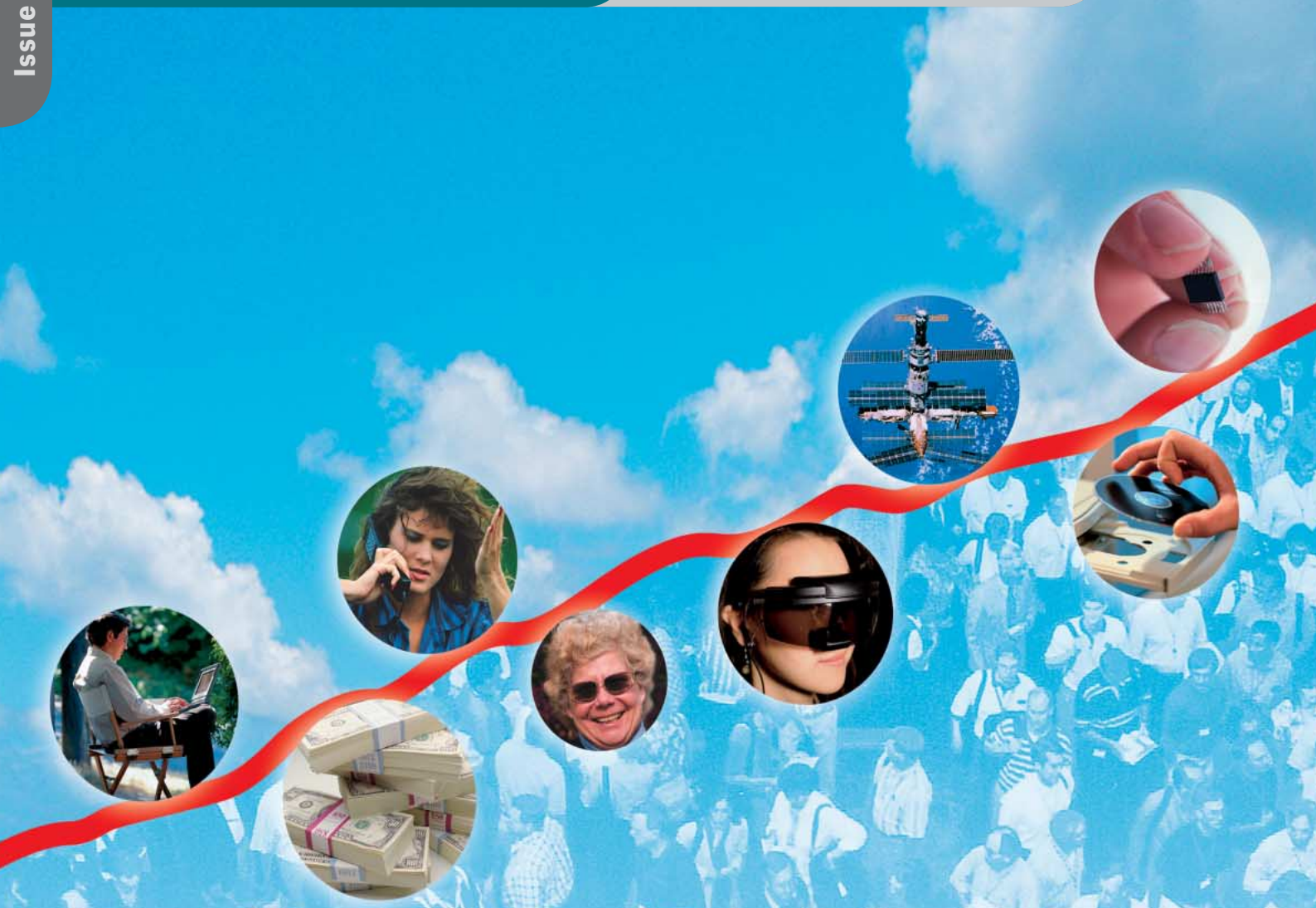
Issue 2/2004

EURESCOM mess@ge



The socio-economic dimension of telecoms

In focus

Slovak Telecom

Project reports

RFID – Opportunities for telcos

Tutorial

Innovative procurement in the EU

Call for Papers

Eurescom Summit 2005
27-29 April 2005
Heidelberg, Germany

Ubiquitous Services and Applications
Exploiting the Potential

SCOPE

The continuing evolution of telecommunications and information services is delivering the technology to fulfil the promise of omnipresent services and applications. Pervasive computing and ubiquitous services, which facilitate the users' everyday activities, have been an intense research issue over the last years. Today, many technologies are available that can be combined to exploit the business potentials of services and applications which work anytime and anywhere in a seamless and intuitive way.

The fourth Eurescom Summit focuses on 'Ubiquitous Services and Applications'. The conference aims at investigating technical issues of ubiquitous services, showing how the advances in enabling technologies can support the exploitation of ubiquity. The conference will also consider the exploitation opportunities, usability and user acceptance, and will evaluate their business relevance.

Authors are invited to submit papers addressing, but not limited to, the following topics:

- Evolution of ubiquitous services and applications
- Service platforms, systems & architecture aspects
- Business aspects, opportunities and threats
- User aspects, acceptance, privacy
- Technology aspects, devices
- Content related aspects
- Self-organisation/self-configuration of networks
- Security aspects

A more comprehensive list of topics is available on the conference website.

INFORMATION FOR AUTHORS

Submissions should be 800-1500 words abstracts summarising original work. It must be clear from the abstract how it is going to be extended to a full paper. All manuscripts must be written in English. The first page of each paper should contain: the title of the paper, the name(s) and affiliation of the author(s) as well as full address, e-mail and phone number of the author responsible for correspondence.

The selected papers will be published in printed proceedings with an ISBN. Papers must be submitted electronically via the conference website. A document template and further instructions for paper submissions can be found on the conference website.

IMPORTANT DATES

- 15 October 2004
  Submission of 800-1500 words abstracts (2 to 3 pages)
- 15 December 2004 – Notification of authors
- 21 January 2005
  Final camera-ready papers (max 8 pages or 4000 words)

CONFERENCE WEBSITE AND FURTHER INFORMATION

Further information can be found on the Eurescom Summit 2005 website http://www.eurescom.de/summit2005 or through the following contacts:

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The development of the information society

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There is barely a week passing without politicians evoking the vision of an inclusive information society. The United Nations and the European Union are giving the information society high priority. At the World Summit on the Information Society in Geneva last December, the participants declared a common vision of the information society, which includes that "everyone can create, access, utilize and share information and knowledge". Although it appears that at least some developed countries are on the right path to realising that vision, it looks like not only the developing countries have a long way to go until the vision comes true.

At the mentioned World Summit, an action plan was adopted that postulates activities by governments and private stakeholders for developing and implementing e-strategies and modern communication infrastructures for providing easy and affordable access. All areas of social, economic, and political life are designed to benefit from the 'e-factor': e-government, e-business, e-learning, e-health, e-employment, e-environment, e-agriculture, e-science, and the authors of the action plan might have added e-security as well.

The vision is exciting, but how far have we come on the stony path to the moving target called 'inclusive information society'? The reality is both sobering and raising hope. Never before in history had so many people such convenient access to communication technologies which have let the Earth shrink to a global village. Even in remote places in Africa it is today possible to talk to other parts of the world through wireless networks. The dynamic development of new information and communication technologies is thus contributing to narrowing the gap between the haves and the have-nots in the emerging knowledge economy, where the digital access to knowledge has become a central factor in the quality of life.

The downside is that the fast train of technological development leaves a number of people behind, at least in a transitory phase. Broadband is an example for this. Only 7 in 100 inhabitants in OECD countries have access to broadband. Despite the rapid growth of the number of broadband users, they are still a minority on global average. There are exceptional countries like South Korea and Japan with extremely high adoption rates, but the majority of countries have not yet exploited the full potential of broadband. The OECD even went a step further in a statement issued in February this year by denouncing the missed opportunities in broadband. As a major factor the OECD blamed the still insufficient liberalisation of telecom markets in some of its member countries, which according to this logic, keeps prices too high for mass-market adoption. This, however, might be a bit too narrow-sighted. What is really inhibiting broadband services take-off, especially in Europe, is rather the slow innovation process. The European Commission has recognised this and tried to accelerate the innovation process in ICT through the 6th Framework Programme. As beneficial as this may be, it is still not enough. The Council of European Ministers agreed on the need and tries to increase R&D expenditure in the European Union in order to reach the Lisbon goal of 3 % R&D expenditure of the GDP. Despite these efforts and the declarations especially by the German and the French government, Europe, in terms of R&D expenditure in ICT, is still lagging behind the United States and some Asian countries. As a consequence the innovation process in Europe is still too slow compared to the countries mentioned above.

What Europe really needs are more industry-driven public-private initiatives for advancing the communication infrastructure in Europe and thus laying the ground for the flourishing of new services that will increase the citizens' quality of life. The current model of public research in Europe might have to be re-considered in order to accelerate the innovation process in European ICT. Eurescom is ready to support any discussion and initiative to achieve this ambitious goal.

Dear readers,

Information and communications technologies, short: ICT, are of key importance in today's economy and have a deep impact on everybody's life. This should be reason enough to dedicate this issue of *Eurescom mess@ge* to the socio-economic impact of ICT. Another reason why we decided to do it in this issue are brand-new results from Eurescom and EU projects, which might change the one or other common judgement on social effects of ICT. Peter Stollenmayer, our responsible editor for this cover theme, is actively involved in both projects presented, PROFIT and e-Living.

In addition, we interviewed Dr. Leslie Haddon, an acknowledged expert in the field of sociological research, about the impact of ICT on our life. The economic development of telecommunications was the main topic in our second interview with OECD experts Dr. Sam Paltridge and Dirk Pilat. We are aware that our cover theme contains a number of controversial issues, and we would be glad to discuss them with our readers. So feel free to send us comments on any of the contributions.

The other topics in this issue may not be as controversial, but they are certainly as interesting and relevant. Under "In focus" we feature an exclusive portrait of Slovak Telecom, one of the Eurescom members that has entered the European Union with the accession of the new member states on 1 May.

Under "Project reports" we present the results of a Eurescom study on the opportunities of the RFID technology for telcos. For the first time, results of this confidential study, which is only available to subscribers of the Eurescom study programme, are made public.

The concepts of "e-procurement" and "innovative procurement" have been fashionable for quite some time. If you would like to know what is behind these concepts and what the current situation in the European Union is, you should read the Tutorial by Leif Hommen, a participant in the EU project INNO-UTILITIES, which currently explores ways to improve the effectiveness and efficiency of procurement processes.

Under "European issues", Heinz Brüggemann, the director of the CELTIC office, gives you an update on the current status of EUREKA cluster CELTIC and the results of the second call for proposals.

We appreciate your feedback on any of the articles presented in this issue. If you would like to suggest a topic or offer a contribution for the next issue, this is equally welcome.

We hope you will enjoy reading this issue.

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e-inclusion of grandparents

"Finally, I have found a mobile device with big buttons and a readable display."

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Wearable network by IST project 2WEAR

A new prototype developed by IST project 2WEAR allows wearable and portable devices communicate with each other via Bluetooth. The 2WEAR prototype is a wearable personal network that links together computing elements in an ad-hoc fashion using short-range radio. Certain elements are embedded into wearable objects, such as a wristwatch and small general-purpose computing and storage modules that can be attached to clothes or placed inside a wallet. Other elements of the system include conventional portable computers, like PDAs and mobile phones.

Stationary elements are also part of the system, including visible components, such as big screens and home appliances, while others are not directly perceivable by the user, such as network gateways and back-end servers. "The system is able to dynamically discover and combine the user interface and storage resources of the devices that are in range with each other," says project manager Spyros Lalis. "We have a couple of demo applications – an alarm application, city-guide application, and a game – that can be used to illustrate this."

