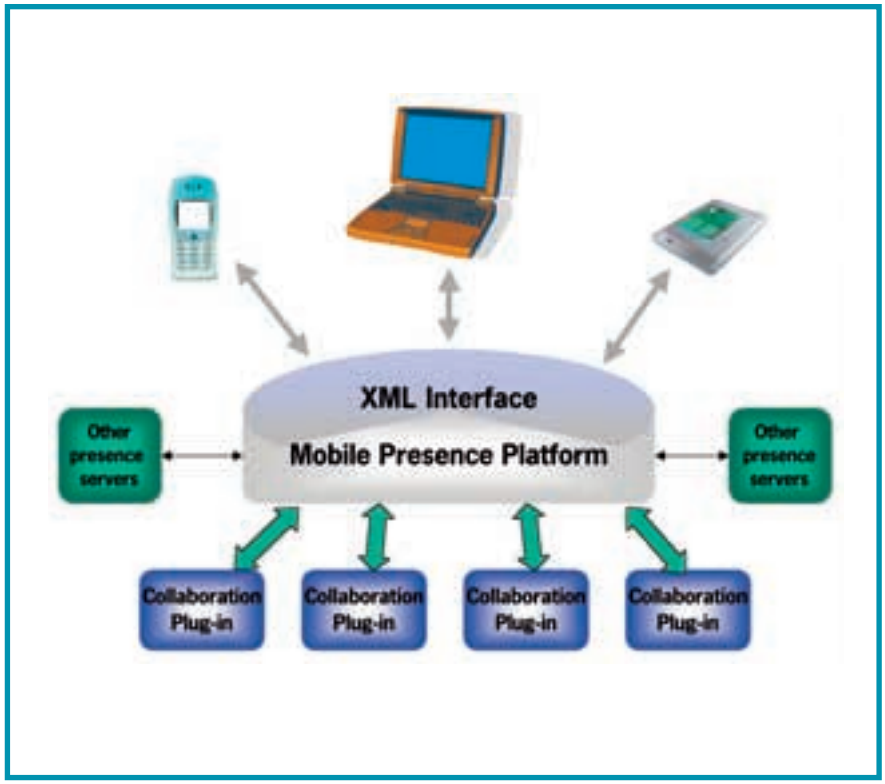

Figure 4: Architecture of the experimental P1204 platform

Mobile Presence platform

The demonstrated prototypes are built on top of an experimental platform shown in Figure 4. The platform offers an XML-RPC interface to client applications. The interface implements a rich and light-weight protocol that can be used by small mobile devices as well as larger ones. The platform has a highly modular architecture that allows the addition of specialized "collaboration plug-ins". The job of these plug-ins is to advance the functionality of the platform in specialized areas. Plug-ins are currently implemented for content-sharing, location information gathering, and communication with external IM systems.

Conclusion

Presence management has become almost anonymous to buddy lists. Going "beyond buddy list" was one of our goals in order to demonstrate that presence should be treated as a ubiquitous network service, and that this ubiquitous service can be used in a vast number of applications beyond buddy lists. P1204 Mobile Presence has resulted in a platform that shows to be generic enough to support social interaction and collaboration among users in different situations. The platform is demonstrated through example services, and is being currently used in real user tests where new services and clients are being developed based on user feedback. Our future research agenda includes work on privacy and security, PM standardization, as well as thorough work on refining business models for commercialising advanced presence services. More information about the results of the project can be obtained by contacting project manager Riccardo Pascotto at Riccardo.Pascotto@t-systems.com or on the Eurescom project web page **http://www.eurescom.de/public/projects/P1200-series/p1204/.**

IPR management in collaborative research

A chance for safeguarding value in joint research projects

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For many people Intellectual Property Rights just sound like administrative load. In most cases the administrative work is widely outweighted by the chance of safeguarding the values achieved through the results of collaborative research.

The expression "Intellectual Property Rights" (IPRs) is a wide term that may cover everything from copyrights via trademarks to patents. Projects at Eurescom – no matter whether they are originating from Eurescom or any other initiative, such as the European Union's 5th or 6th Framework Programme for European Research (FP5, FP6), – may have to handle copyrights as well as occasionally trademark registrations. The main issue, however, and the focus of this tutorial, is the area covered by patents and subsequently licensing agreements.

