

THE **FUTURE** **OF STANDARDISATION**

IN FOCUS
Iceland Telecom

PROJECT REPORTS
Next Generation Networks

TUTORIAL
The Session Initiation Protocol

EURESCOM Summit 2002
21 to 24 October 2002 in Heidelberg, Germany
Tutorials on 21 October



Powerful networks for profitable services

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EURESCOM'S SECOND SUMMIT FOCUSES ON NETWORKS AND THEIR BUSINESS ASPECTS

The EURESCOM Summit 2002 will explore the technologies for future networks and will put the networks into a broader context by adding the business related service aspects. The conference will bring together the technology research community, the experts of telecommunications services and products as well as leading telecommunications business personalities to share ideas and develop a common vision.

HIGH QUALITY PAPERS WILL BE PRESENTED AT THE CONFERENCE

An overwhelming number of about 120 papers were received, from which the Programme Committee assembled a high-quality programme consisting of the best 50 papers.

Amongst the main subjects, which will be covered at the conference, are:

- Optical networking
- Access networks, including wireless access and seamless mobility
- Network evolution, "enabling Next Generation Networks"
- Service evolution
- Network and service management, OSS, traffic engineering
- Quality of service, performance and security
- Multicast
- Terminal, user and business aspects

The detailed programme is available on the Web at www.eurescom.de/summit2002.

THE TARGET AUDIENCE

We are expecting about 250 participants including data communications experts, network technology specialists, systems engineers, telecommunication architects, business and product planners, application and service developers, product developers, visionaries, strategists, researchers, executives from network operators, service providers, IT vendors, content providers, manufacturers of IT/telecom software/hardware, application service providers, academia and consultant companies.

TUTORIALS ON "HOT" ISSUES

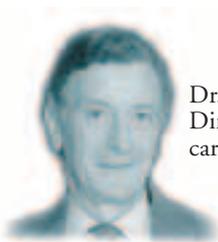
On 21 October four half-day tutorials on interesting topics in promising network-related areas will be offered. Details are available on the Summit Web pages.

EXHIBITION - EXPERTS MEET EXPERTS

The conference will also host demonstrations and an exhibition where experts can meet experts and explore available and emerging products, devices and tools that support the building of powerful networks of the future. Some limited space is still available. Please send your request for exhibition space to Ms Ellen Tallas, e-mail: tallas@eurescom.de.

www.eurescom.de/summit2002

TELCOS AND INNOVATION



Dr. Claudio Carrelli
Director of EURESCOM
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How do telcos get out of the current financial crisis? The core element of the solution is easy to define and can be reduced to one word: innovation. Innovative products that give customers added value and a better quality of life are the only way to increase revenue and regain the trust of shareholders.

What sounds simple is, however, hard to achieve. This applies also in this case. Innovation, which can help overcome the current financial crisis, has been severely hit by it. Under the burden of huge debts, telcos were forced to cut their R&D expenditure, and in recent months they saw themselves forced to downsize their R&D departments. Investment in innovative products and services has been considerably stalled to consolidate the companies'

budgets. The problem is that telcos are condemned to be low on the value chain, if they do not actively influence and steer innovation. The cover theme in this issue shows that telcos seem to loose influence in standardisation of new products and services because of lack of participation. This is due to the fact that the majority of experts in the R&D departments have to concentrate on short-term development projects.

Suggesting to invest more into innovation may appear as naïve as telling someone who fell into the sea to buy a life insurance. There is a vicious circle: Tight budgets lead to reduced R&D efforts, which lead to fewer innovative services, which lead to lower income and attractiveness on the stock market, which leads to even smaller budgets and low market capitalisation.

What is then the way out if this vicious circle? There is certainly no way around financial consolidation. However, at the same time a considerable proportion of the budget that is left has to be used for generating innovative products and services through effective R&D. The stress lies on the word 'effective'. R&D departments in telcos and R&D management companies like Eurescom have to acknowledge the fact that R&D budgets will stay at a moderate level in the short term.

Scarcity of resources has always been a driver for innovative solutions. People in R&D have to be innovative in making the process for generating innovations more efficient and effective. Within a single company this can be done only to a certain extent. The biggest potential lies then in collaboration. Bundling resources and joining forces is a promising way for telcos to strengthen their innovative muscles. Eurescom's project and study programmes as well as the EU's IST programmes and the forthcoming Framework Programme 6 offer ample opportunity for collaboration and innovation-induced growth in the telecoms industry. It is now up to telcos, if they want to stay victim in the vicious circle of the financial crisis, or if they want to climb back into the driver's seat of the value-adding process of innovation focused on customer needs. The key to the solution is easy to see, but hard to achieve, and its name is innovation. I predict that telcos who are convinced of this and act accordingly will be far better off in two years time than the others.

Dr. Claudio Carrelli

EDITORIAL REMARK

selected standardisation organisations and fora to find out what the situation is. We are sure that you will find the results quite interesting and sometimes surprising, at least we did. The cover theme is rounded off by standardisation experiences from a Eurescom project.

Without trumpets and horns, the renewed Eurescom started operating smoothly on 1 July. The most important changes in Eurescom's business model have already been described in the last issue. In this issue, we give a short account of the current state of affairs and bring you up-to-date with the new opportunities Eurescom offers. Preparations for the new Eurescom work programme have already started. Our report gives a preliminary overview, what the central research topics for next year will be.

Eurescom is also involved in IST projects. Our report under 'European issues' gives an account of the activities in this area. In addition, this issue contains project reports on various innovative topics and a tutorial on SIP. We hope you will find some useful information that gives you new insights or different perspectives on known subjects.

We would like to encourage you to send us your comments on special articles or this issue in general. Do you miss any important subject? Do you agree with the opinions by our authors? Would you like to become a Eurescom mess@ge author yourself? We would be glad about any kind of comment from you; it will help us shape and improve this magazine continuously according to the needs of our readers.

Finally, we would like to inform you about an internal change. In last issue's editorial remark, we already announced that Eurescom mess@ge will also offer attractive advertising opportunities. To clearly separate advertising from the editorial part, a new colleague joined the Eurescom mess@ge team: From this issue on, Luitgard Hauer (picture) is responsible for the advertising section of our magazine. Please contact her, if you need further information on booking advertising space;

phone +49 6221 989 405;
e-mail: hauer@eurescom.de.

**Your
EURESCOM mess@ge editorial team**

Usually, summertime is a relatively quiet time, even in a vibrant area as telecoms R&D. This year, everything is slightly different. In parallel to the rather noisy consolidation in global telecoms, researchers have quietly continued doing their work – with sometimes stunning results, as our 'A bit beyond' article on multi-sensorial communications shows. However, the daily work in research is not as glamorous as this topic might suggest.

Although not as attractive at first sight as the process of inventing new technologies, standardisation is of crucial importance for the diffusion of innovative services and technologies. Strong indications that telcos' participation in standardisation has recently decreased inspired us to devote this issue's cover theme to this important topic. We made a query among

SN@PSHOT

"YOUR NEW AFTERSHAVE IS SMELLING GOOD, DARLING!"

Several companies smell business: they have taken up the challenge to include all our senses in telecommunications. The picture shows the prototype of a mobile scent phone. Read more about this topic under 'A bit beyond' (page 26).



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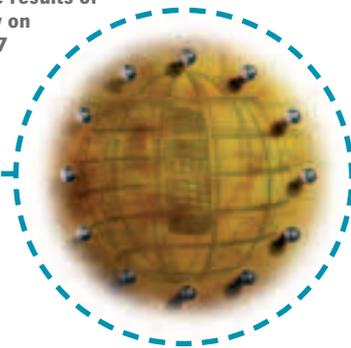
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NEW EURESCOM STARTED

SMOOTH TAKE-OFF INTO THE FUTURE OF COLLABORATION

Monday, 1 July 2002, was a remarkable day for Eurescom. On this day, a new age began for the R&D management company in Heidelberg: The new business model, which was approved on 15 May, went into effect. This did not happen with a big bang, but rather in a smooth, evolutionary way. Eurescom's director, Dr. Claudio Carrelli, deliberately avoided a special ceremony for starting the renewed company. The 20 members of the Eurescom core team in Heidelberg used the first day of the new era for continuing the preparations for next year's work programme, the Eurescom Summit 2002 in October, and other customer-driven activities.

The core element of the new business model is the expansion of the organisation to include a wider scope of organisations in the telecoms domain. This includes traditional and new players, who want to use collaborative R&D to speed up the migration to new systems and technologies and to multiply the impact of their R&D resources. All telecom-focussed organisations now have the opportunity to become a member of Eurescom or to employ the professional project and programme management services of Eurescom.

Eurescom is now open to vendors and suppliers as well as network operators and service providers. Moreover, Eurescom will put emphasis on the commercial offering of R&D project and programme management services. Members have preferred access to the services and the exclusive opportunity to participate in Eurescom's own R&D work programme.

In addition to the expanded business focus, Eurescom has also made some important changes in its way of organising the process of collaborative R&D to make it even more efficient and effective:

All new projects will be self-funded by the participating companies. Eurescom will no longer pay project participants. The positive effect is that the annual fee for each company is now far lower. For EURESCOM members this means that they will have to organise the funding for each project within their own company.

For shareholders, all management and support services for projects are included in their annual fee. Ordinary members and associate members have to pay for these services on a per project basis in addition to their annual membership fee.

Eurescom will continue to run a study programme parallel to the project programme. In contrast to the project programme, participants get paid by Eurescom for their work in studies. This is funded through an extra subscription fee by the companies who participate in the study programme. The set-up of studies will be done in the proven way. Eurescom just needs a minimum number of interested companies to set up a study.

Apart from that many core elements that made Eurescom the unique organisation it is today are continued. Over the last ten years Eurescom has developed an infrastructure that has proven to meet all project requirements with the lowest possible overhead. "Especially in times like these, when R&D budgets are under pressure, intensifying collaborative R&D makes a lot of sense," says Dr. Claudio Carrelli. To facilitate collaborative R&D also for non-members, Eurescom has opened a new business area in offering comprehensive programme and project management services for third parties.

The business model has changed, but the motto of Eurescom has stayed the same: "Innovation through collaboration".

BEST PAPER AWARD

FOR EURESCOM PROJECT FASHION

At the Networks 2002, the 10th International Telecommunication Network Strategy and Planning Symposium, which took place in Munich from 23 to 27 June, Eurescom project FASHION received the award for the best paper. Title of the paper: "Network Operator Perspectives on Optical Networks – Evolution towards ASON".

The paper was presented by Beatriz Craignou, France Télécom (picture: fourth from right). Co-authors were Roberto Clemente (Telecom Italia, project leader; sixth from right), Jacques Robadey (Swisscom; eighth from right), Laszlo Jereb (Budapest University; third from right), Zacharias Ioannidis (OTE; not on the picture), and José Santos (Portugal Telecom; not on the picture).

Eurescom project 'FASHION – Flexible, Automatically SwitcHed client Independent Optical Networks' (P 1012) explored, among other topics, realistic network scenarios and service requirements for automatic switched optical transport networks (ASON).



Further information on the project is available at www.eurescom.de/public/projects/P1000-series/p1012/

THE FUTURE OF STANDARDISATION

ARE STANDARDS THREATENED BY THE CURRENT TELECOM CRISIS?



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Without standards it would not be possible to make a telephone call from Australia to Greenland, to use the same mobile phone in many different countries or to exchange electronic multimedia documents world-wide. Standards are vital for a functioning telecommunications infrastructure. Many different organisations and fora are working on standards. Currently, the telecommunications industry is in a deep financial and economic crisis. Does this have a negative impact on standardisation? Eurescom mess@ge took the initiative and asked a representative sample of standards organisations, whether and how they have been affected by the telecom crisis, and how they try to cope with it.