The result is a system that brings together various wearable devices without the user having to explicitly provide input to the system. One example of this is two friends' devices automatically exchanging data as they meet, and a camera storing pictures on another device and backing them up to a server, all without bothering the user. Another example is a tourist approaching an information kiosk and using its display to review his walk on a city map and obtain information about the photographed sites as his storage module uploads data via the kiosk's access point.
http://2wear.ics.forth.gr/

TIM starts combined EDGE-UMTS services

Under the brand name "TIM Turbo" Telecom Italia Mobile (TIM) launched its new 3G services on 24 May. TIM Turbo is based on a combined EDGE-UMTS network. Current UMTS coverage has reached about 30 percent, thus fulfilling the regulatory requirements in Italy. The implementation of EDGE in the GSM network is already further ahead. By the end of 2004, the complete GSM network is expected to be equipped with EDGE. According to TIM, the maximum data rates are 384 kBit/s for UMTS and 200 kBit/s for EDGE.

The new EDGE TIM Turbo mobile phones are the NOKIA 6230 and the NOKIA 3200. The first UMTS mobiles to be made available by TIM will be Sony Ericsson Z 1010 and the Samsung Z 105 U. The mobile phones offer multimedia services such as high-speed connection to the Internet, the reception and transmission of digital images, videos, photos and music files at transmission speeds in the order of hundreds of kilobit per second compared to the present speed of 40 kbit/s of the GPRS.

All the services at present available on the GPRS network will transit on the new EDGE-UMTS network including, for example, "Mobile TV", the TV on the mobile phone, which TIM launched last year. TIM announced that by the end of June, UMTS coverage will have exceeded the regulatory requirements.

"TIM offers Edge and UMTS services in full compliance with the schedule announced during Telecom Day, the meeting with the financial community, and confirms its own roadmap for the complete development of third generation services," commented Marco De Benedetti, Chief Executive Officer of TIM.

According to Dr. Benedetti, the value-added services (VAS) generated 300 million euro revenue for TIM in the domestic market alone in the first quarter of the current year, with a year-on-year increase of 64% as concerns the more innovate VAS, which now account for 19% of all VAS revenue.
http://www.tim.it/

First communication transmission through terahertz waves

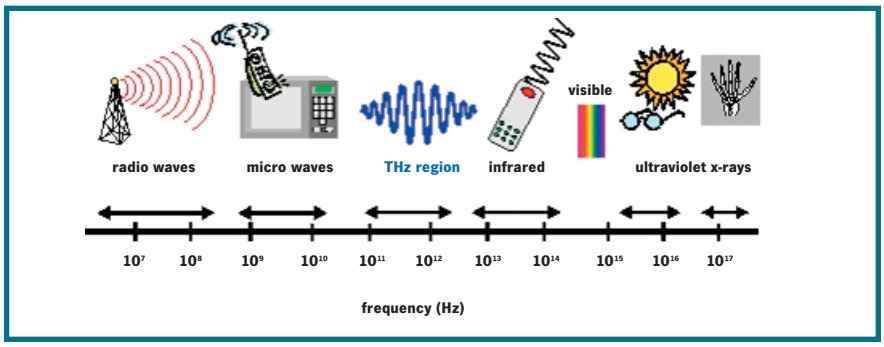
Researchers from the high-frequency technology department of Braunschweig Technical University developed a new kind of modulator, which enables to modulate data on terahertz waves.

"This is a further important step towards a wireless terahertz communication system," said professor Martin Koch, head of the terahertz group. The motivation for such a system is the increasing demand for broadband, which can only be satisfied through higher frequencies. Currently, a number of applications based on terahertz techniques are under discussion, including medical diagnostics, security applications, and control of production processes.

The modulator structure is based on a known transistor concept, which was used for the first time in the context of terahertz communication. In an experiment, the modulators were placed in a transmitter-receiver system fed with music from a CD player. "In the first trials we could receive the music in about the quality you know from telephony," explained Thomas Kleine-Ostmann, one of the researchers.

Website of the terahertz group at Braunschweig Technical University:
http://www.tu-braunschweig.de/ihf/ag/terahertz

Reference:
T. Kleine-Ostmann, K. Pierz, G. Hein, P. Dawson and M. Koch:
Audio signal transmission over THz communication channel using semiconductor modulator. Electronic Letters 40, 124-126 (2004)



Electromagnetic spectrum (© Martin Koch, Braunschweig Technical University)

A crucial business factor
The socio-economic dimension of ICT

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During the past years, when the ICT bubble had burst and business models were under threat, companies realised that the socio-economic dimension of ICT is an area, which cannot get too much attention. The time when technologists brought new services to the market without having taken customer and economic issues into account is definitely over. Only products which are accepted by the targeted user groups and which can be provided at a reasonable cost level will be successful and make their developers happy in the long term.

To illustrate the dramatic economic changes in telecommunications, we just have to look at the development of telephone charges during the last few years: between 1997 and 2003 the price for a one minute long-distance call in Germany has dropped from 30 cents to about 2 cents. Even more dramatic price drops happened with Internet access and mobile telephony. I can verify this every month on my personal telephone bill: although I have gained more services, such as ISDN, GSM and ADSL Internet access, my telephone bill has roughly been constant over the last years.

One of the paramount questions for telecom companies is: How can I convince my customers to spend more of their money for ICT services? Well-founded socio-economic research can help to answer this question.

Socio-economic studies

Plenty of socio-economic work is currently going on at different organisations. A Google search for the keywords "socio-economic" and "telecommunication" returns more than 40,000 results.

The European research programmes have increased their socio-economic share, and in the 6th Framework Programme, socio-economic work is a required objective within all Integrated Projects. Eurescom has had a significant focus on socio-economic ICT projects and studies since 1999, including large ICT user surveys, behavioural studies, usability research, business models, and investment strategies.

Statistical data is not enough

There is no lack of statistical data. The problem is rather extracting the answers to specific questions from the mass of available data sets and getting information on user behaviour beyond pure statistical data.

An example for pulling specific results from available data is the 6th Framework project SOCQUIT (Social Capital, Quality of Life and Information Society Technologies), which is developing a decision support tool that shows the effects of Information Society Technologies (IST) on the development of social capital and quality of life. It will use existing data sets to provide recommendations to business, R&D and policy makers.

An example for investigations beyond statistical data is the Eurescom project on "Cross-cultural attitude to ICT in everyday life" (P903), which conducted a survey interviewing more than 7,000 ICT users in 7 European countries. The interviews went far beyond statistical purposes and contained questions like "How is the use of mobile telephones and Internet related to the geographical distribution of friends and relatives?". Even beyond this stage of research went the 5th Framework project e-Living, which conducted a so-called longitudinal study on the use of ICT services. Longitudinal studies are repeating the survey after some time with the same users to find out how the usage of a service has changed their attitude. The article on the e-Living project in this cover theme presents some new results.

Social roles and the usage of ICT

A service has a good chance to enter the mass market and become a commercial success, if it helps the people to fulfil their professional and private roles in a better and more efficient way. Eurescom project PROFIT has looked at roles and identities of potential ICT users in an Ambient Intelligence world, and the resulting business opportunities, which are featured in this cover theme.

Conclusion

ICT companies across the whole value chain from manufacturers to service providers have realised the importance of the socio-economic dimension of ICT. They are participating in ICT user surveys or are investing money in usability laboratories. Engineers have learned to work face-to-face with sociologists and economists. Sometimes they need controversial discussions to understand each other's arguments and to find common agreements, but engaging in this challenge is very fruitful and can lead to better products, happier customers and higher revenues.

Further information on the Web:

- www.eurescom.de/public/projects/P900-series/P903/
- www.eurescom.de/public/projects/P900-series/P904/
- www.eurescom.de/public/projects/P1300-series/P1302/
- www.eurescom.de/socquit/
- www.eurescom.de/e-living/

The socio-economic dimensions of Ambient Intelligence
Eurescom project PROFIT

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The radical changes in the Information Society driven by progress in Information and Communication Technologies (ICTs) and their adoption has opened a fast path towards a vision of Ambient Intelligence (AmI). This article describes work undertaken to examine the socio-economic dimensions of AmI and to develop a scenario and potential migration paths for its future users and providers.

It is generally acknowledged that a user-centred, social approach is vital to the successful development of this vision, and never has it been so pertinent to explore people's life worlds and how AmI devices can be usefully and positively incorporated into them. AmI also offers tremendous business opportunities and challenges to telecommunications operators and service providers. It is vital to understand these opportunities. The approach used by PROFIT has been twofold:

- Investigation of roles and identities in an AmI world through fieldwork research
- Socio-economic analysis of AmI scenarios

Social issues

The AmI vision itself has some key underlying assumptions, which challenge the way some of us currently lead our lives. Always on, pervasive and particularly mobile devices blur the boundaries of work and home, especially for those who wish to maintain a separation. This fieldwork element of the Eurescom project PROFIT therefore examined people's work/home boundary issues. The IST Advisory Group (ISTAG) and others have developed scenarios of AmI applications. However, those existing scenarios did not question user acceptance. So, as part of the fieldwork interview process, participants were also asked about their feelings towards key AmI elements, as identified from existing scenarios.

Figure 1: A lifestyle business imposing work/home boundaries with a caller display unit

Work/home boundaries

Certain people wish to keep work and home quite separate, based on identified drivers that matter greatly to them – such as not wanting distraction, or to maintain their quality of life. The fieldwork examined not only employees but also the self-employed. Non profit-maximising 'lifestyle businesses' were particularly found to want to maintain strict boundaries, since their businesses were formed to maintain their quality of life (see figure 1). AmI devices will therefore need to stop incoming messages or data from work at home or home at work. A form of 'off switch' is necessary, which is more sophisticated than powering down.

User perceptions

User perceptions of key elements of the AmI scenarios were surprisingly uniform across the fieldwork countries Norway, Finland, Hungary, and the UK. These include concerns about non-independence, loss of control, security, privacy, and systems failures. Respondents feared that the results given by intelligent devices would not be independent – biased towards the sale of particular items. Respondents were also concerned about control issues. They felt they would lose control over how their personal information was used. AmI devices were seen as too controlling through their didactic qualities – telling their owners what to do – but AmI devices, which relieved mundane tasks, were viewed extremely positively.

Future profitability of services

The PROFIT project has analysed the components of profitability, i.e. both the market attractiveness and the competitive advantage in terms of business models and demand, for 2010. Drawing on indications from each of these areas, a prediction has been made in terms of future profitability for telecommunication companies by a combination of qualitative and quantitative techniques. A ranking has been produced of the most profitable services and an estimate of revenue attributable to European telecommunication operators and service providers.

Ranking of most profitable services

- Communications/Messaging Services
- Leisure/Entertainment Services
- Teleworking/ Collaboration Services
- e-Government/Information Services
- Safety/Location Based Services
- Live independently/Health Services
- Financial security/Financial Services
- Data across the web/Information Services
- Quality of life/Monitoring Services
- Education/e-Learning

These predictions have been used as inputs for a realistic basis for a new "grounded scenario" more indicative of life in 2010 (illustrated in figure 2).

This scenario has also been supported by the user perceptions emerging from the fieldwork and the trends indicated by the PESTE (political, economic, social, technical, environmental) analyses.

Business models

In addition, an analytical view has been taken from both the strategic and micro levels in terms of developing business models. The profitability of many new and older economy companies has been examined and alternative ways of viewing the nature of competition in 2010 and beyond has been demonstrated, building on the MIT delta model (see figure 3).

This approach has opened up the importance of not only considering profitability based on traditional "best-product" economics, but also (i) customer economics and (ii) system economics. In considering (i) and (ii) the concept of lock-in becomes important in terms of product-customer, and product-customer complementor (i.e. a company that provides customers with complementary products and services). The simple value chain based on the "best-product" paradigm is augmented to become a value net with the addition of actors providing co-operation as well as competition. Active regulation can serve as a barrier to competition based on system lock-in, and this will be possibly one of the most difficult issues that telecommunication companies will face in the "new economy".

Conclusion

The project's "grounded scenario" was developed to show where possible AmI-related barriers are and where AmI offers opportunities in the future, to both users and businesses.

For users, concerns about non-independence, loss of control, security, privacy and systems failures will need to be addressed if AmI is to experience widespread adoption. Unmet needs, such as automating the mundane and helping people to be more in control of their lives, offer context-aware service opportunities. AmI technologies will offer greater flexibility both in where and how people work.