There have been rules for IPRs since the beginning of Eurescom, slightly changed over the years, but in principle still the same. The IPR rules for the FP6 projects of the European Commission are quite similar, even though they use a different terminology. Eurescom makes a difference between "Technology" and "IPR", which can be licensed, while the EU-terms cover both. We will mention here in parallel terms, which have the same or a very similar meaning.

In the past, IPRs were practically irrelevant for the management of collaborative research within Eurescom. The foreseen licensing procedures were never used. But times have changed. A proper accounting also for immaterial goods, such as the results of research is considered increasingly important, even if it is very difficult to put a value on such IPRs. Manufactur-

ers have been doing this for a long time. The closer co-operation between telecom operators and manufacturers in Eurescom projects and especially in the FP6 projects will increase the need for a proper management of IPRs.

Two different kinds of IPRs

In collaborative projects there are two kinds of IPRs.

The "**Background IPR**" or "Pre-existing Know-how" already exist and are necessary for the work in the project. The participants owning these IPRs usually make them available for the project work free of cost. They remain property of the introducing participant. If they are later necessary for the use of the results they have to be paid for. This requires a clear identification of such background IPR from the beginning.

The "**Foreground IPR**" or "Knowledge" is resulting from the project work. Several project participants may jointly own an IPR, but very often it is owned by one participant. We are talking here about small bits and pieces, which together form the result of the project.

IPR-rules for Eurescom projects

New technologies and foreground IPRs from Eurescom projects are available for use by the project participants and the Eurescom shareholders free of extra payments. This reflects the fact that on the one hand the project participants worked together for these results and on the other hand the shareholders of Eurescom with their membership fees and capital investment provided an important part of the infrastructure for the project.

Even if available for free use by all Eurescom shareholders, the technologies and IPRs are fully owned by the project participants who created them. The licenses mentioned below are only for the use of technologies or IPRs. They do not allow sub-licenses to third parties.

This means that only the owner of the technology or IPR can give a license to a third party, e.g. to a manufacturer, who was not involved in the project and who wants to use it for a new product.

The IPR-rules in the Eurescom Membership Agreements are (slightly simplified) as follows:

A shareholder participating in a Eurescom project has to give licenses according to the table below.

For other project participants rights and obligations differ slightly.

Instead of giving licenses to each of the other Shareholders and project participants, the shareholder can decide to give only one license to Eurescom and task Eurescom to grant sub-licenses to the others.

The consortium agreements of FP6 projects have rules between the project participants similar to those between Eurescom Shareholders. The cost-free use may, however, be limited to the participants within one work package of an Integrated Project.

A tool to make IPR management easy in a collaborative project

Any small piece of new know-how can become an IPR. IPRs can be patented if they are not in the public domain before the official procedures of patenting are started. In the process of a collaborative project it may be important to secure and protect know-how during the work in order not to loose the possibility for later patenting of the mature thing.

Eurescom is currently preparing a tool for the administrative handling of IPRs in FP6 projects. If this tool is running, it will also be available for other projects.

The tool will mainly consist of electronic forms for the registration of IPRs with a comprehensive description of the registered items. This will make the management of IPRs very easy for the project participants

Background or pre-existing know-how has to be registered before it is introduced into the project work. Foreground should be registered as early as possible. There will also be forms for appeals against registrations, where other participants can raise their objections against the registered IPR on the basis that it is already in the public domain or that somebody else owns it. Such appeals will be possible within a given time after registration.

Disputes over IPRs should be settled in mutual discussions. The FP6 consortium agreements usually provide a conflict resolution mechanism for it. Only if they fail, the issues could end in court or arbitration, which may cost a lot of time and money.

Don't be afraid of IPR issues

Eurescom will make the administrative handling of IPR issues in collaborative projects as easy as possible. Besides providing the appropriate tools and electronic forms, we are ready to give assistance in using the tools.