Survey results

In June, Eurescom mess@ge sent a questionnaire to seven standards organisations and fora. Only ITU-T, IEEE, and ETSI answered. The Optical Internetworking Forum (OIF) informed us through their spokesperson that "the OIF will not be able to participate at this time". IETF, OMG and The Parlay Group did not respond at all.

The answers we received show that standardisation has not stayed unaffected by the telecom crisis. However, the overall impacts do not seem to be severe. Membership is still increasing in all three standards organisations, but in general with a lower speed than in earlier years.

Personnel cuts in many companies have caused a shortage of experts. This means that standards work needs to be done with fewer experts and in a more efficient manner. The standards organisations are tak-

ing care of this problem by streamlining the standardisation processes and by utilising more electronic working methods, such as e-mail based document drafting, audio-conferences instead of face-to-face meetings and better co-ordinated schedules.

Speed is also an issue. The time to market for new standards has been significantly shortened.

Relationships to fora

Many fora were created during the last years. Companies seem to like forming fora

Is there a standardisation crisis?

Beyond the scope of our survey, there is some evidence that particularly network operators and service providers have tended to withdraw from standardisation work. At Eurescom the number of project participants attending standardisation meetings has decreased. The reasons are obvious: there are less and less budget and resources directly available for R&D, which leads to a situation where operators often leave it to the manufacturers and vendors to take care of standards and the compliance of the products with those standards. Several operators have actually completely withdrawn from standardisation due to cuts or outsourcing of their R&D.

We need to be aware that standards are vital for a functioning telecommunication infrastructure. Network operators and service providers need to stay in the driver's seat for defining the requirements and for assessing the functionalities. They cannot delegate this responsibility to manufacturers and vendors.

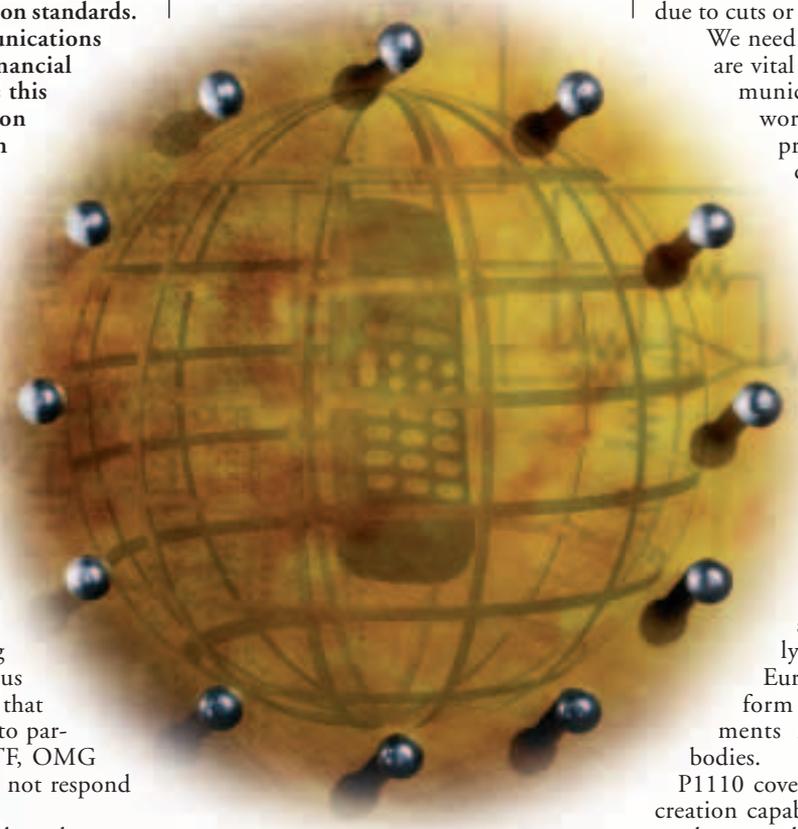
An example for successful contribution to standardisations

Our article on Eurescom project P1110 shows how Eurescom actively supports collaborative telecommunications standards work. Particularly for telecoms operators, Eurescom offers the ideal platform for voicing their requirements in the various standards bodies.

P1110 covers the definition of service creation capabilities for 3G mobile networks according to the Open Service Access approach (OSA/Parlay). Standardisation activities for 3G mobile/UMTS are defining interfaces between applications and network functions, based on the OSA concept. In P1110 seven Eurescom shareholders collaboratively assess OSA/Parlay specifications and benchmark OSA/Parlay-based products to enhance the OSA specifications by contributing to the respective standardisation bodies.

to develop industry standards. There is a certain risk of market segmentation because of different technologies being promoted through organisations and fora.

Are fora a threat to the official standards bodies? None of the responses indicated problems. Most fora work is considered complementary to the work performed in the official standards bodies and can add to achieving a faster standardisation process. All official standards bodies have established liaisons and good co-operation with fora.



IEEE STANDARDS ASSOCIATION

The IEEE Standards Association (IEEE-SA) is an international membership organisation serving today's industries with a complete portfolio of standards programmes. The organisation is based in Piscataway, New Jersey/USA.

Further information is available on the Web site of IEEE-SA at <http://standards.ieee.org/>

The answers to our questions were co-ordinated and sent by Karen McCabe, Senior Marketing Manager, IEEE Standards, who involved several staff members for this.

How has your organisation been affected by the general trend of declining participation in standardisation activities?

If participation in your organisation's standardisation activities declined, what are the reasons for this phenomenon?

From our perspective we haven't seen declining participation in standards activities, in the general context. There has been significant standards development activity world-wide, especially in the telecommunications sector some of this work has gone to consortia and some to standards development bodies such as the IEEE.

The IEEE has been very involved in developing critical standards for wireless applications. Overall, we feel that standards activities are being expanded to address emerging technologies or new fields of application. With this, the IEEE

is becoming even more diversified in its standards development work. Some

examples include projects addressing organic field transistors, which promise to deliver economical circuitry for high-volume applications not viable in silicon, projects addressing encrypted shared media and certificate issuing and management components.

How severe have been and will be the effects of diminishing interest in standardisation on global interoperability?

We really see no diminishing of interest. In fact, interest and activity in standards has been expanding outward to new fields. Standards are now being considered earlier on in the development of products. Users, and hence participants, realise the value of standards earlier on in their cycle of their product development. By participating earlier, businesses are aware how this can hasten market penetration. Self-interest isn't prudent and in today's competitive environment businesses realise that it's best to get involved early and often in standards to create standards so markets can flourish.

If an industry is slow to standardise, or standardises differently from region to region, then, of course, there is an impact on interoperability, and resultant distraction and frustration for customers. However, in a fast-moving sector such as telecommunications, restraint in standardisation can be a rational strategic decision.

What have you done to attract more active participation in your standardisation efforts?

The IEEE has made standards development easier and faster a reality through our Standards Development Solutions programme, which offers a full menu of funded services. We started a Corporate Membership programme to help us address the needs of industry and directly engage industry in the IEEE standards development process. We have a strong individual membership programme within the IEEE Standards Association dedicated to those developing and using IEEE standards. We began a proactive New Technical Programs effort to attract new standards projects by showing standards developers what the IEEE Standards Association has to offer, which includes:

- Over 100 years as a premier standards developer
- Over 850 standards used throughout out the global marketplace
- More than 400 standards projects under development
- Power of over 377,000 engineers representing every aspect of electrotechnology
- A menu of participation options that gives industry, as well as individuals, the flexibility to choose how they will participate. Options offered include the IEEE Standards Association standards programme, the IEEE Industry Connections Programme, and the IEEE Industry Standards and Technology Organisation
- Strong relationships with international and national standards bodies

Do you actively promote the adoption of standards of your organisation, and how?

The IEEE promotes the adoption of its standards on many levels, these include via the IEEE 36 technical societies, which sponsor IEEE standards, via strong relationships with other standards developing organisations, and via an active nurturing of ties with international and national standards bodies and maintaining strong relationships with them to ensure co-ordination and harmonisation of standards.

The IEEE is committed to providing standards that serve the ever-expanding interdependence of nations and their peoples. Integrating national needs and concerns into programme to advance global

prosperity is a critical aspect of this commitment and draws on the expertise of the world-wide membership of the IEEE. We realise that the constant shifts in the marketplace, along with continuous and rapid technological advances, particularly in the industrial context, are placing new demands on standards development. The IEEE meets this challenge head on through high-quality standards development programme, by encouraging the international development, acceptance and use of IEEE standards, and by giving strong support to our global community.

One example how the IEEE supports its global standards community is the recently launched IEEE StandardsAsia website that serves as a web portal into IEEE standards activities. Through StandardsAsia, visitors can learn more about standards development and how to get involved in standards development. Moreover, they can learn about how IEEE standards are implemented in Asia.

Ever more fora are dealing with similar items. How could this be avoided?

How can a better co-ordination between standards organisations and fora be achieved?

There is a growing recognition that full-consensus standards organisations and consortia have a yin-yang relationship in standardisation. Those who wish to develop standards have a variety of needs, with one or more needs demanding attention at any one time. Sometimes, they need an SDO; sometimes, they need a consortium; and, increasingly, sometimes they need a consortium first and then an SDO.

The IEEE sees co-ordination between these types of standards bodies as a natural step in the future of standardisation. We are developing working relationships with several consortia, including the IEEE ISTO.

What is the outlook on the future role of your organisation and on the future of standardisation and interoperability in telecommunications?

The IEEE feels that the outlook is bright, especially with the growth of new technologies and the market expansion for existing technologies. There is an increasing need for standardisation and what the IEEE has to offer, and we are preparing for the next frontier of standards – that includes nanotechnology, information assurance and biomedical.

Each industry sector has its own strategy in international trade and commerce, and the IEEE, with its broad scope of technical interests, is committed to maximising the IEEE's contribution and influence with sector-specific programme.



ITU-T

The Geneva-based ITU Telecommunication Standardization Sector (ITU-T) is one of the three Sectors of the International Telecommunication Union (ITU). ITU-T's mission is to ensure an efficient and on-time production of high quality standards covering all fields of telecommunications. Standardization work is carried out by the ITU-T Study Groups in which representatives of the ITU-T membership develop Recommendations (standards) for the various fields of international telecommunications. At present, more than 2800 Recommendations on some 70,000 pages are in force.

Further information is available on the Web site of ITU-T at www.itu.int/ITU-T/

Our questions were answered by Houlin Zhao, Director of ITU-T's Telecommunication Standardization Bureau (TSB).

How has your organisation been affected by the general trend of declining participation in standardisation activities?

The membership of ITU-T continues to increase, last year we attracted 90 new members, that's a 25 per cent increase on the previous year. But in general there has been a decrease in member activity, but not I believe as much as has been seen in other organisations. This is mainly due to new members from the developing world, where the adoption of standards is seen as crucial as new infrastructure is rolled out. This is also the case for small and medium industries where adoption of standards is seen as critical. But, due to the economic downturn we have seen an inevitable decline in activity in the private sector. The downturn is, we believe, a short-term situation and has not affected in any way, the continuing good work of ITU-T members.

If participation in your organisation's standardisation activities has declined, what are the reasons for this phenomenon?

The work of the ITU-T continues. But, the general financial downturn has hit the telecoms sector particularly hard, with the knock-on effect that private-sector companies are scaling back all 'non-urgent' activities. We hope that this situation will be short-lived.

How severe have been and will be the effects of diminishing interest in standardisation on global interoperability?

Diminishing activity is an unavoidable result of the state of the global economy. It does not mean that the development of standards is any less important. The ITU-T has been particularly active over the period. Issues of interoperability have become

more important as we move towards next generation networks, where an inherently more complicated infrastructure makes the need for standards even more important. ITU-T's work in the next generation space includes, the e-numbering (ENUM) initiative, IMT-2000 and the development of the Joint Video Team (JVT).