For businesses, there are three main areas of change: the development of new organisational forms and strategic approaches; the adoption of management structures and systems that favour flexibility and adaptiveness; the merging of home, work and public spaces. However, regulatory limits on the nature of competition will serve to limit the profitability of telecommunication companies.

For more information on PROFIT and its results:
www.eurescom.de/public/projects/P1300-series/P1302/

Figure 2: Ordering groceries whilst working from a coffee shop

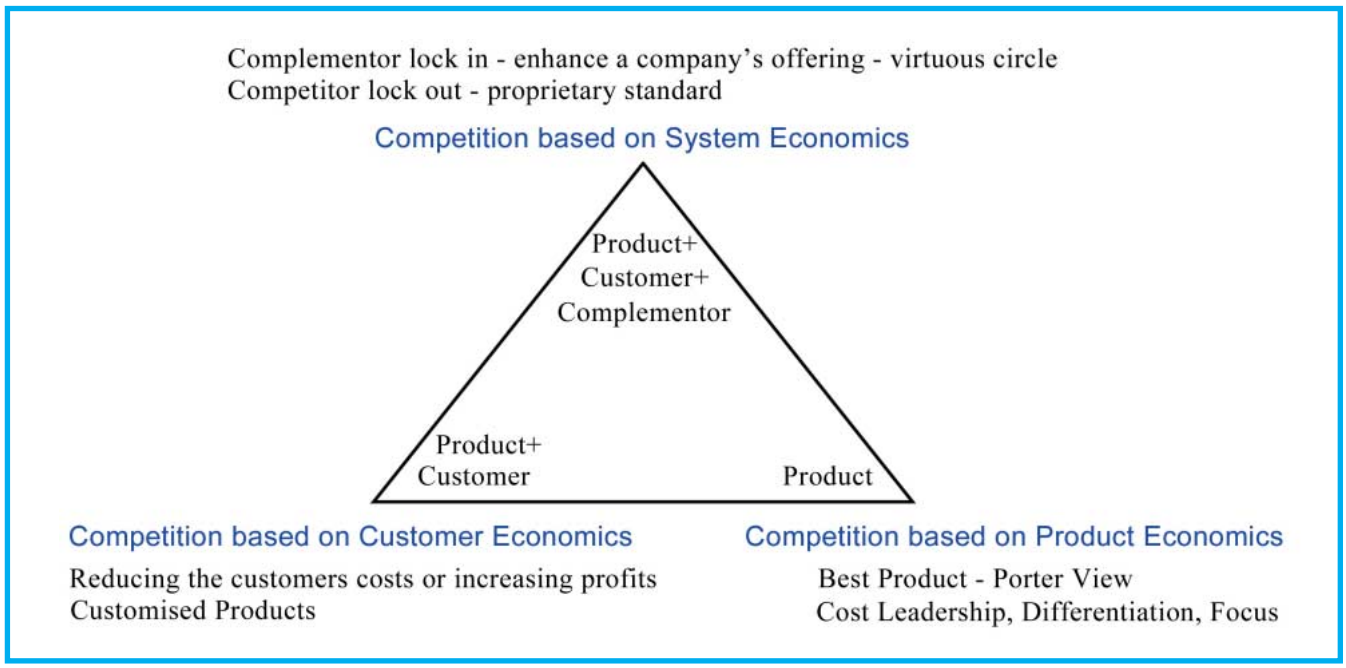

Figure 3: MIT delta model, (Hax and Wilde, 1999)

Why longitudinal social surveys matter

EU research project e-Living

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ICT sector profits and 'e-Society' social policy outcomes depend on the answer to one question: What difference do Information and Communication Technologies (ICTs) make to everyday life? Companies need to know how their customers' usage and e-commerce behaviour will change – or not – if they switch to broadband. Public policy makers need to know how people's employment, leisure and social communication needs and opportunities are met or enhanced by new ICTs.

Following people over time to measure behaviour before and after they adopt new technologies is the only way to answer this question. This longitudinal approach is rare. It is easier to implement one-off surveys such as the Eurescom P903 project and a myriad of other commercial market research and academic surveys. But these cannot answer this crucial question and without this kind of knowledge we cannot take sensible strategic or social policy decisions.

By implementing a longitudinal comparative study e-Living is unique. e-Living is an EC FP5 IST Programme research project being conducted by a nine partner consortium including two Eurescom shareholders, BT and Telenor. A representative sample of 1,750 individuals aged 16+ were recruited in autumn 2001 in each country (UK, Norway, Germany, Italy, Bulgaria and Israel), and about 65% of these were re-contacted and re-surveyed in autumn 2002. Initial results using the first survey were published in 2003, and the final results using both surveys were made public in January 2004 although analysis and publication is ongoing. All reports and the data are in the public domain and can be used for both commercial and non-commercial research purposes without restriction.

Patterns of flux – two examples

The e-Living data show that in 2002 in Norway the rate of yearly Internet dropout was higher than the rate of adoption causing an overall small decline in the online population. In the other five countries the Internet population has stabilised at between 55% (UK) and 10% (Bulgaria) even where penetration is low (see figure 1).

The data also show that the rate of dropping out varies between countries and ICTs. Between 4% (Germany) and 10% (Israel) of those with household Internet access in 2001 no longer had it in 2002. In contrast, between 3% (Italy, Germany) and 24% (Bulgaria) of those who personally owned a mobile phone in 2001 no longer did so in 2002. What is the reason for these dropouts and for the national differences? We do not yet know.

Clearly ICT adoption is no one-way street, and there are still many households and individuals who are persistently "excluded" from ICT – 96% of Bulgarians and 52% of Italians did not have household Internet access in both 2001 and 2002, whilst 84% of Bulgarians and 29% of Germans did not personally have a mobile phone in both years.

Similarly the data show a high degree of flux in forms of flexible or homeworking. About 30% of those who worked mainly at home in 2001 now work mainly at their place of work, and only 2% have moved in the other direction. 37% of those who used to work at one or more other places now work mainly at work premises. These data do not suggest a mass movement either towards home-based or flexible e-working and may suggest that those who have tried home-based working may not continue with the experiment.

So what changes?

Many studies claim that broadband users are heavier Internet users and spend more money online. However, the e-Living data show that this is due to selection effects – those who have broadband were already heavier Internet users and online spenders before they switched. In fact, switching to broadband between 2001 and 2002 significantly increased the time spent online only in the UK when other factors such as the kind of person who adopted are controlled (see figure 2 as an indicator without controls).

There is no evidence that switching to broadband decreases leisure activities, especially out-of-home socialising such as going to a cinema or having a meal out, nor that switchers use a greater range of applications and services. In contrast, the e-Living data show that switching is associated with a significant reduction in time spent watching TV in the UK, Italy and Germany. We have no evidence that adopting broadband is associated with an increase in any aspects of quality of life such as satisfaction with communication with friends. Those who adopted broadband in Norway reported a significantly lower overall quality of life score compared to when they had narrowband access.

We have also looked at the changing quality of life of those who start or stop working from home. The Eurescom proj-

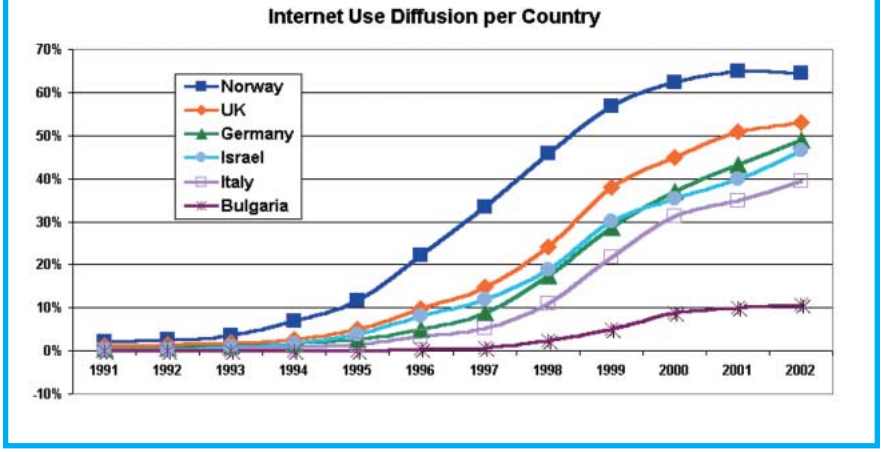


Figure 1: Internet penetration in each country as percentage of total population

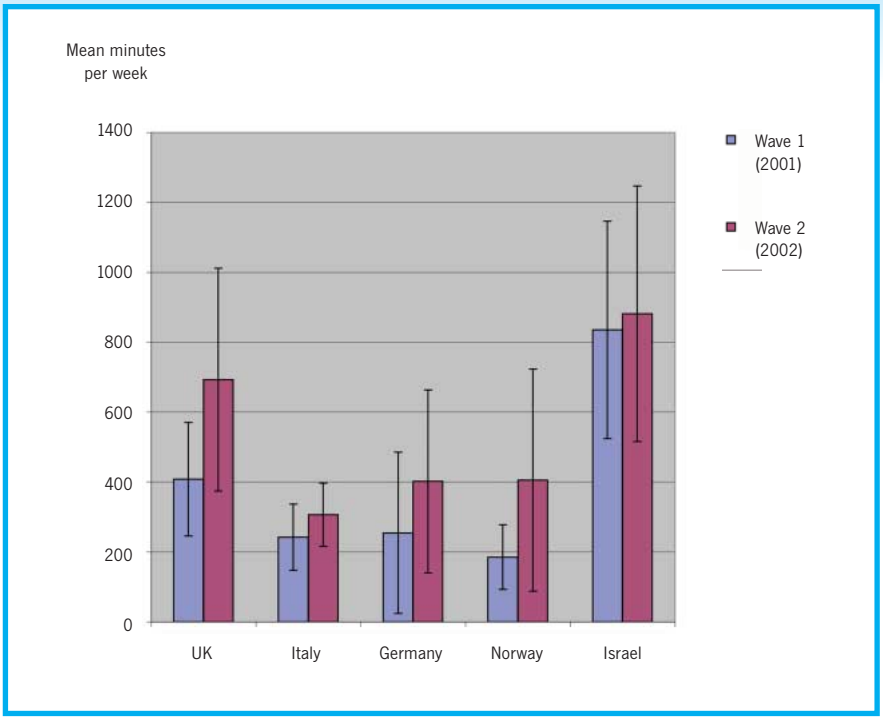


Figure 2: Mean minutes spent online per week by Internet users before (wave 1) and after (wave 2) adopting broadband. Error bars = +/- 2 SE (95% confidence intervals)

ect P904 on telework and its impact on quality of life claimed that home-based working will lead to an increase in perceived quality of life. The e-Living results suggest that in fact starting to work mainly at home has a negative effect on perceived quality of work life in Norway and Germany, but a positive effect in Italy when other factors are taken into account. The most consistent effects on quality of work life are control of work schedule, reduction in working hours and moving from temporary to permanent employment. So it is obvious that ICTs and forms of e-work (such as home-working) are much less important in improving working conditions than more traditional employment factors.

The music effect

The music industry is claiming that music downloads are leading to the demise of industry. In contrast, our results suggest that downloading music is associated with an increase in music purchases. We have discovered that in general those who download music were nearly 40% more likely to buy music, either online or offline, than those who did not. This effect was larger for men (113%), for those in the higher socio-economic groups, heavy Internet users, and those who were employed. In contrast, those who were unemployed were 70% less likely to purchase music if they downloaded. Interestingly the positive link was found in the UK, Germany and Norway but the opposite (substitution) effect was found in Italy and Israel.

Social capital and social software

We have used the longitudinal data to show that one of the most important factors affecting people's overall quality of life is their satisfaction with communication with friends and family. Those who have more active social lives also tend to use ICTs more frequently and use them to support and manage these social networks. This provides them with access to resources through the network of people they know (social capital). Our analysis shows that whilst ICTs do not seem to be generating new social contacts they are crucial to maintaining existing ones. We see that meeting friends more frequently (UK, Norway, Bulgaria) and engaging in outdoor leisure activities with them (Germany) or perceiving more free/leisure time (all except Bulgaria) and increased sport/physical exercise activities (Bulgaria) are all associated with an increase in satisfaction with social contacts and thus with quality of life. Here then is an interesting opportunity for the "social capital" industry – the telecommunications sector – to apply what it knows about supporting informal social interaction to support European social policy efforts in the context of social capital and quality of life and to make money whilst doing so.