Of course, there will remain some case-to-case issues with the content or the description of an item. Those problems can be solved with the help of the IPR legal experts of the participating companies.

in respect of	To other shareholders	To Members participating in the Project	Associate members participating in the Project	To others participating in the Project
Foreground technologies and IPRs	Only for the Use of such foreground	Only for the Use of such foreground	Only for the Use of such foreground	Only for the Use of such foreground
	Free of payment	Free of payment	At non-discriminatory fair and reasonable terms	At non-discriminatory fair and reasonable terms
	For IPRs only to the extent essential for such use	For IPRs only to the extent essential for such use	For IPRs only to the extent essential for such use	For IPRs only to the extent essential for such use
Background technologies and IPRs	Only for such use of such background, which is necessary for the use of the foreground	Only for such use of such background, which is necessary for the use of the foreground	Only for such use of such background, which is necessary for the use of the foreground	Only for such use of such background which is necessary for the use of a deliverable such participant is entitled to use
	At non-discriminatory fair and reasonable terms	At non-discriminatory fair and reasonable terms	At non-discriminatory fair and reasonable terms	At non-discriminatory fair and reasonable terms

The Eurescom Study Programme – a fast way to new insights

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With the increasing speed of innovation, and with product lifecycles becoming shorter and shorter, there is a strong need to react to new challenges from emerging technologies or new business opportunities quickly. Projects investigating such new topics and providing results after one or two years are often not appropriate. The Eurescom Study Programme is an excellent and well-proven means to provide these urgently needed answers in a very short time.

The need for fast results

Studies are an efficient and effective tool to raise a topic for discussion and to bring it to the attention of the Eurescom shareholders. The reason is simply that they are sharply focused, can be set up at short notice and they are short in duration, meaning that their results are delivered after only a few months.

Typically, a study is the suitable means, if new technologies or approaches have to be investigated, providing answers to questions like "What impacts will this have on our current operations?"

Studies are reported in a style appropriate for managers and decision-makers. They are intended to give a clear conclusion on what to do next followed by a short rationale that can be used as part of a business case. Studies offer ideal support for decision-makers to plan further actions, internal projects, collaborations, and more.

Potential topics are wide

In principal all areas where partners are willing to share information, according to defined IPR rules, are appropriate for collaborative studies. Within Eurescom, studies on technical topics have always been the majority. In light of the plethora of new technologies and their potential applications in the wider area of telecommunications, such topics certainly will remain amongst the most popular for future Eurescom studies. In a competitive market there are, however, a number of techno-economic areas and topics where collaborative studies can be successful, such as:

- Lowering the barriers for take-up of existing or new services
- Reducing the cost of operation
- Simplifying end user solutions and improving customers' satisfaction, thus maintaining the reputation of telecommunications network operators (TNOs) in the public
- Making the right choices from the plethora of technical solutions developed and brought to the market by manufacturers
- Planning the scoping of upcoming (abstract) standards to workable/interoperable solutions
- Exploring new business models and areas
- Identifying disruptive events and technologies and assess their impacts on TNOs business

Studies can also address market issues, feasibility aspects or a business case analysis. Studies can serve the creation of a larger momentum around a topic of common interest. Several Eurescom studies of the past have demonstrated this, for instance P1144 "The future CAMERA – Customers And Markets Eurescom Research Activities", which helped scooping our user requirements areas. Another example is study P1145 "4G – the next frontier?" which bundled and disseminated key ideas of TNOs on next generation mobile networks prior to the upcoming 6th Framework Programme of the EU.

Studies can also serve the benchmarking of own ideas against the ideas of competitors or others.

The target group for studies

The target group for studies are managers and decision-makers assisting them in planning further actions, internal projects or collaborations. Therefore, a good way for initiating a study is to pose questions like managers and decision-makers would do it. Knowing their style will also help in identifying the kind of results a study should produce, which also decides on the experts and skills needed to carry it out.

How to propose a study

Studies are performed by a small group of experts (up to 5) during a short period (up to 6 months) the topic for investigation is limited and clearly scoped.