ENUM allows a wide variety of devices to be contacted using one number. IMT 2000 is the umbrella organisation for development of the core network aspects of next generation mobile telephony, and JVT has been set up to develop better video coding efficiency.

Is competition among standards bodies and fora good for the quality of standards, or is it rather damaging, to the expense of global interoperability?

How can a better co-ordination between standards organisations and fora be achieved?

It is not good for standards bodies to work against each other. But co-operation between Standards Development Organisations (SDOs) is on the increase and ITU-T has been involved with a number of ini-



Houlin Zhao

tiatives with other such bodies. I think we will see more of this in the future. I recently convened an unprecedented two-day meeting with two-dozen prominent representatives of well-known forums. I believe we managed to reach agreement on some very important principles on how ITU-T, forums and SDOs can efficiently collaborate in the future.

Among other things we agreed, best practices for communication among ITU-T, forums and SDOs together with considered opportunities for partnerships between ITU-T and forums. ITU-T sees other forums and consortia as strategic partners. We are complementary to one another.

On the other hand, ITU would like to encourage industry to bring their work to existing, rather than new SDOs, wherever possible, so that unnecessary overlapping of work can be avoided at an early stage.

What have you done to attract more active participation in your standardisation efforts?

Do you actively promote the adoption of standards of your organisation and how?

ITU-T has a constantly evolving promotion policy. We have recently strengthened our in-house promotions team with a view to gaining coverage in a wider variety of media. ITU-T is also supported in this sense by ITU members. One of the most important things that we have to do is attract new members and to do this we have a number of initiatives in place beyond gaining press coverage. Regular meetings hosted in different countries around the world are attended by providers of services and systems ensuring that ITU-T is constantly in discourse with both industry and governmental bodies. We also do a lot of work to attract researchers and students, who are key to the future success of ITU-T. It is something that we are aware has been a problem in the past but something that we are taking very seriously now.

Ever more fora are dealing with similar items. How could this be avoided?

This is unavoidable, and not always a bad thing. In fact often other SDO's work is complementary to the work of ITU-T. We believe that the ITU-T is uniquely placed as a standards organisation because its members are drawn from both the private sector and from governmental organisations. This is absolutely key to the adoption of global standards. This is of course in addition to the support that we have from ITU itself and collaboration with other SDOs.

What is the outlook on the future role of your organisation and on the future of standardisation and interoperability in telecommunications?

I certainly hope that the ITU-T will retain its pre-eminent role in the development of standards for interoperability in telecommunications. We are approaching a very exciting time and all of our members are working flat out on the globalisation of standards that will bring about next generation networks.

The telecoms industry depends on it. And representatives of every major manufacturer of network

access equipment, and of most of the major telcos and governments around the world are members of the various study and working groups that are responsible for the development of these standards in ITU-T.

Issues of interoperability have become more important as we move towards next generation networks

ETSI

ETSI, the European Telecommunications Standards Institute, is a non-profit organisation based in Sophia Antipolis, France, whose mission is to produce telecommunications standards for Europe and beyond. ETSI unites 913 members from 54 countries inside and outside Europe, and represents administrations, network operators, manufacturers, service providers, research bodies, and users.

Further information is available on the Web site of ETSI at www.etsi.org

Our questions were answered by ETSI Director-General, Karl-Heinz Rosenbrock.

How has your organisation been affected by the general trend of declining participation in standardisation activities?

It is clear that the telecommunications industry has been undergoing severe difficulties during the last few years and, while ETSI is not immune to the side effects, the immediate impact has so far been relatively mild.

If participation in your organisation's standardisation activities declined, what are the reasons for this phenomenon?

One thing we have noted is that although the number of people attending meetings has decreased for most ETSI TBs (Technical Bodies – the editor), the number of organisations represented in each TB often

remains relatively stable. As well as being an indication that there are fewer resources available for standardisation, this also points to a more targeted use of resources by member companies than before.

There is also a tendency towards co-locating meetings of groups where there is a synergy in the work areas. This allows members to concentrate their resources more effectively and reduce travel costs.

How severe have been and will be the effects of diminishing interest in standardisation on global interoperability?

Let us examine some of the trends:

Membership: The ETSI membership consists of organisations (e.g. operators, manufacturers, regulators) from around the world involved in telecommunications which wish to take an active part in ETSI's standardisation activities. The total number

currently stands at 913 and this represents an average annual growth of around 8% over the last 5 years. We could take this as an encouraging sign. On the other hand, over the last 2 years the growth level has

been around only 5% and is decreasing. Also the number of members needing to withdraw due to financial difficulties is on the increase.

Participation in the work of the Technical Bodies: there are definite signs that the number of people attending TB meetings is on the decline. The days when we could expect hundreds of people to turn up for a one-week meeting appear to be over (the notable exception being 3GPP). There are a variety of reasons for this: a move towards more electronic working, changes in the work programme, increase in the number of fora, the economic environment, etc.

ETSI work programme (EWP): This is a notoriously difficult area to measure. There are still around 900 active work items in the EWP (non-3GPP). It has to be said that around one third of these are



Karl-Heinz Rosenbrock

revisions of existing standards and of the remainder, not all might be regarded by everybody as addressing truly new work areas. Some of the large projects in the more traditional ETSI work areas (e.g. ISDN, SDH, TETRA, DECT, GSM, etc.) can now be regarded as largely finished. What we now find is that the new projects tend to be smaller and more focused in scope - the industry currently does not have the appetite for large, monolithic projects (the notable exception again being 3GPP).

What have you done to attract more active participation in your standardisation efforts?

ETSI has been at the forefront of the development and implementation of advanced electronic working tools. Last year, for example, ETSI launched a portal, which gives users direct and easy access to their information needs in a context-sensitive manner. This,

together with other advances such as the greater use of audio-conferencing, has led to a reduced need to travel and participate physically in meetings (as was the intention). This applies particularly to the type of delegate who is mainly interested in

observing the work rather than actively participating - they are now able to do this much more easily, without the need for so much travel.

The ETSI Technical Specification (TS) is approved by the TB and then published (i.e. no public approval process is neces-

We will continue to develop e-standardisation tools

sary) and this document type is increasingly the one chosen by the TBs (outside of the regulatory arena).

This provides a rapid time to market and reduces to some extent the amount of effort that an organisation needs to put into the standardisation process.

Do you actively promote the adoption of standards of your organisation, and how?

Some examples of the newer work areas are IP Cablecom, DECT data, xDSL, HIPERACCESS, powerline, non-GSM SMS, TIPHON. This work is mostly being done by comparatively small groups of experts. ETSI has started work on NGN and this is something that would once probably have led to a large project being established. However this is not the case and NGN is being co-ordinated in a very "light" fashion - essentially the TBs are each doing their own part with co-ordination by an email-based management group where necessary. This allows the ETSI members to participate in NGN without the excessive overheads associated with a large project.

Ever more fora are dealing with similar items. How could this be avoided?

When a forum is established it often absorbs some of the resources that might otherwise have been directed towards ETSI. However, it should be borne in mind that ETSI has a very general approach to the whole subject of telecommunications whereas fora are usually established for a very focused reason.

How can a better co-ordination between standards organisations and fora be achieved?

ETSI has working relationships with many fora and it is often the case that there is cross-fertilisation of people and ideas at the working level. It should also be remembered that in the current market conditions, fora are suffering from the same financial difficulties as standards bodies. Nevertheless, each can complement the other and the market players can use their resources strategically to gain the benefits available from both types of organisation. The key, of course, is to avoid duplication of effort.

There are fewer resources available for standardisation



What is your outlook on the future role of your organisation and on the future of standardisation and interoperability in telecommunications?

What the future holds for ETSI is a very difficult question to answer. It seems reasonable to expect a decline in the overall membership figures and probably also in the number of people attending meetings. Whether the number of organisations participating in the work at the TB level will also decrease is an open question.

We will continue to develop e-standardisation tools to make it even easier to participate remotely and we hope that this will encourage experts to remain involved, even if they do not necessarily have the funds to take a more visible role.

ETSI only does the work that its members want and the work programme will only develop if member organisations bring new work into ETSI. There is no effective way of strategically managing the work programme – ETSI is now too large

and diverse for this. We know that the environment that we have developed provides for a very efficient standards process and we believe that this will continue to attract member interest and ETSI will be the place where they will want to bring new work. Nevertheless we will continue to look for ways of improving our processes and keeping ETSI a significant point of focus.

EXPERIENCES FROM EURESCOM PROJECT P1110

CONTRIBUTING TO STANDARDISATION IN TELECOMS



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For the definition of proper and acceptable telecommunications standards all relevant players need to contribute. In particular the requirements from potential customers of the final product, the network operators, need to be considered. However, contributing to standardisation bodies is often no easy task and requires considerable efforts. Eurescom project P1110 on Open Service Access (OSA/Parlay) has succeeded in contributing to the respective bodies. This article describes some ingredients of the P1110 recipe to approach and influence standardisation – and the difficulties, which had to be overcome.

When P1110 started in early 2001, the project was in the comfortable situation that some of the P1110 participants had already set up some contacts to vendors and standardisation bodies in the predecessor project P909, in which some of the P1110 participants had been involved. An initial activity in the new project P1110 was to prepare and submit a Request for Information (RFI) to vendors of OSA/Parlay products. The goal of the RFI was to get an overview on the product status and product planning of OSA/Parlay vendors, which was intended to be also the basis for the selection of test equipment for the tests and trials planned in P1110. This RFI made it fairly easy to contact vendors and to get into discussion with key people in the industry. As many of those were also involved in standardisation, first contacts

to leading people in standardisation were achieved. The bodies in charge of OSA/Parlay specification are the Parlay Group, the 3rd Generation Partnership Project (3GPP CN5), and the ETSI OSA project. In retrospect it can be said that issuing the RFI was a good starting point, because it paved the way for P1110 to the appropriate standardisation bodies.

Towards first technical submissions

Subsequently, the P1110 team actively promoted its activities, for instance at the Parlay meeting in San Diego in May 2001. A project flyer was distributed to meeting participants. Furthermore, some initial ideas from P1110 on topics that should be addressed by OSA/Parlay standardisation were submitted to that meeting. Following that the Parlay board invited Eurescom's senior programme manager, David Kennedy, to give a keynote presentation at the Parlay meeting in Munich in September 2001, in which he re-introduced P1110 to the audience. The project had already been running for half a year, and first results allowed the submission of a first contribution to this meeting in Munich. The submission was titled 'Proposals for enhancements to the Parlay/OSA specifications'. At the meeting it was presented by Corrado Moiso from TI-Lab.

Workshop 'OSA & Parlay'

If you want to achieve an intensive discussion and exchange of views on a certain topic, a good means for doing that is to organise a workshop. So the P1110 participants together with Eurescom decided to organise a Eurescom workshop on 'OSA & Parlay' in February 2002. Experts from vendors and operators were invited to participate and give presentations on the status, evolution and business aspects of



Ard-Jan Moerdijk, Ericsson,
chairman of 3GPP OSA at the Eurescom
workshop 'OSA and Parlay'

OSA/Parlay. This workshop was very well accepted, and the high number of nearly 130 participants proved that the event was a very good opportunity for discussing and meeting other experts. Project P1110 gave a couple of presentations about their project results, which further increased the awareness of P1110 activities in the OSA/Parlay community. The workshop was followed by an internal meeting of the P1110 participants with a number of OSA/Parlay vendors and leaders of the standardisation groups, in which the further co-operation between P1110 and standardisation bodies was discussed. To facilitate this interaction, an e-mail exploder list was created.