Conclusion

These kinds of results are already being used by the e-Living partners to influence the direction of both commercial strategy and public policy whilst the freely available data is being used by a range of academic and other researchers to produce new results. Overall, the project has demonstrated the value of addressing the question "What difference does ICT make?", using a longitudinal survey approach. Even with only two years of data collection we have generated insights that have corrected a number of mistaken assumptions in the commercial and public policy ICT arenas about the nature and scale of the impacts of ICTs on everyday life. Change is not revolutionary but evolutionary and some things have not turned out the way the pundits expected. Since mistaken assumptions about users/customers/citizens can bankrupt companies and produce costly and ineffective policies, investing in this kind of research clearly pays off.

For more information on the e-living project and its results see www.eurescom.de/e-living/

Project Partners

- BT (coordinator) with the support of Chimera, University of Essex, UK
- Institute for Social and Economic Research (ISER), University of Essex, UK
- Interdisciplinary Center for Technological Analysis and Forecasting (ICTAF), University of Tel Aviv, Israel
- Legambiente, Italy
- Virtech Ltd, Bulgaria
- CEPS / INSTEAD, Luxembourg
- IDEC Ltd, Greece
- DIW, with the support of RWI-Essen, Germany
- Telenor, Norway

No revolutionary improvements

Interview with sociologist Leslie Haddon on the impact of ICT on our life

New information and communication technologies (ICT) have radically changed our life. At least this is what everybody thinks. *Eurescom mess@ge* wanted to know more precisely and talked to Dr. Leslie Haddon, an acknowledged expert in the field of sociological research on ICT. Dr. Haddon is a visiting fellow at Essex University and has for 20 years specialised in researching ICTs in everyday life. His book on the subject will be published in August.

Which information technologies have the largest impact on our society?

Thinking only of ICTs and everyday life, it is in the field of communications that practices have changed most. Of the two most significant ICTs in recent years, the mobile phone and the Internet, the mobile phone has reached more sections of society and has probably had more effects on what people do on a daily basis. Meanwhile communication, especially via email, remains the most 'important' use of the Internet.

All in all, do you assess the impact of modern information technologies on our society as predominantly positive or negative?

Overall, positive. And that appears to be the view of the people I interview for my research. But there are issues. The highest profile one for the mobile is the disruptive nature of calls in public spaces, which may alter over time but does not simply go away. One current worry about the Internet is that the expansion of spam may degrade the use of email – although my current research is finding mixed results on this issue. For many, communications bills have expanded, and sometimes this is a problem, leading, for example to communication being rationed, especially children's communication. Some have started to feel ambivalent about the amount of communications they now receive, and make efforts to control this.

How important is the widespread availability of broadband for the take-up of modern information technologies?

My criterion for judging importance is how much it leads people to do things they would not have done before. The picture is mixed. For example, one Dutch study suggested people with broadband did mostly the same things on-line as before, but appreciated the greater speed. Some French trials suggested people widened the range of things they did and were willing to experiment partly due to faster feedback.

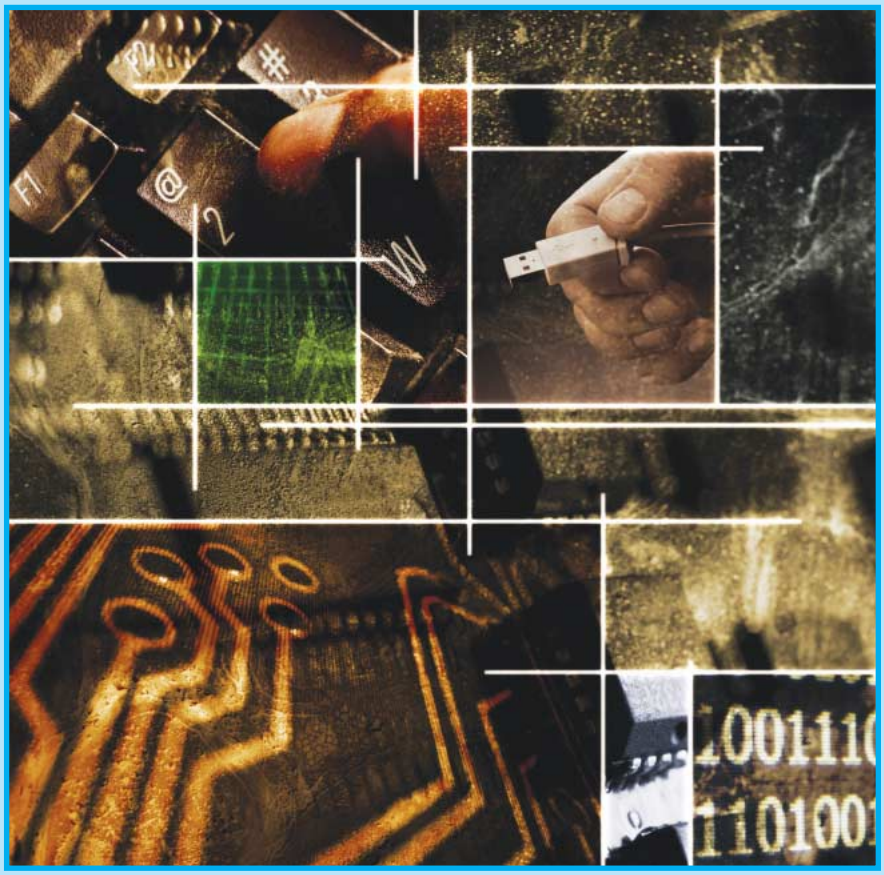
How does the adoption of modern communications technologies differ according to gender, geographical region, and income?

At any one time there are digital divides relating to some ICT or other. But there is a pattern for some technologies and for some socio-demographics whereby divides are more temporary, or at least their importance grows less. For example, in the case of the mobile and Internet, younger users and males were more predominant in early waves of adopters, but females and older users have started to be numerous among later adopters. However, this need not apply to all people and all ICTs. For example, the current generation of "older elderly", 75+, are still low adopters, and I anticipate some income/class divides in relation to PCs and the Internet may persist.

Looking into the future, how will our communication behaviour and our quality of life be different in the year 2010 given the rapid advances in communications technologies?

At one level there are on-going changes in our daily life, some influenced by technology, some not. At other levels, we do not so easily change our overall way of life or else we do things we did before but in new ways. One Belgian study showed that over 30 years the percentage of time spent outside the home was constant, but what we actually did outside the home changed. Some of the changes that do take place may be felt to be beneficial, although my examples above show how they can raise new issues. However, the implication of thinking in terms of these levels is that while ICTs may lead to some improvements in people's quality of life they do not make a revolutionary difference.

The interview was conducted by Peter Stollenmayer.



"R&D is the engine of technological progress"

Interview with the OECD experts Sam Paltridge and Dirk Pilat about economic aspects of telecoms

The Organisation for Economic Co-operation and Development (OECD) bi-annually publishes the OECD Communications Outlook. One of its main contributors is communications analyst Dr. Sam Paltridge. *Eurescom mess@ge* talked to him and Dirk Pilat, senior economist at OECD, about the economic development of telecommunications and its impact on other industry sectors.

What are the main trends on the telecoms market in OECD countries?

Paltridge: Demand is driving the telecoms sector, and it has proven very resilient. It grew throughout the 1990s and slowed down in 2002. Household expenditure on telecommunications increased in every year since 1990. Even in the financial crisis 2001/2002, demand kept growing, it was just not growing as fast as some people had expected. No one stopped using their mobile phone or accessing the Internet when the financial bubble burst; the number of users was still growing. However, there has been some substitution going on. People have been substituting mobile services for fixed-line services, especially in the United States, where you can get mobile service packages that offer large volumes of minutes. Overall demand for telecommunication services continues to increase for the industry as a whole but the substitution effect can impact diversely on different players.

Which telecommunication services are the main driving factors?

Paltridge: During the 1990s, mobile was undoubtedly the premier success of the telecoms industry, in terms of growth and revenue. The other success story since the mid-1990s has been the Internet, first as dial-up service and now increasingly with broadband services. Broadband has been one of the fastest growing communication services we have seen. In 2003, we have just gone past 100 million broadband subscribers worldwide.

OECD experts Dr. Sam Paltridge (left) and Dirk Pilat.

In February, the OECD issued a statement saying that the opportunities of broadband have not been used to their full extent. What is meant by this?

Paltridge: On the residential side, we had an average of 7 subscribers per 100 inhabitants across the OECD at the end of 2003. We can do a lot better than that. On the business side, our data show that especially small businesses are rapidly adopting broadband. Due to technologies like ADSL, broadband has become affordable for small companies. The OECD wanted to set out some best practices and try to define the roles of government and the private sector. The most successful countries today have been in Asia, for example Korea, Japan, and Hong Kong – not only because they have high take-up rates, but also because of the level of services on offer for the price. In Europe, traditionally the Nordic countries have been leaders, especially in mobile. But in the case of broadband, Europe has definitely not been the leader. One of the factors that slowed down the development of broadband in Europe has been ownership of cable television by the incumbent telecoms network operators. Where cable networks and telecoms networks are separate, this stimulated competition. Telcos don't need to own the cable networks anymore to offer a full range of services, and an increasing number are providing video over ADSL.

How is telecommunications influencing the growth of the economy and the development of the job market?

Pilat: Information and communication technologies have become more important in economic life and under certain conditions can have a direct impact on economic growth by increasing productivity. A good example is the economic growth of the US economy in the second half of the 1990s. However, telecommunications is only a part of it. There are other factors like good hardware and software, which play a role. The other important area where telecommunication has an important impact is the globalisation process. It has become much easier for companies to collaborate and operate globally. As prices have fallen and communication has become cheaper, it has become more attractive for companies to use communication technologies. If we look at certain sectors, like the financial services sector and the distribution sector in the United States, there has been an enormous increase in productivity in these sectors in the second half of the 1990s. At the same time we have seen a strong creation of jobs. Telecommunications has certainly played a role in that, but I cannot tell you, how many jobs were created thanks to the telecoms sector. Several other factors, like liberalisation and organisational changes within firms are playing a role. We cannot disconnect these factors.

What is the relationship between R&D investment and the economic performance of the telecoms sector?

Pilat: R&D is an important engine of technological progress. There has been enormous technological progress in the telecommunication sector since the 1990s. This has contributed to improvements in productivity, falling prices and growing investment in information and communications technology.

Do the OECD data indicate a widening or a closing of the digital divide within and between developed and developing countries?

Paltridge: In terms of some services, the digital divide is much less today than it was ten years ago. We have remarkably high mobile phone penetration rates in OECD countries today. The access to telecommunication networks via fixed-line mobile is higher than it has ever been. However, I have to put a caveat on this. The telecommunications industry is very dynamic. As new services emerge, new digital divides open up. We have an adoption curve where some people use services faster than others, and it takes time to roll out services. It might be argued that there is a divide in broadband today. However what we see in broadband is tremendous innovation in areas such as fixed wireless. The remarkable point about these fixed wireless services in rural areas is that in some cases they are providing higher capacity services at lower prices than exist in urban areas.

The interview was conducted by Milon Gupta.

Slovak Telecom
Solutions for better life

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Slovak Telecom is the leader in telecommunications services provisioning in the Slovak Republic. It is a modern and dynamically developing company with a long tradition in the Slovak telecom market. It provides national and international telephone services, a wide portfolio of data and Internet services, arranges for distribution and transmission of radio and television signals, and offers a wide range of value added services.

Besides a broad portfolio of telecommunications services, Slovak Telecom owns and operates the telecommunications network covering the whole territory of the Slovak Republic. The year 2000 proved to be a significant milestone in the company's history, when a 51 % share was sold to a strategic foreign investor, Deutsche Telekom AG. The shareholders of Slovak Telecom are Deutsche Telekom AG (51 %), the Ministry of Transport, Posts, and Telecommunications of the Slovak Republic (34 %), and the National Property Fund of the Slovak Republic (15 %).