Every shareholder or member subscribing to the Eurescom Study Programme has the opportunity to propose studies. Study proposals can be submitted at any time. However, to allow a certain synchronisation, calls for proposals are issued in November (for start in January the following year), in April (for start in May), and in September (for start in October). Currently about 8 to 10 studies are started each year. More information about studies carried out in previous years can be found at:
www.eurescom.de/public/projects/studies/list-studies.asp

Contact

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New Eurescom projects & studies

The Eurescom work programme 2003 is growing further. Three more studies and one more project started between June and August. More studies will follow soon.

Health risk assessment of the effects of radio-frequency electromagnetic fields (P1309)

According to the current scientific knowledge there is no indication that radio-frequency electromagnetic fields (EMF) have any harmful effects on human health. Nevertheless, there is considerable concern on the part of some biomedical scientists, within certain legal jurisdictions and within the general public that potential effects on health could occur even at field intensities below threshold limits. These concerns apply particularly to the current and new digital radio technologies.

The main objective of this project is to prepare the technical concept for the extraction of information from publications and databases of "MEDLINE/PubMed" and "EMF database" and to implement a respective tool. Further a review of the most significant scientific literature regarding potential effects of radio-frequency EMF will be carried out using the created tool, and to finally investigate by means of computer simulations scaling techniques for estimating the whole-body exposure of humans in radio-frequency EMF, applicable to different body height and mass.

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Concepts for generic TelCo Application Servers in the various sub-domains of Telco industries (P1344)

Application Servers turn out to be a very important element for application provisioning today, as well as for upcoming next generation networks. Most of existing application servers do not meet the demanding and sophisticated requirements of telecommunication networks, e.g. concerning performance, support for mobile applications and multiple pluggable protocols, as today's products are designed for low or medium scaled services in the Internet world.

The main objective of this study is establishing the necessary terminology for the definition of a telecom application server and to capture the requirements by the telecom industry on an application server. Furthermore it aims to identify the main components that comprise a telecom application server and to develop a reference architecture thereof. The results of the study will help identifying the borderline between competitive and non-competitive components, providing guidance as to in which areas the telecom industry should invest in concerted efforts to promote the development of missing components.

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Mobile Internet/Instant Messenger – the way to enrich our customers' world (P1345)

Instant messenger (IM) is the well-known chat functionality on the PC. Recently, mobile instant messaging has entered the market, and might take substantial input from the SMS/MMS income of mobile operators. Some actors have started to build up their own IM portals to allow for value added services, and that might reduce operators to a bit-pipe supplier. Mobile operators gain a high percentage of their income from the SMS market, but when instant messaging is enabled on all mobile phones, SMS/MMS type of messaging will result in a loss of income.

The main objectives of this study is to assess the mobile messenger market, to evaluate the business potential both in terms of threat and opportunities for value-added-services, and to suggest a common strategy for operators in this domain.

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Potential of the RFID technology for Telecom Operators (P1346)

RFID (Radio Frequency Identification) is an interesting means of storing and retrieving data through electromagnetic transmission to a RF compatible tag. In the supply chain management up to now the use of RFID was limited to bigger volumes like containers or pallets, but the ongoing advances in microelectronics let very soon expect tag prices of under 10 cent. This will enable the use on or in single products, even in low cost products for the daily life. Since the small storage capacity of about 64 to 128 bit is mainly used for identification, all data correlated to the product must be stored and processed in a network. This is a great opportunity for telecom operators to deliver and operate backend infrastructure and services for RFID applications.

This study will give an overview of the state of the art of technology and market of RFID, show business opportunities, and identify core, backend and infrastructure services which can be delivered by telcos.

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IST in FP6 – the status before call 2

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The first call for project proposals in the IST area of the Sixth Framework Programme (FP6) closed on 24 April with an overwhelming number of submissions. The European Commission received and evaluated 1,468 proposals. This is not much of a surprise, given the budget of 1,070 million euros for the first call alone.

FP6 is the frame for the near to mid term EU activities in the field of science, research and innovation. With a total budget of 17.5 billion euros it represents nearly 5 percent of the overall expenditure on R&D in EU member states. With a budget of 3.625 billion euros Information Society Technology (IST) has one of the largest shares in the programme. This sum will be spent in four successive calls. The first call covers already 30 percent of the total amount.

An analysis of the budget and the prioritised proposals has shown that around 200 projects will be likely to receive funding from the European Commission.