Panel session of the 'OSA and Parlay' workshop: Lucas Klostermann, Ericsson; Zygmunt Lozinski, IBM, President of The Parlay Group; Chelo Abarca, Alcatel, Project Leader of ETSI SPAN OSA project (from left)

Further contributions

In the following time, P1110 submitted a couple of further contributions to Parlay and also to ETSI and 3GPP. At the Parlay meeting in Montreal in July 2002, the project was invited to give presentations on P1110 results in two full sessions, which again indicated the appreciation of the project's work. For September a follow-up of the internal meeting with vendors and standards bodies is planned, and also another workshop will be organised at Eurescom in November 2002, this time focussing on OSA/Parlay deployments aspects.

Challenging issues

Although the above might read as if contributing to standards was a simple and straightforward procedure for P1110, there were and are a number of hindering issues. One of them is the difference in the schedule of a project like P1110 and the standardisation process. Although it still can be arranged that submissions to a standards meeting are timely prepared, a project naturally can't wait with the further project's work until the outcome of the standards meeting is clear, because the project has to proceed to stay on schedule. Waiting for the result of the standards meeting would, however, often be necessary, as further contributions need to be

aligned with the outcome of the standards meeting.

Moreover, standards bodies typically hold meetings world-wide, which might cause another problem, if the meeting can't be attended, due to travel restrictions, for instance. If a submission cannot be presented or an author cannot answer questions from the audience and join the discussion, the submission may get only little attention. It is also crucial to see, whether there are other contributions on the same topic, and how they were accepted, which can have an impact on the own contribution. This knowledge can, in general, only be gained by attending the meeting.

Getting access to the Parlay draft technical documents was a special problem for P1110, as they are not available to non-members of Parlay, three of the P1110 partners. As a Parlay membership of Eurescom on behalf of all Eurescom shareholders was not acceptable to Parlay, only the project participants whose companies were Parlay members could work on these items. This decreased the workpower of P1110 to some extent.

Conclusion

Participating in standardisation activities is not a straightforward task. Several difficulties need to be overcome. P1110 managed to find their way to successfully contribute to standardisation and to ensure that requirements from network operators are considered.

You can find more information about P1110 at www.eurescom.de/public/projects/P1100-series/p1110.

ANOTHER EXAMPLE: FROM P 806 TO ITU REC. E. 860

Back in 1998/99 Eurescom carried out its EQoS project (P 806) developing a common framework for QoS/network performance in a multi-provider environment. This project has had significant impact on the development of Quality of Service standards. Through one of the P 806 project participants, Luis Cardoso from Portugal Telecom, the project contributed directly to the ITU Quality of Service Develop-

ment Group (QSDG); Luis Cardoso was the chair of this Development Group.

This has been three years ago. Just after the deadline for this issue, we received the information that ITU Recommendation E.860 "Framework of a Service Level Agreement" has now been issued for approval. Most of the content of this document is directly based on reports produced by P806. ITU has also started work on other QoS recommendations. For this work, the basics have been produced by Eurescom projects as well.

This recent example confirms two points: First, telecom researchers often need a long breath beyond the closing of their projects until their results finally make it into standards. Second, the thorough work of standards organisations like ITU continues to be close to R&D and the requirements of the telecoms industry – despite the obstacles mentioned before in this cover theme.

ICELAND TELECOM



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Telecommunications play a vital role for the Icelandic society, the country being an island in the North Atlantic about three hours flying time from London. In the 1130 years of Icelandic history, failure to communicate with the European mainland always meant times of stagnation and even starvation. Iceland Telecom takes every effort to serve its customers with a sound telecommunications network. One of these measures is the participation in collaborative R&D.

History

The year 1906 marked a milestone in the history of telecommunications in Iceland. In this year, a submarine telegraph cable was laid from Scotland through the Faeroe Islands to the East Coast of Iceland. Concurrently, a telegraph and telephone line was laid to the capital Reykjavik, thereby ending the country's internal isolation. A number of people were opposed to the rollout of the telephone line, arguing that wireless telegraphy was a more promising alternative. The current dispute of wired versus wireless communications is therefore not a new topic. Decades passed before all Icelanders gained access to the telephone system. The rollout of telephone lines in rural areas was finished around 1960.

The Icelandic State Telephone Service, "Landssími Íslands", was founded in 1906. The name contains the Old Icelandic word "sími" (original meaning: thread), which was reused to stand for "telephone". Work with the new company was considered attractive, and the telephone system created new job opportunities for both men and women. In 1935, the telephone and postal services were consolidated, but in 1998 they were split up again, and Iceland Telecom Ltd. was founded. The company took up its former name from 1906 but is always called "Síminn" amongst Icelanders.

Expanding networks

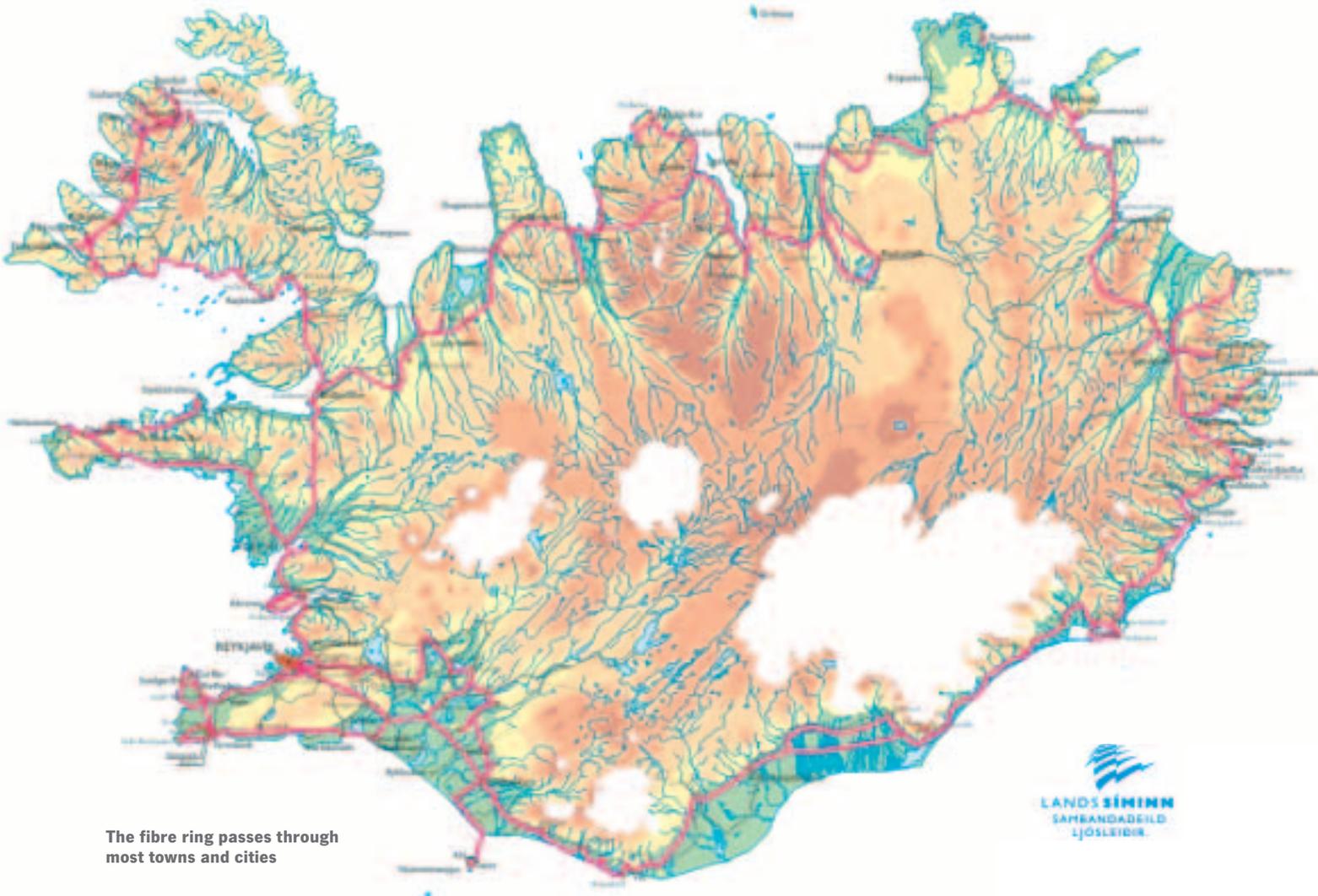
Síminn built an advanced and cost-effective telecommunications network in Iceland. The first automatic exchanges were opened in 1932, and all exchanges had been upgraded to digital in 1995. The installation of an optical ring passing through most cities and towns began in 1986 and was finished in 1993. Around 3000 km of fibre has been laid. The fibre carries a 2,5 Gb/s SDH layer, upon which an ATM network is operated. An IP/MPLS network has been installed in cities and towns and ADSL is available to 86 per cent of the population. GSM services have been offered since 1994, but already in 1986 the Nordic Mobile Telephone network (NMT) was installed. The NMT network serves larger areas than GSM and is still in operation. It provides services to fishermen and to the large number of tourists enjoying the highlands of the country. GSM services, including GPRS, are available to 98 per cent of the households and the service penetration is 87 per cent. International connectivity is provided



with the CANTAT-3 submarine cable which passes Germany, UK and Denmark through the Faeroe Islands to Iceland and finally to Canada. Restoration is done using satellite links, which is far from satisfactory with regard to Internet connectivity. Therefore, a new submarine cable is



Site-surveys for the telephone line in 1905



The fibre ring passes through most towns and cities



Horses pulling telephone poles in 1905

on the drawing board that will pass from Iceland through the Faeroe Islands to Scotland.

Introducing broadband

In 1994, Síminn commenced the installation of a FTTC/FTTB broadband network. Since civil works are the most expensive part in such a network, the methodology for laying the network has been to seize the opportunity when trenches are open for other construction work. Currently, about 12 per cent of the households have fibre to their basement, all major companies are connected via fibre and 37 per cent of all homes are passed. The network is currently used for cable television broadcast and cable modem services. Digital television will be offered later this year, and options for providing Gigabit Ethernet connectivity are under investigation.

Síminn has a customer base that is highly receptive to new technologies and eager to enjoy their benefits. In return, the nation enjoys one of the lowest telephony tariffs amongst the OECD countries, both with respect to mobile and fixed telephony, business and residential. This is despite the fact that Iceland is a large country with a small population of only 286.000. About 80 per cent of the households are equipped with

a personal computer and more than 70 per cent are connected to the Internet. The number of ADSL connections corresponds to 15 per cent penetration in terms of number of households.

Research at Síminn

Iceland is not a member of the EU but is able to participate in EU-funded research programmes through the agreement on the European Economic Area (EEA). On this basis, Síminn started to participate in a number of ACTS projects in 1994 and 1995 including the projects NICE, JAMES and AMUSE. Knowledge acquired in these projects on technical subjects like ATM, IP and ADSL has proven valuable for the subsequent build-up of networks and services. This is particularly true after the deregulation of the Icelandic telecom market in 1998. In today's competitive environment, telcos must rely on the knowledge and skills of their employees in order to implement correct strategies. Participation in collaborative R&D is a key to new knowledge and to being informed in the dynamic environment of telecommunications. R&D work was formalised within Síminn in 1998, when the R&D department was formed. The strategy was to have a small department that would participate



internationally in collaborative research and would be able to assist in strategic planning and preparation of new services.

Research policy

Collaborative research within Eurescom has become the cornerstone of Síminn's R&D, but participation in EU- and local research projects is also important. Furthermore, Síminn has had a good relationship with the University of Iceland and the Icelandic Gallup organisation that have contributed to Eurescom research projects on a subcontract basis. The R&D department belongs to the network division. The activities are, however, not confined to networking, there is also a focus on the subjects of user behaviour and commitment to research that aims at increasing the use of telecommunications in the long term. An example of this is research work in the

fields of telework, tele-education and virtual communities. In the technical arena, Síminn has participated in projects on TMN, IP-Multicast, Always-On, and Future Access Networks.