The company has undergone major changes since 2000 including ongoing restructuring. Its efforts aim at being a modern, customer-friendly company coming as close to the customers as possible. The most important projects helping to attain this vision include in particular call centre implementation and introduction of a special toll-free number 0800 123 500 for businesses and organisations, available round-the-clock for obtaining information on the company's products and services. Slovak Telecom is the actual leader in innovation and modern technology implementation. It is the first company in the Deutsche Telekom Group that has started to introduce a unique technology of the Next Generation Network.

Slovak Telecom shareholders decided to start the year 2004 with a new business name and changed logo. The change of corporate identity was necessitated by a dynamic change of the company and its new strategy. Slovak Telecom's aim is to be perceived not only as a telecommunications carrier providing voice services to residential customers, but as a universal telecommunications operator – provider of comprehensive communications services to residential and business customers.

With a wide array of products and services, including a new broadband access, comprehensive communications solution based on an MPLS functionality, the company focused on innovative technologies. In order to build up a modern telecommunications service and product portfolio, Slovak Telecom introduced time based billing after the first minute of a call as one of the first fixed line carriers in Europe.

The company plays an active part in informationalisation of the society as a whole, namely by the governmental project eSlovakia and through co-operation with the Infovek project; by which hundreds of Slovak schools were connected to the Internet. Via the PCs for Schools project, Slovak Telecom will also equip all elementary and secondary schools in Slovakia with PC technology, which will greatly contribute to informationalisation of schools in all regions of Slovakia.

Joining the European Union in May 2004 was a milestone in the country's history that will influence also the development on the telecommunications market. With the new Act on Electronic Communications in effect we expect the competitors will be more active than to date. Our focus is on network interconnection and increasing competition from the side of other operators. All of the above mentioned will influence the IT architecture. We have implemented a number of challenging projects, mainly in the areas of interconnect billing, service provisioning and sales. Slovak Telecom will further advance with deployment of the ADSL technology in order to cover the whole territory of the Slovak Republic. In the course of 2003 we introduced three DSL access products. In June we launched the ST DSL 768 product with an access speed of 768 kbps downstream and 128 kbps upstream. As of 1 October the ST DSL 1500 service extended the portfolio, and finally on 1 November the ST DSL 384 service was launched targeting the residential market. One of the most demanding challenges is to achieve 100 per cent network digitalisation.

Miroslav Majoros,
President & CEO of Slovak Telecom

Social responsibility

It is a privilege of the big and powerful to render help to those who need it. In the previous year Slovak Telecom focused mainly on projects providing comprehensive help to those in need. The physically handicapped fellow-citizens, former political detainees, anti-fascist fighters and those who were dragged off to the USSR during the communist dictatorship have been offered advantageous calling plans for many years. Slovak Telecom supports and pays great attention to unique cultural projects and preserving the cultural heritage of Slovakia. It is – by tradition – a partner in the projects which create space for the young generation's self-realisation.

Write your thesis with Slovak Telecom

The programme "Write your thesis with Slovak Telecom" offers gifted students in their 4th and 5th years of study thesis internships and consultations directly in the company. It is a select programme designed for ambitious students who want to link their theoretical knowledge with practical experience particularly from the areas of telecommunications, information technologies, marketing, sales, finance or human resources. The programme gives the students an opportunity to consult experts having real-life practice, or find a thesis topic in Slovak Telecom. Those joining this programme can get a part-time job and potentially also a future employment. Last year we employed 19 students, mainly in information technologies, telecom infrastructure, HR, and marketing and sales.

Global Internships Programme

The International Global Internship Programme offers selected students three-month stays in Deutsche Telekom Group. This select programme is designed for students who already have experience with part-time employment in Slovak Telecom, or who took part in the "Write your thesis with Slovak Telecom" programme. The Global Internship Programme offers the students an opportunity to gain international working experience in a multinational company.

Co-operation

Given the ongoing transformation, Slovak Telecom offers the new employees a chance to take part in constant changes, to enter the world of innovative technologies and dynamic processes that are steered by our professionals. The company offers jobs to those who want to contribute to its success and are in search of extraordinary experience in a specialised area. In relation to the aforementioned, Slovak Telecom's collaboration with Slovak universities and research institutes in fields such as education and science and co-operation in international projects proved very beneficial. Slovak Telecom co-operates with the Research Institute of Communications located in Banská Bystrica in the development of technical guidelines and regulations.

Slovak Telecom is a member of various Slovak and international associations by profession and industry. The company is represented in the standardisation, radiocommunications, and development sectors of the International Telecommunications Union (ITU). It is a shareholder in EUTELSAT and a member of ETNO, ETIS, ETP, and ETSI.

Slovak Telecom and Eurescom

Slovak Telecom, a.s. is a shareholder of Eurescom since 1993. During this period our company has actively participated in several projects, for instance:

- P902 – Sustainability and social impact of ICT on school, homes and communities
- P1015 -FREEHANDS – Fibre and radio enhanced integration in heterogeneous access networks for delivery of broadband services
- P1111 – Next-Gen Open Service Solutions over IP (N-GOSSIP)
- P1112 – DIMMIT – Networks DIMensioning based on Modelling of Internet Traffic.

This participation helps ST experts share know-how and experience with other operators. Results achieved by Eurescom projects which covered various technical areas are used in our company with the aim to increase the value of ST through innovation. ST makes use of common research and field trial results thanks to the dissemination of Eurescom project results in our company.

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Workshop on industrial applications of Model Driven Architecture

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The telecommunications industry is about to experience a tremendous shift in the way complex software systems are constructed, deployed and operated.

This is one of the main conclusions from the "First European Workshop on Model Driven Architecture with Emphasis on Industrial Applications" that took place in Enschede, The Netherlands, on 17-18 March 2004. The workshop was jointly organised by Eurescom, the University of Twente and the European Software Institute to give the opportunity to industry experts and research scientists to exchange their opinions about the state of development in this area.

Panel discussion: expectations towards MDA

Dr. Richard Soley, OMG

In his opening speech Prof. C.A. Vissers, Scientific Director of the 'Telematica Instituut' briefly examined the historical evolution of software engineering and reminded the audience that there is still a long way to go to fulfil all the promises technology makes. In his keynote on the first day of the workshop, Dr. Richard Soley from the Object Management Group (OMG) provided an overview of the current standardisation of the Model Driven Architecture (MDA) in the OMG and gave a number of examples of successful application of the technology in different industries.

Industry sectors

The workshop was attended by more than 65 participants who discussed with great interest the potential of the technology in telecommunications and various other industrial fields, such as air traffic control and the automotive industry. During the workshop, 18 papers were presented, which had been selected among 35 papers through a peer review process, covering a wide field of application of the MDA technology.

Many contributions were prompted through the large expert network that the two IST projects MODA-TEL and MASTER, both investigating the application of the model driven architecture in an industrial context, have built.

The industrial relevance of the MDA technology was evident by the large number of industry players who contributed to and participated in the workshop, such as T-Systems, BT Exact, Thales, Siemens, France Télécom, and Computas. In addition, the research and academic contributions were well received and the presented work demonstrated market relevance, since most of the presented work was conducted in collaboration with the industry. This was for example the case for the work presented by Fraunhofer FOKUS, the Carnegie Mellon University, the Technical University of Berlin, the Vanderbilt University, and the University of Twente.

In his keynote on the second day of the workshop, Prof. Rolv Bræk from the University of Trondheim reminded the audience that the industry and especially telecommunications have a longer history in formal design and modelling of complex software systems. The wide adoption of these methods was not possible due to lack of expertise and easy-to-use tools, restricting its use to a small community. However, it looks like the time is ripe to widely adopt formal design and modelling for software construction. In addition, the fact that there exists a wide industry consensus will lead to numerous supporting tools.

Conclusion

At a concluding panel discussion, the panellists expressed their expectations with respect to MDA at different levels. Extrapolating from the presented experience of effective application of the technology in large, complex systems such as telecom billing applications, operations support systems, and air traffic control, the experts formulated ambitious expectations.

For example, Thales is expecting MDA to contribute to systems engineering as a whole, rather than only to software engineering. In contrast, BTexact expects MDA to help implementing also tactical solutions in a very rapid way. However, one of the most important conclusions was that MDA as a concept must be supported by industry strength tools supporting a much wider systems life-cycle, ranging from requirements gathering up to deployment, operations and maintenance of the systems.

More information is available at
http://modeldrivenarchitecture.esi.es/mda_workshop.html

Follow-on

The "Second European Workshop on Model Driven Architecture with an Emphasis on Methodologies and Transformations" will be held at the University of Kent in Canterbury, England, on 7-8 September 2004.

More information is available at
http://www.cs.kent.ac.uk/projects/kmf/mdaworkshop/

Meeting of the Wireless World Research Forum at Eurescom

In mid-April, the Wireless World Research Forum (WWRF) met in Heidelberg. As a sponsoring member, Eurescom hosted the meetings of the Branding Committee and the Vision Committee on 13 and 14 April. The Steering Board convened at NEC Europe one day later.

The picture shows members of the Vision Committee from Nokia, Siemens, TU Dresden, Vodafone, Philips Research Laboratories, France Telecom, Ericsson Eurolab, University of Piraeus, Alcatel, Nortel, Intel, NEC, Eurescom, University of Aachen, Fraunhofer FOKUS, Motorola, University College London, LG Electronics, and Carleton University.

The Forum has currently more than 150 members from industry and academia. Its mission is to formulate visions on strategic future research directions in the wireless field and to generate, identify, and promote research areas and technical trends for mobile and wireless system technologies.

Further information on the WWRF can be found at:
www.wireless-world-research.org

RFID – Opportunities for telcos

Eurescom study P1346 investigates potential of RFID for new telecom applications

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RFID (Radio Frequency Identification) is currently widely discussed as a high potential enabling technology and a radical means of enhancing data handling processes. This article summarizes the results of Eurescom study P1346 "Potential of the RFID Technology for Telecom Operators". The study team from Deutsche Telekom, Elisa, and Telenor investigated the state of the art of RFID technology. However, the main focus of the study was to identify new service and application opportunities based on RFID related to telecommunication with a high business potential.

Overview of an RFID system

The acronym RFID – also widely known as transponder technology – is a collective term for contactless identification and storage technologies. Main components are a "tag" and a "reader", which communicate by means of electromagnetic fields. At present, the tag consists of an integrated circuit with a storage part, a substrate or a printed circuit board, and an antenna or coil. It serves as information storage and can carry unchangeable identity information. Passive tags get the needed energy from the electromagnetic field transmitted by the reader, whereas active tags include a battery for power supply. The antenna of the smallest tags is integrated on the chip. Actual low-cost tags contain only the identity information of 64 to 128 bits in an integrated circuit as small as 0.5 x 0.5 mm. In the next years their price will fall under 10 cent per unit at very high quantities.

Readers read and write the information from and to the tags. Adapted to the read range they use different antennas or coils. Current readers are available in PC card format, and low cost versions with prices under 20 euro are announced. Figure 1 shows the typical components of an RFID system.

Enabling potential

The enabling potential of the RFID technology can be considered from two points of view: the one is the fast and wireless input of numbers and data into information processing systems. There are RFID systems that allow reading several hundred tags in one second. The other is that a big set of tags is building a large data storage addressed by identity numbers, even if the tags are spatially distributed over a continent. Both views enable new applications and services.

In the future every single item, even low cost products for the daily life, can get an RFID tag. This causes the strong interest in RFID from the supply chain management. In this domain up to now the use of RFID was limited to bigger volumes like containers or pallets. New opportunities for tracing the path of a single item from "the cradle to the grave" arise. Especially economisation at stock keeping or point of sale is expected.

New business opportunities for telcos

RFID also opens new application areas for the telecom sector. Regarding low-cost tags, the small storage capacity is mainly used for identification. Therefore, all data correlated to the low-cost tag must be stored and processed in a network where – depending on the application – different services are necessary. The identities can be transferred in other information, e.g. initialising information for telecommunication services. For example, a lost wristwatch can trigger the posting of an SMS to the owner at the lost-property office. In another example, an RFID-equipped bottle of wine can trigger a product information service in an intelligent home and display related information on a screen.