The table below shows the composition of the call 1 proposals according to the different project types called 'instruments' (see table).

Compared to previous EU research programmes, two new Instruments, Integrated Projects (IPs) and Networks of Excellence (NoEs), have been introduced. Whilst traditional projects are typically in the range of one to three million euros funding, IPs are much larger with typical funding of 10 to 15 million euros. Hence they are representing a much bigger critical mass for bringing Europe forward within a certain theme area. The number of submissions shows that especially the IP instrument has been well accepted. Nearly one quarter of all submissions are IPs.

Eurescom has been strongly involved in this call, driven by the collaborative needs of its members. They profit from Eurescom's unique experience in managing collaborative projects, and its large network of experts in the telecoms domain. Eurescom is a catalyst for bringing together interested top researchers from network operators and service providers to participate in suitable activities.

Eurescom's performance in the first call shows that these qualities are well appreciated within FP6. Eurescom was involved in 9 project proposals, 4 of them succeeded. This equals a success rate of 44 percent. This is more than acceptable compared to the average of just 14 percent selected proposals. In the 4 selected projects, Eurescom will be primarily responsible for dissemination and exploitation of the results, and administrative management support.

With full speed into the second call

Although the project selection for call 1 was not finished by July, the second call had already been issued on 17 June. With a budget of 525 million euros the second call has slightly more than half the budget of call 1. By the deadline of 15 October 2003, the European Commission is awaiting proposals for the same types of projects as in call 1, however within different strategic objective areas. Of particular importance to telecommunication operators are the following strategic objectives:

- Open development platforms for software and services
- Cognitive systems
- Embedded systems
- Applications and services for the mobile user and worker
- Cross-media content for leisure and entertainment

Eurescom will also be involved in this call in its two main roles as management service provider and networking facilitator:

- With its substantial experience in managing collaborative projects, Eurescom is determined to take up the challenging task of administrative and financial management of a few project proposals.
- With its networking capabilities within the Eurescom member and other companies, it will bring together interested top researchers from network operators and service providers to participate in suitable activities.

Conclusion

Call 1 was a great success, at least as far as the number of submitted proposals is concerned. The accepted projects will have a chance to prove their quality and their impact on Europe during the next few years.

For call 2 I would expect at least the same number of proposals as for call 1. There will probably be a substantial amount of re-submissions, proposals that were rejected in call 1 and will be submitted again in call 2 with more or less modified objectives and consortia.

The Sixth Framework Programme is a great opportunity for European collaborative R&D to increase Europe's scientific and technological excellence in the world. Eurescom is determined to keep on playing an important supportive role and to provide a substantial contribution to achieving the challenging objectives of FP6.

Information about FP6 is available at

- The European Commission Web site: **http://europa.eu.int/comm/research/fp6/index_en.html**
- The CORDIS Web site: **http://www.cordis.lu/fp6/**

Integrated Project (IP) proposals	Network of Excellence (NoE) proposals	Targeted Research Project (STREP) proposals	Co-ordination Action (CA) proposals	Specific Support Action (SSA) proposals	Total number of proposals
348	169	755	58	138	1468

Table: Numbers of submitted first call proposals in the IST priority (Source: European Commission)

new project results

STUDIES

P1244 Homogenous infrastructure for HotSpot scenarios
Deliverable 1 · Study Report · Eurescom Study Programme confidential

P1244 Homogenous infrastructure for HotSpot scenarios
Deliverable 2 · Technical Information · Eurescom Study Programme confidential

P1244 Homogenous infrastructure for HotSpot scenarios
Deliverable 3 · Presentation · Eurescom Study Programme confidential

P1341 Next Generation Service Concepts
Deliverable 2 · NGN/3G Business Opportunities · Eurescom Study Programme confidential

P1341 Next Generation Service Concepts
Deliverable 1 · Next Generation Service Concepts · Eurescom Study Programme confidential

MIDDLEWARE

P1108 Workflow-based On-line Validation of Complex Component Based Internet Services
Deliverable 5 · Design and implementation of middleware capabilities and case studies of Continuous On-Line Validation · For full publication