Benefits of Eurescom participation

In terms of turnover, Síminn is currently the smallest telco participating in Eurescom. It is clear that a small organisation has limited resources both to contribute as well as to utilise the benefits of Eurescom participation. The benefits of R&D often appear in the long term and can be indirect. However, Eurescom participation implies direct benefits including

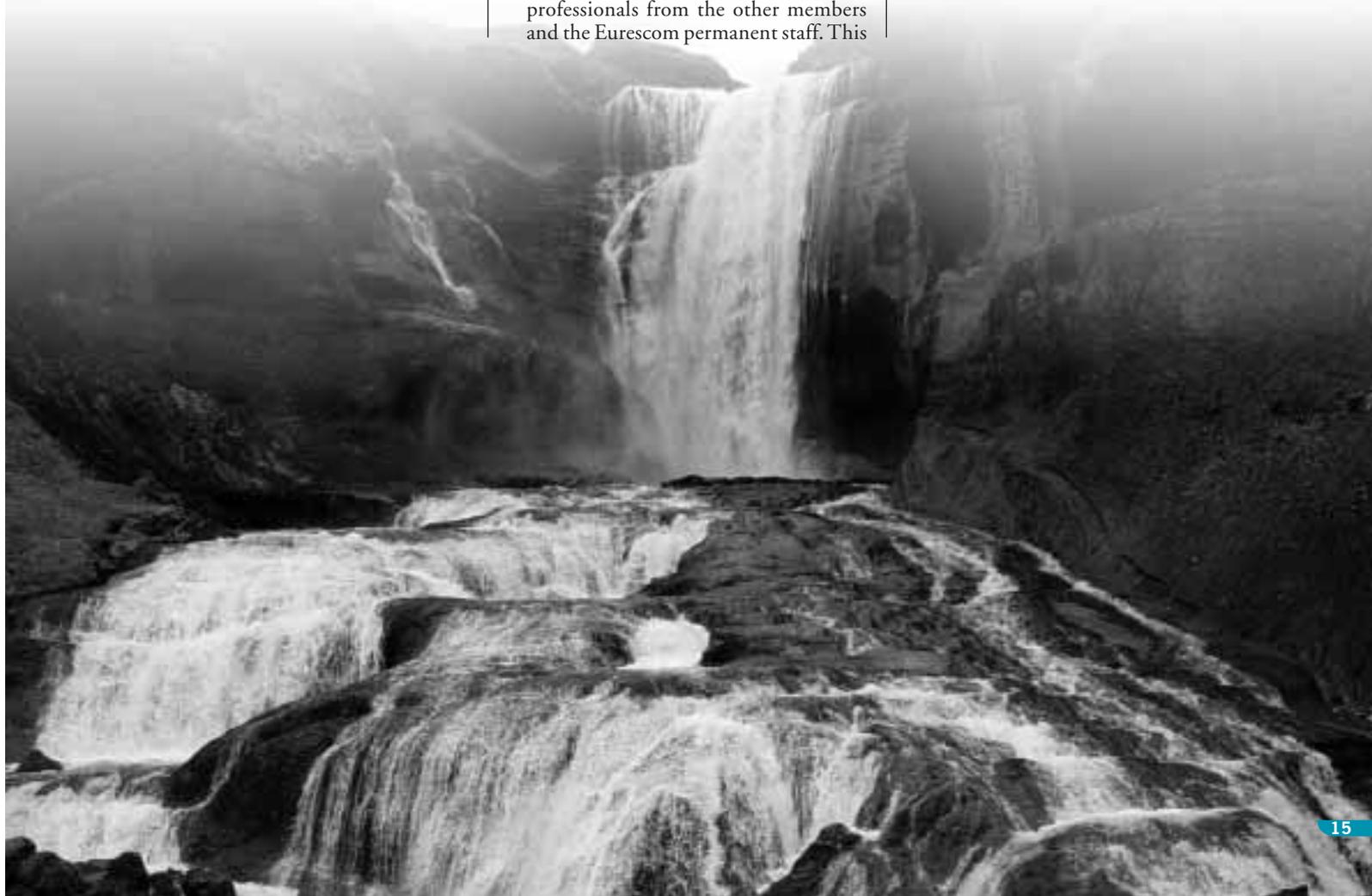
- Access to a wealth of information regarding technical and operational subjects as well as information about the telecommunications market, e.g. user behaviour.
- Contacts and personal relationships with professionals from the other members and the Eurescom permanent staff. This

can be of great value to a small operator with limited resources and limited manpower.

- Eurescom's operational procedures are simple and fast, yet efficient. This means that it is relatively easy to propose a new research project and participate in projects proposed by others.

For Eurescom it is important to have a broad constituency, to have access to a broad spectrum of ideas. The small operators play an important role in this respect. In addition to being able to offer interesting meeting places to Eurescom projects, Síminn can offer access to a well-informed user community eager to try out new devices and services.

Further information is available on Telecom Iceland's Web site at www.simi.is



“A UNIQUE BLEND OF TECHNOLOGY AND BUSINESS TRENDS”



Interview about the EURESCOM Summit 2002 with Dr. Heinrich Stüttgen, General Manager of the Network Laboratories Heidelberg, NEC Europe Ltd., co-chair of the Summit 2002 organising committee and member of the Summit 2002 programme committee.

Dr. Stüttgen, why do you invest your time in the preparation of the EURESCOM Summit 2002?

EURESCOM Summits are great opportunities to meet researchers and practitioners in the field of telecommunications. Looking at network technologies from the point of view of enabling profitable services, which is the theme of this year's summit, is an interesting and valuable approach.

What distinguishes the EURESCOM Summit 2002 from other telecom conferences?

In contrast to the large number of research and business conferences, EURESCOM Summits provide a unique blend of tech-

nology and business trends. Technology is not considered for technology's sake, but it is positioned towards its potential to provide value to end users and network providers. Therefore, the Summit attracts an interesting mix of experts from academia, network technology suppliers and network operators, which can hardly be found at other conferences.

You have been very active in both the programme and the organising committee. Could you tell us a bit about your work there?

Our common objective in both committees has been to assure that Summit attendants will find their time and money well spent. In the organising committee we focus on providing a stimulating environment for the attendants. A world class conference venue and a social programme encouraging attendants to share ideas and insights in and after the technical sessions have been put together. We want our visitors to always remember Heidelberg and

EURESCOM as excellent locations for technical and personal communications. The technical programme committee has extended a great effort to select the best present-

tations from roughly hundred and twenty submissions. In addition, we have invited tutorial and keynote speakers who relate technology trends and the market environment in which new technologies have to compete and to succeed.

As programme committee member you have seen many of the submitted and accepted papers. Which technical areas would you consider as particularly interesting and topical?

Right now we have a lot of bandwidth available in the backbone network, the bottleneck is in the access. Although the rollout of new access technologies like xDSL is in full swing, the next generation of access technologies is under study. Innovative wired and wireless access technologies, bringing more bandwidth to the end user, are desperately needed. It has become clear that the Internet is developing into a pervasive communication medium. However, there is a big difference between providing a best effort web and e-mail service and offering a reliable and secure universal communication platform. Therefore a second area of particular interest are improvements of the Internet in aspects like security, mobility, or multicasting. This includes the transition from the current Internet based on IPv4 to a next generation Internet based on the IPv6 protocol.

How important is it to demonstrate systems and equipment in addition to the presentation of papers, as it is done at the EURESCOM Summit 2002?

A German proverb says: "Paper is patient", so a real life demonstration of new technologies, be it prototype or product, is always more convincing than yet another presentation. For network suppliers the Summit is the perfect setting to get awareness and early feedback of network operators on their new or upcoming products. For network operators it presents the chance for in-depth discussions with suppliers on the latest technology trends. They can express their requirements and provide feedback at a time, where in many cases they may still impact the final product. In



contrast to huge and overcrowded traditional trade fairs, the exhibition in the Summit 2002 provides the ideal setting for a thorough exchange of operational requirements, advances in technology and product trends. In short, I think that the exhibition will greatly enhance the value of the Summit, and I encourage suppliers to take advantage of this opportunity.

What do you expect from the Summit for yourself?

I expect mainly three things from the upcoming Eurescom Summit: First, I hope to get a good grasp on what telecom operators consider to be their main technical challenges in the near future. Second, I want to learn about the strengths and weaknesses of evolving network technologies from an operational and evolutionary point of view. Last, but by no means least, I want to establish a dialogue with future project partners sharing our technical interest but adding their own requirements and business views to it.

The interview was conducted by Peter Stollenmayer.



EURESCOM SUMMIT ON POWERFUL NETWORKS FOR PROFITABLE SERVICES HEIDELBERG, 21 TO 24 OCTOBER 2002

Eurescom's second Summit focuses on networks and their business aspects. It will explore the technologies for future networks and will put the networks into a broader context by adding the business related service aspects. The conference will bring together the technology research community, the experts of telecommunications services and products as well as leading telecommunications business personalities to share ideas and develop a common vision.

Amongst the main subjects, which will be covered at the conference are optical networking, access networks, including wireless access and seamless mobility, net-

work and service evolution, network and service management, OSS, traffic engineering, quality of service, performance and security, multicast, terminal, user and business aspects.

The participants will comprise data communications experts, network technology specialists, systems engineers, telecommunication architects, business and product planners, application and service developers, product developers, visionaries, strategists, researchers, executives from network operators, service providers, IT vendors, content providers, manufacturers of IT/telecom software/ hardware, application service providers, academia and consultant companies.

Besides the technical sessions there will be tutorials on interesting topics in promising network-related areas, and demonstrations and an exhibition where experts can meet experts and explore available and emerging products, devices and tools that support the building of powerful networks of the future.

More information and the registration form is available on the EURESCOM Summit 2002 Web pages at www.eurescom.de/summit2002.

If you want to receive a printed programme or have any other questions, please send a mail to summit2002@eurescom.de.

MOBILE ELECTRONIC COMMERCE

SERVICE SCENARIOS AND BUSINESS MODELS



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The development of the mobile telecommunication sector is heading more and more towards value-added services. Analysts forecast that soon a large share of mobile operators' revenues will be earned through mobile commerce. Consequently operators as well as third party providers will focus on value-added-services. To enable these services, actors from different sectors, like telecom, banking, and content, will have to co-operate. Eurescom project P1102 'eMporio – Mobile Electronic Commerce' developed service scenarios and business models for mobile services that will give telcos a competitive edge in a promising future market.

Consumers have become increasingly accustomed to using mobile devices for voice calls. Operators should quickly seize their opportunity to gain extra revenue by offering them versatile m-commerce services. However, creating mobile services is not as easy as it may seem; m-commerce is not simply e-commerce on a mobile device. Services will only be adopted by users and thus become a commercial success for the provider, if opportunities and limitations of mobile commerce are taken into account.

Specifics of mobile commerce

Mobile devices and mobile networks introduce a number of restrictions compared to e-commerce in the fixed line environment. Limited bandwidth and storage capacity, small screens and lower processing power, limited storage capacity, to name just a few, narrow the possibilities that m-commerce can exploit. On the other hand, mobile devices offer plenty of opportunities that

enable interesting new service offerings: Users take their mobile devices with them wherever they go and can be located through the phone. The information they receive can be filtered according to their location and preferences the service provider has stored. Furthermore, sensitive information like cryptographic keys can be securely kept in the trusted device. eMporio came up with a variety of ideas for promising service scenarios, four of which will be summarised below.

Examples of promising service scenarios

Mobile Micropayment can act both as a stand-alone service and as an enabler for other m-commerce services. eMporio's

payment service offers a secure payment method without requiring an online connection to the payment provider. After the customer has made his decision at a real or virtual point of sale, the merchant sends him a purchase order form, containing the price and details about the item. The customer signs the purchase order with his key stored on the mobile device and sends it back, along with his digital certificate. The merchant forwards the purchase orders to the payment provider who is responsible for the clearing.