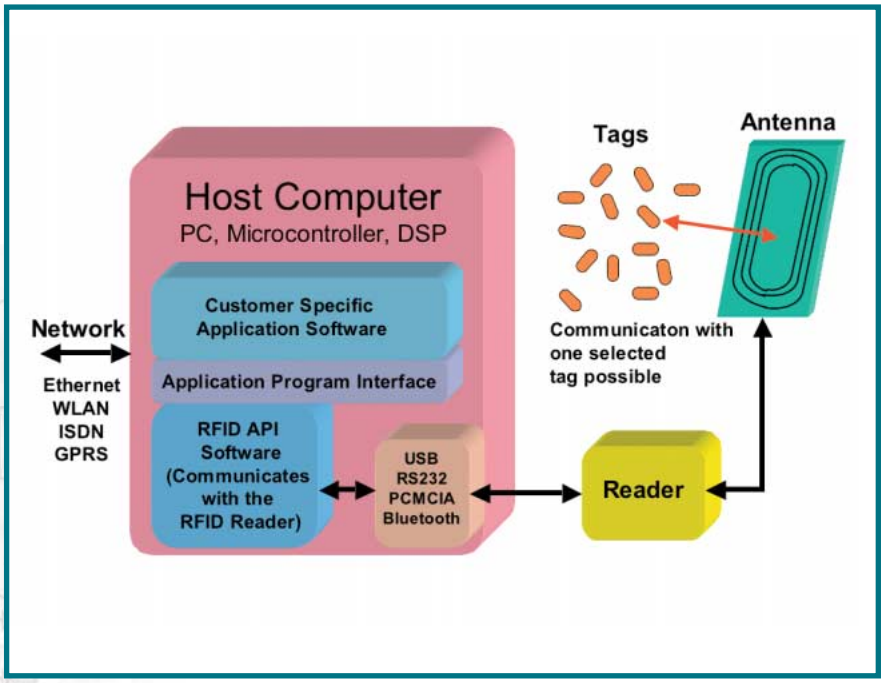


Figure 1: Typical components of an RFID system

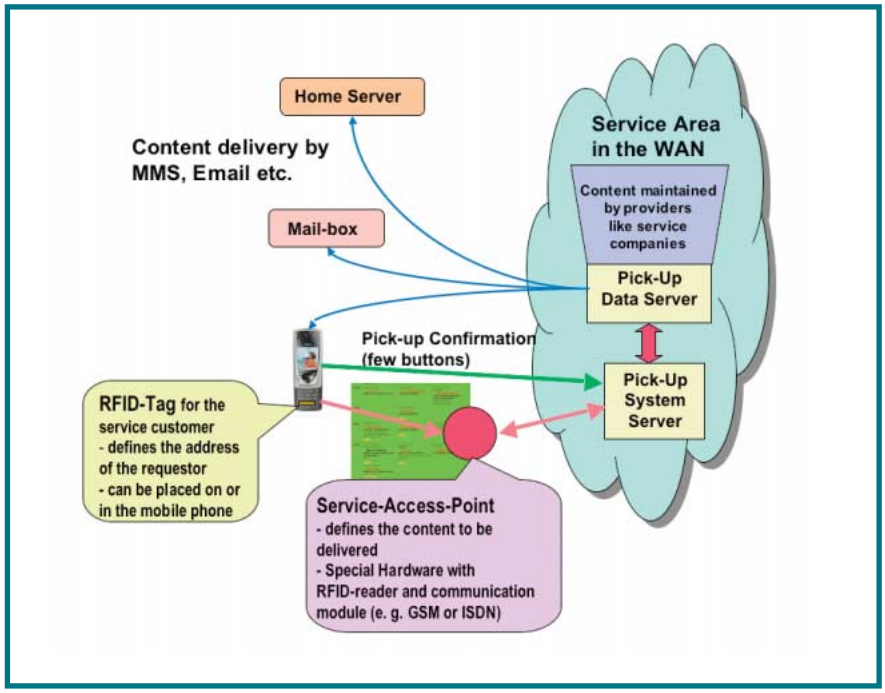
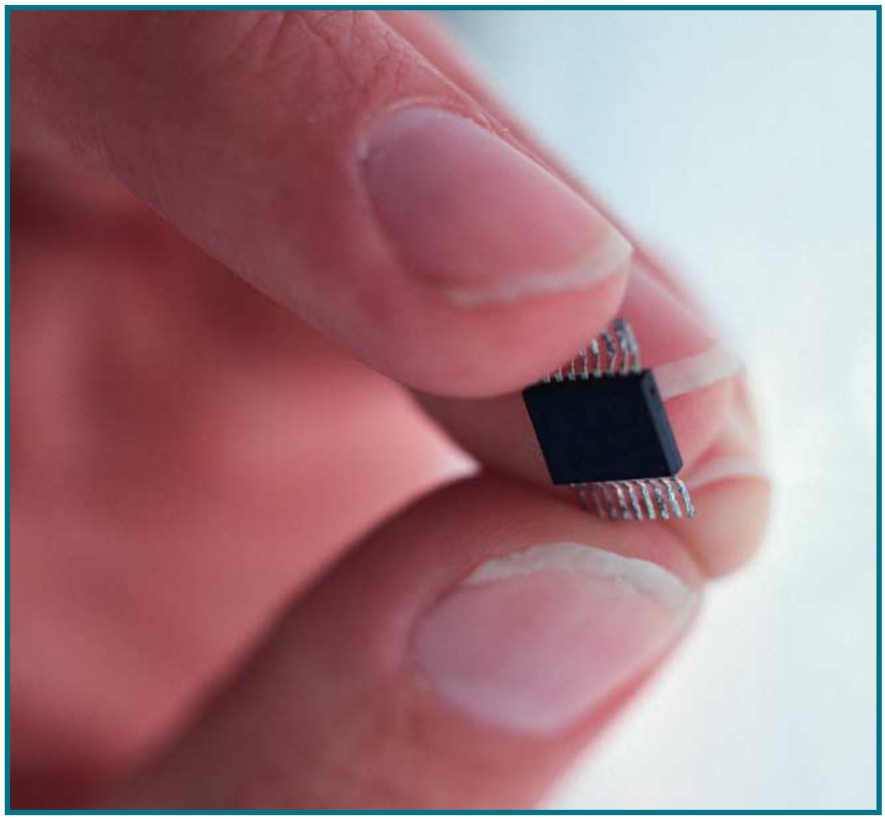


Figure 2: Functionality of a location based pick-up service

Location identification can be achieved by determining the reader's position. Combining tags or readers with mobile terminals can thus enable new applications. An example is a location based information pick-up service, as shown in figure 2. This service replaces the need to pick up printed information brochures or to make notes of the respective information of interest. Instead, the information is provided electronically on request. Examples of such information are timetables, repertoires or advertisement posters, which a user can see e.g. at railway or bus stations, shop-windows, billboards, or poster sites. The content can be sent by MMS or e-mail. To implement that, an RFID reader with the function of a service-access-point is located in the immediate neighbourhood of the visually shown information. A personal RFID tag, e.g. at the users mobile phone, defines the receiver of the information. The user can confirm the request on the mobile device. For the user this service is very fast, simple und convenient to use.

Furthermore, the following applications are considered to have high business potential: personalisation service, access to WLAN, payment in shops, electronic ticket sale and access systems, visitor density, food security, and certification of banknotes and cheques.



Risks

Risks for a market boost are privacy and security fears, possible requirements imposed by legislation, and up to now the unknown reliability of the technology in some applications. Several new services can be successfully introduced to the market only if cross-company, cross-administration and cross-national agreements can be achieved. But particularly from these overarching applications new business opportunities for telecom operators can arise.

Recommendations for telcos

It seems that the RFID market is in a waiting phase before a significant breakthrough. New technologies for mass fabrication are ready for use or under development and have a good chance to keep their promises. RFID can be the missing element to build up new processes in production and service industries.

Therefore the project participants recommend to the telecom operators to be active in:

- Observing the developments at the successors of the Auto-ID-Center and other RFID related organisations.
- Getting in touch with organisations doing trials in fields like supply chain management, banking, public transport and public authorities.
- Developing prototypes in joint projects with the RFID industry.
- Discussing new opportunities with (mobile) terminal manufacturers.

The P1346 study team expects that RFID technology has a good chance to spread from dedicated applications to every home, office and person.

The detailed results of Eurescom study P1346 are available to the subscribers of the Eurescom Study Programme at: www.eurescom.de/public/projects/P1300-series/P1346

Innovative procurement
in the European Union

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A recent report to the European Commission by an independent expert group on raising EU R&D intensity singles out innovative public procurement as a particularly effective demand-side mechanism for increasing private sector R&D activity, expenditure and output.

In addition to the use of this instrument in direct policy measures, the report also discusses possible indirect measures, i.e. "technology procurement policy … aiming at promoting private procurement … as a complement to public procurement" (E. Amanatidou et al.: Improving the Effectiveness of Direct Public Support Measures to Stimulate Private Investment in Research, Brussels, January 2003). E-procurement – procurement via electronic media – can be situated squarely within this proposed policy framework. However, there are good reasons for doubting that e-procurement can also be innovative procurement, especially if it is conducted under the EU's current set of public procurement rules.

Regular and Innovative Procurement

Procurement refers to the purchasing of a product, i.e. a material good or an intangible service. It may be carried out by either private-sector or public-sector actors. In the case of public utilities, such as telecoms, it may be carried out by private-sector actors under public sector regulations. There is an important distinction to be made between regular procurement, which concerns the purchase of ready-made, already existing products whose characteristics are well known or can be readily ascertained, and innovative procurement, which involves placing of an order for a product that does not yet exist, but which could probably be developed within a reasonable period of time. In the case of innovative procurement, additional or new innovative work is required to fulfil the demands of the buyer.

Whereas competitive market conditions can be relied upon to ensure the efficiency and effectiveness of regular procurement, this is not the case with innovative procurement – for the simple reason that there are no established markets for products that have not yet come into existence. Hence, innovative procurement has become a problematic undertaking within the institutional framework that has been imposed on telecoms and other public utilities by the EU directives on public procurement, the main thrust of which has been to ensure competitive market conditions in public procurement. As innovation analysts Edquist, Hommen and Tsipouri state in the concluding chapter of their book "Public Technology Procurement and Innovation", there is "a considerable degree of tension between the EU procurement rules and the need to accommodate … technical change".

Auctioning versus interactive learning

Mainstream economic theory provides the essential rationale for the present EU policy on public procurement, in the form of auction theory. Auction theory treats the interaction between a single buyer and a number of private suppliers as a game in which each side tries to take advantage of the other's weaknesses. The weakness of the buyer is that he is supposed to know less about the product than the suppliers do. The suppliers are supposed to take advantage of their superior knowledge. The weakness of the suppliers is that they do not control the rules of the game. Instead, the buyer does. Thus, the buyer can gain advantage by designing the best kind of auction.

Auction theory is a useful way of thinking about regular procurement. However, innovative procurement is a different situation, where the same conditions do not apply. For example, it is often the case in innovative procurement that the buyer actually knows more about the new product or technology than the suppliers. This possibility is not taken into account in auction theory. Innovation theory provides a better guide to innovative public procurement. It does consider the possibility that the buyer is more knowledgeable. More generally, innovation theory deals with relations between buyers and sellers in situations where products have not yet been fully defined and standard markets have not yet been established.

In innovation theory, innovative procurement is usually treated as a special form of user-producer interaction, which is fundamental to product innovation. Thus, innovative procurement is not a purely 'anonymous' market transaction based only

on cost- and price-signals. Nor does it take place in the context of vertical integration, where one organisation is "captured" by another. Rather, the buyer and seller remain independent, but they co-operate by sharing a range of information about user needs and how best to meet them. This means that communication between the buyer and seller must follow a network model of close and extensive communication, rather than conforming to the model of anonymous market signalling, restricted to the exchange of information about quantities and prices. From this perspective, the institutional and regulatory framework governing innovative public procurement should be modified in order to allow and encourage closer collaboration and more extensive exchanges of qualitative information about user requirements between buyers and sellers.