MULTI-SERVICE NETWORKS

P1112 Network dimensioning based on modelling of Internet traffic
Deliverable 1 · Component-wise analysis of network performance · Eurescom confidential

P1112 Network dimensioning based on modelling of Internet traffic
Deliverable 2 · TCP performance and bandwidth sharing strategies · Eurescom confidential

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Deliverable 3 · QoS and performance models for streaming traffic · Eurescom confidential

P1112 Network dimensioning based on modelling of Internet traffic
Deliverable 4 · Admission control and QoS from the user perspective · Eurescom confidential

P1112 Network dimensioning based on modelling of Internet traffic
Deliverable 5 · Network dimensioning and traffic engineering methods · Eurescom confidential

P1112 Network dimensioning based on modelling of Internet traffic
Deliverable 8 · Traffic Characteristics and Statistical Estimation · Eurescom confidential

SECURITY AND SUPPORT

P1106 E-commerce impacts on service and network operations and management
Deliverable 6 · Brochure: Project achievements and results · For full publication

CUSTOMERS AND MARKETS

P1302 PROFIT: Potential pRofit Opportunities in the future ambient InTelligence world
Deliverable 1 · Roles and identities – Review and identification of the state of the art · For full publication

Bits against bites

Are mosquitoes afraid of mobile ringtones?

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Many people find mobile ringtones annoying. Just install particularly unpleasant sounds on your handset, and you will see how lonely you can get even in crowded places. Experts recommend using flatulence sounds as ringtones to keep people at a respectful distance. The same principle could also work with mosquitoes instead of humans. At least this is what Korean mobile phone operator SK Telecom claimed. In July, they started offering customers in South Korea a special ringtone to repel the nasty bloodsuckers.

The offer looks tempting, if you think of the substances usually rubbed in the skin for keeping mosquitoes off. Mobile users can download the anti-mosquito sounds to their handsets for a one-off fee of Won 3,000, which approximates € 2.24. This looks like a decent price for saving your skin.

Male sounds against females

How does this wonder work? Only female mosquitoes require a blood meal and bite warm or cold-blooded animals. Acquiring protein through a blood meal is essential for egg production. Male mosquitoes do not bite, but feed on the nectar of flowers or other suitable sugar source. Bloodthirsty female mosquitoes tend to avoid their non-biting male counterparts.

So, if a mobile phone emits a noise similar to the buzz of a male mosquito, the biting females should stay clear. The sound should be capable of clearing the insects within a range of one metre. The sound plays constantly and is, if at all, faintly audible to the human ear. This way of repelling the bloodsuckers will use up to 30 percent more of the phone's battery power. SK Telecom claimed it had worked during tests.

Market prospects in Korea

The anti-mosquito ringtone was developed by Sung In-jae for Dots Mobile, a Korean wireless content provider co-operating with SK Telecom. Mr Sung was confident that at least 90,000, or 1 percent, of SK Telecom's wireless Internet customers would download the service. With 17 million subscribers, SK Telecom is South Korea's largest mobile telephone operator controlling more than 50 percent of the domestic market. Internet services account for nearly 8 percent of SK Telecom's average revenue per subscriber.

South Korea is among the world's leading markets for wireless Internet services, with millions of people downloading pictures, video clips, games and music to their handsets. The introduction of innovative features, such as the mosquito-repellent tone, is a reflection of the stiff competition in the sector.

Against this background, the question comes up, if this service really works or if it is just a clever marketing trick. The experts are sceptical.

Sceptical experts

Lee Won-ja, a mosquito expert at South Korea's National Institute of Health, said the idea was good in principle but she doubted it would work in practice. "There are 54 kinds of mosquito in Korea, and they all make different sounds, so I don't think a mobile phone will prevent people being bitten," she said.

Dr. Pierre Guillet, responsible for 'communicable diseases control, prevention and eradication' at the World Health Organization in Geneva, shares her doubts. "The production of an anti-mosquito sound by mobile phone may be a great commercial idea, but we have good reasons to be very sceptical about its real efficacy," he said.

There have already been a few devices on the market, which are based on ultrasound emitters to prevent mosquito bites. According to Dr. Guillet, their efficacy has been tested by several well-known institutions like the London School of Hygiene and Tropical Medicine or the US Army Medical Services, but has never been scientifically established so far.