Mobile Gambling services offer the opportunity for entertainment anytime and anywhere. The user can place bets or play games and get informed about the result of the game by using very basic, text-based technologies. Thus, gambling suits the limitations of mobile devices perfectly. The service provider has to offer the customer methods to make a quick and secure payment he can not repudiate afterwards. This could be mobile micropayment or the access to a mobile gambler's account.

Location-Based Services make excellent use of the immanent properties of mobile devices. The user does not even have to know where he currently is, but can get information related to his location. Upon the user's request for information the service provider will ask the mobile operator to localise the handset. Based on the location data and the profile of the user the provider has created beforehand, information like touristic sites, accommodation, nearby restaurants, or maps will be provided.

Intelligent Advertising is another service, which includes localisation and personalisation. Advertising agencies create mobile adverts and send them to the mobile operator along with a definition of their target group. The operator forwards them to customers that are likely to be interested according to their profiles. Users will get these adverts on their mobile devices, informing them about stores in the neighbourhood that offer their favourite goods, or providing vouchers for special offers.

Business models for mobile commerce

Even the most brilliant service will not be commercially successful for the provider, if an inappropriate business model is chosen. There are many roles in an m-commerce service scenario and mobile operators have to choose very carefully which roles to play themselves and which to leave to experienced partners. Generally, mobile operators should exploit their competitive advantages as cleverly as possible. Of course, they should offer carrier and portal services. They have large databases of customers who have put trust in them and

are likely to adopt mobile services, like mobile gambling or shopping. Operators can use their existing billing systems and customers' accounts to act as micro-payment provider. Providing content and applications, financial transactions, and certificate management, on the other hand, are services that are probably too far from their core competencies. For these tasks telcos should prefer alliances with renowned partners in this field.

Conclusions

There is no such thing as one single 'killer application'. Mobile operators will only succeed in m-commerce by offering an overall portfolio of those services that consumers find most useful. Telcos can only be successful in m-commerce, if they adapt their services to the specifics of m-commerce and the user needs, exploiting their competitive advantages.

Further information about the project is available on the Web at www.eurescom.de/public/projects/P1100-series/p1102/

NEXT GENERATION NETWORKS

TECHNOLOGIES AND PRODUCTS FOR FAST SERVICE DEVELOPMENT



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Next Generation Networks (NGN) has been a buzzword for the last two years. They have been promoted as a way to decrease infrastructure and operational costs. However, there is no business analysis by now that clearly proves this. On the other hand, NGN technologies seem to have the potential for new service offerings and to be a source for new revenues. Therefore it is of paramount importance to understand how NGN solutions and products can enable flexible and easy service creation for network operators, service providers and 3rd party application developers.

EURESCOM project P1109 'Next Generation Networks: the service offering standpoint' has addressed this issue by evaluating NGN service platforms in terms of functionality, programmability, flexibility,



openness, inter-operability, and their potential for generating new revenues. In other words, the objective was to put some of the major benefits promised by NGN to the test, and to see how well current products support these capabilities.

The approach

The evaluation of Next Generation Network service platforms was carried out by a step-by-step approach: First, a reference architecture for NGN service platforms and related components was defined. This should reflect the main requirements from the service provider/network operator and application developers point of view (see figure on the next page). Then a Request For Information (RFI) on NGN products has been sent to 50 vendors, both traditional and newcomers. Several vendors have also been invited to meet with P1109 to discuss the RFI answers and to negotiate the provision of some equipment for trials in P1109. In the end, 30 replies to the RFI have been received. Based on the results of the evaluation, 10 products have been selected for lab trials at P1109 partner sites. The graphic also shows a map-

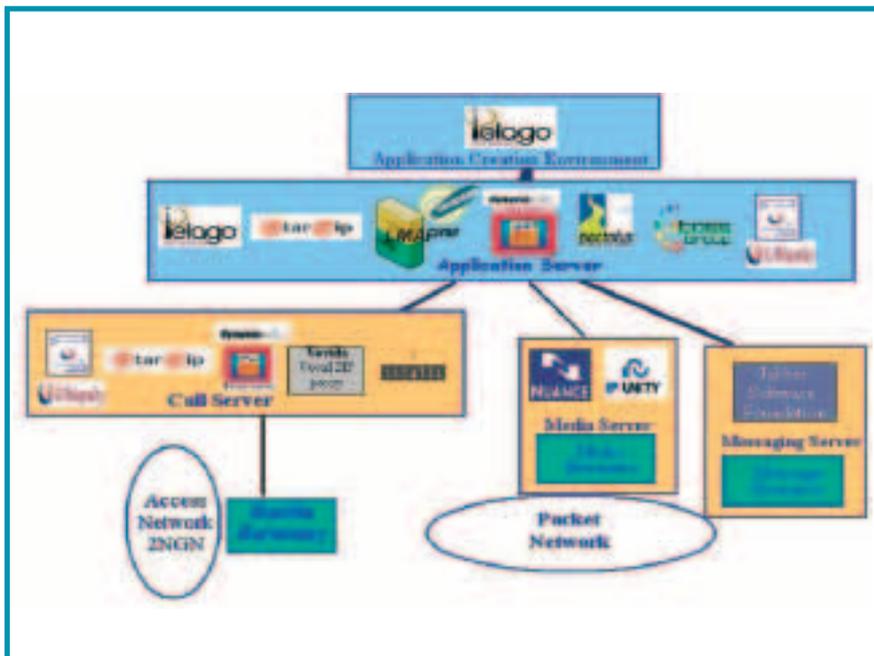


Figure: Reference architecture for NGN service platforms

ping of the selected products to the elements of the reference architecture defined by P1109.

Having these products available in the partner's labs was an excellent opportunity to get hands-on experience with the products and to make a proper assessment. Confidence with products usage was achieved in training sessions for service developers, held by vendors at partners' premises. Courses were given for Pactolus' RapidFlex, Longboard AS, Pelago Service Node, Ubiquity Service Broker, and other products.

Results of the assessments

The overall assessment led to many results. Some of the key findings and trends are summarised below:

■ SIP technology is key

SIP technology is key for NGN deployment. There are, however, still several issues that SIP products must support

before they can be considered mature enough for scalable, multi-service, manageable communications networks. Functions in support of service selection, QoS, billing and security are four such areas that require improvement.

■ Required expertise in telecommunications is declining

The expertise in telecommunications required for service development is decreasing. This is mainly due to the convergence of the telecom and Internet domains. Widely known IT technologies and methodologies can more and more be used to develop telecom services.

■ Balancing intelligence: edge or core?

Service intelligence is moving towards the edge of the network. Powerful terminals will enable the provision of innovative and personalised services, demanding less resources from the network. Operators and service providers should see this as an opportunity rather than a threat and should try to use the resulting synergies.

■ Towards generic service creation tools

Most NGN products don't provide a specific Service Creation Environment

like in IN, as NGN programming can be done with standard IT tools. This is an important evolution as it enables developers to choose the tools they are familiar with or which are most suitable.

■ Wide availability of APIs

A big variety of APIs and/or XML based scripting languages are emerging in NGN products. Although several "standards" based interfaces are specified by the industry (e.g. JAIN SIP Lite), there is a lack of product realisation of these interfaces today.

■ Use of open source software

Open source products can play an important role in NGN system solutions. They can be another means for service provider differentiation.

■ Availability and reliability less stringent

There is an indication that users are prepared to accept lower availability and/or quality, if they can have additional functionalities in return. The Internet and mobile telephony are examples for that.

Conclusions

Experience from service development has shown that most vendors are adopting industry standards for their NGN products. However, product maturity, system stability, and management capabilities still need to be improved.

NGNs will enable many different application developers to develop telecom services that are close to the Web. NGNs will also enable an IT developer community approach. This will reduce the time to market for new services to a couple of weeks or even days.

Results from P1109 have been presented at many conferences, for example at IN-IP World Forum 2002, Eurescom Summit 2001 and IP Global Summit 2002. Several demonstrations along with presentations on the developed services have been shown at the Eurescom workshop 'Service Programming in Next Generation Networks: Is SIP the solution?'

The P1109 project results are available at: www.eurescom.de/public/projects/P1100-series/p1109

Most reports are confidential and only accessible to members of Eurescom.

THE SESSION INITIATION PROTOCOL (SIP)

CONTROLLING TELECOM SERVICES ON IP NETWORKS



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In order to set up a call in classical telephony networks (PSTN) a number of control messages has to be exchanged, before two people can speak to each other. These messages are called 'signalling', and the network used to convey them is the 'signalling system number 7' (SS7). If we want to set up a call – or, more generally, a session – in IP networks, this can be done by using the “Session Initiation Protocol” (SIP). This tutorial gives a brief overview on SIP and how it works.

SIP is a general-purpose protocol that can be used to set up any type of session. It has been defined by the Internet Engineering Task Force (IETF) and, as the name suggests, it can be used to initiate sessions

and transport channels during a session. Due to the fact that SIP neither specifies any end-user application nor is limited to any specific transport of the user service data, it can be used flexibly for emerging service scenarios in the future.

SIP components and methods

There are a few components involved in a SIP scenario. A first one is a **user agent client**, which is located in the caller's terminal, issuing SIP requests, for example to set up a call. A **proxy server** in the network receives SIP requests and forwards them towards the current location of the callee, either directly to the callee or to another server that might be better informed about the actual location of the callee. In contrast to the proxy server, a **redirect server**, upon receiving a request, informs the caller of the next hop server, so the caller can contact the next hop server directly. A **user agent server** resides on the host where the called party is actually located. It is capable of querying the user about what to do with the incoming call, which means accept, reject or forward, and sends

useful, if a provider needs to maintain session information or wants to manipulate some of the contents of the SIP messages.

SIP defines six methods that can be exchanged and invoked at the involved components to set up, manage and terminate a SIP session. Briefly, they are:

- INVITE: initiates a session, e.g. by inviting a user to join a call
- ACK: to confirm that an INVITE has been received
- CANCEL: cancels a pending request, but doesn't end the session
- BYE: terminates the session
- OPTIONS: solicits information about available capabilities
- REGISTER: informs a registration server of the current location of a user

A SIP example

A small example shall indicate the simplicity of setting up a session using SIP: Let us assume Peter on the left side of the figure wants to set up a call to Joe. Addresses of users in SIP have the same format as used in e-mail addresses, so Joe could have the address `joe@iptel.org`. To initiate a session, Peter's terminal sends an INVITE request to a proxy server to resolve the static SIP address of Joe to the IP address where he currently can be reached.

The proxy server again queries a location server, which returns the IP address where Joe can be reached. The INVITE is now sent from the proxy server to the terminal with the given IP address for Joe. In case Joe accepts the invitation, an OK message is returned via the proxy to Peter, and Peter's terminal confirms with ACK to Joe. Finally, the media streams to realise the actual service are created and can exchange the service user data.

In practice, there will be more than one proxy or redirect server involved, because the first server is rather unlikely to know the final address of the called user. Thus, the first server will proxy the INVITE further until it finally arrives at a server which knows the IP address where the called user can be reached. For the realisation of more sophisticated service features an application server can also get involved.