Currently, the EU directives on public procurement do not promote this kind of relationship between user and producer. Rather, "present EU legislation merely allows interaction to take place – and then only in special cases" (Edquist, Hommen, Tsipouri). Although it makes some provision for innovative collaboration between firms and public agencies through a so-called "negotiated procedure", EU procurement legislation has really only tolerated such interaction, not fostered it. Implicitly, the legislation regards user-producer interaction as an aberration from normal market relations. Possibilities for interactive learning leading to innovation have thereby been diminished.

EU project INNO-UTILITIES

It is from this theoretical and policy perspective that the European research project INNO-UTILITIES, led by Eurescom, will investigate cases of innovation-friendly procurement carried out by European telecom operators. E-procurement projects will be a special focus, and one main objective will be to determine whether – and, if so, how – e-procurement can also be innovative procurement in the sense discussed here. However, this research proceeds from a standpoint of initial scepticism. The foregoing observations on the current EU procurement legislation raise doubts about policy proposals which assume optimistically that information technologies can be used to radically improve buyer-seller interactions in the context of direct or indirect public-technology procurement. In order for that to occur, a number of institutional problems and policy issues should first be solved.

Further information on EU project INNO-UTILITIES is available at www.inno-utilities.org/

New role for the Programme Advisory Committee

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The Eurescom Programme Advisory Committee (PAC) was set up in 1994 to assist the Board of Governors in decisions on the orientation and priorities of the Eurescom Work Programmes. With Eurescom's new business model, the tasks for the PAC have changed significantly. Besides assisting in the assessment and prioritisation of proposals to the Study Programme, the PAC will be more active in identifying new business opportunities and suggesting how to use the mechanisms of Eurescom in growing these.

In the course of moving to a new role, the PAC has proposed a new approach for launching projects as a complement to the "bottom-up" approach used by Eurescom for a long time. Such new projects called "flagship projects" reflect that these projects are part of the strategic agenda of the members and supported by the decision makers at the shareholder companies. Typical characteristics of such projects are that they address boundary issues where the participants have to co-operate to find solutions. They are also closely related to business strategies and have business-line approval and buy-in to ensure the contribution is widely recognised in the parent companies. Flagship projects do not necessarily have a long-term perspective. They can be near-term, having a close-to-market perspective.

With this new concept at hand, the PAC together with Eurescom staff has established a dialogue with the newly established Fireworks Group, a group set up by operators for profiling standards. Together with the Fireworks Group, a project on "Interconnection of Multimedia Service Networks" has recently been launched.

The PAC has also suggested using the Study Programme to kick-start other projects, being run as Eurescom-internal projects, FP6, or CELTIC projects. A first pilot according to this approach is a study on next-generation operation support systems. This introduces a further work area for the PAC: discussion and advising on the most appropriate way of funding projects of telecom network operators. This can be done either through self-funding or by using the European publicly funded R&D programmes and related European initiatives, including the positioning of Eurescom in these programmes and initiatives.

Eurescom and the Fireworks Group

Towards interconnection of multimedia service networks

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The Fireworks Group was set up in July last year by operators in order to profile standards. Eurescom offered to assist the group in their mission, and in March 2004 the Fireworks Group and Eurescom launched a first project on "Interconnection of Multimedia Service Networks".

The background for this project is that, from the perspective of operators, the interconnection of IP based networks providing multimedia services has not been given adequate consideration by standardisation yet. Interconnection based on the work done to date is likely to suffer from non-guaranteed QoS, security risks, and inefficient use of network resources. Interworking is likely to be achieved only by bilateral agreements, thus preventing the interoperability of many services.

The project will identify the requirements in terms of architectural alignment, protocol selection and profiling, gap analysis, and selection of network elements for interconnect. Identified problems will be targeted at the appropriate standards bodies that will provide the detailed technical solutions.

The work will be phased. The first phase started in March has a duration of three months and will demonstrate the viability of the approach in a short period of time. The seven work packages will include the architectural framework, business rationale, signalling, media, management, numbering, and IP stack.

The project partners are BT, Deutsche Telekom, Eurescom, Telecom Italia, Telenor, TeliaSonera, and Telefónica. France Télécom has recently decided to join.

First drafts of deliverables on the architectural framework and the business rationale have already been prepared. The final deliverables are planned to be available by end of June.

More information on this project is available at:
www.eurescom.de/public/projects/P1400-series/P1421

Fireworks in the garden: the members of the Fireworks Group during the kick-off meeting at Eurescom in Heidelberg.

New Eurescom studies

The first five Eurescom studies of 2004 are running. There will be another four to six studies started during the second half of 2004.

ID Management Enabling AAA Services (P1441)

During the last two years, standards for the management of online identities started to establish themselves on the Internet and especially in Web technologies. Identity Management (IDM) has the potential to leverage business and service aggregation on the Internet by making services easier to use and involved parties more trustworthy.

This study will look at the potentials to integrate http-level identity management with network-level authentication found in carriers' infrastructures. Central questions will be:

- What are the dangers to carriers' customer relationships through online-enabled identity providers?
- How can telcos position themselves in this emerging market making use of existing AAA (Authentication, Authorization and Accounting) infrastructures?
- Can acceptance of telcos' Internet services be improved, using Identity Management?
- Can telcos services, like accounting and billing, be adopted to work in an Identity Management environment?

The key results will be a set of service scenarios presented in terms of technological and business approaches, and some recommendations for telcos:

- Architecture and standardisation recommendations
- Regulatory aspects
- Strategic positioning of telcos

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New Market Opportunities by Galileo Satellite Services (P1442)

The development of the European satellite navigation system Galileo will be finished in 2006, the deployment of the 30 satellites in 2008. Companies that want to develop innovative and attractive new services, applications or devices have to start now to be ready in time.

The main objectives of the study:

- Identify Galileo characteristics that are key factors for telco opportunities
- Identify potential applications and service areas
- Draft business cases for promising services
- Develop a roadmap and recommendations for Galileo usage by telcos

Activities related to the second call for Galileo applications, which is expected soon, will clearly profit from the results of this study.

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TRAWIS – Traffic Models for the New Wireless Services (P1443)

Mobile wireless services are quickly evolving. As wireless infrastructures are deployed, the rapid adoption of multimedia messaging and interactive services will have a heavy impact on traffic usage patterns. Services such as real-time multimedia messaging, video streaming and conversational services with rich-video content are expected to rise in popularity. From a traffic perspective these services tend to exhibit a peaky and highly correlated behaviour. This leads to worse-than-planned network performance, increasing the possibility of bottlenecks.

This study will examine the requirements of new traffic models for these new services. Such models will incorporate descriptions of different traffic types, likely customer behaviour, and service requirements that would influence traffic.

The following questions will be addressed:

- What will the next generation of wireless traffic look like?
- What level of Quality of Service will be required, and what will be the impact on the network?
- What are the requirements for devising a model for this type of traffic?

The output of the ongoing Eurescom Project P1112 “New Dimensions” will be considered.

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NGN Signalling with ENUM (P1444)

ENUM is a widely accepted standard, jointly developed by IETF and ITU-T in order to establish an international standard for the enhanced usage of the Domain Name System (DNS). ENUM supports the provision of new services in converged voice-data networks, the so-called Next Generation Networks (NGNs), and thus forms a key element particularly important for operators. ENUM promises to be a simple solution to address new services, optimise signal routing and to improve the interoperability between the fixed-line and the IP-based network.

ENUM, as a standardised technology, offers solutions for many known problems within an NGN. It provides mechanism for the mapping of E.164 telephone numbers into URIs (Uniform Resource Identifiers) and thereby enables new service features within an IP based network. The deployment of ENUM will support the smooth migration of service discovery and signalling functions from the existing SS7 databases and protocol mechanisms to an ENUM based NGN.

ENUM is currently being trialled in different countries, some of them very close to conclusion. It is necessary that operators take a step back, review all these efforts and the lessons learned, and assess the strategic impact of ENUM on their networks.

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OSS for NGN – Coordination of Telco Activities (P1445)

The operations support system (OSS) is a critical business success factor of today’s telecom operators and service providers. In addition, OSS can be a key differentiator among competitive players. During the last years, the industry stakeholders have started to realise the vision of next generation networks (NGN), which will be an ongoing process for the next decades. However, for the establishment of NGNs there exists a substantial challenge to build an appropriate architecture for operation, administration and maintenance of future networks.

The main motivation for this study is to improve the non-competitive cooperation of telecom operators in standardization bodies, initiatives, projects, or towards vendors in the context of network and service management systems. The identification of the major issues in this large area will help to advance the work in a coordinated and therefore cost effective way. Besides, the work will help in finding a consensus view on the main issues.

The study will assess the current situation and will provide recommendations for actions. In particular, it will:

- Evaluate the OSS for NGN topics, players, and their activities
- Identify overlapping or non-relevant activities as well as unconsidered topics
- Derive recommendations for action in order to coordinate and advance activities, e.g. bundle activities to bear increased influence, initiate new activities, etc.
- Propose a mechanism to keep the coordination and concerted activities running after the end of the study

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EUREKA cluster CELTIC
Rich harvest in Call 2

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EUREKA cluster project CELTIC is gaining momentum. Its second call for new Proposal Outlines (PO) has already brought a rich harvest. By the submission deadline on 28 April, 35 PO applications were registered. In the second phase from 21 June to 6 October 2004, full project proposals from the selected PO's can be submitted.

The overall budget for CELTIC projects in 2005 is expected to be about € 150 million. The total budget that has been defined for CELTIC between 2004 and 2008 is € 1 billion. The costs for CELTIC projects are shared between private investment and governments, who contribute up to 50 % of the project budget.

The start of the projects from Call 2 is envisaged for early 2005. As in Call 1, proposals for Call 2 must adhere to the main CELTIC objectives. Proposals shall contribute to the CELTIC approach of Integrated Telecommunications Systems and should promote the CELTIC Pan-European Laboratory with suitable platforms and test vehicles.

The objectives of the proposals must fit into one or more of the CELTIC areas. Figure 1 shows the distribution of Call 2 POs related to the nine CELTIC areas.

With respect to Call 1, there is a strong increase in the Security area of 100 %. Other increasing areas are Mobile Wireless Networks (41%), and both Broadband Transport Networks and Services and

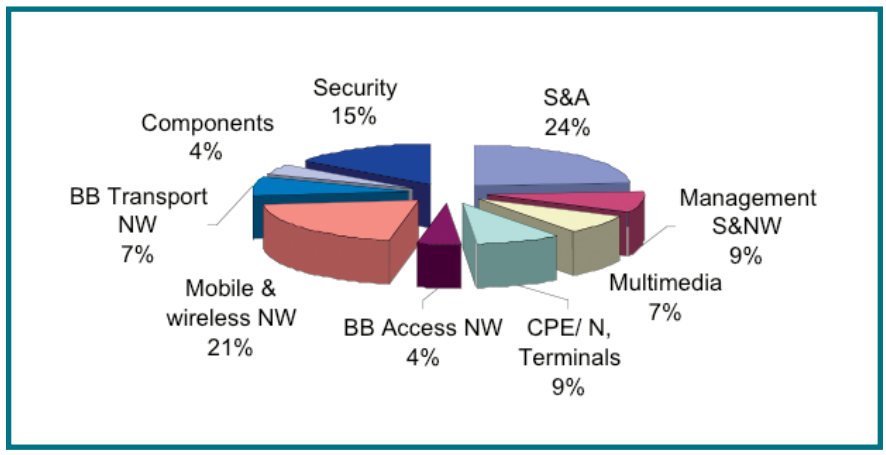

Figure 1: Main technical domains addressed

Applications of about 30 %. There is a general tendency towards wireless networks.The impressive increase in the area of Security issues can partially be related to this trend, as there is a need for achieving high-level security for this technology. The strongest reduction of 69 % was registered for Broadband Access Networks. Other reductions are observed for Components (37 %), Management of Services and Networks (35 %), Multimedia (27 %) and to a lesser extend Custom Premises Equipment, Home Networks and Terminals (15 %).