In another point the experts are less unanimous. Could the anti-mosquito ringtone have negative health effects on humans?

Lee Won-ja thinks it possible that the mosquito-like sound could be audible to humans and prove irritating for them. Dr. Pierre Guillet contradicts: "The frequency of these devices is high enough so that humans do not hear the sound. Similar products are sold to prevent resting of marten or other similar wild animals in house garrets with some apparent success. We are not aware of any study on the potential side effect of such devices on human well-being."

So, at least the mosquito-repellent ringtone does not seem to do any harm. However, you should better stay with the traditional repellents, if you want to protect your skin. It looks as if it would be more effective to smash the little bloodsuckers with your handset than rely on the deterring effect of faked male mosquito sounds.

There is only one consolation for tormented mosquito victims: Mostly, both male and female mosquitoes are nectar feeders. Human blood meals are seldom first or second choices – Horses, cattle, smaller mammals and birds are preferred.

Further information
http://www.sktelecom.co.kr/english/index.html
http://www.mosquito.org/mosquito.html

EURESCOM Summit 2003
29 September to 1 October 2003
in Heidelberg, Germany

Evolution of Broadband Services
Satisfying user and market needs

Sponsors and supporters:

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SCOPE OF THE CONFERENCE

The continuing evolution of telecommunications services and technologies, including broadband, mobility and pervasiveness has reached levels where users and customers are often confronted with technology instead of service aspects. They often feel overwhelmed by confusing functionality, different handling modes, and user interfaces and device layouts that are difficult to understand and to use. There is an increasing risk that the potential of new communication services and technologies cannot be fully exploited and users may not enjoy the full benefits of the new technologies. As a result, expected market shares and business success may not be achieved.

This third Eurescom Summit 2003 on the 'Evolution of Broadband Services' aims at capturing a snapshot of ongoing activities in these areas, providing value to executives, business professionals and technical experts of network operators, service providers, equipment manufacturers, content providers as well as to the research community. It aims at looking into technical issues of advanced services and technologies, showing how the advances in service creation technologies can support the creation of user- friendly services. It will consider usability and user acceptance of advanced services and devices, as well as looking at their business relevance.

An objective of the conference is to explore business challenges, threats and opportunities for the next generation of applications, services and communication technologies, by covering the whole value chain. Furthermore it aims to identify new ways to bridge the gap between a purely technology-driven and a more user-focused service evolution.

The conference will provide a platform for the discussion of innovative and marketable solutions, strategies for the promotion of new communication technologies and applications, as well as open issues for further research. It will cover the following list of issues both from a user perspective, as well as from a technology and a business point of view:

- Applications & services including mobility
- Business aspects, opportunities and threats
- User aspects and customer relations
- User requirements
- Personalisation
- Identifying the market pull
- Technology trends including:
- Service platforms
- Service platform related systems & architectures
- Device evolution
- Content related aspects

The programme is complemented by keynote presentations, panel discussions, tutorials, exhibitions, and demonstrations.

TARGET AUDIENCE

Experts, researchers, executives, business and product planners, strategists, service developers from Telecom operators and IT vendors, content providers, manufacturers of IT/ telecom software/ hardware, application service providers, telecom service providers and consultant companies.

EXHIBITION – EXPERTS MEET EXPERTS

The conference will also host an exhibition presenting available and emerging products, devices and tools demonstrating recent advances in communication services and enabling technologies, Please send requests for exhibition space to summit2003@eurescom.de .

www.eurescom.de

New Eurescom publications

Broadband and Wireless Services in the Future Home
Eurescom workshop, Heidelberg, 12-13 March 2003,
Streamed presentations on CD-ROM

XML Web Services for the telecom market
Eurescom workshop, Heidelberg, 24-25 June 2003
Streamed presentations on CD-ROM

For those who missed the workshop and those participants who would like to see and hear again what was said, we offer all presentations from the workshop on CD-ROM. You can view the slides and hear what the speaker said. Thus, you will be able to the inside knowledge presented by leading international experts at the workshop, which you will not find anywhere in print.

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