Describing the session type

The messages exchanged in the example above also contain information about the type of session that should be established. This is necessary, as SIP itself is independent from a specific session type. This information is transported in the bodies of the SIP messages and negotiated

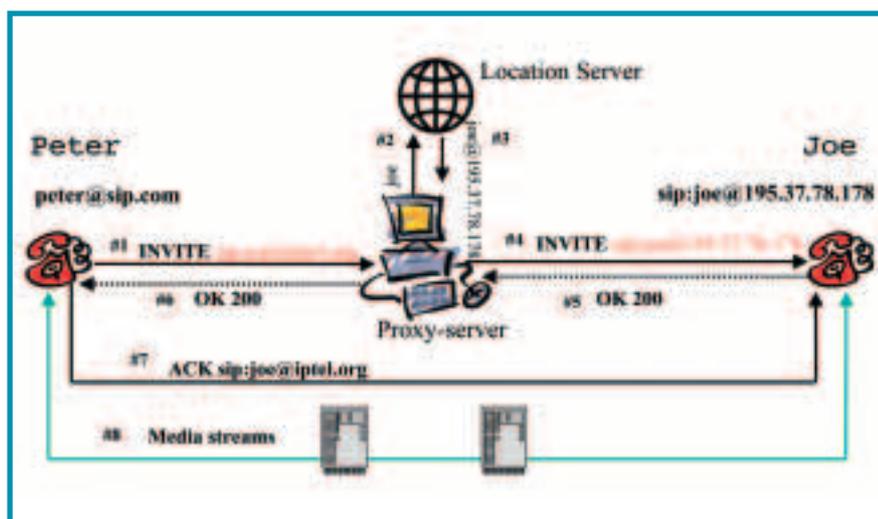


Figure: Setting up a session using SIP

between users. SIP can be compared, to a certain extent, with SS7, as SIP allows for setting up calls, handling established calls, and call termination. SIP enables, however, a wider variety of services to be realised, like multi-party services, personalised call handling, messaging services, access to information and media servers, and realisation of context-aware services including use of location information. It also allows to dynamically add or release communi-

the response back to the caller. To assist the end systems in locating their requested communication partner, SIP supports another server type called **register server**. It is more or less a database containing locations as well as user preferences as indicated by the user agents. A **Back-to-Back User Agent (B2BUA)** is an entity that acts as a server on the one side, including the termination of incoming requests, and as a client on the other side by re-issuing the receiver requests. Such entities are often

between the involved parties in the session set up phase. The description of the session is currently realised with – but not limited to – the Session Description Protocol (SDP), which describes parameters like type of media streams, the addresses where to terminate the streams, port numbers, start and stop times, and more.

References

A number of sources offer more detailed information about SIP, for example:

- www.cs.columbia.edu/~hgs/sip/
- www.sipcenter.com/
- www.ipstel.org/sip/

EURESCOM project P1111 has implemented a number of services to test SIP

capabilities and products, in order to show areas for SIP enhancement and to investigate the migration towards SIP based networks.

Project reports can be downloaded from: www.eurescom.de/public/projects/P1100-series/p1111

WORK PROGRAMME 2003

PREPARATIONS UNDER THE NEW BUSINESS MODEL HAVE STARTED



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The Eurescom Work Programme 2003 will be the first programme under the new Eurescom business model, which came into effect on 1 July. For the first time, the management of third party projects and programmes will be part of the Eurescom portfolio.

New programme structure

As part of its new business model, Eurescom will diversify its business, offering its project and programme management services also to third parties. This means that Eurescom services are open to everybody who wants to participate in collaborative telecoms-related R&D. Future Eurescom work programmes will consist of three clearly separated parts:

- Eurescom Study Programme
- Eurescom Project Programme
- Third Party Programme

Fast results through studies

The Study Programme will be run for all Eurescom members who have subscribed to this particular programme. The Study Programme subscribers are entitled to propose topics for new studies, take part in their execution, and receive the results of all studies. The results of the studies are available to the subscribers of the Study Programme only. As in previous years, studies are funded by Eurescom under the agreed conditions.

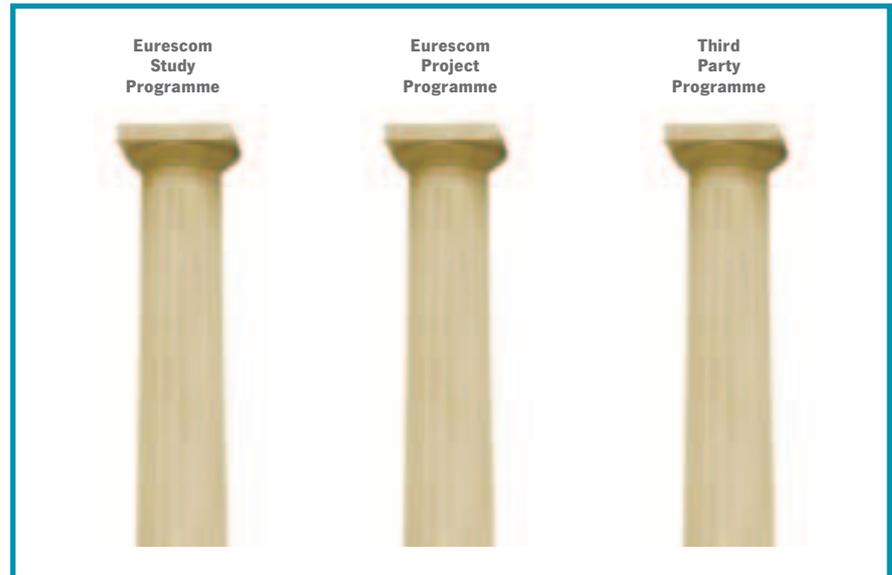
Our aim is to launch studies after a preparation period of three to four weeks. Study topics can range from 'IP in the radio access network' via 'Augmented reality' and 'Cool-town like architectures in telecom networks' to 'Trading partner agreements in a Web services world'.

Shorter projects in 2003

The generation of the Eurescom Project Programme 2003 will be a challenge, because it will compete with the preparation of the 6th Framework Programme of the European Union in the second half of 2002. It is not yet clear, which topics will be included in the 6th Framework Programme. We know that the 6th Framework Programme is moving towards larger, longer-term ventures, so-called Inte-

Third Party Programme

The main part of the Third Party Programme will be directed towards the administrative management of Integrated Projects and Networks of Excellence of the 6th Framework Programme (FP6) which will start projects in 2003. This will allow the partners to concentrate on the scientific and technical issues of the constituency. Eurescom has more than ten years of experience of running collabora-



grated Projects. This will leave space for targeted, shorter-term projects to be carried out in separate industry sector domains.

In addition to the technically oriented Eurescom projects, our aim for 2003 is to identify and launch a limited number of flagship projects of high strategic value to our shareholders and members.

For details, please see our Web site: www.eurescom.de/public/workprogrammes/workprogramme.asp

tive projects and programmes and has established a comprehensive set of procedures and tools for an efficient management of such programmes. Eurescom has taken an active role in the preparation of FP6 promoting the position of network operators/service providers and taking first steps to define projects based on the submitted Expressions of Interest.

STRENGTHENING EUROPE'S POSITION

EUROSCOM AND THE EUROPEAN R&D PROGRAMMES



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With its Framework Programmes for Research and Technology Development, the European Union takes huge efforts to support European R&D and strengthen the economic position of Europe. A significant part of the programmes is allocated to Information Society Technologies (IST). This programme area of EU-funded collaborative projects is particularly asking for the active involvement of telecom operators and service providers to make it successful.

Currently, we are in the transition phase between the 5th and the 6th Framework Programme (FP5 and FP6). Projects under the 5th Framework Programme are still running, but the preparation of FP6 activities has already started.

Eurescom as the leading institute for collaborative telecoms-related R&D in Europe is heavily involved in both the 5th and the 6th Framework Programme.

Eurescom's involvement in FP5

As far as FP5 is concerned, Eurescom is involved in several projects in different roles.

Eurescom provides the project co-ordination for two projects:

- MODA-TEL – Model Driven Architectures for Telecommunication System Development and Operation
- INNO-UTILITIES – Innovation-friendly public procurement and fight against telecommunications fraud and security threats

In addition, Eurescom is a partner in the consortia WWRI (Wireless World Research Initiative) and NGN-I (Next Generation Network Initiative). Eurescom is also represented in the Steering Committee of e-living (e-living: Life in a Digital Europe) and provides advice to NexWay (Network of Excellence in Wireless Applications and Technologies).

Through this multitude of involvement, Eurescom makes a significant contribution towards a consistent European Information Society and ensures that the important players – telecommunication opera-

tors and service providers – are properly involved in the European R&D programmes. At the same time, Eurescom is gaining more experience for a managing task in an even more ambitious programme: the 6th Framework Programme.

Eurescom's plans for FP6

The European Commission is currently preparing the 6th Framework Programme for research and technology development (FP6) for the years 2002 to 2006. The budget for FP6 totals 17.5 billion euro over the period of the programme. Information Society Technologies (IST) will be the largest part of the programme with 3.6 billion euro (about 20 per cent of the total).

In FP5 a high number of individual projects were performed and controlled by the European Commission. The Commission has decided to change this and wants to move towards targeted themes. The main instruments for implementing this policy are so-called Integrated Projects (IP), which can be in the range of tens of millions of euro EU funding, and Networks of Excellence (NoE).

Eurescom has identified several themes for potential Integrated Projects under FP6 from an operator and service provider perspective:

- GAMNAT: Guaranteeing Interoperability in Advanced Mobile Networks and Technologies
- B3G: Wireless Systems Beyond 3G for Broadband and Personalised Services
- S3IST: The Strategic Social Science of Information Society Technologies
- e-PER-SPACE: Towards the Area of Personalisation at Home and Everywhere
- ASTTI: Advanced Software Technologies for Telecom Infrastructures

Eurescom will centrally manage the generation and submission of the above IP proposals and is thus qualifying for a role as administrative manager of the IPs allowing the consortium partners to concentrate on the scientific and technical issues.

Conclusions

Eurescom has been involved in several European R&D projects taking different roles. As one of the most experienced organisations for collaborative R&D, Eurescom is well positioned to take even a bigger role in the upcoming 6th Framework Programme, especially as the co-ordination and management of the large Integrated Projects will become a crucial issue. There is plenty of synergy with the projects performed in Eurescom's own work programme. Both the members of Eurescom and the European Union could benefit from this synergy.

More information on Eurescom's FP6 themes is available on the Web at www.eurescom.de/public/ec-programmes. For further information on the Framework Programmes, please see the Cordis Web site at www.cordis.lu/en/home.html

new project results

STUDIES

- P1147 Personal Nets – defining the concept · Deliverable 2 · Putting Personal Place into Cyberspace · (EURESCOM confidential)
- P1149 Impacts of changes in enterprise software construction for telecommunications · Deliverable 1
Model Driven Architecture – Assessments of relevant technologies · (For full publication)
- P1149 Impacts of changes in enterprise software construction for telecommunications · Deliverable 2
Model Driven Architecture – Adaptations and impacts for the telecom domain · (For full publication)
- P1151 Always On ADSL Security · Deliverable 1 · Findings and Recommendations · (EURESCOM confidential)
- P1151 Always On ADSL Security · Deliverable 2 · Detailed Findings · (Eurescom confidential)