The number of 35 POs represents a very good result, as the last CELTIC call was less than 6 months ago. The number of 20 participating EUREKA countries represents an increase of 15 % compared to Call 1. Among the 226 participants, Spain and France again have strongly contributed, and a significant increase is registered for Germany, Greece, Norway, and Portugal. Again, most coordinators are from France and Spain, followed by coordinators from Israel, who participated very actively in this second CELTIC call. The duration of most projects is 24 months, and the range is from 12 to 36 months. The figure below indicates the types of participants. Industry and especially telcos represent the major partcipants. A strong reduction is observed for SMEs, and a gradual reduction is visible for academia and related bodies.

In the first CELTIC call, 43 proposals were received. 30 potential projects received the CELTIC label. The current situation is that 17 projects are expected to be launched in 2004, which represents an effort between 200 and 260 person years. The launched projects will have an effort of about 600 person years in 2005.

For more information, please visit the CELTIC website at
www.celtic-initiative.org

or contact the CELTIC Office, which is hosted by Eurescom in Heidelberg, at
office@celtic-initiative.org
phone +49 6221 989372.

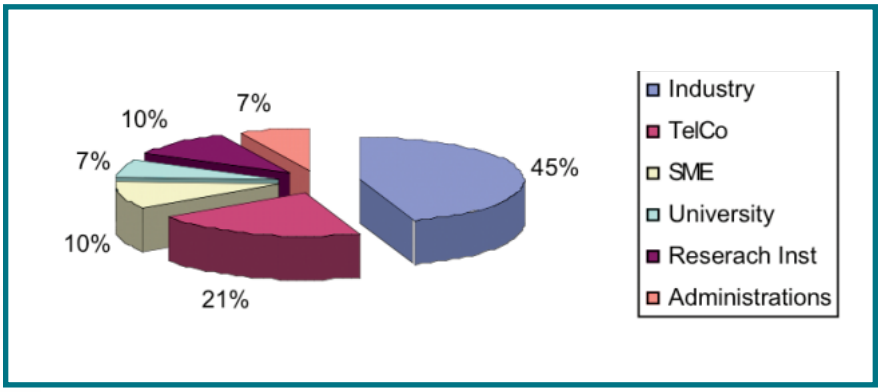

Figure 2: Types of participants

new project results

EURESCOM STUDIES

P1348 SPEED: Strengthening Telco's Position in the Mobile Presence and Location aware services European Interoperability for new market opportunities
Deliverable 1
A Roadmap To Rollout Of LAMP Services For Telcos
Eurescom Study Programme confidential

P1348 SPEED: Strengthening Telco's Position in the Mobile Presence and Location aware services European Interoperability for new market opportunities
Deliverable 2
Roadmap towards delivery of Location Aware and Mobile Presence Services (LAMPS)
Eurescom Study Programme confidential

P1348 SPEED: Strengthening Telco's Position in the Mobile Presence and Location aware services European Interoperability for new market opportunities
Technical Information 2
Detailed Description of Technical Enablers and Inhibitors for LAMP (Location Awareness and Mobile Presence) Service Delivery
Eurescom Study Programme confidential

P1442 NEMOGS – New market opportunities by Galileo satellite services
Deliverable 1
Technological analysis of Galileo and its relevance for Telcos
Eurescom Study Programme confidential

EURESCOM PROJECTS

P1302 PROFIT: Potential pRofit Opportunities in the Future ambient InTelligence world
Deliverable 3
Strategic business models for the new economy
For full publication

P1302 PROFIT: Potential pRofit Opportunities in the Future ambient InTelligence world
Deliverable 4
Work/ home boundaries and user perceptions of Aml: key issues and implications for business
For full publication

P1304 CENTS – Cost-Effective migration to FTTx-Networks for Tomorrow's Services
Deliverable 1
Concepts enabling the economic introduction of Next Generation Optical Access Networks starting from DSL
Eurescom confidential

P1304 CENTS – Cost-Effective migration to FTTx-Networks for Tomorrow's Services
Technical Information 1
Opportunities for improvement in today's access networks
Eurescom confidential

P1309 Health risk assessment of the effects of radio-frequency electromagnetic fields
Deliverable 3
Influence of Human Body Shape on EMF exposure
Eurescom confidential

Instant spamming
The spim wave is growing

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If you think spam is the ultimate nuisance, try spim. Instant messages containing unsolicited commercial content are on the rise. This year their number is expected to triple, and the spim wave has just begun.

You are working at your computer, when suddenly a grey box with a text message pops up on your screen. Instead of some lines from one of your buddies, an unknown person invites you to click on the ensuing link and learn more about the extension of certain parts of your body. If you have received something like this, you are also a member in the fast-growing club of spim victims.

Rapid growth of spim

Instant spamming has been around for a long time. The term 'spim' was already mentioned in the Chicago Tribune on 5 August 1999. What is new, though, is the rapid growth. In 2003, spim amounted to 400 million messages, according to marketing-research firm Radicati Group. This year, Radicati expects the number to triple to 1.2 billion. Compared to spam, this number is still relatively low – the projected number of spam e-mail messages for 2004 is 34.8 billion. This is mainly due to the fact that Instant Messaging (IM) has not yet achieved the number of users, especially business users, as e-mail. However, the number of business IM users is expected to grow rapidly – from 10 million in 2002 to 182 million in 2007, according to Ferris research.

Now that Instant Messaging has reached a critical mass, it is becoming ever more interesting for spammers. "The reason spim has taken off is very simple – the money and the marketers go where people are," says Robert Mahowald, an analyst at the IT advisory firm IDC in Massachusetts. "IM is just another channel, but now people are starting to use it more often."

Another reason is the lower barrier Instant Messaging currently poses. While legal and technical measures against spam are being increased, spim still offers a promising area for dubious marketers. There is not much legal protection yet against spimming, and most users are not aware of security issues related to Instant Messaging.

Recent spim attacks revealed the vulnerability of IM communication. In February, an adware worm called "Osama Found", circulated among users of America Online Instant Messenger (AIM), causing more aggravation than actual damage. The worm pops up a URL link in an incoming message during an AIM session and appears to come from someone on the user's buddy list. Users who click on the URL link are sent to a web page where they are asked to download a programme for an IM game application. Once a user installs the programme, it acts like a worm and sends the link to everyone on the user's buddy list. The spread is even faster than in e-mail worms, because IM is real-time, and people react much faster.

Differences between IM and e-mail

Experts have different opinions on how serious a threat spim is. Most of them regard predictions of a spim explosion as exaggerated. "I wouldn't characterise spim as a huge problem," said Paul Ritter, programme manager at The Yankee Group. Spam expert John Levine agrees: "Spim is not as horrible a problem as e-mail spam." Their judgement is based on two main differences between e-mail and Instant Messaging.

Firstly, IM communication takes place in a better controllable environment. Instant messages are routed through just one server at Yahoo, MSN, or AOL – unlike e-mails, which are routed via several servers on their way to the recipient. As the IM services are not interoperable, each provider has high control over IM traffic.

The second major difference between Instant Messaging and e-mail is on the user side. Most users filter instant messages through buddies list. E-mail users may apply spam filters, but most of them do not use white lists of permitted senders. Thus, the structure of IM communication tends to limit the growth of spim. However, spimmers have been quite inventive to overcome the structural barriers. Spimmers deploy bots in chatrooms that pose as real persons and persuade other chatters to invite them to their buddy lists. In a crowded chatroom, a rudimentary impersonation is sufficient to lure chatters into adding bots to their buddies list. In general, most spim is sent by bots that simulate IM users.

Francis deSouza, CEO of IMlogic, estimates that about 5% to 17% of IM messaging today is spim, compared to a 52% share of e-mail spam in 2004. According to the Radicati report, 70% of spim messages point to pornographic websites, around 12% involve "get rich" schemes; product sales account for 9 percent; and loans or finance messages are at 5 percent.

Spim is more obtrusive

The reason why some experts see spim as a real threat is not so much because of the mere numbers, but more because of spim's special character. Spim is more obtrusive than spam, because messages pop up automatically on a PC or a mobile phone when a user is logged in, making them harder to ignore. "IM spam is much more of an interruption than regular e-mail spam," said John Levine. "Unlike e-mail spam, the timing is controlled by the sender and not the recipient."

IM spam can also cause security problems by enticing users into clicking on promising hyperlinks. These links can provide a doorway for viruses to enter a corporate network. Spim could cause network congestion, hurting application performance. IM providers take the threat seriously: AOL, MSN and Yahoo have already taken measures to limit the amount of unwanted messages their users receive.

EWMDA-2

UNIVERSITY OF KENT

Second European Workshop on Model Driven Architecture with an emphasis on Methodologies and Transformations

CANTERBURY, KENT, UNITED KINGDOM
7-8 SEPTEMBER 2004

The Model Driven Architecture (MDA) is an approach to IT systems development fostered by the Object Management Group (OMG). It is based on forming a separation between the specification of a system's essential functionality as a platform independent model (PIM) and the realisation of the system using more detailed and specific platform specification (PSM).

The MDA approach to the development of distributed IT systems will affect the current methods and techniques employed to manage the development process. It is recognized that specifying the mappings from transformations from a PIM to a PSM is a key enabling aspect of the MDA approach. This is substantiated by OMG's current Request for Proposals (RFP) on techniques and facilities to enable transformations. In this workshop we aim to explore how the MDA approach impacts methodologies for system development and intend to explore the techniques available for specifying transformations, in particular taking a look at tools for supporting such specifications and methodologies.

Format of the Workshop

This two-track, two-day workshop on methodologies and transformations will provide the opportunity for in-depth discussions regarding each topic whilst allowing interaction between experts in each area. The first day will be dedicated to setting the scene, involving presentations on some of the accepted submissions. Based on the topics covered by the submissions, specific problems in the areas of transformations and methodologies will be identified by the organisers.

The second day of the workshop will be targeted at "doing some work": The delegates will be divided into groups for smaller-scale discussion on the selected problems. The goals of the discussion groups will be clearly defined, and each group will be expected to report back the results of the discussion at the end of the second day. After the workshop the results will be written up and included in the proceedings.

Papers and Presentations

Proposed papers should be submitted by 27 June 2004. Paper submissions should be in English and should include title, abstract (about 200 words), name, company and address of the author.

Papers should be between 2 and 8 pages long. We are particularly interested in position papers however full papers are acceptable submissions.

The topics of the submissions should relate to either methodologies or transformations (in the context of MDA). Suggested topics include (but are not restricted to):

Methodologies

- Model driven software engineering process
- Design guidelines for applying MDA
- Positioning and relating levels of platform-independent modelling
- Managing the model driven approach
- Applications of MDA in an industrial context. Case studies
- Costs and benefits of model-based software engineering
- Barriers for MDA adoption. Existing and necessary solutions

Transformations

- Tools supporting MDA transformations
- Techniques for specification MDA transformations
- Alternative uses for model based transformations
- Problems with the MDA approach to specifying transformations
- Techniques for transformation reuse
- Debugging transformation specifications
- Interesting or difficult transformation Case Studies
- Formal/ Mathematical aspects of transformations

All accepted submissions (full papers and position papers) will be included in the workshop proceedings.

Important Dates

Submission deadline for papers: 27 June 2004
Notification of acceptance: 25 July 2004

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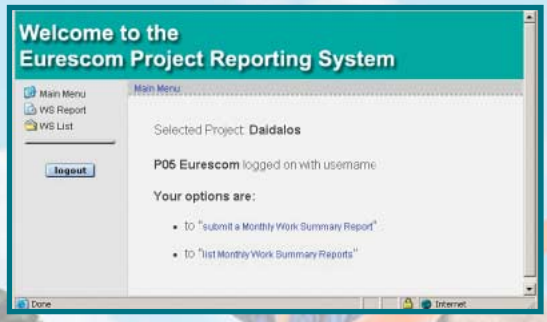
http://www.cs.kent.ac.uk/projects/kmf/mdaworkshop/

Next issue – September 2004:
Critical infrastructures

EU Project Reporting – Fast and Easy



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Riccardo Pascotto, Deutsche Telekom
Project coordinator of EU Integrated Project DAIDALOS

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