APPLICATIONS AND SERVICES

- P1004 ICE-Commerce (Framework for interoperable and customised E-Commerce Solutions) · Deliverable 4
Implementation and deployment of demonstrators · (For full publication)
- P1004 ICE-Commerce (Framework for interoperable and customised E-Commerce Solutions) · Deliverable 5
The ICE Commerce framework · (Eurescom confidential)
- P1004 ICE-Commerce (Framework for interoperable and customised E-Commerce Solutions) · Technical Information 5
Demonstrators description · (Eurescom confidential)
- P1102 Mobile Electronic Commerce (eMporio) · Technical Information 2
Architecture to Support Mobile Information Services on UMTS · (Eurescom confidential)
- P1102 Mobile Electronic Commerce (eMporio) · Deliverable 3
Platform concept for flexible m-commerce services · (Eurescom confidential)
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Enhancing the IIQP framework and validation planning · (For full publication)
- P1103 Inter-Operator IP QoS Framework -ToIP and UMTS Case Studies · Deliverable 4
State-of-the-art of the technology for ToIP scenarios · (EURESCOM confidential)
- P1103 Inter-Operator IP QoS Framework -ToIP and UMTS Case Studies · Deliverable 5
Economic and Business Aspects of Managed IP QoS Services · (EURESCOM confidential)
- P1103 Inter-Operator IP QoS Framework -ToIP and UMTS Case Studies · Deliverable 6
UMTS Case Study · (For full publication)
- P1103 Inter-Operator IP QoS Framework -ToIP and UMTS Case Studies · Technical Information 2
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- P1103 Inter-Operator IP QoS Framework -ToIP and UMTS Case Studies · Technical Information 5
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Market Analysis and User Requirement · (Eurescom confidential)
- P1204 Mobile Presence · Deliverable 1 · Technology Overview and User/Service Requirements · (Eurescom confidential)
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Location Based Services: an overview of user and technical aspects · (EURESCOM confidential)
- P1208 Location awareness (LOCAWA) · Technical Information 1
Identification of mass market Location Based Services · (EURESCOM confidential)
- P1208 Location awareness (LOCAWA) · Technical Information 2
Analysis of the privacy issue in Location Based Services · (EURESCOM confidential)
- P1208 Location awareness (LOCAWA) · Technical Information 3
Identifying the Technology Issues on Positioning · (EURESCOM confidential)

MIDDLEWARE

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Technical Information 1 · Requirements Validation · (Eurescom confidential)
- P1108 Workflow-based On-line Validation of Complex Component Based Internet Services · Deliverable 4
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- P1109 Next Generation Networks: the service offering standpoint · Technical Information 5
NGN Service Creation Environment: an outlook based on scouting and lab evaluation · (Eurescom confidential)
- P1109 Next Generation Networks: the service offering standpoint · Technical Information 6
Product assessment based on implemented services · (Eurescom confidential)
- P1109 Next Generation Networks: the service offering standpoint · Deliverable 2
Experimental Assessment of NGN service offering standpoint · (Eurescom confidential)
- P1110 Open service architectures: Advantages and opportunities in service provisioning on 3G mobile networks
Technical Information 5 · White Paper: Non-functional aspects and requirements related to Parlay/OSA products
(Eurescom confidential)

- P1110 Open service architectures: Advantages and opportunities in service provisioning on 3G mobile networks · Deliverable 3
Enhancement of OSA for Network Operators needs · (EURESCOM confidential)
- P1111 Next-Gen open Service Solutions over IP (N-GOSSIP) · Deliverable 1
Service Development through SIP: A report on implemented scenarios · (For full publication)
- P1111 Next-Gen open Service Solutions over IP (N-GOSSIP) · Deliverable 2
Areas for SIP Enhancements · (For full publication)
- P1111 Next-Gen open Service Solutions over IP (N-GOSSIP) · Deliverable 3
Interoperability between SIP based networks and existing networks · (Eurescom confidential)

MULTI-SERVICE NETWORKS

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Multicast extensions: Reliable Multicast and content Delivery Networks · (Eurescom confidential)
- P1105 MC-A-RONI MultiCast Deployment – A Practical handbook for Networks and ISPs · Technical Information 2
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Survey on Ipv6 technology implementation · (Eurescom confidential)
- P1114 MC-A-RONI MultiCast Deployment - A Practical handbook for Networks and ISPs · Deliverable 3
A Practical Handbook for Multicast Deployment · (Eurescom confidential)
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CUSTOMERS AND MARKETS

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A DIGITAL TASTE OF SMELL

HOW THE WEB WILL CONQUER OUR FIVE SENSES



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Up to now telecommunications has been limited to vision and hearing. This is going to change soon: Researchers around the globe are exploring ways to reach also our other three senses. At the moment the most promising sensual area is odour.

In 2000 France Télécom R&D started a project on the diffusion of fragrances through telecom networks. Together with ISIPCA, the international perfume and aroma institute, and two manufacturers, Ruetz Scent Systems and AC2i, the French created a prototype for olfactory applications on the Web. The core element of this prototype is a fragrance diffuser, which has stored hundreds of fragrances. The required fragrance, including its duration and intensity, is activated from the server side via the Internet using a scent diffusion software.

Diffusion of fragrances

France Télécom has smelled a wide range of business opportunities for its scent diffusion application, like games, education, tele-medicine, e-commerce, advertising, and tourism. To highlight the service opportunities, France Télécom is designing an olfactory stroll through the vineyards of Burgundy on the Web site of the office for Burgundy wines, B.I.V.B. Digital scent diffusion could also be used as remote aroma therapy for curing malnutrition.



To demonstrate the mobile opportunities of scent applications the French researchers designed a scent game for PDAs called "Drago". It is a culinary competition between two or three teams whose aim it is to concoct the best meal possible for a dragon called "Ventremou". However, for France Télécom this is more than a game. Already in September 1999, they registered for a patent for diffusion of fragrances through telecom networks. For 2003, France Télécom is planning to introduce its fragrance diffusion services on the market. The prize for the diffuser will be in the range of 50 to 150 euro.

Digital touch

While online scents are on the brink of commercial services the two others senses seem to be even harder to address. Companies like Immersion Corp. in the USA have done quite a lot of development in the area of touch technologies for enabling immersion applications. The digital use of the sense of touch could be used in medicine, entertainment and in the automotive sector. Immersion Corp. is developing simulators for medical procedures, which use tactile feedback to make the experience as realistic as possible. However, this is still far away from the real experience.

Electronic tongue

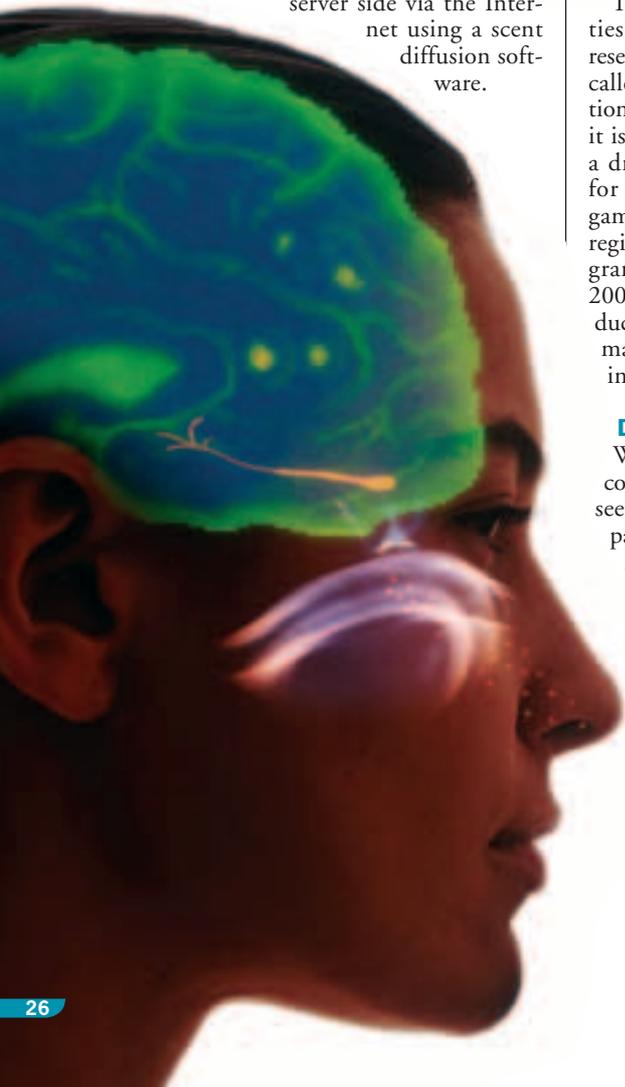
The sense of taste is even harder to digitise. It seems that emulating taste should not be too difficult, as there are only the four well-known tastes sweet, salty, sour and bitter. However, many details of our taste system and the working of our taste receptors are still unknown. This is underlined by the recent identification of a candidate for a fifth basic taste called 'umami', the taste of monosodium glutamate, characteristic of protein-rich foods.

Despite these problems, there is already a tasting device available. It is a hand-held tasting device called 'electronic tongue' by EMBRAPA Instrumentação Agropecuária from São Carlos, Brazil. The device has been designed for accurate and reliable taste measurements for companies currently relying on human tasters for their quality control of wine, tea, coffee, and other foods. Electronic tongue cannot compete with human tasters if it comes to subtle products, such as fine wines, but what makes the device a serious rival for human taste buds is the fact that it never tires and does not lose its differentiating edge. A tasting device for online use has not yet been designed, as far as we know. However, it is probably just a matter of time until this will be done as well.

Digital hallucination?

What is the bottom-line? Cyberspace is not yet the "consensual hallucination" as which William Gibson, the inventor of this term, has seen it. The digital hallucination on the Web is still far from being complete. However, for the first time in history it is now theoretically possible to emulate all five senses and communicate multi-sensual information via telecoms networks. The complete digital hallucination for all five senses is very likely to occur. The only open questions are 'When will it happen?' and 'What will be the consequences for our lives?'. Read, hear, feel, smell and taste the answers in one of the forthcoming issues of Eurescom mess@ge.

References and links on the covered topics are available in the online edition of Eurescom message at www.eurescom.de/ message.



WORKSHOP

OSA and Parlay @ Work Moving towards deployment

**EURESCOM workshop,
13-14 November 2002**

Venue: Eurescom Conference Centre, Heidelberg, Germany
www.eurescom.de/OsaAtWork
Early bird registration deadline: 30 September 2002

Parlay and OSA are key enablers for Service Provisioning in the Open Services Market. Trials and initial deployments have already been done. How effective are these implementations? This is your chance to get the answers first-hand from the experts.

The objective of the workshop is to present experience from trials and early deployment of OSA and Parlay technology. It will also discuss the further evolution of OSA/Parlay and show the benefits and business opportunities that eventually will lead to a wide deployment of OSA and Parlay in the Open Services Market. This workshop will be the meeting place for telecom operators, service providers, manufacturers and others interested in the deployment of OSA/Parlay. Product demonstrations and showcases will be running throughout the workshop.

Topical highlights include:

- The state of the art of OSA/Parlay technology
- An overview of the status of standardisation work
- Experiences and results from trials and deployment of OSA/Parlay products
- Live OSA/Parlay demos
- Discussion of operational issues from mobile and fixed network operator on deployment of OSA/Parlay
- Discussion of business opportunities in the OSA/Parlay market – and what is in it for the service provider and network operator
- Results from Eurescom projects

Speakers include:

- Zygmunt Lozinski, President of Parlay Group, Senior Technical Staff Member, IBM
- Ard-Jan Moerdijk, Chairman of 3GPP OSA, Strategic Product Manager, Ericsson
- Karl-Gunnar Eklund, Project Manager, Skanova Networks
- Anders Elleby, Head of Strategy Affairs, Swisscom Mobile Ltd
- John Strand, Chief Executive Officer, Strand Consulting

- Oddvar Risnes, Project leader Eurescom project P1110, Director of Research, Telenor R&D
- Carlo Alberto Licciardi, Project leader Eurescom project P1109, Telecom Italia Lab

Workshop programme outline

- Session 1 "State of the art of OSA/Parlay products and standards"
- Session 2 "Experience from trials and early deployments"
- Session 3 "Benefits and business opportunities"
Panel Session "Is OSA/Parlay ready for deployment?"
- Session 4 "Services and operational issues of OSA/Parlay"
- Session 5 "Complementary technologies"

Who should attend?

- Operators and service providers that have or are planning to deploy OSA/Parlay solutions
- Managers and decision makers within operators and service providers
- Service and application developers
- Network architecture and network deployment engineers
- Equipment and software vendors
- 3G standardisation experts

Registration and further information:

www.eurescom.de/OsaAtWork
Early bird registration deadline: 30 September 2002

Contact:

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